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## t Test

- ▶ [Mean Differences](#)

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## T1D

- ▶ [Type I Diabetes Mellitus and Quality of Life](#)

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## Taiwan

Grace Yao  
Department of Psychology, National Taiwan University, Taipei, Taiwan, Republic of China

### Definition

Taiwan is a small island that lies on the western edge of the Pacific Ocean, between ▶ [Japan](#) and the Philippines. It has an area of about 36,000 km<sup>2</sup> (14,400 miles<sup>2</sup>).

### Description

In June of 2011, Taiwan had 23,180,477 inhabitants, 50.2 % of which were males and 25.11 % of which holding a bachelor's or higher degree (Directorate General of Budget, Statistics & Executive Yuan, [2011](#)). The age distribution

was 15.6 % aged 0–14, 73.4 % aged 15–64, and 10.9 % aged 65 and over (CIA World Fact Book, [2011a](#)). In 2010, the GDP (PPP) was US \$35,800 per capita, ranked as 32nd in the world (CIA World Fact Book, [2011b](#)). The unemployment rate was 5.2 %, ranked as the 50th lowest in the world (CIA World Fact Book, [2011b](#)).

The ▶ [WHOQOL-BREF](#) was used in the 2001 ▶ [National Health Interview Survey \(NHIS\)](#) conducted by the National Health Research Institute and the Bureau of Health Promotion (BHP), Department of Health, Taiwan (Shih et al., [2002](#)). 13,008 respondents (aged between 20 and 69) were randomly sampled and completely answered the questionnaire. The sample was representative of the national population in age, gender, and in terms of the urbanization index (Hung, [2002](#)). The ▶ [WHOQOL-BREF](#) uses a five-point Likert-type scale for each item. The range of each domain score was between 4 and 20. [Table 1](#) shows the mean responses for each item and domain of the questionnaire. In general, males have better ▶ [QOL](#) on physical and psychological domains, while females have better ▶ [QOL](#) on social domain. The scores of the four domains decrease with age. However, the psychological and environmental domain scores increase a bit after 60 years old.

The ▶ [SF-36](#) questionnaire was also used in both of the 2001 and 2005 ▶ [NHIS](#) (Bureau of Health Promotion, Health & Taiwan, [2011](#)). 19,777 (aged between 11 and 98) and 17,769 (aged between 11 and 65) respondents were included for the 2001 and 2005 studies,

**Taiwan, Table 1** The mean responses for the 26 items and 4 domains of the WHOQOL-BREF in the 2001 NHIS of Taiwan

#	Item/Domain	GENDER		AGE					
		Total (n = 13,008)	Males (n = 6,586)	Females (n = 6,422)	20–29(n = 3,592)	30–39(n = 3,688)	40–49(n = 3,403)	50–59(n = 1,815)	60–69(n = 510)
1	Overall QOL	3.30	3.27	3.32	3.36	3.27	3.28	3.27	3.22
2	General Health	3.39	3.45	3.33	3.46	3.44	3.37	3.29	3.18
3	Pain & Discomfort	4.08	4.11	4.07	4.14	4.12	4.08	3.99	3.88
4	Dependency on Medication/Treatment	4.38	4.38	4.39	4.53	4.46	4.35	4.15	3.91
5	Positive Feelings	2.70	2.70	2.71	2.86	2.70	2.61	2.59	2.66
6	Spirituality/Religion/Per social Beliefs	3.52	3.54	3.50	3.55	3.57	3.52	3.40	3.40
7	Thinking, Learning, Memory, & Concentration	3.40	3.48	3.33	3.40	3.47	3.41	3.30	3.25
8	Physical Safety & Security	3.31	3.35	3.27	3.35	3.30	3.31	3.26	3.32
9	Home Environment	3.12	3.11	3.13	3.12	3.11	3.12	3.09	3.18
10	Energy & Fatigue	3.37	3.44	3.30	3.42	3.41	3.36	3.26	3.17
11	Body Image & Appearance	3.67	3.70	3.64	3.69	3.74	3.66	3.53	3.54
12	Financial resources	2.82	2.79	2.84	2.96	2.84	2.73	2.69	2.65
13	Acquiring New Information	3.31	3.29	3.32	3.42	3.35	3.24	3.15	3.10
14	Recreation/Leisure	2.95	2.96	2.93	3.12	2.88	2.87	2.88	2.96
15	Mobility	3.92	3.93	3.90	4.07	4.01	3.86	3.64	3.51
16	Sleep & Rest	3.41	3.47	3.34	3.40	3.40	3.44	3.37	3.36
17	Activity of Daily Living	3.65	3.67	3.62	3.69	3.68	3.63	3.56	3.52
18	Work Capacity	3.63	3.66	3.59	3.64	3.68	3.63	3.53	3.47
19	Self-Esteem	3.66	3.68	3.63	3.70	3.68	3.64	3.57	3.60
20	Personal relationships	3.59	3.59	3.59	3.65	3.59	3.56	3.53	3.58
21	Sexual Activity	3.52	3.51	3.54	3.50	3.60	3.55	3.42	3.36
22	Practical Social Support	3.67	3.64	3.70	3.75	3.68	3.63	3.60	3.57
23	Physical Environment	3.54	3.54	3.54	3.60	3.49	3.54	3.52	3.58
24	Health & Social Care	3.42	3.40	3.44	3.44	3.39	3.43	3.41	3.45
25	Transport	3.55	3.55	3.56	3.53	3.57	3.57	3.53	3.52
26	Negative Feelings	3.54	3.59	3.48	3.55	3.55	3.54	3.50	3.56
	Physical	15.11	15.23	14.98	15.37	15.30	15.05	14.57	14.19
	Psychological	13.66	13.79	13.53	13.83	13.80	13.59	13.26	13.34
	Social	14.38	14.32	14.44	14.54	14.49	14.32	14.05	14.00
	Environment	13.01	13.00	13.01	13.27	12.97	12.90	12.76	12.88

**Taiwan, Table 2** The mean responses for the eight scales and physical/mental components of the SF – 36 in the 2001 NHIS of Taiwan

	GENDER		AGE																
			20–29		30–39		40–49		50–59		60–69		70–79		80–89		90–99(n = 8)		
	Total (n = 16,862)	Males (n = 8,326)	Females (n = 8,535)	(n = 3,857)	(n = 3,843)	(n = 3,747)	(n = 2,355)	(n = 1,724)	(n = 1,058)	(n = 261)	(n = 261)	(n = 261)	(n = 261)	(n = 261)	(n = 261)	(n = 261)	(n = 261)	(n = 261)	(n = 261)
1. PF	90.75	92.71	88.84	97.27	96.11	93.56	89.76	79.44	68.24	52.41	22.5								
2. RP	81.82	84.73	78.99	89.99	89.12	85.44	78.84	66.14	56.19	37.74	21.88								
3. BP	80.56	83.65	77.73	86.47	83.48	81.79	78.36	72.39	68.45	62.49	47.38								
4. GH	68.42	70.62	66.27	75.79	73.44	69.48	63.90	56.29	54.02	50.61	38.00								
5. VT	67.05	69.80	64.36	70.18	68.96	68.67	66.00	61.31	58.08	53.77	42.50								
6. SF	85.99	87.05	84.95	84.44	87.60	88.09	85.85	81.89	78.52	69.68	67.19								
7. RE	79.33	81.61	77.54	79.93	81.11	83.21	79.93	74.75	68.75	57.34	33.33								
8. MH	72.63	74.76	70.55	72.88	72.58	74.06	72.65	70.41	71.46	68.66	71.50								
PCS*	51.90	52.91	50.92	55.63	54.58	52.70	50.49	46.04	42.31	37.21	27.32								
MCS*	49.28	50.09	48.49	48.70	48.95	50.14	49.56	49.08	49.47	48.21	48.55								

\*Since the factor scores of the eight scales for Taiwanese are not available, PCS and MCS were calculated by using the US factor scores

**Taiwan, Table 3** The mean responses for the eight scales and physical/mental components of the SF – 36 in the 2005 NHIS of Taiwan

	Total (n = 14,843)	GENDER		AGE				
		Males (n = 7,570)	Females (n = 7,273)	20–29 (n = 3,885)	30–39 (n = 3,562)	40–49 (n = 3,749)	50–59 (n = 2,681)	60–65 (n = 961)
1. PF	94.88	95.94	93.77	97.49	97.17	94.87	91.41	85.49
2. RP	87.79	89.35	86.16	91.48	91.12	88.04	82.72	73.70
3. BP	84.85	86.82	82.80	86.64	85.55	84.86	82.87	80.56
4. GH	71.12	72.53	69.65	73.76	73.87	70.91	66.70	63.26
5. VT	68.36	70.44	66.19	67.26	68.52	69.25	68.92	67.16
6. SF	89.65	90.18	89.10	88.97	89.95	90.40	89.79	87.99
7. RE	83.30	83.89	82.69	80.52	83.13	84.80	85.47	83.32
8. MH	74.71	76.22	73.13	72.74	74.01	75.83	76.46	75.93
Physical	53.71	54.32	53.08	55.53	55.01	53.50	51.39	56.83
Mental	50.12	50.65	49.57	48.53	49.56	50.80	51.61	49.01

\*Since the factor scores of the eight scales for Taiwanese are not available, PCS and MCS were calculated by using the US factor scores

respectively. In this entry, we selected the participants with ages above 20. Tables 2 and 3 show the mean responses for the eight ► SF-36 scales as well as the physical and mental components (PCS and MCS) for both of the ► NHISs. In general, the physical component score is higher than the mental score on both surveys. The scores of the physical-related scales (e.g., PF, RP, BP, and GH) decrease with age. On the other hand, higher scores on the mental-related scales (e.g., SF, RE, and MH) were noted for middle-aged people.

## Cross-References

- Japan, Quality of Life
- National Health Interview Survey (NHIS)
- Physical Functioning (PF)
- Quality of Life (QOL)
- SF-36 Health Survey
- Symptomatic Gallstone Disease and Quality of Life in Taiwan
- World Health Organization Quality of Life (WHOQOL) Assessment

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## Taiwanese Women

- Chinese Health-Promoting Lifestyle Profile

## Talent

- Creative Class (Richard Florida)

## Tangible Support

- Social Support and Self-Worth Among African-American Youth

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## Target Hardening and Crime

- ▶ [Impact of Housing Design on Crime](#)
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## Tariffs

- ▶ [Taxes](#)
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## Task Discretion

Ying Zhou

Surrey Business School, University of Surrey,  
Surrey, UK

### Synonyms

[Decision latitude](#); [Job autonomy](#)

### Definition

Task discretion refers to the extent to which employees are able to exercise independent initiative and judgment over their job tasks.

### Description

The “participative management” paradigm that emerged in the late 1980 emphasizes giving employees higher levels of job autonomy as a means of unleashing employee creativity and improving organizational efficiency (Aoki, 1990; Lowin, 1968; Miller & Monge, 1986; Walton, 1985). For instance, Appelbaum, Bailey, Berg, and Kallenberg (2000) analyzed the relationship between participative workplace practices and the performance of plants in steel, apparel, and medical electronic instruments and imaging industries in the US and found that employee autonomy and shop floor participation had a significantly positive impact on organizations’

competitive advantage. Explanations for the positive impact of employee empowerment include that it improves the quality of job decisions (Levine & Tyson, 1990; Miller & Monge, 1986), reduces industrial conflict (Delaney, Fiorito, Jarley, & Schwochou, 1993) and facilitates the development of new work skills (Osterman, 1995).

From the psychosocial perspective, the scope for decision-making in the job has important implications for the ▶ [quality of working life](#). It has been suggested that employees’ task discretion and broader participation in organizational decision-making help satisfy their nonpecuniary needs and protect their physical and mental well-being (Gardell, 1987; Johnson & Johansson, 1991; Karasek & Theorell, 1990; Marmot, 2006). The need to have a voice over how one carries out his or her work is important because it contributes to a sense of competence and self-actualization. In support of the argument, American and British investigations with psychosocial job characteristics have consistently found positive correlations between employee task discretion and general ▶ [job satisfaction](#) (Blumberg, 1968; Coburn, 1978; Patchen, 1970).

Further, a lack of control over the job can lead to higher levels of job stress and deteriorated health. The influential theoretical model developed by Karasek and Theorell (1990) treats work strain as a function of the joint effects of job demands and employees’ decision latitude over their work. It postulates that excessive workload produces long-term adverse effects on employee health only when it is accompanied by low decision latitude. When employees are allowed to exercise discretion over their work, heavy job demands can transform into positive challenges that facilitate cognitive growth, which will inhibit fatigue from developing into stress. Karasek and Theorell (1990)’s analysis of the Swedish Level of Living Survey and the US Health Examination Survey showed that workers’ risk of developing coronary heart disease (CHD) symptoms was strongly correlated with the interaction of their work demands and decision latitude.

The findings were replicated by Hahn's (1986) study of the psychosocial work conditions of male Finnish industry workers, which also revealed a clear association between the interaction of high work demands and low decision latitude on the one hand and elevated risk for workers to develop myocardial infarction or angina pectoris on the other hand. Similar findings were reported by more recent research on British workers (Kuper & Marmot, 2003).

More skeptical writers, however, have pointed out the theoretical and practical limits to the effectiveness of employee empowerment practices. These include management resistance to power-sharing, inequality of skills among employees and inauthentic empowerment programs used by employers to reassert managerial control and intensify the work process (Grant, 1999; Heller et al., 1998; Legge, 1995; Purcell, 1993; Willmott, 1993). Despite the plausibility of such arguments, the majority of empirical evidence to date based on analysis of large-scale employee surveys tends to support the view that higher level of employee task discretion is associated with improved physical and mental well-being.

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## Task Measures

### ► Activity Assessment

## Taxes

Jürgen Faik  
FaMa-Neue Frankfurter Sozialforschung,  
Frankfurt/Main, Germany

## Synonyms

Tariffs; Tribute fees

## Definition

Taxes are certain payments from private persons and enterprises directed to the state authorities without claims for special compensation. On the one hand, taxes are often seen as a burden, which lessen private resources of wealth. On the other hand, taxes are an important source of income for the state to provide public goods.

## Description

Historically, taxes exist since early antiquity. Although their traditional authorization was caused by the satisfaction of societal wants, some remarkable, creative justifications for generating public revenue were given. In this sense, Emperor Vespasian argued: “Pecunia non olet!” (“Money does not smell!”) in order to justify a tax on public conveniences.

From a welfare perspective, Adam Smith, the father of economics, postulated four, nowadays, well-known principles of taxation in (see Smith, 1776/1977): the regularity of taxation, the firmness of tax laws, and the convenience as well as the cheapness of tax collection. Based on these principles, in the nineteenth century – during the period of classical liberalism (see, e.g., Dickerson, Flanagan, & O’Neill, 2009, pp. 129–136) – tax legislation emerged in the sovereign states. For modern tax systems especially the following aspects are relevant: (1) fiscal purposes (in order to realize governmental targets), (2) governance aspects (in order to influence socially undesirable

behavior of society’s members like smoking by levying a relatively high cigarette tax), and (3) redistribution purposes (in order to achieve a politically desired distribution of personal incomes) (see, e.g., Musgrave & Musgrave, 1989). State authorities use tax revenue for providing public goods in the fields of infrastructure, education, health, etc.; furthermore, to some degree, taxes are needed to erase public debts.

The balance of private and public goods is a reasonable goal and the incongruity of private wealth and public poverty was noticed especially in the sixties (Galbraith, 1967).

In general, several variants for constructing tax systems exist. They vary concerning the tax base, the relationship between tax payments and tax base, the level of the tax rate, the amount of tax exemptions, and the taxed target groups. For instance, in Germany income and value-added taxes exist (among others). While the German income tax system is primarily addressed to the entire population and is characterized by a progressive tax scale, the German value-added tax is based on consumption, it is levied on entrepreneurs, and it has a proportional tax scale (currently: usually 7 % for subsistence commodities and 19 % for all other commodities).

In Germany, e. g., more than 70 % of overall tax revenue stems from only four sources: income tax, value-added tax, mineral oil tax, and (local) business tax. Related to the German gross domestic product, the share of tax revenue – without social security contributions – amounts to approximately 20 % (see, e.g., Statistisches Bundesamt, 2011 with respect to the third quarter of 2010). Including social security contributions, this share of total tax revenue increases up to 37 % in 2010 (see OECD, 2011).

For individuals, the tax burden creates negative consequences with respect to private well-being because it reduces the disposable income level, but this point of view neglects the provision of public goods (like streets and education) which increases individual well-being (for more details, see Mankiw, 2009). Thus, two opposing effects on the relation between individual satisfaction and taxes exist. For example, in a study for the US state of Minnesota, it was found that residents of Minnesota “(...) tend to be slightly more



dissatisfied than satisfied with the amount of taxes they pay” (Minnesota Department of Revenue, 2005:1). In a study of Feldman and Steenbergen (2001), US citizens were asked if they consider the amount of income taxes they pay are too high, somewhat too high, about right, somewhat too low, or much too low. The result was that only a few people thought that they were paying too little in taxes. In a study of Schmolders (1960), Germans were asked to tell what they associate with taxes. Twenty-nine percent of the people associated negative aspects, e. g., like unpleasant feelings (13 %) and too many or too high taxes (8 %).

The so-called Laffer curve postulates a concave connection between tax revenue and average tax rate. Supply-side economists claim that the optimal tax rate of the Laffer curve is exceeded in practice, and, thus, supply-side economists demand diminishments of business and income taxes in order to evolve entrepreneurial dynamics. Concerning the financing of such tax diminishments, supply-side economists typically plead for cutbacks of transfers (see in this context, e.g., Bartlett, 2003). This point of view is often accompanied by a deep distrust in the productivity and the management qualities of the public sector, compared with the private sector. It is assumed that public organizations would waste tax revenue to a high degree. Nowadays, this would be documented by high public debts which generated a need for state authorities to save money, i.e., to restrict the provision of public goods.

The sketched position of supply-side economists is by no means undisputed. For instance, Haavelmo’s theorem asserts that the kind of usage of tax revenue is decisive for an assessment of growth/well-being effects. In brief, that means that the diminishment of taxes can reduce growth/well-being if it is accompanied by a reduction of public expenditures (et vice versa). Another counterargument against the supply-side economists’ position is also inspired by the Keynesian theory which assumes higher marginal consumption rates in the lower-income region compared to the upper-income classes (for such fundamental macroeconomic aspects, see, e.g., Mankiw, 2010). Against this background, income redistribution by a progressive

tax system can cause a higher macroeconomic consumption level and, therefore (at least short termed), a stimulation of overall output and income which might be a successful economic strategy especially during a recession (see, e.g., Faik, 2010, pp. 390–394).

The redistribution effects of taxes (which are connected with well-being categories as a tax base, like income, wealth, and consumption) depend on the functional relationship between the amount of money a taxpayer has to give to the state and the variable which represents the tax base. A progressive function reveals a greater amount of redistribution than, e.g., a flat tax. Besides the concrete functional relation, for redistributive purposes, the kind of tax exemptions and their location in several well-being regions are relevant (for corresponding fundamental considerations see, e.g., Musgrave & Musgrave, 1989). In total, taxes are fundamental for our quality of life because it depends on the provision of public goods and their financing through taxes and, additionally, on the redistribution effects in the economy and society.

## Cross-References

- ▶ Consumption
- ▶ Consumption Taxes
- ▶ Economic and Social Indicators
- ▶ Happiness
- ▶ Household Disposable Personal Income
- ▶ Household Expenditure
- ▶ Life Satisfaction Judgments
- ▶ Needs Assessment
- ▶ Objective Quality of Life
- ▶ Personal Well-Being
- ▶ Quality of Life

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## “Taxing the Rich”

- ▶ [Progressive Taxation](#)

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## Taxonomy of Measurement Properties

- ▶ [COSMIN: Consensus-Based Standards for the Selection of Health Status Measurement Instruments](#)

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## Taylor and Aspinwall Psychosocial Stress Model

Konstantinos Kafetsios  
Department of Psychology, University of Crete,  
Rethymno, Greece

### Definition

A conceptual framework derived from research in social cognition, coping and stress that details

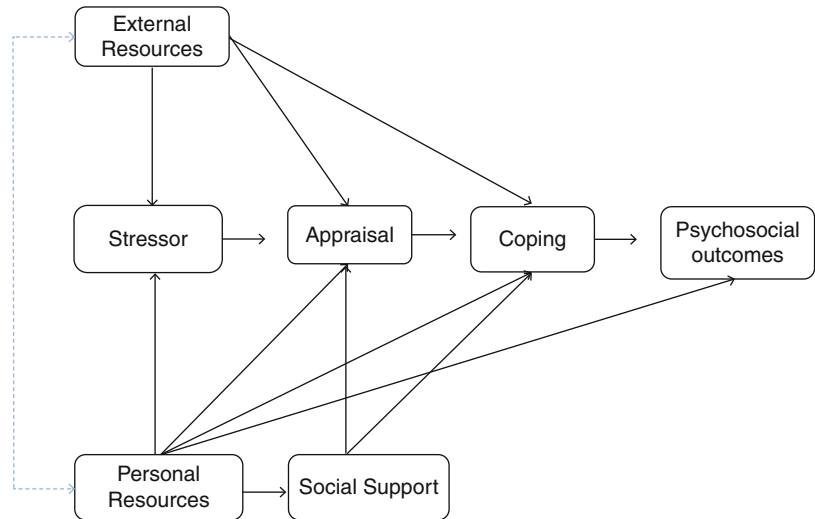
the paths and processes through which personality (e.g., optimism, mastery, social support perceptions) and social (e.g., time, money, gender, status) resources influence stress levels and psychological and health outcomes. Central to the model is the identification of appraisal, coping and resistance/vulnerability to stress as key moderators or mediators of personality and social resources' effects on stress levels, psychological health and well-being giving the model a dynamic, multilevel character.

### Description

The model (Taylor & Aspinwall, 1996 see Fig. 1) explains stress and its effects on health and psychological well-being in a multilevel fashion with proximal processes of stress appraisal, coping styles and strategies and stress vulnerability nested within more distal social and personality resource factor effects. At the distal level, the model outlines how personality and environmental resources may influence psychological outcomes directly or indirectly through affecting appraisal, coping and vulnerability to stress. Conceptualizing personality characteristics and social conditions as psychological resources, Taylor and Aspinwall adhere to social and psychological resource models that consider stress as the potential or actual loss of resources (see Hobfoll, 2002). Individual/personality resources that influence stress appraisal, selection and use of coping strategies, and ultimately vulnerability to stress include socio-emotional learning, genetic underpinnings of support tendencies and negative affectivity, dispositional affectivity, pessimism, hardiness, optimism, psychological control, self-esteem, and social support perceptions. Environmental resources include time, money, education, standard of living, and structural aspects of social support. Building on the then available personality and sociopsychological research, the model identified direct effects of those personal and external resources on vulnerability or resistance to stress.

At the proximal level, Taylor and Aspinwall's model builds on Lazarus and Folkman's (1984)

**Taylor and Aspinwall Psychosocial Stress Model, Fig. 1** Taylor and Aspinwall psychosocial stress model



distinction between primary and secondary appraisal to threat and Carver and Scheier's (1994) theory of approach-avoidance coping styles and coping strategies to explain the moderating and mediating effects of cognitive and motivational regulatory processes for psychosocial resources relationships with stress levels and well-being. For example, personality resources such as optimism may influence stress appraisal, a key moderator, in that low levels of optimism may exacerbate stress by rendering it higher or even intolerable for the individual (e.g., Aspinwall & Brunhart, 1996). Coping styles, strategies and vulnerabilities can mediate psychosocial resources' effects on stress and well-being. Equally, the availability of financial resources may dampen down stress vulnerability with palliative effects on psychological well-being (Taylor & Seeman, 1999). Dispositional optimism may interact with situational optimism, as a result of availability of environmental resources (e.g., time, money).

The model has influenced conceptualizations of how environmental factors interact with personality capacities to influence social support (Thoits, 2011), well-being, and mental and physical health (e.g., Taylor & Boffman, 2011; Taylor, Repetti & Seeman, 1997). Central ideas regarding the combination of cognitive and motivational moderators and mediators were later

developed into Aspinwall and Taylor's (1997) influential model of proactive coping as anticipatory efforts to a potentially stressful event to prevent it or modify its form before its occurrence. The model also informed research on social support and psychosocial resources in older adults (e.g., Martin, Grünendahl, & Martin, 2001) or special populations (e.g., Van der Veek, Kraaij, & Garnefski, 2009).

## Discussion

Taylor and Aspinwall's multilevel framework is particularly effective in pointing to socio-cognitive and motivational processes that mediate and moderate stress level outcomes and how these relate to personality and social resources (and their interaction).

Although aspects of the model have informed related research and theorizing, empirical tests of the full model and its effects on well-being and quality of life have been rare. In one such test, a cross-sectional study of a sizeable working sample (Michielsen, Croon, Willemsen et al. 2004) confirmed part of the model especially paths linking external and internal resources (relationships between external resources and social support levels). Part of the model was not supported in this dataset, the part that had to do with the direct effect of external resources (i.e., gender) on stressors and coping strategies

mediating stress levels' relationships with psychological outcomes (i.e., emotional exhaustion). Another attempt to apply the model to predict the quality of life of a sample of psychiatric outpatients (Masthoff et al., 2007) failed to support the full model, although some parts of the model were verified in further exploratory analyses in the same sample.

The model integrates empirically established contextual and individual difference predictors of psychosocial stress outcomes, thus integrating process-oriented and individual difference perspectives in psychosocial stress outcomes. The utility of such an approach was further exemplified in Aspinwall and Taylor's (1997) model of proactive coping.

## Cross-References

- ▶ [Negative Affect](#)
- ▶ [Optimism](#)
- ▶ [Social Support](#)
- ▶ [Stress](#)

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## Team Efficacy

- ▶ [Collective Efficacy](#)

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## Technical Quality of Government

- ▶ [Good Governance and Happiness in Nations](#)

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## Technocratic Knowledge

- ▶ [Democracy and Development in Mexico and Chile](#)

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## Technological Capabilities

- ▶ [Capability and the Middle-Income Trap in Chile](#)

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## Teen Drug Abuse

- ▶ [Adolescent Substance Use](#)

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## Teen Drug Use

- ▶ [Adolescent Substance Use](#)

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## Teen Motherhood in Canada

Hala Tamim, Ban Al-Sahab and  
Jennifer Connolly  
York University, Toronto, ON, Canada

### Synonyms

[Adolescent motherhood in Canada](#); [Girls' motherhood in Canada](#)

### Description

Teen pregnancy and childbirth is associated with lifelong physical, emotional, and socioeconomic risks for both the adolescent mother and her child. Despite widespread recognition of the multiple hazards of adolescent pregnancy and motherhood, the World Health Organization (WHO) estimates the global rate of live births delivered by teenage girls aged 15–19 years to be approximately 11 % (World Health Organization [WHO], 2012). In Canada, 30,000 adolescent girls became pregnant in 2005. About 14,000 girls gave birth, while 16,000 of the girls had an abortion (Statistics Canada, 2005).

These figures are alarming given the highly adverse effects on the mother and infant as well as the ▶ [healthcare](#) system.

### Adverse Effects of Teen Motherhood on Mothers, Infants, and Healthcare System

*Maternal Effects.* Adolescent pregnancy has been associated with poor maternal weight gain, pregnancy-induced hypertension, anemia, sexually transmitted diseases (STD), and prolonged and difficult labor (Community Action Program for Children and the Canada Prenatal Nutrition Program [CAPC/CPNP], 2007; Klein, 2005). Studies have shown that maternal mortality rate is twice as likely among adolescent mothers as among adult pregnant women (Klein, 2005). Teenage mothers are also confronted with the double challenge of becoming a parent while at the same time becoming an adult, which limits their acquisition of child-focused parenting skills (CAPC/CPNP, 2007). Moreover, a majority of adolescent parents do not complete their education and hence are faced with constricted employment choices and poor economic opportunities (CAPC/CPNP). In fact, homelessness by the age of 33 years was reported to be twofold more among teenage mothers than their older counterparts (CAPC/CPNP).

*Child Effects.* In addition to the adverse maternal effects of teen motherhood, children of adolescent mothers have poor neonatal outcomes. Having a low birth weight baby is twice more likely to occur among adolescents than adults (Klein, 2005). Prematurity is also more evident among adolescent mothers. The percentage of preterm birth is approximately 14 % among girls  $\leq 17$  years as compared to 6 % for women aged 25–29 years (Klein). Moreover, the neonatal death rate (within 28 days of birth) is almost three times higher among adolescent mothers (Klein). The children of teen mothers have also been shown to have greater developmental, cognitive, attachment, and behavioral problems than those born to adult mothers. The American Notre Dame Adolescent Parenting Project (Whitman, Borkowski, Keogh, & Weed, 2001) revealed that by age 3, internalizing

problems (i.e., low ► [self-esteem](#), helplessness, self-loathing, depression) were common among 37 % of the children of adolescent mothers, while 35 % had externalizing problems (i.e., delinquency, acting out, ► [anger](#)). Moreover, adolescent mothers' children have shown to perform poorly on cognitive tests and measures of school achievement as compared to children of older mothers (Baldwin & Cain, 1980; Ha, Osofsky, & Culp, 1996; Spieker, Larson, Lewis, White, & Gilchrist, 1997). Besides behavioral and cognitive problems, the Notre Dame Longitudinal Parenting Project found that by age 3, around 75 % of children born to teen mothers experienced a delay in one domain of development and around 50 % of the children had delays in two domains of development (Whitman et al., 2001). Finally, studies have shown that children of adolescent mothers are at greater risk for becoming victims of ► [child abuse](#) (McCullough & Scherman, 1998).

*Healthcare System Effects.* Adolescent parenthood comes at a great cost to the healthcare system. Health problems associated with teen pregnancy and motherhood result in increased rates of hospital admittance, highlighted in numerous Canadian studies. A Manitoba study found that the risk of postnatal readmission was higher for infants whose mothers were 17 years of age or younger than for older mothers (Martens, Derksen, & Gupta, 2004). Similarly, an Ottawa-based study concluded that young maternal age was linked to both obstetric complications and risk of readmission (Liu et al., 2002). Cargill and Martel (2007) added to these findings by showing that young single women are most likely to return to emergency departments with their neonates. Finally, increased hospital admissions have been noted after the neonatal period as children of adolescent mothers are more likely to be admitted to hospital for accidents, injuries, and illnesses than children of older mothers (Offord, 1987). Teen mothers, moreover, often experience a loss of productivity related to their health risks, and the cost of their low earnings is passed on to society (Hoffman, 2006). Based on a national Canadian study, adolescent mothers were found to have decreased participation in the labor

market and low earnings, with hourly wages of teenage mothers found to be \$10.93, while they were \$13.29 for adult mothers (Luong, 2008). In view of these disadvantages, it is not surprising to learn that adolescent mothers are more likely to use ► [welfare](#) and government assistance programs than older mothers (Maynard, 1997).

### **Epidemiology of Teenage Pregnancy and Births Around the World and in Canada**

The prevalence of teen motherhood varies greatly from country to the other. The highest adolescent birthrates are in the developing countries of Africa, followed by India, Bangladesh, Latin America, and the Caribbean. The percentage of women who have their first child before 20 years of age in these countries ranges from 30 % to 50 % (WHO, 2006). In industrialized Europe, the rates are markedly lower. According to the WHO (1999), Italy, along with the Netherlands, has the lowest teen mother rate (2.3 %). Portugal and the United Kingdom are Western European countries with the highest number of live births to adolescents, 7.8 % and 6.4 %, respectively. Countries in Eastern Europe report even higher proportions of births to teen mothers: 21 % for Georgia, 20.5 % for Bulgaria, and 19.5 % for the Ukraine (Singh & Darroch, 2000). Therefore, it is estimated that one in five or one in six of the births was to adolescent mothers in these nations (Singh & Darroch, 2000). As for other countries, Japan reported the rates of live births to 15–19-year-old girls as 1.4 % (Singh & Darroch, 2000) in 1995, while it was reported as 4.9 % in Taiwan in 1994 (Lee, Yen, Wu, & Lee, 2007). Around the same time period, 12.6 % of all births in the United States were attributed to adolescents (Singh & Darroch, 2000).

In Canada, it has been estimated by Statistics Canada that the live birthrate of adolescent girls (15–19 years) among all 2006 births was 4.1 % (Statistics Canada, 2006a). The ► [prevalence](#) rates in Quebec, Ontario, and British Columbia, however, were lower than the national average (2.7 %, 3.3 %, and 3.5 %, respectively). Nunavut (24.0 %) and the Northern Territories (10.6 %), on the other hand, had much higher teen motherhood rates than the general Canadian average. As for pregnancy rates among Canadian adolescents, it was found to

be 24.6 per 1,000 adolescent under 20 years of age in 2005 (Statistics Canada, 2005). The rate is lower than the 72.2 pregnancies per 1,000 adolescents reported in 2004 in the United States (Ventura, Abma, Mosher, & Henshaw, 2008).

With regard to characteristics of teen moms, international studies have shown that adolescent ► **childbearing** is more common among women with low levels of income and education (Singh, Darroch, & Frost, 2001). Girls with good self-esteem and a sense of responsibility also tend to avoid adolescent pregnancies (Ruusuvaara, 1997). Furthermore, although these differences vary across countries, levels of childbearing are strongly associated with race, ethnicity, and even immigrant status (Singh et al., 2001). In the United States, at least, African-American adolescents are at a higher risk of early childbearing in comparison to other ethnicities (Chang, O'Brien, Nathanson, Mancini, & Witter, 2003). Pregnant adolescents are also more prone to take part in dangerous activity. An American study found that those who had done cocaine (4.88 times more likely), carried a weapon (4.06 times more likely), or had a history of STD (3.50 times more likely) were more likely to become pregnant (Rome, Rybicki & Durant, 1998). There is also some information on predictors and characteristics of Canadian pregnant adolescents. In a rather old study, adolescent mothers demonstrated higher rates of substance, tobacco, and dietary abuse during pregnancy than older mothers (Jacono, Jacono, St Onge, Van Oosten, & Meininger, 1992). In a more recent study, adolescents with a history of sexual abuse (Bowman, 2007) and sexual abuse involving penetration were 13 times as likely to become pregnant (Cinq-Mars, Wright, Cyr, & McDuff, 2003). Moreover, about one quarter of the adolescent mothers' partners were 6 or more years older (Millar & Wadhera, 1997).

### Study on Teen Births in Canada

While teen motherhood and pregnancy are reasonably well documented in other countries, this is less the case for Canada. Only limited data are available about teen motherhood and the characteristics of teen mothers (Cinq-Mars et al., 2003; Dryburgh, 2000; Jacono et al., 1992;

Millar & Wadhera, 1997). The authors in a previously published article (Al-Sahab, Heifetz, Tamim, Bohr, & Connolly, 2012) examined the prevalence and characteristics of adolescent mothers throughout the provinces of Canada, using a recent Canadian survey, the Maternity Experience Survey (MES).

The MES was sponsored by the Public Health Agency of Canada and conducted by Statistics Canada in 2006. It aimed to assess pregnancy, delivery, and postnatal experiences across the Canadian provinces and territories. The study recruited women aged 15 years and above, who had singleton live births, and who lived with their baby at the time of data collection. Women were selected from the 2006 Canadian Census of Population. Out of 8,244 women estimated to have met the eligibility criteria, 6,421 women responded to the survey. The data were collected during the 5th and 9th month postpartum through telephone interviews using computer-assisted telephone interviews. The MES questionnaire lasted for 45 min on average and was available in 15 different languages. To increase participation rate, up to 25 calls were attempted for each study participant on different times of the week and day. The MES project was presented to Health Canada's Science Advisory Board, Health Canada's Research Ethics Board, and the Federal Privacy Commissioner and was approved by Statistics Canada's Policy Committee. For more information about the MES, please refer to other references (Dzakpasu, Kaczorowski, Chalmers, Heaman, & Duggan, 2008; Statistics Canada, 2006b).

Based on the recommendation of the Royal College of Obstetricians and Gynecologists in the United Kingdom on optimal maternal age for childbearing, maternal age, the main dependent variable for the study, was grouped as teen mothers (<20 years), average-aged mothers (>=20 years and <35 years), and older mothers (>=35 years) (Al-Sahab et al., 2012). The analysis of the study compared teen mothers to average-aged mothers across different independent variables. Among these variables were sociodemographic characteristics including total household income, place of residence (urban vs. rural), ► **immigration** status,



marital status, and province of residence. Maternal characteristics, including previous history of teen pregnancy and mother's perceived health, were also examined. A list of pregnancy-related factors such as alcohol drinking during pregnancy, smoking during pregnancy, mother's intention on planned pregnancy, and attendance of prenatal/childbirth education classes during the pregnancy was included in the analysis. Finally, experience of violence in the past 2 years was explored. All of the above independent variables were included in a logistic regression analysis comparing teen mothers to average-aged mothers. To account for the complex sampling design, bootstrapping was performed to calculate all the 95 % confidence interval (CI) estimates.

Due to small sample sizes, the Al-Sahab et al. (2012) study excluded from the analysis women living in the northern territories. The study sample, thus, totalled 6,188 women and was weighted to represent 76,110 Canadian women. The mean age of the study participants was 29.6 years (Standard Deviation (SD) = 5.2). The mean age for teen, average-aged, and older mothers were 18.1 years (SD = 1.1), 28.3 years (SD = 3.7), and 37.4 years (SD = 2.3), respectively. Based on MES data for current births, 2.9 % of the births (95 % CI: 2.7–3.1) were among mothers aged 20 years or younger, 79.5 % (95 % CI: 78.6–80.4) among average-aged mothers, and 17.6 % (95 % CI: 16.7–18.5) among older mothers. The teen motherhood prevalence was higher than the MES calculated national average among women residing in the provinces of the Western Prairies (4.8 %) and Eastern Atlantic (4.8 %). Teenage deliveries ranged between 2.0 % and 2.3 % among women living in British Columbia, Ontario, and Quebec. Among all study participants, 14.1 % reported to have had experienced teen pregnancy and 6.2 % have had a childbirth during their teenage years. The teen motherhood rate in MES might be slightly underreported since the sample was only restricted to mothers who were residing with their infants at the time of the survey. Teen mothers whose children were under foster care were not included in the study.

Based on the logistic regression analysis, all the sociodemographic variables were significantly associated with being an adolescent mother except for the place of residence (Al-Sahab et al., 2012). As compared to average-aged mothers (20–35 years), teen mothers were more likely to have low household income. As the household income decreased, the odds of being a teen mom increased. Teen motherhood was also more common among nonimmigrant (Odds Ratio (OR) = 3.10, 95 % CI: 1.14–8.42) and single mothers (OR = 2.66, 95 % CI: 1.69–4.18). According to the multivariate logistic regression analysis, none of the maternal characteristic variables proved to be significantly associated with adolescent motherhood. On the other hand, of the health-related variables, attendance at prenatal classes and intention of planned pregnancy were both found to be significantly associated with age at delivery. Mothers attending prenatal classes were two and a half times (OR = 2.54, 95 % CI: 1.74–3.71) more likely to be teen mothers. Moreover, mothers who wanted their pregnancy to happen at a later stage in their life were more at odds of being teen mothers (OR = 4.49, 95 % CI: 2.93–6.87). Finally, experience of abuse in the past 2 years was significantly associated with maternal age at delivery. The odds of experiencing physical and/or sexual abuse was higher among adolescent mothers (OR = 2.24, 95 % CI: 1.53–3.29) than other mothers.

### Conclusion and Future Directions

Teenage childbearing and birth has negative implications on the health and well-being of the mother and the child, as well as financial costs to the healthcare system. In Canada, the prevalence of teen motherhood was reported to be 4.1 % by Statistics Canada and 2.9 % by the Maternity Experiences Survey. Both rates, while relatively low, are still higher than the rates reported by some European countries. Other than the burden of child rearing at a young age, Canadian teen mothers are disadvantaged by their low socioeconomic status, single motherhood status, and experiences of ► [violence](#) and abuse. Policy makers should therefore aim to provide intervention programs and assistance for these young women, in terms of financial support, violence prevention and



control, and access to sympathetic health services. Since adolescent moms are more likely to attend prenatal classes, there is evidence that Canadian teen mothers demonstrate characteristics of ► **resilience** despite the risks and challenges they face. Further, in-depth understanding of what mitigates the risks associated with adolescent childbearing and what protective factors may be available to adolescents at risk is highly warranted. Studying resilience to these adverse outcomes in Canada will build a comprehensive body of information on which to base policy and intervention that are specific to this country.

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## Teen Substance Abuse

- ▶ [Adolescent Substance Use](#)

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## Teen Substance Use

- ▶ [Adolescent Substance Use](#)

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## Telecommuting

E. Jeffrey Hill and Kaylene J. Fellows  
School of Family Life, Brigham Young  
University, Provo, UT, USA

### Synonyms

[Telework](#); [Work-at-home](#); [Working remotely](#)

### Definition

*Telecommuting* is an alternative work arrangement in which employees perform tasks elsewhere that are normally done in a primary or central workplace, for at least some portion of their work schedule, using electronic media to interact with others inside and outside the organization (Gajendran & Harrison, 2007). Telecommuting is a form of teleworking and is often done at home.

### Description

Jack Nilles is thought to have coined the word *telecommuting* in 1973, and he defined it as “the substitution of telecommunications and/or computers for commuting work” (Nilles, 1994, p. 109). The emphasis is on the *reduction or elimination of the daily commute* to and from the workplace. Although telecommuting has traditionally been associated with work-at-home, the term is also applied to a broader range of virtual work options, such as working from satellite work offices, hotels, and so forth (Siha & Monroe, 2006).

Theoretically, telecommuting is thought to enhance quality of life because it meets the needs of individuals, companies, and societies by (1) providing individuals flexibility and autonomy to better meet life demands; (2) reducing the time spent commuting and making that time available for personal/family life; (3) helping organizations attract key talent and lower overhead costs associated with offices (including adding accommodations for those with disabilities); (4) providing employees a way to work during times when working from the office is inconvenient or impossible (e.g., during nonstandard hours or severe weather that might otherwise interfere with the commute); and (5) improving society by reducing traffic and pollution that result from vehicular commuting (McCloskey & Igbaria, 1998).

Individual studies and meta-analyses have unambiguously documented that telecommuting is associated with many positive quality of life

outcomes including higher perceived autonomy, lower work-family conflict, higher job performance, lower job turnover intent, greater job satisfaction, and less role stress (see Gajendran & Harrison, 2007). These positive outcomes are magnified when telecommuting is coupled with schedule flexibility (Hill, Erickson, Holmes, & Ferris, 2010). In addition, the relationship between telecommuting and job satisfaction may be curvilinear based on the number of hours spent telecommuting per week (Golden & Veiga, 2005). Many have speculated that telecommuting would be detrimental to co-worker relationships. However, this relationship has only been substantiated for high-intensity telecommuting (more than 2.5 days per week). Those engaging in extensive telecommuting may also perceive reduced career advancement opportunities (McCloskey & Igbaria, 1998).

Telecommuting has become more common in recent years. The number of employee telecommuters in the United States (those who work from home or remotely at least one full day per month) increased from 9.9 million in 2005 to 17.2 million in 2008, an increase of 74 % (WorldatWork, 2009).

## Cross-References

- ▶ [Home-Based Work](#)
- ▶ [Telework](#)
- ▶ [Virtual Work](#)
- ▶ [Work-at-Home](#)
- ▶ [Workplace Flexibility](#)

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## Television and Leisure

- ▶ [Television and Quality of Life](#)

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## Television and Quality of Life

Paul S. N. Lee  
 School of Journalism and Communication,  
 The Chinese University of Hong Kong,  
 Hong Kong, People's Republic of China

## Synonyms

[Television and leisure](#); [Television consumption](#); [Television impact](#)

## Definition

Television technology appeared in the 1920s. Its heyday was in the 1970s and 1980s. With the rise of the Internet and other forms of information and communication technologies, the pervasiveness of television has declined in most parts of the world since the turn of the century. Nevertheless, television viewing still remains a major leisure activity taking up a considerable amount

of time. Studies have shown that television viewing has both positive and negative impact on people's well-being.

## Description

Television technology appeared in the 1920s. In mid-1930s, Germany, France, the United Kingdom, and the United States started broadcasting, mostly on an experimental basis. The world's first high-definition television broadcasting service using 405-line standard was launched in 1936 by the BBC in London. The growth was slow at the beginning. When the Second World War broke out in 1939, only 20,000 television receivers were registered in the UK. The television service was suspended during the war. When the service was resumed in 1946, growth was still slow. By 1949, less than 2 % of adult population in the United Kingdom had television sets (Belson, 1967).

In the USA, television service was not completely stopped by the war. Six experimental stations continued their broadcasting service throughout the war years although the growth was slow (Whitehouse, 1986). By 1949, only about 9 % US homes had television sets. The penetration of television accelerated in the 1950s. By the end of 1963, the penetration rate of television in the US was 93 %, while that of the UK was 91 % in 1964 (Belson, 1967). A UNESCO study in 1965 on people's time expenditure on various daily activities in 12 countries in Western Europe, Eastern Europe, and America showed that nearly 90 min of free time were devoted to television in these countries including the Soviet Union, France, West Germany, Bulgaria, the USA, and Peru (Szalai, 1972). Except for some poor and war-torn countries like Ethiopia, Liberia, Malawi, Niger, Rwanda, Somalia, and Uganda, television has reached more than 90 % homes all over the world in the twenty-first century.

The heyday of television was in the 1970s and 1980s. With the rise of the Internet and other forms of information and communication technology such as mobile phones, MP3, video

games, and video discs, the pervasiveness of television has declined in most parts of the world since the turn of the century. Nevertheless, television viewing still remains a major leisure activity taking up a considerable amount of time. A recent study on time use in 23 countries showed that in 2005, with the exception of the Netherlands (19 %), television viewing took up almost one-third of people's leisure time or more (Robinson, 2011). The time spent on television viewing just lags behind sleep and paid work (Fisher & Robinson, 2011).

In general, television viewing is taken as a passive leisure. With conservative, noncontroversial and least objectionable program contents, television is considered to be a medium cultivating an inactive, unchallenging, and unimaginative mind in its audience. Many studies have found a correlation between television viewing and various negative aspects of life. The heavier the viewing, the more serious is the problem. However, some studies found positive experiences in television viewing among the audience. Overall, television studies since the 1950s have shown that the impact of television on quality of life varies with different levels of analysis and socioeconomic categories.

There are three levels of analysis in the impact of television on life quality, namely, individual, family, and societal. The variables which mediate the impact of television on life quality include age, education, marital status, psychological state/mood, interpersonal relationship, and family orientation.

## Impact on Individual

In general, analysis at the individual level has found many negative aspects of television viewing. Much attention has been given to the effect of television on children. This is not surprising since television was the first time in history an audiovisual medium sitting in people's home, having close and easy contact with children.

There are three landmark studies on television's effects on children. They are *Television and the Child* (Himmelweit, Oppenheim, & Vince, 1958), *Television in the Lives of Our Children* (Schramm, Lyle, & Parker, 1961), and

*Television and Growing Up* (Surgeon General's Scientific Advisory Committee, 1972).

Both Himmelweit and Schramm's research teams found that the amount of viewing is a function of age, intelligence, and social class. The older, more intelligent and lower class children tended to watch more. Television appears to have had a minor effect on school-work. For the very young, television viewing results in an increase in vocabulary especially the words frequently used on television. Reading decreases in recent viewers, but reestablishes later with a change in type, with a reduction in comic reading and escapist fare in general. When intelligence is taken into account, there is little relationship between viewing amount and school performance.

However, insecure middle-class children, particularly those who have difficulty in making friends, tend to watch much more television than the typical middle-class children. But children of lower socioeconomic status do not exhibit a link between insecurity and heavy viewing (Himmelweit et al., 1958; Schramm et al., 1961). An explanation is that children of lower socioeconomic status, like their parents, watch a lot more television than children of upper or middle class. Insecurity or frustration does not differentiate the children who watch a lot of television all the time. But middle-class children who usually watch less television will increase their amount of viewing due to frustration or insecurity, and the result stands out in statistical analysis (Maccoby, 1954).

Children are found to use television for three main reasons. First, it gives an excuse for them to get together and share common topics in conversations. Second, television serves as an important source for information about the outside world. Third, it is used for entertainment. Television provides contents from casual relaxation to escape. In Schramm et al.'s study, they found entertainment the main function of television, and the chief needs television meets are those under the heading of fantasy. In the researchers' view, the fantasy-seeking behavior has positive and negative consequences. On the one hand, fantasy behavior may drain off some of

the discontent resulting from the hard blows of socialization and provide insights and analogies that may help the viewer to see himself better. On the other hand, it may lead a child into withdrawal from the real world, encourage the confusion of real situations with fantasy, and thereby cause him more trouble than he should have in learning the rules of the real world. It may also build up aggression and make socially acceptable adjustment more difficult (Schramm et al., 1961).

A decade later, another large-scale study found a more negative picture about television. Despite controversies around the researchers' conflict of interest with television networks and numerous qualifications made to the findings of the report (Comstock, 1980), the 5-volume Surgeon General's report on televised violence provided a basis for the Surgeon General to conclude in the US Senate Commerce Subcommittee hearing that "televised violence . . . does have an adverse effect on certain members of our society. . . a causal relationship between televised violence and anti-social behavior is sufficient to warrant appropriate and immediate remedial action. . ." (US Government, 1972). A combination of evidence from laboratory-type experiments, field experiments, and surveys in the Surgeon General study provides evidence of real-life connection between viewing of violent television programs and aggressiveness among young viewers.

The finding of televised violence's adverse impact on children in the early 1970s was probably due to the fact that commercial television had gradually turned away from providing educational and informational contents since the 1960s. A study in New York in 1947 showed that the most popular television programs at that time was first, sports; second, live drama; third, feature films; and fourth, children shows (Siepmann, 1950). In the early 1970s, however, it was observed that television contents were dominated by violence, then sex, seminudity, vulgarity, smoking, drinking, and drugs. All these contents were on the rise (Bower, 1973).

The link between undesirable social behaviors and television viewing is not limited to children.



Adult viewers are also susceptible to negative influences of television. A longitudinal study combining content analysis and surveys found that heavy viewers are more likely to overestimate the frequency of violent and criminal acts and the likelihood of their falling victim to an act of crime or violence. These viewers obtain a distorted view from television and become fearful of the neighborhood and the outside world (Gerbner & Gross, 1976; Gerbner, Gross, Morgan, & Signorielli, 1980). Although the causal link between viewing and audience behavior is questioned (Hirsch, 1980, 1981), the role of television in constructing social reality received support in some studies (Hawkins & Pingree, 1983; Rosengren & Windahl, 1989). The series of so-called cultivation studies have indicated that heavy television viewers tend to be more mistrustful, alienated, and apprehensive (Gerbner, Gross, Morgan, Signorielli, & Jackson-Beeck, 1979; Gerbner et al., 1980).

The link between television viewing and some negative attributes is however subject to interpretation. Although heavy viewers are found to be stressed, unhappy, lonely, bored, and see their own lives as less fulfilling and more depressing (Anderson, Collins, Schmit, & Jacobvitz, 1996; Morgan, 1984), television viewing is at the same time conceived by viewers as relaxing, entertaining, satisfying, and peaceful (Csikszentmihalyi & Kubey, 1981; Steiner, 1963). Despite a continuing decline of television's dominance in daily life, a study in 2003 in three Chinese cities showed that television was still conceived to be the third most important medium in raising quality of life after the Internet and mobile phone (Lee, Leung, Lo, & Xiong, 2008). It is found that the typical viewing experience is characterized by moderate cheerfulness and high relaxation (Csikszentmihalyi & Kubey, 1981).

The contrast between viewers' television experience and the characterization of their lives can be explained by the variation between immediate and long-term effect, as well as the duration of time spent on watching television. In the short run, television viewing may provide relaxation and escape, but in the long run, the messages and reality derived from the screen may bring

negative consequences. Greater viewing may cultivate the sense that one's own life is less glamorous and exciting than the lives of most television characters. In addition, only heavy viewing seems to be a problem. Moderate viewing, i.e., 2 or 3 hours a day, is indeed found to have an effect of pleasant relaxation (Csikszentmihalyi & Kubey, 1981; Morgan, 1984). This discrepancy between heavy and moderate viewers in viewing experience is probably due to the fact that heavy viewers have some "unhappy" psychological moods which drive them to watch a lot more television than usual, while moderate or light viewers are usually "more happy" people.

Relatively poor people have been found to be the most enthusiastic viewers. It can be explained by the fact that television is a form of "going places" without incurring expenditure; it brings the world to people's doorsteps without the need to pay (Siepmann, 1950). The relationship between heavy viewing and feeling of "lousy" in life is found to hold stronger among nonwhites, the unemployed, and older people – all have a gloomy outlook compared with other social groups (Morgan, 1984).

Summarizing the findings of their study as well as those of others, Kubey and Csikszentmihalyi (1990) point out six factors for heavy viewing on individuals. They are loneliness, availability of free time, emotional difficulties, youth, low income, and lack of education. Quite often, when people are deprived and marginalized, they are more likely to be lonely, emotionally difficult, have abundant free time, low income, low education, and little guidance or support from family or friends. These characteristics point to certain socially and psychologically disadvantaged groups, including the unemployed, divorced, widowed, older people who are widowed and/or retired, seriously ill, depressed and stressed, "empty nest" parents or children, poor, and people with low level of symbolic skills.

In short, television viewing is associated with low quality of life among disadvantaged groups of people who tend to watch a lot more television than normal. For light and moderate viewers,

television is more likely to enhance life quality in providing relaxation, escape, information, and opportunities for social interaction. Parker (1976) observes that television and other media are both a leisure interest in themselves and also a catalyst for other interests.

### **Impact on Family**

Television viewing is always a family activity particularly in early years when most families had only one television set. Findings generally show that television viewing harmonizes with family life. Many studies have found that television viewing is associated with greater family interactions and solidarity (Brody, Stoneman, & Sanders, 1980; Faber, Brown, & McLeod, 1979; Friedson, 1953; Glick & Levy, 1962; Katz & Foulkes, 1962; Katz & Gurevitch, 1976; Lull, 1980; Robinson, Converse, & Szalai, 1972). It is reported that married adults, especially those with children, watch significantly more television, stay at home more, and spend less time with friends than adults who are single or without children. Similar trends are found in adolescents. More frequent use of television by teenagers is associated with more time spent with the family and with better feelings with the family. The groups for whom heavier viewing is not generally associated with positive familial experiences are those adults who are single, divorced, or separated (Kubey & Csikszentmihalyi, 1990). The downside of heavy viewing with family members seems to lie mainly in spending too much time passively instead of engaging more actively in other non-television activities.

Lull (1980) examines the difference in attitudes and uses of television between socio-oriented and concept-oriented families. He found that families which stress harmonious social relations at home consider television a useful tool to facilitate communication among family members. For social-oriented family members, television viewing serves to structure their activities and talk patterns as well as accomplish some complex interpersonal objectives. On the other hand, for families which emphasize individual expression, discussion of ideas, and personal achievement, television viewing is less

used as a communication facilitator. The concept-oriented family members have a guarded attitude toward television and exercise control over viewing. They watch more for information than for fantasy. This study shows that whether or not television viewing is a rewarding experience depends on the cultural orientation of the family. If the family emphasizes individual members' achievement more than harmonious family relationship, heavy television viewing will not enhance members' satisfaction as much as families which emphasize members' solidarity and harmony.

### **Impact on Society**

Much less attention is given to television's impact on society than on individuals and families. Empirical studies are even less. Most studies on television's societal impact are based on personal observation or historical analysis. There are more theories than empirical evidence on this part.

McLuhan's conception on television's influence on society is most noteworthy. He conceives that the invention of writing has "detribalized" humans by taking them out a closely knit oral culture and put them into a private and isolated setting because writing and reading are essentially private activities. With the invention of electronic media, especially, television, humans become "retribalized" into a "global village" in which they will come into close contact with each other again. This is due to the fact that electronic media can convey the wholeness of communication though a combination of sound, text, and image. Television will restore the good balance of the senses and deprivatize, encouraging participation, and relationship building. It will bring humans back to the communal experiences of an oral culture (McLuhan, 1962, 1964).

Similarly, Meyrowitz (1985) argues that television breaks the barriers set up by printed materials which separate people into very different experiential world. By bringing many different types of people to the same "place," electronic media have fostered a blurring of many formerly distinct social roles. Some behaviors that were once kept in the "backstage" of each performance



world emerge into the enlarged “onstage” of each performance world. Many traditionally perceived differences including different social groups, different stages of socialization, and different levels of authority are dismantled by a collapse of distinctions between people’s “onstage” and “backstage” behaviors. The widespread use of electronic media has contributed to many positive social developments including integration movements for blacks, women, elderly, children, disabled, prisoners, and mentally ill.

The grand theories of McLuhan and Meyrowitz are not subject to empirical tests. However, the general social trends in the past several decades have made crossing boundaries of various kinds by humans, including national, ethnic, hierarchical and gendered, obvious, and no longer surprising. The popularization of values like free choices, equal opportunities, elimination of hierarchy, fair play, individual rights, and the like through television has contributed to the social and cultural changes around the world in the past few decades.

Apart from the grand theories, Schramm (1973) points out some obvious impact of television on social changes. He observes that television’s presence alone already changed people’s living patterns and knowledge base. Since television absorbs more time than the average individual gives to any activity other than work or sleep, it is bound to have an effect on the way a family arranges its living patterns. The late afternoon’s children programs, the daytime women’s programs, the favorite prime-time entertainment, and special events like election night reports are all likely to be fixed points around which individuals organize their leisure and families arrange their schedule. Television’s immediate effect was found to be modifying previous leisure time avocations of people. There was a decline in moviegoing, in attendance at sporting events, in reading, and most seriously in radio listening (Robinson, 1981; Siepmann, 1950).

It was a common experience for people who had witnessed the heyday of radio to get together with family members in the evening to listen to radio dramas. After television came, family radio

listening was replaced by television viewing. A study on the change of life styles from 1925 to 1966 in the USA shows that in urban Minnesota in 1936, 52 % of families possessed encyclopedia and 61 % had piano, but in the Detroit sample in 1966, only about 10 % of the families had encyclopedia and 10 % had piano, while 77 % had a television set (Felson, 1976). The data indicate that people’s home activities have changed dramatically since the introduction of television.

Schramm (1973) also points out the fact that nowadays we get most of our information about the outside world from television although the information may be superficial and in lack of details. Without television, we certainly know less than what we know now. Schramm does not mean to say that television has great educational values, what he means is lots of information and knowledge about public affairs, and entertainment come to us via television. Some information from television must have been retained although much has been forgotten. The society’s general level of knowledge is raised because of television.

### Conclusion

Television viewing is generally considered to be a passive leisure activity which implies mental and cognitive inactivity (Bickham, Wright, & Huston, 2001). It is regarded as most useful for three needs, i.e., to kill time, to spend time with family, and to be in a festive mood (Katz, Gurevitch, & Hass, 1973). In their study on television and children, Schramm, Lyle, and Parker (1961) noted that television chiefly meets children’s fantasy needs as opposed to reality needs. Television is always associated with nonpositive notions of passivity, fantasy, escape, vicarious experience, thrills, withdrawal, etc. It is generally assumed that television viewing cannot do much to increase quality of life.

But empirical studies show that only “heavy” viewing is problematic. Moderate and light viewing may indeed be beneficial for viewers’ entertainment, information, and social needs. Heavy viewing is found to be associated with unhappy people’s psychological state and mood,

socioeconomic position, marital status, life cycle, or a combination of some or all of these. Heavy television viewers are more likely to be stressed, lonely, unemployed, poor, uneducated, divorced, widowed, or old aged without job, family, or friends, and insecure particularly with regard to the outside world. However, the direction of causality is not determined. It is possible that people are unhappy and deprived at first and then turn to television for relaxation, comfort, or escape. In this case, television is not a contributor to low quality of life. Rather, it serves an important function for unhappy people to seek refuge and escape, albeit temporarily, from the hardship of real life. For the deprived and unhappy viewers, although television may not enhance their life quality, it helps make them forget their troubles and unhappy state at least for a while.

At the family and societal levels, researchers tend to find an essentially positive influence of television on family interaction and social development. Television serves as a catalyst for family members to build solidarity or to seek information for individual growth. Although it is difficult to empirically test the notion of a “global village” being built by television or a leveling of hierarchy due to blurring of distinction between back stage and on stage, the conception of television as a benign technology in human society can hardly be challenged with empirical evidence either. We cannot point out a major harm done by television to humans since its appearance. Even for those who live in a most totalitarian society where television and other mass media are centrally controlled, they still have a choice not to use and trust the media contents.

In retrospect, despite the fact that televised violence was found to have strong influence on children’s aggression, the actual incidence of violence due to television seldom occurs. Television is rarely accused by society as the major culprit of real-life crimes either. On the other hand, children learn a lot of knowledge from television before and after schooling. Adults get lots of information about their society and other countries from television. More important, television still remains a major leisure activity for most people in the modernized

world. It provides relaxation, entertainment, and topics for social interactions. Based on the findings and observations of previous studies, it is quite clear that television has a positive influence on quality of life most of the time for most people.

## Cross-References

- ▶ [Leisure](#)
- ▶ [Violence](#)

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## Television Consumption

### ► [Television and Quality of Life](#)

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## Television Impact

### ► [Television and Quality of Life](#)

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## Telework

E. Jeffrey Hill and Kaylene J. Fellows  
School of Family Life, Brigham Young  
University, Provo, UT, USA

## Synonyms

[Telecommuting](#); [Virtual work](#); [Working remotely](#)

## Definition

Any use of information technologies (such as telecommunications and/or computers) to perform work outside the conventional workplace (Nilles, 1994). Telework is a broad term which encompasses *telecommuting* – working electronically from a fixed location away from the office (often at home) – and the *virtual office* – working electronically from a variety of locations away from the office (Hill, Miller, Weiner, & Colihan, 1998).

## Description

Telework was foreseen as early as 1950 but did not become practical until the advent of personal computers and portable modems in the early 1970s (Hill, Hawkins, & Miller, 1996). Until the 1990s, almost all teleworkers were telecommuters who worked from home to accommodate personal and/or family needs. However, with the diminishing cost and size of telecommunications equipment, as well as increased portability, a much broader group of teleworkers emerged (Hill et al., 1998).

Teleworkers of this type electronically from a variety of ever-changing remote locations such as libraries, Internet cafes, hotel rooms, client offices, and even on trains and in automobiles (Mello, 2007). These employees are said to pertain to the *virtual office*.

Some researchers suggest that there are four qualifications which must be in order for a situation to be called telework. First is the work location – this could include one's home, a satellite office, a field site, etc., but the employee must work from a non-office location at least some of the time. Second is the reliance on information and communication technologies. The third dimension is the locational time distribution. Although early research focused on those workers that worked away from the office full-time, most researchers now acknowledge that teleworkers can spend any portion of their time away from the office. The fourth and final dimension is the contractual relation to the company. Researchers have not yet

come to a consensus on how this dimension relates to the overall definition of telework, with some researchers including contract or self-employed individuals in the population, while others maintain that just regular employees should be included (Garrett & Danziger, 2007).

Teleworking is becoming more and more common, perhaps because of technological advances which enable working, communication, and interaction similar to those experienced in a traditional office (Mello, 2007) and due to less fear and mistrust on the part of managers (Lister & Harris, 2011). Despite the difficulties associated with getting an accurate picture of the population of teleworkers, extant research does suggest that teleworking seems to be a relatively common experience – a 2001 random telephone sample suggested that approximately 20 % of working Americans were teleworkers (Davis & Polonko, 2001). The population of teleworkers appears to be fundamentally different than the average worker in that they are more likely to be highly educated and highly paid males who work as independent contractors rather than full-fledged employees (Bailey & Kurland, 2002). They are also more likely to work for larger companies (Lister & Harris, 2011) and are far more likely than the average worker to work in a professional or management capacity (Bailey & Kurland, 2002; Lister & Harris, 2011).

Research corroborates that different types of telework are associated with different work and personal/family outcomes. Telecommuting is related to greater job motivation, improved job retention, increased work-life balance, and greater personal/family success when compared to the traditional office. Working in the virtual office is also associated with greater job motivation, but with less work-life balance and lower personal/family success (Hill, Ferris, and Martinson 2003).

## Cross-References

- ▶ [Home-Based Work](#)
- ▶ [Telecommuting](#)
- ▶ [Work-at-Home](#)
- ▶ [Workplace Flexibility](#)

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## Tele-working

- ▶ [Work, Alternative/Flexible Arrangements](#)

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## Temporal Satisfaction with Life Scale (TSWLS)

William Pavot  
 Social Science, Southwest Minnesota State  
 University, Marshall, MN, USA

## Synonyms

[Global Life Satisfaction](#); [Happiness](#); [Quality of life, subjective](#); [Satisfaction with Life](#); [Time-related quality of life](#); [Well-being, subjective](#)

## Definition

The Temporal Satisfaction with Life Scale (TSWLS; Pavot, Diener, & Suh, 1998) is a 15-item self-report instrument intended to assess the respondent's overall life satisfaction (sometimes referred to as global satisfaction). The TSWLS incorporates a temporal framework; respondents are asked to make ratings pertaining to past, present, and future satisfaction.

## Description

### Rationale

The influence of goals on human ▶ [motivation](#), and the effect of progress toward goals on ▶ [subjective well-being \(SWB\)](#) and behavior have been well established empirically. Behavior is often “pushed by the past. . .” or “pulled by the future. . .” as well as influenced by one's current experiences and situation (Karniol & Ross, 1996, p. 593). More specifically to happiness and ▶ [life satisfaction](#), our ongoing subjective sense of well-being is likely to be at least partially determined by recalled events in the past or anticipated future circumstances (Diener, 1984; Diener, Suh, Lucas, & Smith, 1999). Some of these experiences have a general influence, such as the effect that age differences tend to have on how we view past life satisfaction and anticipate future life satisfaction (Lachman, Rocke, Rosnick, & Ryff, 2008). Other factors, such as personality and unique life experiences, are also likely to be important determinants of our interpretation of the past or anticipation of the future, and represent more unique influences on our sense of well-being and life satisfaction. The addition of a temporal dimension in the assessment of life satisfaction allows investigators the opportunity to examine these influences separately, which is not possible with many existing measures of life satisfaction and subjective well-being.

### Scale Development

The TSWLS was developed as an adjunct to the ▶ [Satisfaction with Life Scale \(SWLS\)](#) (Diener, 1985). The original five-item SWLS was



modified and expanded to a 15-item measure. Each of the five items from the original SWLS appears three times in the TSWLS, with revised wording representing past, present, and future satisfaction with life. For example, the item from the original SWLS “I am satisfied with my life” was reworded to “I am satisfied with my *current* life,” and two additional items worded “I am satisfied with my life in the past” and “I will be satisfied with my life in the future” have been added to the measure. The respondent is instructed to indicate his/her agreement or disagreement with each item, using a seven-point ▶ **Likert scale** (1 = strongly disagree, 7 = strongly agree). The items are presented to the respondent grouped according to the indicated time-frame in temporal order; the respondent is asked to indicate agreement/disagreement with five statements regarding life satisfaction in their past life, five statements focused on their present level of life satisfaction, and finally five statements oriented toward expected future life satisfaction.

### Scoring the TSWLS

Using the same structure as the SWLS, the items of the TSWLS are all worded in a positive direction; none of the items are reverse-keyed. The unidirectional structure was maintained for reasons of consistency, clarity of presentation, and simplicity (Pavot et al., 1998). Subsequent analysis (McIntosh, 2001) has indicated only modest effects for response bias for the scale. Thus, the scoring rubric involves a straightforward summation of the responses.

Overall mean scores for the TSWLS would be expected to fall in a range roughly three times the typical mean scores for the original scale; generally, this outcome has been observed. For example, Pavot & Diener (1993) reported a composite mean score on the SWLS for several large student samples of 23.9. The mean scores on the TSWLS for the college student sample reported in Pavot et al. (1998) were 63.61, 69.39, and 69.96 across three separate administrations of the scale. The subscales formed by the groups of past, present, and future directed items can be analyzed separately to

consider the variation in response that each specific temporal focus may introduce.

### ▶ Reliability and Validity

As an indicator of internal reliability, Pavot et al. (1998) reported Alpha reliabilities for the TSWLS of .92, .92, and .93 across three administrations of the scale to the same sample. Test-retest reliabilities of .83 (for a 4-week interval), .88 (5-week interval), and .82 (9-week interval) indicate that the scale has good temporal stability; these reliabilities also indicate some variation in responses over time.

The TSWLS has shown good ▶ **convergent validity** with other measures of SWB (McIntosh, 2001; Pavot et al., 1998), including other self-reported measures and informant reports. Conversely, the ▶ **discriminant validity** of the TSWLS is indicated by consistent negative correlations with variable such as neuroticism, depression, and loneliness (Pavot et al., 1998).

### Factor Structure

The results of a principal components analysis of the TSWLS are presented in Pavot et al. (1998). Using varimax rotation, a three-factor solution was obtained for the scale. The three subsets of future, present, and past items formed Factor 1, Factor 2, and Factor 3, accounting for percentages of scale variance of 45.2, 19.3, and 9.3, respectively. McIntosh (2001), using a covariance structure analysis approach, also presented data supporting a three-factor structure.

### Cross-Cultural Research

The TSWLS has not been used extensively in cross-cultural research, unlike the original SWLS, which has been translated to more than 25 languages (for a complete listing, see the following webpage: <http://internal.psychology.illinois.edu/~ediener/SWLS.html>), and has been used in a number of cross-cultural studies. Researchers anticipating using the TSWLS for cross-cultural research should be aware that some evidence exists (based upon the original SWLS) for differential response patterns across cultural groups, when sophisticated item response analysis is applied to the data

(Oishi, 2006; Vitterso, Biswas-Diener, & Diener, 2005). Cross-cultural research with the TSWLS therefore will require caution and careful analysis.

### Additional Measurement Concerns

The TSWLS was developed as a measure of overall or global life satisfaction, which represents a cognitive judgment. Although it generally correlated with the affective components of SWB, it is not intended as a complete assessment of all aspects of SWB. Researchers intending to assess “SWB” should incorporate specific measures of the affective components as well as measures of life satisfaction in order to capture the primary components of the construct.

Previous research has shown that the affective and cognitive context of a SWB assessment can, under some circumstances, influence an individual’s response to such a measure (Pavot, 2008; Pavot & Diener, 1993). Potential users of the TSWLS are encouraged to be mindful of these contextual influences as they design their research.

### Cross-References

- ▶ Motivation
- ▶ Satisfaction with Life Scale Adapted for Children
- ▶ Satisfaction with Life Scale (SWLS), an Overview
- ▶ Subjective Well-Being (SWB)

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## Temporary Agency Work

- ▶ Temporary Employment

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## Temporary Contracts

- ▶ Temporary Employment

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## Temporary Employment

Nele De Cuyper and Hans De Witte  
Research Group Work, Organizational and  
Personnel Psychology, Faculty of Psychology  
and Educational Sciences, KU Leuven,  
Leuven, Belgium

### Synonyms

Alternative/flexible work arrangements; Casual employment; Contingent work; Contractual flexibility; Fixed-term contracts; Nonpermanent employment; Nontraditional employment; Precarious employment; Temporary agency work; Temporary contracts



## Definition

The Organisation for Economic Co-operation and Development (OECD, 2002) defines temporary employment as “dependent employment of limited duration.” Lack of permanency is inherent to temporary contracts. Temporary contracts come in many forms (De Cuyper, Isaksson, & De Witte, 2005), from short term (daily and on-call contracts) to limited term (fixed term, seasonal, specific tasks, replacement, trainees, probation, and job creation schemes), temporary agency work (both permanent and nonpermanent with the agency), and subcontractors.

## Description

### Facts and Figures

In 2009, temporary employment, as defined above, accounted for about 14 % of the workforce in Europe, 13 % in Canada, and 8 % in North America (see [www.oecd.org](http://www.oecd.org)). The incidence of temporary work varies considerably between countries, from about 6 % in the United Kingdom (UK) to 22 % in Portugal and 25 % in Spain, for example. It furthermore fluctuates with economic conditions, so that the proportion of temporary contracts decreases during economic recession. Temporary contracts are overrepresented among the youngest age group, and their proportion decreases with educational level and among jobs requiring high skills. Gender differences are less outspoken and strongly dependent on the particularities of national labor markets (see, e.g., De Cuyper, Isaksson, & De Witte, 2005).

There is general agreement regarding the benefits of temporary work for employers, among them cost-cutting in the short term and efficiency in adapting to shifts in demand and supply (e.g., Sverke, Hellgren, & Näswall, 2000). Policy-makers, researchers, and trade unions however expressed concern regarding the consequences of temporary employment for employees. These concerns relate to the consequences of temporary employment for (a) the quality of the work (e.g., is temporary employment characterized by specific job

characteristics?; “objective” aspects of their jobs, quality of work, and employment) and (b) employee work-related attitudes, health, and ► [well-being at work](#) (subjective consequences of temporary work).

### Quality of Work

The “flexible firm” model of Atkinson (1984) is a dominant perspective in research on temporary employment. The theory assumes that companies are characterized by two categories of workers, namely, core and peripheral workers. Temporary workers are part of the peripheral category and are assumed to be less important for the core business, as these workers can be easily replaced. This echoes segmentation theory, which distinguishes between a primary and secondary segment in the labor market (Kalleberg, 2003), again with temporary workers being part of the secondary labor market. Jobs of workers in the periphery of the organization and/or in the secondary labor market are assumed to be inferior in terms of wages and job quality. Part of the explanation relates to assumptions of Human Capital Theory (Becker, 1993): employers are less likely to invest in peripheral workers or in employees from the secondary labor market, because they will not stay in the organization for long. A return on the employer’s investment is thus less likely for temporary workers compared to core (e.g., permanent) workers.

Research tends to confirm the assumption of lower quality of work among temporary workers, even though not all findings are unequivocal (for overviews, see, e.g., Connelly & Gallagher, 2004; De Witte & Näswall, 2003; De Cuyper et al., 2008; Goudswaard & Andries, 2002; Kalleberg, Reskin, & Hudson, 2000). The job content of workers with a temporary contract is poorer. A variety of surveys point towards less autonomy and control over the job for temporary workers. Their tasks are more monotonous, offering fewer possibilities for skill utilization and development. According to the European Dublin survey, the working conditions of temporary workers are also inferior. They more often work in painful and tiring positions, are exposed to intense noise, and perform repetitive movements

or short repetitive tasks. These workers also often lack information regarding safety issues on the job. Their employment conditions are characterized by lower wages, less fringe benefits, and lower promotion and training opportunities. Finally, temporary workers have fewer possibilities to participate in decision making and are not consulted to the same extent as permanent workers. Note that temporary workers also consistently perceive more job insecurity (► [Employment Insecurity](#), ► [Fear of Job Loss](#), ► [Job Security](#)) in their job, a known job stressor (Sverke, Hellgren, & Näswall, 2002). Not all findings point towards an inferior job quality for temporary workers, however. Studies also typically reveal that temporary workers report lower levels of workload (Parker, Griffin, Sprigg, & Wall, 2002), whereas they sometimes experience less role conflicts and greater role clarity. Taken together, however, most studies point towards a less advantageous position, which is also reflected in the finding that temporary workers less often work in the occupation or workplace of choice (Aronsson & Göransson, 1999).

### Health and Well-Being

The lower quality of work of temporary workers leads to the hypothesis that their health and well-being will be poorer compared to permanent workers. Various theoretical perspectives have been advanced to underpin this assumption. First of all, job stress theories (► [Work Stress](#)) result in this expectation, as the jobs of temporary workers contain more stressors which are known to result in heightened levels of job strain (De Witte & Näswall, 2003). Next, based on ► [social comparison](#) and social exchange theories, one can assume that temporary worker will feel deprived (► [Relative Deprivation Theory](#)) when comparing themselves with permanent workers, which will likely result in the perception of being treated unfairly (► [Perceived Fairness](#)) (Beard & Edwards, 1995).

The results of empirical studies to date are much less equivocal and even inconclusive, however (for overviews, see, e.g., De Cuyper et al., 2008; Quinlan, Mayhew, & Bohle, 2001; Virtanen et al., 2005). This is illustrated by the

findings regarding ► [job satisfaction](#). Some studies found permanent workers to score higher on job satisfaction, whereas others found the opposite pattern, or no differences at all. In their review, Quinlan et al. (2001) show that most (but not all) studies suggest a negative relationship between temporary contracts and ► [occupational health](#) and safety. With respect to general health, temporary workers report better or comparable health as permanent workers. In the meta-analysis of (Virtanen et al.), the association between temporary employment and general health was not significant. Finally, also the results concerning psychological well-being (Psychological Health, Mental Health, ► [Subjective Well-Being](#)) are mixed. The meta-analysis of (Virtanen et al.) reveals a lower level of psychological well-being among temporary workers. This association was dependent on the type of contract and the specific well-being indicator and ranged from weak to moderate. The pattern of results of the large scale European PSYCONES project deviates from this picture (Guest, Isaksson, & De Witte, 2010). In this study, the life satisfaction of temporary workers did not differ from permanent workers. The temporary workers in this study even reported lower irritation, depression and ► [anxiety](#), and higher job satisfaction than permanent workers.

### Psychological Contract Theory and Impression Management as Explanations of Inconsistencies

Some explanations have been advanced for the inconsistency between the (less advantageous) quality of work of temporary workers and their health and well-being. After all, the latter is not unequivocally negative, as could be expected based on their work quality. One explanation relates to the psychological contract, or the “the idiosyncratic set of reciprocal expectations held by employees concerning their obligations and their entitlements” (McLean Parks, Kidder, & Gallagher, 1998). The promise of job security is part of the relational psychological contract, more often offered to permanent workers than to temporary workers (De Cuyper & De Witte, 2006). The perception of job insecurity violates

the relational psychological contract and leads to negative outcomes, such as lower job satisfaction and irritation. This means that job insecurity will be problematic for permanents but not for temporary workers. Since no relational psychological contract is offered to temporary workers, job insecurity does not violate their expectations and does not lead to negative reactions or lower well-being. Another explanation relates to the idea that temporary employment can be perceived as a stepping stone towards a permanent contract. This could motivate temporary workers to engage in impression management strategies, to promote the image of being an excellent and healthy worker, thus increasing the probability of getting the desired permanent contract (De Cuyper & De Witte, 2010).

## Cross-References

- ▶ [Alternative/Flexible Work Arrangements](#)
- ▶ [Anxiety](#)
- ▶ [Casual Employment](#)
- ▶ [Employment Insecurity](#)
- ▶ [Fear of Job Loss](#)
- ▶ [Human Capital](#)
- ▶ [Job Satisfaction](#)
- ▶ [Job Security](#)
- ▶ [Occupational Health](#)
- ▶ [Perceived Fairness](#)
- ▶ [Relative Deprivation Theory](#)
- ▶ [Social Comparison Theory](#)
- ▶ [Subjective Well-Being](#)
- ▶ [Work and Employment, Quality of](#)
- ▶ [Well-Being at Work](#)
- ▶ [Work Stress](#)

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## Temporary Urban Practices

- ▶ [Sharing Space in the Contemporary City](#)

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## Tension

- ▶ [Anxiety](#)

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## Terminology Concerning Relationship Satisfaction

- ▶ [Relationship Satisfaction](#)

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## Territorial Grouping Using Quality of Life Criteria

- ▶ [Defining Urban Areas, Quality of Life](#)

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## Territoriality and Crime

- ▶ [Impact of Housing Design on Crime](#)

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## Territorialization

- ▶ [Defining Urban Areas, Quality of Life](#)

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## Terror Management Theory

- ▶ [Objective and Subjective Nearness to Death](#)

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## Terrorism

Jonathan Barker  
Department of Political Science, University of Toronto, Toronto, ON, Canada

## Synonyms

[Extreme political violence](#)

## Definition

Terrorism is illegitimate violence directed at civilians for political purposes.

## Description

The two major kinds of terrorism are state terrorism and oppositional terrorism. State terrorism is directed by government agencies, while oppositional terrorism is carried out by non-state groups. Each of these subdivides into domestic and international categories. Domestic terrorism is planned and performed within one country, while international terrorism is orchestrated in one country and accomplished in another (Ganor, 2002).

The connections between terrorism and ▶ [quality of life](#) are fourfold. Terrorist attacks may cause changes in quality of life. Aspects of quality of life may make terrorist attacks more or less likely. Quality of life may shape the way

people think about terrorism. The experience of terrorism may affect the way people assess their quality of life.

State terrorism far surpasses oppositional terrorism in its impact on quality of life. It kills and harms far more people. Beyond its sheer lethality, it represents the government's betrayal of its fundamental responsibility to protect the people under its authority. Governments use official branches to carry out terrorism, but they may also employ unofficial agents and often act without the niceties of legal justification. Police-led death squads, government-organized pogroms, large-scale killings, extraordinary renditions, and systematic torture of political detainees are examples. Through painstaking research R. Rummel (1994) demonstrates that "during the first eighty years of this [20th] century, almost one hundred and seventy million men, women and children have been shot, beaten, tortured, knifed, burned, starved, frozen, crushed, or worked to death; buried alive, drowned, hung, bombed, or killed in any other of the myriad ways governments have inflicted death on unarmed helpless citizens and foreigners." One hundred and thirty million of these were killed by their own governments. By contrast, he found that just over half a million people were killed by terrorists and guerrilla fighters. That is a ratio of about one killed by non-state groups to two hundred fifty killed by governments.

Domestic state terrorism has a direct impact on the quality of life of at least some citizens, and in the case of large-scale state terrorism, its effect is very powerful and widespread. Those who control the government through agencies of the state may inflict violence against civilians for many different political purposes: to prevent expression of dissent, to eliminate opposition groups, to expunge a category of people, to extract labor and property from certain groups, to change the pattern of economic activity, to alter the distribution of population, and to demonstrate impunity and invincibility. The people who are the target of state violence or who fear they may become a target lose all sense of security, and many lose their freedom or their lives. Fear may pervade much of society.

When a government attacks a named group, it usually launches a propaganda campaign to make others fear and hate that group. Physical security suffers, the psychological sense of safety is diminished, and many experience trauma (Agger & Jensen, 1996).

Domestic state terrorism also harms other aspects of quality of life such as income, health, and education. Targeted groups may suffer in almost all dimensions of quality of life, while others may hardly be affected and may, in some instances, benefit, for example, from the transfer of property from a targeted group or from a sense that a domestic danger is under surveillance. State terrorism may enforce economic exploitation of a class, region, or cultural grouping to the immediate benefit of other classes, regions, or cultural groupings. Some state terrorist episodes are so disruptive that the whole economy suffers. Each situation has its own complex ramifications. In some cases, government officials play upon existing social tensions to orchestrate violence. In others, they may lack the will or capacity to resist being used by non-state groups for their violent agendas (Menjívar & Rodriguez, 2005).

Does quality of life cause state terrorism? Political autocracy and the absence of civil and political rights make domestic state terrorism more likely. Negative aspects of quality of life such as severe regional economic disparities, interethnic conflict, and economic crisis may be precursors of state terrorism, but their effect is not direct, and their presence is neither necessary nor sufficient for state terrorism. Two political conditions that do not figure in measures of quality of life often have a quite direct influence on the development of domestic state terrorism: the emergence or creation of political identities that the government sees as enemies of the state (Heryanto, 2006) and international pressure to enforce an unpopular neoliberal economic program (Blakeley, 2009). The cases of Stalin's Soviet Union and Hitler's Germany demonstrate the power of a government ideology that values ethnic nationalism or economic industrialization far above human rights and that devalues a group or class for reasons of ethnicity, religion, or

political beliefs. A government with such an ideology may see violence against civilians as a political tool to use in pursuit of its political goals (Duvall & Stohl, 1983).

The impact of international state terrorism, although smaller than its domestic counterpart, is significant. Governments undertake or assist terrorist action in other countries for several different reasons. They sometimes extend their domestic terrorist action abroad by targeting domestic enemies who have fled abroad. A government agency may attack citizens in another country as part of a larger interstate conflict. All these actions have a direct impact on the quality of life in a country that is the target of terrorist attack, especially on the groups or individuals who may be targeted.

A government, whether or not it engages in domestic state terrorism, may support the domestic terrorist action of another government with the aim of strengthening a friendly regime or weakening a threatening oppositional group. A government may also support the terrorist capacities of oppositional groups in another country. The consequence of both actions is to increase the impact on quality of life. Quality of life variables seem to play little systematic role in bringing about these kinds of transnational support for terrorism. However, rich and powerful countries may be tempted to use terrorism to control political dangers in weaker and poorer countries, particularly those perceived as failed states. The government of a poor country may resort to terrorism in a conflict with a richer country that it would never attack militarily. Certainly, richer countries have been known to fear such attacks (Byman, 2005).

One kind of international state terrorism in the nineteenth and twentieth centuries related strongly to quality of life and had an enormous impact around the world: modern colonialism. The European powers and Japan made frequent use of terrorism in creating and maintaining their empires. The termination of colonial rule sought by nationalist movements (that sometimes themselves employed terrorism) was opposed in many cases with a final barrage of state terrorism (Elkins, 2005).

Domestic and international oppositional terrorism are usually more episodic and localized, and less deadly than state terrorism. Yet they are widespread, and some episodes of domestic oppositional terrorism persist for decades (Ireland, Spain, Sri Lanka, and Colombia). Research on the consequences of oppositional terrorism has touched upon several aspects of quality of life including economic performance, sense of well-being, and incidence of psychological trauma. Broadly, the findings are that oppositional terrorism, especially where it is intense and long lasting, shrinks or slows the economy, reduces the subjective level of life satisfaction, and increases the experience of psychological trauma (Frey, Luechinger, & Stutzer, 2009; Holan & Silver, 2011). However, the consequences are not uniform, and there are exceptions to the general trend (Gaibulloev & Sandler, 2011). Statistical studies of whole economies often show little economic effect of localized terrorism or episodes of short duration (Krueger, 2007). However, in cases where group terrorism has become widespread and frequent, economic welfare and sense of security can be severely compromised (Abadie & Gardeazabal, 2001). The situation may devolve into a broad crisis of authority and civil war that does great harm to quality of life for the whole country.

In addition to the effects of the terrorism itself, counterterrorist measures taken by the government attacked may alter quality of life. Many people may be reassured, but the typical increase in surveillance and official calls to report suspicious behavior may raise the level of public anxiety and restrict the freedom of the many non-terrorists subjected to surveillance measures (Donohue, 2008). Shifts of government spending into surveillance, intelligence, education, and research about terrorism may draw funding away from other government programs that support quality of life (Müller, 2011).

Research on causes of oppositional terrorism, both domestic and international, energized by the hope of finding keys to stopping and preventing it, has reflected strong preexisting hypotheses about the power of possible motivators like economic status, religious belief, and



cultural identity. The research yields a mixed picture. There are connections, but the forces at work differ from case to case, and they do not always point in the same direction. Especially relevant to issues of quality of life are the attempts to discover the structural or root causes of terrorism. The social variables that are often cited as possible root causes are poverty, low levels of education, severe economic inequality, high youth unemployment, and rapid urbanization. Comparative statistical studies of large numbers of cases fail to find the strong correlations that justify speaking of root causes. Much stronger relationships are found between oppositional terrorism and political variables. A history of political violence, political dictatorship, foreign occupation, or ethnic discrimination is found to make oppositional terrorism more common. A current government lacking territorial control, democratic practices, civil liberties, rule of law, or political inclusion is also more likely to generate oppositional terrorism (Piazza, 2011).

Terrorism undoubtedly changes the way people judge quality of life. State terrorism may induce some to fear the designated enemies of the state and to value authoritarian rule while others may gain an enhanced valuation of peace, security, and civil rights. Experience of oppositional terrorism may increase the value many people place on security at the expense of liberty, while for others, human rights remain the priority. It is plausible that aspects of quality of life such as education and income generally affect the importance people attribute to terrorism, but that relationship appears not to have received useful research.

## Discussion

These findings are consistent with the idea that terrorism is a political activity that (by definition) requires the terrorists to act with two intentions: to pursue a political purpose and to do so by means of violence against civilians. Political intentions are notably various, and although they do bear some relation to the economic and

social context in which they are formed, the effect must pass through the process by which political intentions are formed. Terrorist political intentions are much more closely related to political history, experience, and tensions than they are to economic and social aspects of quality of life. Therefore, it is the political aspects of quality of life that are most closely connected with terrorism.

## Cross-References

- ▶ [Democracy](#)
- ▶ [Educational Inequality](#)
- ▶ [Inequality in Quality of Life](#)
- ▶ [Political Empowerment](#)
- ▶ [Political Trust](#)
- ▶ [Poverty](#)
- ▶ [Social Change](#)
- ▶ [Social Inequalities](#)
- ▶ [Unemployment](#)
- ▶ [War](#)

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## Tertiary Education

- ▶ [Higher Education: Institutional Effects](#)
- ▶ [Postsecondary Education](#)

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## Test Bias

Brian F. French  
College of Education, Washington State  
University, Pullman, WA, USA

## Synonyms

[Bias, statistical](#); [Invariance](#)

## Definition

Test bias refers to the differential validity of test scores for groups (e.g., age, education, culture, race, sex). Bias is a systematic error in the measurement process that differentially influences

scores for identified groups. Bias can be internal (psychometric properties, test structure) or external (differential prediction/selection) to the test.

## Description

Test bias, defined as a systematic error in the measurement, captures the idea that there are construct-irrelevant components that result in systematically higher or lower scores on the measurement for the groups under examination (American Educational Research Association [AERA], American Psychological Association [APA], & National Council on Measurement in Education [NCME], 1999; Berk, 1982). Bias, as describe here, is used in a technical sense. This description does not entangle social fairness, equality, and prejudice in with bias. Bias may lead to issues in fairness and equality but that is beyond the technical definition discussed here. Investigations of test bias generally include studies of (a) unequal psychometric properties and (b) differential prediction of performance or selection between groups. Researchers in the quality of life domain and working with patient reported outcomes, for example, may ask questions about if the Early Development Inventory has a similar factor structure across Aboriginal and non-Aboriginal children to support the claim that the measure assesses the same facets in each group (Muhajarine, Puchala, & Janus, 2011). In the field of educational and psychological measurement there is general agreement that investigations of bias are an essential component of high-quality testing practice and development at all stages.

Evidence to support the absence of bias is critical, no matter the purpose, as the scores measurements yield will be used to draw inferences about a person's ability, and thus used to make a variety of selection or diagnostic decisions. Thus, scores and their inferences directly impact the quality of lives of individuals, be it for acceptance to a university, placement in a job, or a cognitive diagnosis of a student or patient.

To avoid unfavorable social consequences, Messick (1989) suggests that the measurement process must keep construct-irrelevant variance and construct under-representation to a minimum. Taken one step further, the measurement process must hold differences in test properties at a minimum across identified subgroups in the population. It is not sufficient to provide evidence of construct validation for a majority group.

The issues of test bias have received much attention from the legal system, policy makers, test consumers, test developers, and the general public. In the United States, the 1960s marked the first attempts to define test bias in technical terms (Croker & Algina, 1986). Many regulations, for example, that concern the misuse of psychological tests, especially in employment decisions, were developed in part, as a result of the United States Title VII of the Civil Rights Act of 1964. This Act provided government regulations to ensure that employment decisions were not based on a person's ethnicity, race, sex, color, or religion. The desired outcome was economic equality for African Americans. In 1966, official guidelines for employment testing were released with the intent of defining test bias related to in employment decisions (Wigdor & Garner, 1982). Educational testing received legal attention in the United States as well around this time. Improper classroom placement based on test scores was brought to the court's attention in *Larry P. v. Riles* in California. The case centered on the misuse of intelligence test scores to place African American students in special education classes. This was the first case at the federal level to demand validity evidence of tests used to place students in certain classes (Wigdor & Garner). Tests without such validation were not to be used. Some court decisions were based on a subjective review of the test by the judge (Wigdor & Garner). This method of validation, especially by a non-expert in the field of intelligence tests, was not sufficient evidence to claim that the test is unbiased (Plake, 1980; Sandoval & Whelan-Miille, 1980). Indeed, these were not the last of the legal battles concerning test bias. These continue today and will likely increase with the increase of accountability models

based on test scores. What this legal attention did assist with was moving researchers to begin to technically define what type of evidence was needed to detect the absence or presence of test bias.

Researchers and practitioners have pointed to various ways to examine tests for bias (e.g., AERA, APA, & NCME, 1999) including (a) content-related sources, (b) response-related sources, (c) differences in internal test structure, and (d) differential predication or selection across groups. A combination of methods including statistical techniques and judgmental review can be used to identify potential bias. A few of the major statistical techniques used in this endeavor at the test level are highlighted below. See other encyclopedia entries for information on item level methods for detecting bias (i.e., differential item functioning; ► [measurement invariance](#)).

Differences in the internal structure (e.g., factor structure) of the test can be examined through multi-group confirmatory factor analysis to assess the degree of factorial invariance (Bollen, 1989; Byrne, Shavelson, & Muthén, 1989; Millsap, 2011). This type of evidence begins with examination of the unrestricted theoretical model of the test to assess if a general model fits well between the identified groups. If this model does not fit between groups, test constructs are said to be measured differently and no additional testing is needed. If the model adequately fits between groups, progressively more restrictive models are tested for invariance. More restricted models may be tested by adding one additional constrained matrix of: (a) factor loadings, (b) error variances and (c) factor variances and covariances. If any matrix is found to lack invariance, steps can be taken to test one matrix element at a time to identify the location of the lack of invariance. Models are typically compared using the chi-square difference test and changes in fit indices (e.g., French & Finch, 2006). Other variations of factor models can be used to test for factor similarity under various assumptions including the multiple indicator, multiple cause (MIMIC) model (e.g., Finch, 2005; French & Mantzicopoulos, 2007; Muthén, 1988).

The second main area studied in test bias is differential ► [predictive validity](#), or prediction and selection bias. This bias occurs when associations with other variables (i.e., validity coefficients) significantly differ between groups or when a test systematically over or underestimates a criterion for a given group. Differential prediction is investigated by comparing regression lines for criterion and predictor scores between groups. Please note that a lack of differential prediction does not guarantee that a test will not be biased (Croker & Algina, 1986). With regard to differential selection, especially in the employment arena, various models have been defined (e.g., Croker & Algina) and continue to be researched and refined (e.g., Meade & Fetzer, 2009) to ensure accurate outcomes for identified groups.

Researchers currently have a plethora of quality examples of empirical applied research which demonstrates attempts to locate test bias. There also is excellent methodological work to support the methods and statistical techniques employed to detect bias. Moreover, entire books on the technical aspects of measurement invariance (Millsap, 2011) are available and point to the successes as well as needs for improvements in the area. The models employed are becoming increasingly sophisticated. Models are taking into account complex data collection and structures (e.g., multilevel data) as well as allowing researchers to work within a latent variable modeling framework (e.g., Sawatzky, Ratner, Kopec, & Zumbo, 2011) to take advantage of that variable system. In the decades that follow, there is no doubt that the field will continue to make technical advances in accurately identifying bias. Certainly the biggest challenges that remain for the study of test bias is identifying the sources of bias and explaining why bias occurs from a non-statistical viewpoint. Researchers continue to make progress in moving from an exploratory analysis framework to a confirmatory analysis framework to assist with this identification process. No matter how sophisticated and accurate the statistical methods become, the fundamental questions persons ask will be is the test bias and why.

## Cross-References

- [Differential Item Functioning \(DIF\)](#)
- [Item Response Theory \[IRT\]](#)
- [Measurement Invariance](#)
- [Response Shift](#)

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## Test Statistic

- ▶ [Hypothesis Testing](#)

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## Testing Students

- ▶ [Student Achievement](#)

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## Test-Retest Reliability

Gemma Vilagut  
 IMIM (Hospital del Mar Medical Research Institute), Barcelona, Spain

### Synonyms

[Coefficient of stability](#); [Repeatability](#); [Reproducibility of test results](#)

### Definition

Test-retest reliability is the degree to which test scores remain unchanged when measuring a stable individual characteristic on different occasions.

## Description

Test-retest reliability measures the stability of the scores of a stable construct obtained from the same person on two or more separate occasions.

- ▶ [Reliability](#) concerns the degree to which scores can be distinguished from each other, despite
- ▶ [measurement error](#). In the case of test-retest assessment, intraindividual response variability is used to estimate measurement error (Hays, Anderson, & Revicki, 1993).

## Evaluation of the Test-Retest Reliability of a Continuous Variable

The Classical Test Theory Approach

According to classical test theory (CTT), reliability ( $R$ ) is defined as the ratio of true score variance ( $\sigma_t^2$ ) to total score variance, which is the sum of the true score variance and the error variance ( $\sigma_e^2$ ).

$$R = \frac{\sigma_t^2}{\sigma_t^2 + \sigma_e^2}$$

It can be shown that, under CTT assumptions about measurement error, this ratio equals the Pearson product-moment correlation ( $r$ ) of two parallel forms of a questionnaire, i.e., two different sets of items ( $X$  and  $X'$ ) that address the same constructs and have identical true scores and linearly independent errors with equal variances.

Given the difficulties of designing parallel forms, Guttman (1945) suggested that two consecutive and independent test applications in a stable population would be parallel. Therefore, the Pearson correlation between them would be equal to their reliability. Notice that the use of Pearson correlation requires testing parallelism. If the two applications of the test were tau-equivalent (i.e., having the same true scores but possibly different error variances) or congeneric (i.e., having measures with linearly related true scores), parallelism assumptions would be violated. In this situation, the Pearson correlation would yield biased estimates of reliability because, as a linearity index, it cannot discern between two identical true scores or true scores that are linearly related ( $T_1 = aT_2 + b$ ).

To solve these limitations, the intraclass correlation coefficient (ICC) has been proposed as an alternative method for determining test-retest reliability (Hays et al., 1993; Streiner & Norman, 1989). The general form of the ICC is a ratio of variance due to differences between subjects (true score variance) to the total variance of the data (observed score). In a test-retest design, the ICC can be calculated from mean squared errors derived from a repeated measures ► ANOVA. Among the wide range of available forms of the ICC (McGraw & Wong, 1996; Shrout & Fleiss, 1979), the distinction between a measurement of consistency or absolute agreement is especially relevant for the assessment of test-retest reliability. ICCs measuring absolute agreement are sensitive to systematic variations in different applications of the same test, because between-trial variance is included in the denominator as part of the total variance, and thus, measurements that differ in absolute value, regardless of the reason, are considered as disagreements. Another advantage of the ICC is that, unlike Pearson correlation, it allows more than two assessments of the test to be easily summarized.

In test-retest situations, trials are crossed with subjects and therefore follow the appropriate design for analysis by means of two-way models. A two-way random effects model to measure agreement, which assumes that the different assessments are randomly selected, is appropriate for most test-retest evaluations in HRQOL studies. According to the Shrout and Fleiss notation system (Shrout & Fleiss, 1979), this definition corresponds to the ICC(2,1) or ICC(2,k), depending on whether the reliability of a single trial or the reliability of the average of multiple trials is estimated, respectively. In this model, the main effect of multiple assessments is incorporated into the estimate of total variability (Hays et al., 1993).

$$ICC(2,1) = \frac{MS_B - MS_E}{MS_B + (k-1)MS_E + k(MS_T - MS_E)/n}$$

where  $MS_B$  = mean square between subjects;  $MS_E$  = mean square error;  $MS_T$  = mean square between trials; and  $k$  is the number of assessments per respondent.

The Spearman-Brown prophecy formula can then be used to obtain the ICC estimate of the average of multiple trials:

$$ICC(2,k) = \frac{ICC(2,1)}{1 + (k-1)ICC(2,1)} \\ = \frac{MS_B - MS_E}{MS_B + (MS_T - MS_E)/n}$$

The ICC has been criticized because its magnitude depends on between-subject variability. If subjects differ little from one another, a low ICC can be found even if trial-to-trial variability is small. If subjects differ from each other a lot, the ICC can be large even if trial-to-trial variability is large. However, other authors (Streiner & Norman, 1989) perceive this characteristic of the ICC as an asset rather than a drawback, arguing that it actually reflects the fact that small differences between individuals are more difficult to detect than large ones.

#### Model-Based Approach

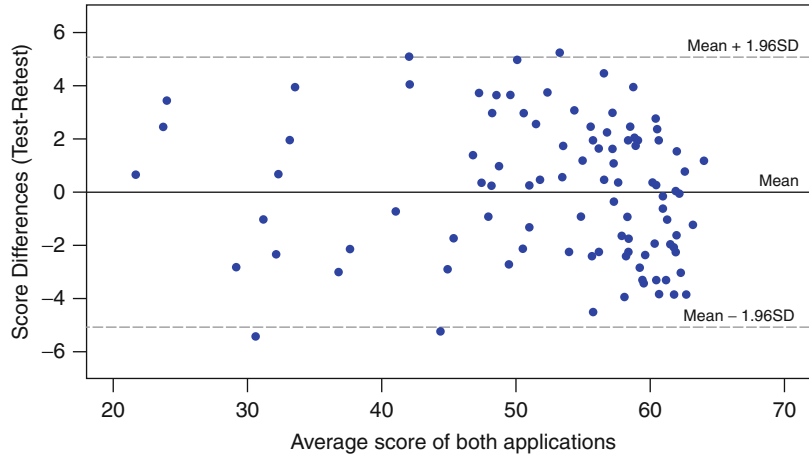
Several authors have proposed model-based approaches for the assessment of test-retest data. McArdle et al. (McArdle & Woodcock, 1997) proposed ► structural equation models for longitudinal data in which the sample is subdivided into multiple groups with different test-retest intervals. These models allow for the structural separation of some potentially important components, such as reliability, stability, and change. Similarly, Tisak et al. (Tisak & Tisak, 1996) proposed a ► latent growth curve modeling approach that allows measurements to be decomposed into separate sets of parameters representing reliability and the function of change, thus permitting a wide variety of submodels that include models of change and constancy to be statistically tested.

#### Graphical Methods

Bland and Altman (1986) suggested a graphical approach to examine the agreement between two different methods or to assess the reproducibility of a single measure. It consists of plotting the individual differences of two administrations

**Test-Retest Reliability,**

**Fig. 1** Example of Bland and Altman plot with limits of agreement



against their average. If the differences are normally distributed, 95 % of them are expected to lie between  $d - 1.96s$  and  $d + 1.96s$ , known as the limits of agreement (LOA), where  $d$  is the mean difference and  $s$  is the standard deviation of the differences. This method has become increasingly popular over the last few years. Unlike the ICC, it is independent of the true variability of the observations, and it can potentially alert the researcher to systematic differences in scores. Effects such as monotonic drift in the agreement related to the value of measurement or a systematic increase in error (evaluated with the differences between assessments) related to the value of the measurement (i.e., the mean of the two assessments) can be easily detected. An example of a Bland and Altman plot is presented in Fig. 1.

More recently, Luiz, Costa, Kale, and Werneck (2003) proposed a new graphical method, the survival-agreement plot, wherein the Kaplan-Meier method is used to plot the absolute difference of two assessments from the same individual  $|A - B|$  in the x-axis against the proportion of individuals with differences equal to or greater than the observed difference ( $x_i$ ) in the y-axis. One limitation of this approach is that it cannot detect systematic differences (or bias). Another similar graphical strategy that has been proposed to assess agreement is the mountain plot (Monti, 1995), also known as the folded empirical cumulative distribution plot, which is obtained by computing a percentile for each ranked difference between two measurements.

### Assessment of Reproducibility of a Categorical Variable

The methods described so far apply to continuous variables. When the variable to be evaluated is categorical, the use of Cohen's kappa coefficient ( $\kappa$ ) or an extension of this, the weighted kappa ( $\kappa_w$ ), is generally recommended (Streiner & Norman, 1989; Terwee et al., 2007). Both statistics are designed to take into account the effects of agreement by chance. The  $\kappa$  is appropriate only in cases in which the categorical variable is unordered, and it is calculated as follows:

$$\kappa = \frac{P_o - P_e}{1.0 - P_e}$$

where  $P_o$  is the observed proportion of agreements and  $P_e$  is the proportion of agreements expected by chance. For ordinal variables with more than two categories, the weighted kappa should be used instead, as it considers partial agreement when responses differ by only one or two categories. In weighted kappa, the diagonal cells of total agreement have a weight of zero and the two opposite corners have the maximum weight and it is calculated as a sum of the weighted frequencies corrected for chance:

$$\kappa_w = 1.0 - \frac{\sum w_{ij} P_{o_{ij}}}{\sum w_{ij} P_{e_{ij}}}$$

where  $w_{ij}$  is the weight assigned to cell (i,j) and  $P_{o_{ij}}$  and  $P_{e_{ij}}$  are the observed and expected



proportions in cell (i,j). The most commonly used weighting system makes use of quadratic weights, which correspond to the square of the amount of discrepancy. If this weighting scheme is used, then the weighted kappa is equal to one form of the ICC: the ICC(2,1).

### Cautions and Recommendations for the Test-Retest Interval

Under the valid assumption of stability and the independence of trials, the two administrations can be considered parallel and the test-retest correlation would be an adequate reliability index (Cronbach, 1947). However, these two conditions for parallel forms compete with one another: short time intervals are required to prevent changes in true scores, but intervals that are too short would lead to the violation of independence between applications because the memory of the former application would still be fresh in the subject's mind. For the evaluation of HRQOL measurements, a retest interval of 1 or 2 weeks is common, but there could be situations in which a longer period might be required (Streiner & Norman, 1989; Terwee et al., 2007). Donald G. Morrison (1981) explicitly modeled forgetting and change in true score processes through a stochastic model to determine the optimal time between two administrations when reliability is assessed through test-retest correlation. In any case, the time interval used in obtaining the coefficient of stability should be reported and justified.

### Standards for Test-Retest Reliability

As with internal consistency reliability, a test-retest reliability estimate of 0.90 is considered to be the minimum standard for scales that are interpreted at the individual level (Nunnally & Bernstein, 1994). This recommendation stems from the fact that the ► [standard error of measurement](#) would be about one-third of the measure's standard deviation with a reliability of 0.90. However, this value may be too stringent in some situations. For this reason, reliabilities exceeding 0.70 have been suggested as acceptable for group comparisons (Nunnally & Bernstein, 1994), given that the sample size will serve to reduce the degree of measurement error compared to group differences.

### Cross-References

- [ANOVA](#)
- [Intraclass Correlation Coefficient \(ICC\)](#)
- [Latent Growth Curve Modeling](#)
- [Measurement Error](#)
- [Reliability](#)
- [Standard Error of Measurement](#)
- [Structural Equation Models](#)

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## Test-Retest Reliability Coefficient

- ▶ [Inter-item Correlations](#)
  - ▶ [Reliability Coefficient](#)
- 

## Textiles

- ▶ [Arts in British Columbia, Canada](#)
- 

## Theater

- ▶ [Arts and Quality of Life](#)
  - ▶ [Arts in British Columbia, Canada](#)
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## Thematic Analysis

Victoria Clarke<sup>1</sup> and Virginia Braun<sup>2</sup>  
<sup>1</sup>Department of Psychology, University of the West of England, Bristol, UK  
<sup>2</sup>School of Psychology, The University of Auckland, Auckland, New Zealand

### Definition

Thematic analysis (TA) is a method for identifying and interpreting patterns of meaning across qualitative data.

### Description

TA as a method was first developed by Gerald Holton, a physicist and historian of science, in the 1970s (Merton, 1975). In the social sciences, TA has been extensively used for analyzing qualitative data, but until recently, there has been little discussion of TA as a method or guidance provided for its use (Aronson, 1994; Boyatzis, 1998; Patton, 1990, provide early exceptions). In 2006,

Braun and Clarke (2006) proposed a “systematic” and “sophisticated” (Howitt & Cramer, 2008, p. 341) approach to TA, which has subsequently been widely adopted. Although TA is often used (within a realist or essentialist framework) merely to describe or summarize key patterns in data, for Braun and Clarke, a good TA involves more than simply reporting what is in the data; it involves telling an interpretative story about the data in relation to a research question.

Braun and Clarke’s (2006, 2012) approach involves a (recursive) six-phase process:

1. Familiarizing yourself with the data and identifying items of potential interest
2. Generating initial codes
3. Searching for themes
4. Reviewing potential themes
5. Defining and naming themes
6. Producing the report

The first phase of TA, something common to all forms of qualitative analysis, is *familiarization* with the data. This involves the researcher immersing themselves in their dataset by reading and rereading each and every data item (and listening to any audio data at least once), to learn the content of the dataset “inside out.” Familiarization also involves starting to identify, and record, potentially interesting features of the data, relevant to the research question.

Familiarization is followed by the process of systematically coding the data to *generate initial codes*. A code is a pithy label that captures something interesting about the data (codes in TA are very similar to initial codes in grounded theory; see Charmaz, 2006), and the aim here is to identify potentially meaningful bits of the data, at the smallest level (Boyatzis, 1998). Codes either summarize the (surface) meaning of the data (called semantic codes, similar to grounded theory’s “in vivo” codes (Charmaz, 2006) and interpretative phenomenological analysis’s (IPA) “descriptive comments” (Smith, Flowers, & Larkin, 2009)) or dig deeper into the data to identify “hidden meanings” (called latent codes), such as assumptions underpinning the semantic content. Latent codes prioritize the researcher’s analytic framework; they are often deductive, and

the data are examined through existing theoretical lenses. Semantic codes are more inductive and grounded in the data and prioritize the meanings provided in the data. This phase ends with the compilation of a list of the codes and collation of all the data relevant to each code.

In the phase *searching for themes*, the analysis shifts to a wider focus. A theme identifies a meaning patterned across the dataset, which is important for illuminating the research question (Braun & Clarke, 2006). Despite the word “searching,” it should not be assumed that themes are hidden in the data waiting to be discovered by the intrepid researcher or that if the researcher is patient enough, themes will simply “emerge” from the coded data fully formed (Ely et al., 1997). The process of constructing themes is an active one (Taylor & Ussher, 2001)! Theme development involves looking for broader patterns of meaning across the coded data; coded data can be organized into a theme by “promoting” a particularly large and complex code to a theme (Charmaz, 2006) or clustering similar codes together. There is no one (ideal) way to do this; researchers rely on their own analytic judgment about what is *meaningful* and *important* for answering the research question. A good theme is stand-alone and distinctive, yet themes need to work *together* to form a coherent whole – an analytic *story*. Some codes (and themes) will inevitably be discarded, because they do not fit the developing analytic narrative. This phase ends with a set of candidate themes; some sense of the relationship between themes (perhaps figuratively represented in the form of a thematic map (see Braun & Clarke, 2006, 2013, for examples)) and the collation of the coded data relevant to each theme.

There are two levels of *reviewing potential themes*: (1) checking that the themes “work” in relation to the coded data (do they capture the most important features of the coded data relevant to the research question?) and (2) checking that they work in relation to the whole dataset (which involves a final read through of the whole dataset to check). Throughout the reviewing process, the researcher checks that each theme is

coherent and substantial, with clear boundaries and a distinct central organizing concept (Braun & Clarke, 2013). The process of reviewing potential themes is especially important for novice qualitative researchers and when working with large datasets. The researcher ends this process with a final set of themes.

The process of *defining and naming* is the phase where the most substantive, interpretive analytic work is done, and where the researcher produces detailed and complex definitions of each theme, which capture its shape and texture and how it relates to other themes. In this phase, the researcher selects the data extracts that will be used in the final report, and develops and builds the analysis into its final form, with each theme (and the analysis overall) clearly addressing the research question. Ideally, as noted above, the analysis must go beyond simply summarizing or paraphrasing the data, to tell a rich, nuanced, conceptually-informed interpretative story about the meanings embedded in and beyond the surface of the data (see Braun & Clarke, 2006, for a checklist of quality criteria for TA). Another seemingly trivial but important part of this stage is naming each theme. Good theme names are informative and engaging (short data quotes that capture the “essence” of a theme can be used).

*Producing the report* is the last phase of a Braun and Clarke’s (2006) version of TA. However, as in all other qualitative analytic approaches, writing is integral to the analytic process, so the analysis will usually be close to fully drafted *before* this phase. This phase provides the final opportunity for refining the analysis, such as through the integration of literature, or determining the order in which the themes are to be presented. The researcher’s goal is to tell the rich and complex story of their analysis, situated within the relevant field of scholarship, in a way that convinces the reader of the validity of their interpretations.

In many ways, the procedures and principles of TA are similar to other forms of pattern-based qualitative analytic methods, such as IPA (Smith et al., 2009) and grounded theory (Charmaz, 2006). However, unlike these approaches, it is

not tied to a particular theoretical framework and provides *just* a method, rather than a methodology, for qualitative research. This gives it unique flexibility and the potential for researchers to use it in a range of different ways. It is highly flexible in relation to the types of research questions and appropriate forms of data. So, it can be used to answer a wide variety of research questions: about experiences or perspectives, practices and behaviors, influencing factors, or the representation or construction of particular social objects or processes. It can also be used with almost any type of qualitative data: data generated through a researcher interacting with participants (e.g., face-to-face or virtual interviews or focus groups), data generated by participants writing responses to questions or prompts (e.g., qualitative surveys, story completion tasks, vignettes, researcher-directed diaries), or secondary sources of data (e.g., women's magazines, TV talk shows, parliamentary proceedings). And it can be used for both smaller and larger datasets.

TA is also flexible in how it can be used to analyze and theorize data. As it is not tied to a particular theoretical or epistemological framework, it can be used within an essentialist or experiential framework, where language is treated as a window on reality or people's experiences (Hall, 1997), or a constructionist or critical framework, where language is treated as constructing and creating the meanings and "reality" evident in the data (Burr, 2003). In terms of analysis, TA can be used inductively, where the analysis is driven by the content of the data, by the participants' language and concepts, or deductively, where the data are analyzed through the lens of preexisting theories and concepts (Boyatzis, 1998). TA is often used to summarize and provide a rich *description* of a dataset, identifying key themes and patterns of meaning at the surface (semantic) level of the data; it can also be used to interrogate the "hidden" or latent meanings in a dataset, the assumptions underpinning, and the implications of, particular patterns of meaning, and to provide an interpretative and conceptual analysis of a dataset (Braun & Clarke, 2006).

Overall, TA provides an accessible, flexible, foundational method for qualitative data analysis, with clear guidelines for conducting analysis. It offers a comparatively easy entry into qualitative research and can be used to answer many different types of research questions.

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## Theoretical Framework

- ▶ [Person-Environment Fit Theory](#)

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## Theoretical Sampling

- ▶ [Purposive Sampling](#)

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## Theoretical Synthesis

- ▶ [Metatheory](#)

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## Theory of Causal Effects (TCEs)

- ▶ [Causal Inference on Total, Direct, and Indirect Effects](#)

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## Theory of Goal-Striving Stress (TGSS)

- ▶ [Expectation-Reality Discrepancy and Quality of Life Assessments of Chinese Migrants](#)

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## Theory of Low Self-Control

- ▶ [Risky Lifestyles and Self-Control](#)

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## Theory-Driven Evaluation

- ▶ [Theory-Driven Interventions](#)

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## Theory-Driven Implementation

- ▶ [Theory-Driven Interventions](#)

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## Theory-Driven Interventions

Wouter Vanderplasschen<sup>1</sup> and  
Jessica De Maeyer<sup>2</sup>

<sup>1</sup>Orthopedagogics, Ghent University, University  
College Ghent, Gent, Belgium

<sup>2</sup>Ghent University College, Faculty of Education,  
Health and Social Work (E-QUAL), Gent,  
Belgium

### Synonyms

[Knowledge-driven interventions](#); [Quality of Life \(QoL\)](#); [Randomized controlled trial \(RCT\)](#); [Theory-driven evaluation](#); [Theory-driven implementation](#)

### Definition

Theory-driven interventions can be defined as practices or interventions which are based on an explicit theoretical model including an articulation of the causal link between an intervention and its outcomes. A clear description is provided how and why the intervention leads to specific outcomes such as improved Quality of Life (QoL).

### Description

The Cochrane Database of Systematic Reviews (or “Cochrane Library”) has been established by the Cochrane Collaboration as a widely accessible tool to identify and spread accurate and up-to-date information about evidence-based interventions in health care. Similarly, the Campbell Collaboration aims at preparing, maintaining, and disseminating systematic reviews of effective practices in the field of education, crime and justice, and social welfare. Both influential organizations regard the “randomized controlled trial (RCT)” as the gold standard for evaluating interventions and determine evidence based on the number of RCTs that have demonstrated significant outcomes in favor of the

experimental condition. Although this experimental approach appears highly valuable for evaluating short-term and clear-cut (medical) interventions, it has been less successful for evaluating more comprehensive and long-term (psychosocial) interventions such as therapeutic communities or case management (Broekaert, Autrique, Vanderplasschen, & Colpaert, 2010). Moreover, published systematic reviews often stick to the conclusion that “the intervention works (or not),” but why or how an intervention works remains unaddressed. Therefore, several authors have emphasized the importance of a theory-driven approach to evaluation, where the links between an intervention and its intended outcomes are set out a priori and are observed prospectively. By doing so, more appropriate and for the individual relevant personal outcome indicators such as QoL can be selected to judge the effectiveness of an intervention, instead of using generic and socially desirable outcome measures (De Maeyer, Vanderplasschen, & Broekaert, 2009).

### Theory-Driven Approach

Irrespective of whether an intervention works or not according to evidence-based criteria, programs intended to help or support individuals need to be legitimized by ethical, legal, practical, methodological, and theoretical principles. However, an underlying theoretical rationale for providing a specific intervention does not guarantee per se the provision of a theory-driven intervention nor of evidence-based practice. The theory-driven approach and the evidence-based paradigm are compatible and complementary, and a combination of both approaches may be the best way to address the evaluation of interventions (Broekaert et al., 2010). Researchers are increasingly encouraged to move beyond the simplistic outcome-focused approach (determining that it works by demonstrating the causal connection between an intervention and the intended outcomes) in favor of a more informative, phenomenological approach to examine the processes underlying program effects (Sidani & Sechrest, 1999). These processes explain how the program exerts its influence on the anticipated effects and identify what makes a program work. This

emphasis on understanding how an intervention works and what makes it work, in addition to simply knowing whether or not it works, has led to the development of the theory-driven approach to program implementation and evaluation.

A theory can be defined as a broad attempt to organize and explain phenomena occurring. It contains a consistent group of statements that present a systematic view about phenomena, which identify, define, and describe the phenomena involved, as well as specify the nature of the relationships among the phenomena (Sidani & Sechrest, 1999). Theory does not necessarily refer to the grand psychological or sociological theories, though these comprehensive theories may be helpful in understanding why one outcome leads to another. Consequently, more specific “practical” theories are needed for explaining the behavior of specific groups of individuals, e.g., children with autism, or for understanding standardized interventions like cognitive behavioral therapy (Van Strien, 1984). The most specific type of theory is the theory of a specific case ( $n = 1$  theory). The latter type of theory is most closely related to the concept “theory-driven interventions” since such an approach allows a way of understanding interventions and of predicting their effects (Greenhalgh, 2009).

Program or intervention theories consist of a set of statements that describe a particular program, explain why, how, and under what conditions the program effects occur, predict the outcomes of the program, and specify what needs to be done to bring about the desired program effects (Sidani & Sechrest, 1999). A program theory defines the problem for which a program is set up, specifies the causal processes through which the program is expected to produce the desired outcomes, predicts the outcomes expected of the program, and identifies the conditions under which the causal processes arise (Chen, 1990). It further specifies the nature, intensity, and duration of the activities that should be performed in order to achieve the intended program outcomes, the human and material resources needed for delivering the program, and the procedures to be followed when delivering the program.



### Quality of Life as Outcome Indicator

One of the core elements of a program theory is the expected output (Lipsey, 1993). The expected output represents the effects or outcomes anticipated as a result of the program. A program theory specifies the nature of the outcomes, the timing at which the changes are expected to occur, the expected pattern of change in the outcomes after implementation of the program, and any interrelationships among the outcomes (Sidani & Sechrest, 1999). Output reflects the expected output and consists of the ultimate outcomes that are intended with an intervention. Outcomes constitute the reasons for which the program is set up and are used as the criteria indicating the effectiveness or successes of the program. Outcome indicators are also useful for monitoring the implementation of an intervention and for improving the quality of care (Van Loon, Claes, Vandeveld, Van Hove, & Schalock, 2010). By starting from the expected personal outcomes (QoL), transparency and clarity are created for the goals that need to be met, starting from an assessment of individuals' needs and aspirations (input) and an adequate plan and strategy to realize these objectives (throughput). This is what Schalock and Bonham (2003) have called "right to left thinking."

According to Schalock, Verdugo, and Gomez (2011), outcomes can be measured from an individual, organizational, and societal perspective. From an individual perspective, objective and measureable indicators need to be developed that can be used to determine whether the practice in question leads to positive personal outcomes. Change indicators are preferably targeted to individuals' behavioral, physical, psychological, or subjective well-being since this gives a better indication of individuals' situations than dichotomous outcome measures such as employment, abstinence, or cure (De Maeyer et al., 2009). Also, at organizational level personal outcomes can be used to measure global benefits to program recipients, which are the result of program activities, services, and supports. Finally, societal perspectives determine social policy and its guiding concepts and principles (e.g., inclusion, self-determination, empowerment) (Schalock et al., 2011).

As many diseases or disorders disturb individuals' well-being and tend to be of chronic nature, QoL has become an important outcome indicator, defined as a subjective sense of well-being and satisfaction with life (Katschnig, 2006). Moreover, growing dissatisfaction with the medical treatment model was a driving force behind the development of a movement for self-advocacy, participation, and social inclusion, which stresses the individual needs of persons in their daily lives (Greenhalgh, 2009). As a consequence, the importance of client self-management and their involvement in care is increasingly emphasized in most Western countries. The use of concepts as QoL has brought clients' desired outcomes on the clinical agenda (Higginson & Carr, 2001). It alerts professionals to the clients' concerns about their QoL, clarifies clients' priorities for care, and prompts a discussion between client and professional about these issues. This is very important since clients and professionals do not always agree on which outcomes of care are most important. Discussion about intended personal outcomes may lead to greater involvement in decisions about their care and increase clients' self-efficacy to manage their own health (Greenhalgh, 2009). This may in turn affect treatment compliance and satisfaction.

QoL is an overarching concept, which has often been applied in health care research, particularly in the fields of disability studies and mental health care. Nevertheless, there is controversy about the meaning of this concept, and there is no consensus about its definition (Carr & Higginson, 2001). The WHO Quality of Life Group has defined QoL as "individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" (WHOQOL Group, 1998, p. 551). Various professions have created their own interpretations of QoL, with little resemblance and much fragmentation in-between disciplines. Still, there is a growing recognition of QoL as an important indicator for the impact of treatment, the need for health care, the evaluation of interventions, and the cost-benefit analyses. In general, QoL is seen as a subjective and multidimensional phenomenon

that starts from an individual's own perspective. Today, there is an overall consensus that QoL consists of both objective and subjective components of life, although the subjective component of QoL tends to prevail (Cummins, 2000). Also, it is a dynamic construct that changes throughout the life cycle, influenced by individuals' expectations. QoL may vary substantially between individuals and will be affected by someone's specific life situation. Some dimensions in life (e.g., physical health) will have a universal character, but these dimensions can vary between individuals and cultures (De Maeyer et al., 2009).

### Toward a Theory-Driven Evidence-Based Client-Centered Practice

Besides scientific evidence and theoretical modeling, professionals' experience and input are a third important component of a sound present-day practice. Practice-driven evaluations are needed, which involve researchers and providers who work jointly to gather information about the effects of an intervention. This is what Veerman and van Yperen (2007) refer to as "practice-based evidence". However, theory, practice, and evidence cannot function without their most crucial partner: the client. A humanistic, client-centered approach, which starts from clients' needs and assets, should guide treatment and support (Broekaert et al., 2010). As most disorders are chronic and cannot be cured, clients' subjective well-being should be (come) the most important outcome indicator. One of the biggest challenges in measuring QoL is trying to capture the uniqueness of this concept for each individual, which means that it is not always desirable to start from an objective standard of QoL. By making explicit reference to theory, theory-driven interventions and evaluations contribute to the generalizability of interventions and its components that enhance QoL.

### Cross-References

- ▶ [Metatheory](#)
- ▶ [Personal Outcomes Scale](#)
- ▶ [Subjective Well-being](#)

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## Therapy

- ▶ [Counseling](#)

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## Thermometer Scale

- ▶ [Thermometer Scale \(Feeling Thermometer\)](#)

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## Thermometer Scale (Feeling Thermometer)

Diana Zavala-Rojas  
 Research and Expertise Centre for Survey  
 Methodology, Department of Political and Social  
 Sciences, Universitat Pompeu Fabra,  
 Barcelona, Spain

### Synonyms

[Rating scale](#); [Thermometer scale](#)

### Definition

The feeling thermometer, or thermometer scale, is a rating procedure to measure respondents' feelings about an issue using a scale that corresponds or makes a metaphor to temperatures in the thermometer.

### Description

A feeling thermometer, or a thermometer scale, is a procedure used in survey research to measure feeling. Respondents are given instructions to express their feelings in numbers using the thermometer for temperatures as a reference or an analogy. Positive feelings are labelled as warm feelings and negative feelings are equivalent to cold feelings. It aims to measure the direction of the attitude and also to assess the degree or intensity of the feeling (Alwin, 2007, p. 188).

The underlying assumption of thermometer scales is based in information theory: more precise information can be obtained if respondents can give their answer in a continuum or in a large number of categories (Alwin, 1992, 1997, 2007; Saris, 1988, 1998; Saris, Bruinsma, Schoots, & Vermeulen, 1977; Saris & Gallhofer, 2007).

The first survey to introduce this scale was the ▶ [American National Election Studies survey](#) (ANES) in 1964. Since its formulation in the ANES, feeling thermometer scales are quite popular to measure attitudes towards politicians, groups, and public figures. In the ANES, a large set of items asks about feelings towards political leaders and groups using a 0–100 scale making a visual and an oral reference and metaphor to a temperature thermometer. Alwin (2007) reported the reliability of the ANES feeling thermometer used in 1970. It spans in a quite large range. The “respondent’s feeling thermometer rating of people on welfare” had the minimum reliability of 0.425 (N = 504) and the “respondent’s feeling thermometer rating of Christian fundamentalists” got the highest reliability of 0.856 (N = 1,082). The mean reliability of the items was 0.6385 and the standard deviation was 0.11252.

Alwin (1997) analyzed a multi-trait multi-method experiment (MTMM) conducted in the ▶ [Quality of Life Survey](#) in 1978. The experiment compared the quality of two forms of a “7-point scale” and a “feeling thermometer” of 17 domains of life satisfaction measured in the survey. For all the indicators included in the experiment, that thermometer scales reported larger ▶ [reliability](#), and they also provided more validity. However, Alwin (1992, 1997) found that only 3–5 % of respondents used other numbers of the scale than the ones presented in the labels; then he concludes that the scale is indeed reduced to a 9-point scale instead of a 100-point scale as the real temperature thermometer.

Wilcox, Sigelman, and Cook (1989) studied the propensity of thermometer scales in producing a tendency for people to answer consistently in a positive or negative way about political issues. For their study, they used the data collected in the ANES in 1979. They showed

that “some respondents are simply ‘warmer’ than others to the broad range of groups they rate with feeling thermometers” (p. 251). They also found that some respondents use only a narrow range of the thermometer while others use the whole scale. The best predictors for the use of the scale were “measures of attachment to and involvement in political groups” (p. 251). This poses a problem because part of the variance in the scale is not explained by differences in attitudes to groups, but by systematic behavior of respondents. Moderately liberal respondents seemed to have “positivity biases” (p. 256).

The item in the ANES questionnaire is: “Please look at page 3 of the booklet. I would like to get your feelings toward some of our political leaders and other people who are in the news these days. I will read the name of a person and I would like you to rate that person using something we call the feeling thermometer. Ratings between 50° and 100° mean that you feel favorable and warm toward the person. Ratings between 0° and 50° mean that you do not feel favorable toward the person and that you do not care too much for that person. You would rate the person at the 50° mark if you do not feel particularly warm or cold toward the person. If we come to a person whose name you do not recognize, you do not need to rate that person. Just tell me and we will move on to the next one” (ANES Datacenter webpage 2012).

## Cross-References

- ▶ [American National Election Studies](#)
- ▶ [Measurement Methods](#)
- ▶ [Multi-indicator Measures](#)
- ▶ [Quality of Life](#)
- ▶ [Reliability](#)
- ▶ [Response Bias\(es\)](#)

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## Third World

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## Thurstone Rescaling

Wim Kalmijn

Erasmus Happiness Research Organization  
EHERO, Erasmus University Rotterdam,  
Rotterdam, The Netherlands

### Definition

Thurstone rescaling is a method of rescaling verbal (textual) primary ratings to a corresponding numerical secondary rating on a predefined common continuum. These secondary Thurstone ratings are based on the opinions of a number of individuals about the meaning of this label, expressed as its average appropriate position within this continuum.

### Description

#### Problems in Measuring Quality of Life

Quality of life is commonly measured using survey questions such as: Taking all things together, how would you say things are these days – would you say you are ... ? “very happy,” “pretty happy,” “not too happy,” or “unhappy”? See ► [Rescaling](#).

Questions with respect to happiness differ in “wording,” i.e., the text of the response options. Another set of labels to be used with the same question could have been “fully happy,” “very happy,” “happy,” “unhappy.” Moreover, the numbers of response options used are different; some researchers present 3 options and others 7. Next to questions using verbal response options, survey researchers increasingly use numerical response scales, such as a rating on a range 0 (most unhappy) to 10 (most happy). All this variety in response options greatly reduces the comparability of the available survey data.

One more problem particular to questions using verbal or pictorial response scales is that computation of average values and standard deviations requires that options are represented with numbers. Commonly, see ► [Linear Scale Transformation](#), this is done using rank numbers as codes,

e.g., “very happy” → “code 4,” “pretty happy” → “code 3,” “not too happy” → “code 2,” and “unhappy” → “code 1.” Moreover, a confusion of codes with cardinal numbers unintentionally introduces unjustified equidistance between successive ratings. A final problem is demonstrated by the above examples, where “very happy” is replaced with “4” when first in the row but with “3” when second, even if both scales are four-step scales.

### Rescaling as a Solution

Most of these problems can be addressed using “rescaling procedures.” Rescaling of the original verbal response options involves a transformation of each response option on the primary scale into a corresponding number on a secondary scale in such a way that all secondary scales cover a common interval, for which [0, 10] is the usual standard.

The traditional rescaling method is the *linear scale transformation*, e.g., stretching a 1–4 scale to 0–10. See ► [Linear Scale Transformation](#). This method has serious methodological shortcomings. One is that difference in meaning of labels is ignored, e.g., if in two different four-step questions “fully happy” and “very happy” are the first options on the list of its question, their meaning is defined to be identical for the researcher, but presumably not in the eye of the respondent. Another shortcoming is the assumed equidistance of successive ratings, e.g., that the difference between “very happy” and “fairly happy” is equally large as the one between “not too happy” and “unhappy.” The Thurstone transformation is an alternative rescaling method, which is focused on the *labels* of the response options.

### Background of the Thurstone Method

Jones and Thurstone (1955) presented 51 “phrases,” i.e., qualifications, used to judge consumer products to 905 US respondents together with a nine-interval questionnaire. These intervals were presented as a row of nine contiguous boxes. The left hand box was anchored as “greatest dislike,” the right-hand one as “greatest like”; the neutral middle box was marked as “neither like nor dislike.” The respondents had to tick one of the nine boxes when presented with

each of the 51 qualifications, e.g., “poor” or “like a bit.” Later, integer numbers were assigned to the middle of each box, from  $-4$  to  $+4$ ; these numbers were kept hidden from the respondents.

The judgments of the “accepted” respondents on the appropriate position of, e.g., the qualification “poor” appeared to be scattered around a central value  $-1.55$  with a standard deviation  $0.87$ . These statistics for the qualification “like a bit” were  $+2.32$  and  $0.52$ , respectively. In this way all 51 qualifications were positioned on the “meaning continuum,” which were applied as their scale values. Respondents were ignored if they did not understand the task, ignored too many phrases or produced clearly inconsistent combinations. Incidentally, a phrase would be disqualified, if the distribution of its individual responses was bimodal or if a large value of the standard deviation revealed poor consensus among respondents with respect to the meaning of this particular phrase.

### Application in the World Database of Happiness

The rescaling of the original response options implies a transformation of each verbal response option on the primary scale into a corresponding number on a secondary scale in such a way that all secondary scales cover a common interval, for which  $[0, 10]$  is the usual standard.

Veenhoven and his team selected a number of verbal response options to questions about happiness and rated the value of each with a number between 0 and 10 (Veenhoven, 1993). They used common survey questions in English language. The average ratings connected to these labels are presented in the list below.

Thurstone ratings for 14 frequently used happiness response options in surveys have been collected in Table 1 (Veenhoven, 2013).

These ratings are referred to in the World Database of Happiness (WDH) as “Thurstone values.” They are used to compute “transformed” means and standard deviations, which are presented in the collection of distributional findings on “Happiness in Nations.” When comparing these transformed statistics across time and nations, Veenhoven got some odd results, which brought several weaknesses of this rescaling method to the light.

**Thurstone Rescaling, Table 1** Thurstone Ratings for 14 frequently used labels in verbal happiness rating scales

Label	Rating
Very happy	9.3
Quite happy	7.2
Happy	7.0
Pretty happy	6.7
Fairly happy	6.5
Rather happy	6.0
Neither happy nor unhappy	5.1
Not too happy	4.1
Rather unhappy	4.0
Not very unhappy	3.7
Fairly unhappy	3.4
Not happy	2.7
Not at all happy	1.0
Very unhappy	0.6

### Weak Points of the Thurstone Rescaling Method

- The method ignores both the number of alternative categories on the same scale and their labels.
- It also ignores the scale position as compared to those of the alternatives.
- Although the judges in the Erasmus University Rotterdam Happiness Research group were a relatively homogeneous group in this respect, the standard deviation of Thurstone rating estimates within this group, reflecting the (lack of) consensus about the position of the same rating on the same  $[0, 10]$  scale, was substantial: it varied between 0.3 and 1.5. Among a more heterogeneous group of respondents, a larger ► **dispersion** is to be expected.
- The number of judges is not taken into account. In practice, Thurstone ratings are treated incorrectly as if they were error-free, as is also the case with the secondary ratings after linear scale transformation, giving rise to a flattered precision of the estimated mean value in the case of both rescaling methods.
- If Thurstone ratings are based on expert judgments, these do not necessarily reflect the views of typical respondents in a survey.
- These judgments may be time dependent, which effect has not yet been investigated.



Therefore, scientists working in this area have been looking for an alternative. Most of the above problems vanish when happiness in the population is considered to be a continuous ► **latent happiness variable**, and this view is used as the basis for the happiness population estimation parameters procedure.

This may make the Thurstone rescaling method obsolete for future application.

## Cross-References

- **Happiness Population Distribution Parameter Estimates**
- **Latent Happiness Variable**
- **Linear Scale Transformation**
- **Rescaling**

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## Thyroid-Specific Patient-Reported Outcome Measure (ThyPRO)

Torquil Watt  
Department of Medical Endocrinology,  
Copenhagen University Hospital Rigshospitalet,  
Copenhagen, Denmark

## Description

### Introduction

Located in the junction between the head and the body, the thyroid gland may be envisioned as a meeting point between psyche and soma. Somatic diseases within the thyroid have major

impact on the psyche of the patient and vice versa. Previously, a blunted response by thyroid-stimulating hormone (TSH) to externally administered TSH-releasing hormone was used in the diagnosis at that time termed “endogenous depression” – the somatic function of the thyroid is affected in the depressed patient (Hein & Jackson, 1990; Kirkegaard & Faber, 1981; Kirkegaard, Korner, & Faber, 1990). In the recent quest within psychiatry for the biological correlates of psychiatric diseases, the thyroid axis has gained renewed focus (Rush et al., 1997). Another line of research has focused on the consequences for the thyroid of psychological stress. The results from this methodologically challenging research indicate a possible relationship between psychological stress and subsequent onset of autoimmune thyroid disease (Harris, Creed, & Brugha, 1992; Lee et al., 2003; Matos-Santos et al., 2001; Sonino et al., 1993). Evidence regarding the opposite etiological pathway, leading from thyroid disease to psychological distress and psychiatric disease and ultimately reduced ► **quality of life**, is more readily obtained and more clinically relevant, and is indeed the focus for this entry. A large amount of studies have found thyroid diseases to be a major risk factor for such impairments (summarized in Watt et al. (2006)). Based on the well-documented high impact of psychological distress on quality of life one might expect, that thyroid diseases pose substantial impact on quality of life.

Diseases related to the thyroid gland are very common, affecting individuals of all ages, mainly women. Thyroid hormones target all cells/organs in the body, mainly as a promoter of metabolism, and under- or overproduction of hormones therefore affects a broad range of human functions. Two major disease mechanisms are involved in thyroid diseases, leading to a wide spectrum of clinical manifestations: enlargement of the gland, termed goiter, and autoimmunity, where the immune system falsely targets thyroid structures. Goiter without accompanying dysfunction (termed nontoxic goiter) may cause neck discomfort and/or cosmetic concerns, but goiter may also be associated with autonomous

function, resulting in overproduction of hormones (hyperthyroidism, in this case termed toxic nodular goiter). Autoimmunity can be associated with enlargement of the gland (diffuse goiter), but most often leads to disturbed function, with either decreased secretion of thyroid hormones (autoimmune hypothyroidism) or increased secretion (hyperthyroidism, termed Graves' disease). A subgroup of patients with Graves' disease has affection of the eyes, yielding a characteristic protrusion and irritation of the eyes (termed thyroid-associated ophthalmopathy (TAO) or Graves' orbitopathy (GO)). The classical symptoms of hypothyroidism are unspecific, but well described, with tiredness, slow cerebration, constipation, weight gain, and depression as core elements. The typical symptoms of hyperthyroidism are rapid heartbeats, tremor, weight loss, ► [anxiety](#), and increased sweating.

The importance of involving quality of life aspects in the evaluation of thyroid patients is increasingly recognized (Abraham, Avenell, Watson, Park, & Bevan, 2004; Ladenson, 2002; Romijn, Smit, & Lamberts, 2003). This is well motivated, since benign thyroid disorders are common and rarely life-threatening. Thus, their treatment mainly deals with optimizing the quality of life of the patients who can be treated by, e.g., thyroid hormone supplementation, anti-thyroid drugs, radioiodine, or surgery. The scientific documentation about how these common, well-known diseases affect people's lives is very limited, as is the knowledge about how various treatments moderate these effects. Some questionnaires have been developed for and have been used in specific thyroid subpopulations (Fahrenfort, Wilterdink, & van der Veen, 2000; Jaeschke et al., 1996; Jaeschke, Guyatt, Cook, Harper, & Gerstein, 1994; McMillan, Bradley, Woodcock, Razvi, & Weaver, 2004; Saravanan et al., 2002; Tehrani et al., 2004; Terwee et al., 1999, 2001; Terwee, Gerding, Dekker, Prummel, & Wiersinga, 1998), but prior to the development of the ThyPRO, no validated, thyroid-specific patient-reported outcome instrument was available for use across different thyroid diseases (Watt et al., 2006). The nature of thyroid diseases

necessitates such an approach to HRQL-measurement in these patients: These diseases are characterized by a substantial overlap between various disease entities (e.g., coexistence of goiter and hyperthyroidism) and a shift between diseases (e.g., hyperthyroid patients becoming hypothyroid through ablative therapy). If a quality of life questionnaire was confined to cover only one of these entities, the results of longitudinal studies may be misleading, because important quality of life aspects were not measured.

The purpose of ThyQoL project was therefore to develop a questionnaire for measurement of quality of life in patients with benign thyroid diseases – the ThyPRO.

### Development of the ThyPRO

As outlined in [Fig. 1](#), the development process was rather complex, in order not only to ensure appropriate measurement properties, including ► [content validity](#), but also to coordinate the development of two parallel versions in Danish and English.

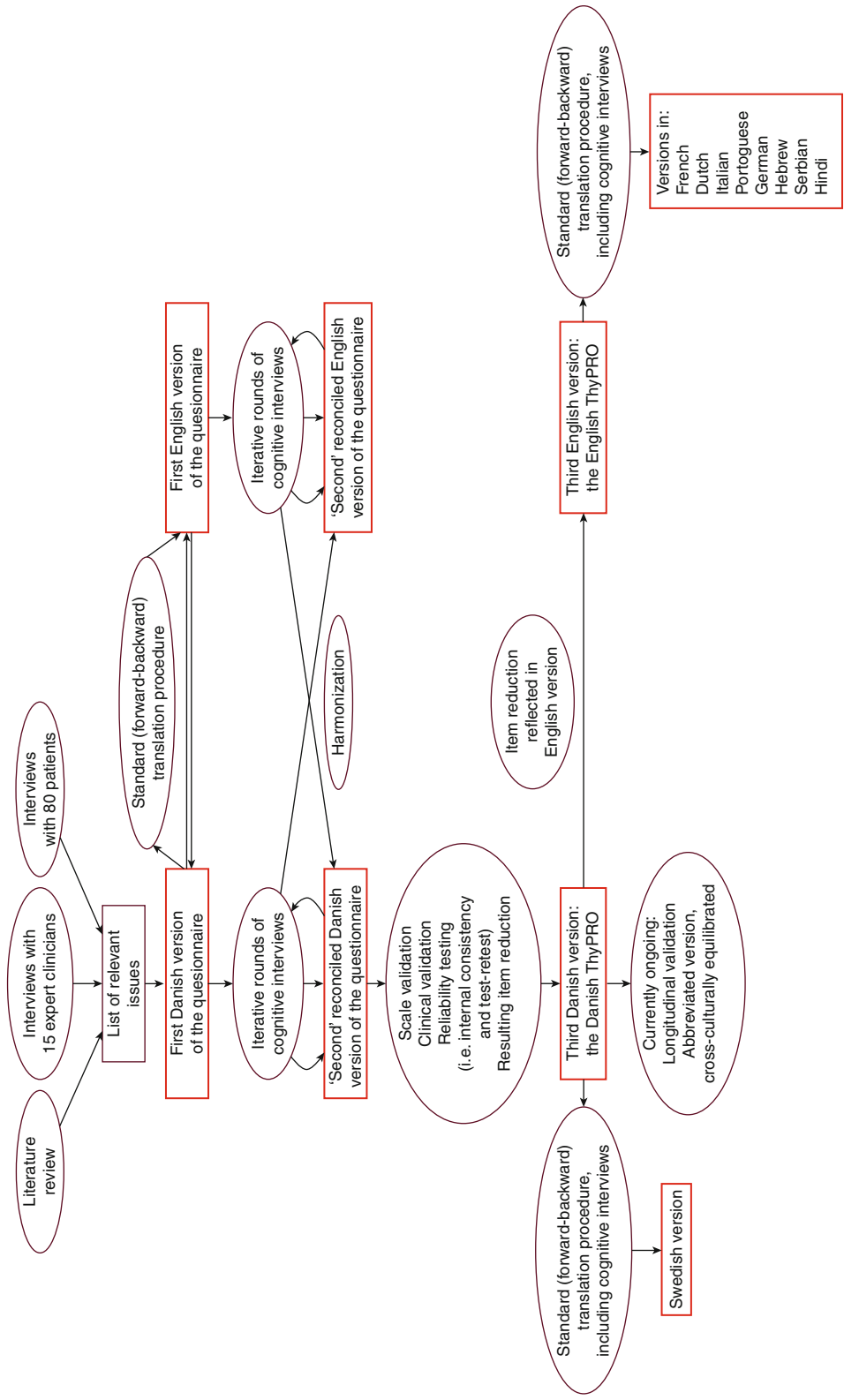
#### Issue Generation

Content validity was ensured by tapping three sources: a literature review (Watt et al., 2006), interviews with experienced clinicians and with thyroid patients (Watt et al., 2007). As shown in [Table 1](#), patients and clinicians offered complementary perspectives on what was relevant, where patients focused more on psychological aspects of their diseases and clinicians focused more on what was specific for thyroid diseases.

Based on these analyses, a theoretical model of quality of life impairment within thyroid diseases was constructed, which is shown in [Fig. 2](#).

#### Pilot Testing

Comprehensibility, applicability, and acceptability of the questionnaire were tested using iterative rounds of cognitive interviewing. We adopted a probing technique which in our opinion was better suited for self-completed questionnaire, i.e., “immediate retrospective probing.” This



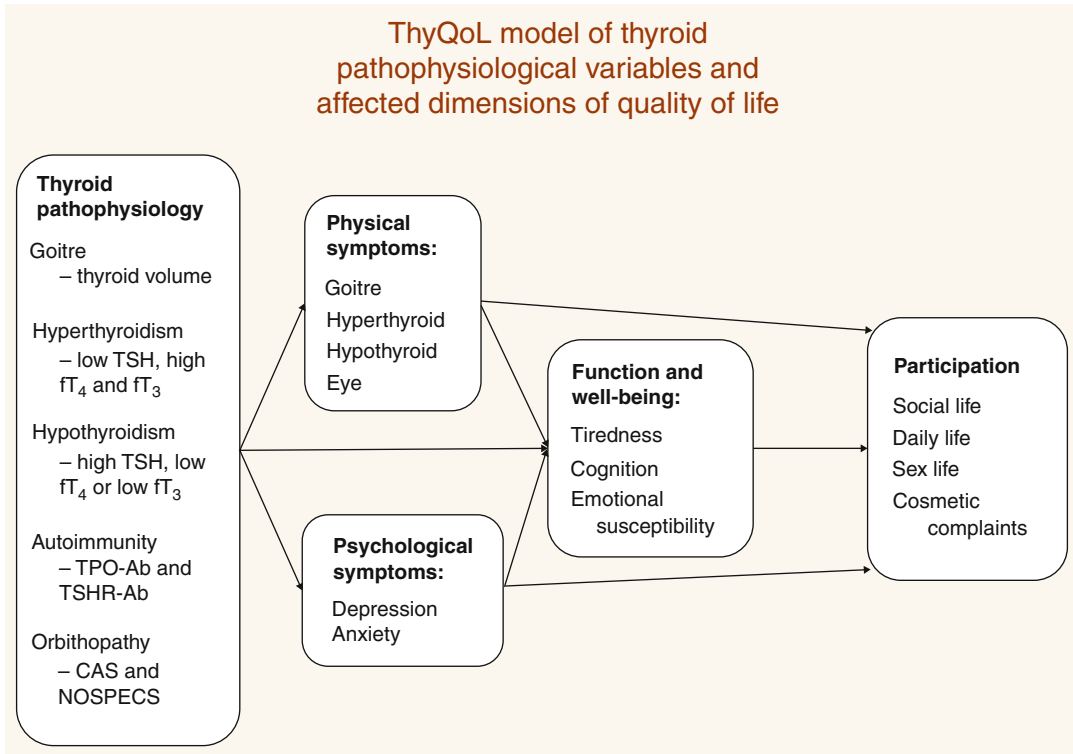
Thyroid-Specific Patient-Reported Outcome Measure (ThyPRO), Fig. 1 Development process, including translation

**Thyroid-Specific Patient-Reported Outcome Measure (ThyPRO), Table 1** Patient clinician agreement about which issues are relevant (Adapted from Watt et al. (2007))

Graves' disease	P	E	TAO	P	E	Toxic nodular goiter	P	E	Nontoxic goiter	P	E	Hypothyroidism	P	E
<i>Most relevant to patients only</i>														
Getting upset*	2	*	Watery eyes*	1	*	Dyspnea	1	21	General fatigue	2	23	Being slow*	1	*
Easily getting stressed*	4	*	Bags under the eyes*	2	*	Bothered by patient role*	2	*	Clearing throat often*	4	-	Bags under the eyes*	4	*
Dyspnea	6	23	Feeling of unrest	3	44	Cancerphobia	6	61	Sleeplessness	5	25	Getting upset*	9	*
Physical fatigue	8	18	Dyspnea	5	84	Globulus sensation	8	22	Hypersomnia	6	36	Palpitations	10	91
Tension	10	25	Palpitations	6	87	Physical fatigue	9	30	Feeling like suffocating*	7	*	Globulus sensation	11	46
Nervousness	11	24	General fatigue	7	30	Weight dissatisfaction	10	45	Weight dissatisfaction	8	32	Dyspnea	13	63
Attention problems	13	26	Getting upset*	8	*	Swollen hands or feet	11	84	Weight increase	10	37	Clearing throat often*	14	*
			Easily getting stressed*	10	*	Sadness	13	66	Physical fatigue	11	38			
			Swollen face	13	61				Feeling of unrest	12	39			
			Emotional lability	14	31				Pruritus	13	105			
			Restlessness	15	62									
<i>Most relevant to both patients and experts</i>														
Palpitations	1	4	Dry grittiness in eyes	4	1	Palpitations	3	4	Neck swelling	1	1	General fatigue	3	1
Emotional lability	3	5	Swollen eyelids	9	2	Neck swelling	4	5	Globulus sensation	3	2	Gold intolerance	3	11
Feeling of unrest	5	8	Blurred vision	11	8	Feeling of unrest	5	6	Anxiety	9	14	Physical fatigue	5	6
Hand tremor	7	1	Pressure in the eyes	12	3	Emotional lability	7	8	Cancerphobia	14	5	Hypersomnia	6	4
Restlessness	9	12				General fatigue	12	9	Hoarseness	15	9	Weight increase	7	9
Easily irritated or angry	12	13				Increased sweating	14	2				Weight dissatisfaction	8	13

Difficulty concentrating	14	10	Impaired memory	15	13	Mental fatigue	12	5						
General fatigue	15	6	<i>Most relevant to experts only</i>				Constipation	15	3					
Increased sweating	37	2	Pain in the eyes	30	4	Hand tremor	75	1	Difficulty breathing	83	3	Impaired memory	16	2
Weight loss	18	3	Unsatisfied with appearance	22	5	Weight loss	65	3	Discomfort swallowing	22	4	Limit daily activities	53	7
Heat intolerance	26	7	Reduced vision	24	6	Heat intolerance	42	7	Unsatisfied with appearance	39	6	Hoarseness	76	8
Increased appetite	19	9	Double vision	75	7	Increased appetite	39	10	Mask visible aspects	112	7	Difficulty concentrating	24	10
Sleeplessness	24	11	Red eyes	45	9	Difficulty concentrating	18	11	Pain in the throat	129	8	Depression	33	12
Mental fatigue	16	14	Photophobia	38	10	Nervousness	42	12	Worry	19	10	Dry skin	46	14
Diarrhea	34	15	Red eyelids	116	11	Diarrhea	100	14	Pain when moving head	130	11	Attention problems	31	15
			Limit daily activities	17	12	Sleeplessness	28	15	Weaker voice	131	12			
			Impaired general health	38	13				Neck stiffness	132	13			
			Social problems	58	14				Dyspnea	16	15			
			Anxiety	50	15									

Issues among the 15 most relevant according to both patients and experts are listed in the middle part of the table. Issues in the upper part of the table were among the 15 most relevant according to patients but not to experts; issues in the lower part of the table were among the 15 most relevant according to experts but not to patient. Issues marked with asterisks (\*) were added to the list of issues by the patients after the expert interviews had been conducted. *TAO* thyroid-associated ophthalmopathy, *P* relevance rank according to patients (the most relevant ranked as #1), *E* relevance rank according to experts



**Thyroid-Specific Patient-Reported Outcome Measure (ThyPRO), Fig. 2** Theoretical model. Each dimension is measured by a separate multi-item scale

technique proved very effective in reducing the number of errors occurring during each completion of the questionnaire (Watt et al., 2008), as shown in Table 2.

#### Quantitative, Psychometric, and Clinical Validation

Based on multitrait scaling and internal consistency analyses, a final, comprehensive questionnaire possessing appropriate measurement properties was developed, which was designated the thyroid-specific patient-reported outcome, ThyPRO (Watt et al., 2009).

Analyses of ► [known-groups validity](#), where expected high-score and low-score groups were defined for each of the 13 scales (cf. Fig. 2), showed excellent discriminative power of this new instrument (Fig. 3). The same study showed excellent ► [test-retest reliability](#) in a clinical sample of patients with thyroid diseases (Watt et al., 2010).

#### Internationalization

Partly parallel to the development described above, versions in 10 other languages have been developed (cf. Fig. 1 and Table 3). The instrument is already in use in several clinical studies worldwide, and data from these will be used to develop a cross-culturally equilibrated abbreviated version, based on selection of items with best measurement properties in terms of fit to a structural equation model and of best clinical properties (i.e., discriminative power and responsiveness) as well as lack of ► [differential item functioning](#) according to language.

#### Current and Future Projects

Currently, the ThyPRO is in use in several studies. Some of those are further methodological studies evaluating further the longitudinal measurement properties of the instrument, but also clinical studies exploring impact of thyroid



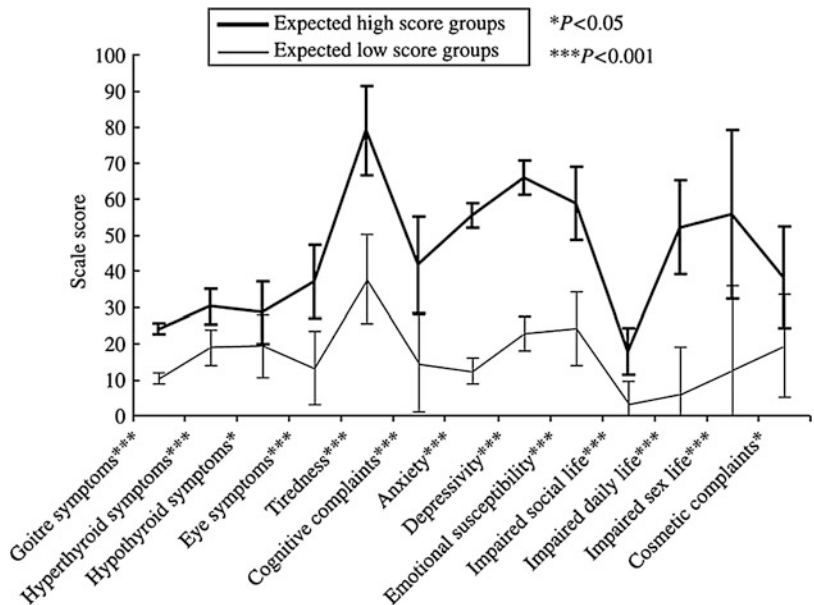
**Thyroid-Specific Patient-Reported Outcome Measure (ThyPRO), Table 2** Number of problems identified within each of six rounds of cognitive interviews (Adapted from Watt et al. (2008))

Questionnaire version:	1	2	3	4	5	6	All versions
Number of interviews:	<i>n</i> = 5	<i>n</i> = 4	<i>n</i> = 4	<i>n</i> = 4	<i>n</i> = 5	<i>n</i> = 9	<i>n</i> = 31
Number of identified problems (average per interview)	30 (6.00)	21 (5.25)	27 (6.75)	13 (3.25)	16 (3.20)	19 (2.11)	126 (4.06)
Separately for each component							
Comprehension	17	10	7	5	5	10	54
Retrieval	1	0	0	0	0	0	1
Judgment	2	6	7	2	4	2	23
Responding	4	4	8	2	4	6	28
Logical	5	1	1	1	2	1	11
Acceptability	1	0	2	1	0	0	4
Coverage	0	0	2	2	1	0	5

The number of problems identified within the cognitive interviews are presented separately for each cognitive component involved in the problem and separately for each interview round, ultimately resulting in a revised version

**Thyroid-Specific Patient-Reported Outcome Measure (ThyPRO),**

**Fig. 3** Mean scale scores for the expected high-score groups versus the low-score groups for the 13 ThyPRO scales. Vertical lines indicate 95 % confidence intervals of the means



diseases on quality of life in greater detail, as well as evaluating various treatment modalities including randomized clinical trials. Among these is a study recently published in European Thyroid Research (Watt et al., 2012) which indicates, that pathophysiological mechanisms not previously considered of importance to the clinical state and quality of life of the patients may

indeed play a role for the well-being of these patient: When evaluating quality of life of patients with autoimmune hypothyroidism, using this comprehensive instrument and analyzing data within the theoretical model presented in Fig. 2, autoimmunity, as measured by thyroid peroxidase antibodies, appeared to have greater influence on quality of life than

**Thyroid-Specific Patient-Reported Outcome Measure (ThyPRO), Table 3** Languages in which linguistically validated versions of the ThyPRO are available

Danish	Spørgeskema om livskvalitet ved sygdomme i skjoldbruskkirtlen
English	Quality of Life Questionnaire for Patients with Thyroid Disease
Portuguese	Questionário da Qualidade de Vida para Pacientes com Doença da Tireoide
German	Lebensqualität Fragebogen für Patienten mit Schilddrüsenerkrankungen
Italian	Questionario sulla qualità della vita per pazienti con malattia della tiroide
French	Questionnaire qualité de vie pour patients avec maladie thyroïdienne
Dutch	Vragenlijst kwaliteit van leven voor patiënten met een schildklieraandoening
Serbian	Upitnik o kvalitetu života pacijenata sa bolešću štitaste žlezde
Hindi	थाइराइड मरीजों में जीवन की गुणवत्ता के बारे में प्रश्नावली
Swedish	Frågeformulär om livskvalitet vid sköldkörtelsjukdomar
Hebrew	שאלון להערכת איכות חיים של מטופלים עם מחלת בלוטת המגן

levels of thyroid hormones did. This is indeed an exploratory finding, which needs confirmation in longitudinal studies.

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## Tibet

- [Ethnic Tibetans: Application of the Personal Well-being Index \(PWI\)](#)

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## Time Budget(s)

Seoyong Kim

Department of Public Administration, Ajou University, Suwon, South Korea

## Synonyms

[Time use\(s\)](#)

## Definition

Time budgets in a strong sense refer to activity-specific aggregated time used over the entire day like a money budget (Harms & Gershuny, 2009).

## Description

The time budgets are patterns of time use to which people have usually accustomed every day. Time budget studies have been empirically

conducted by social scientists since 1959, when an international group of social scientists in UNESCO formed the study of time budgets. Time use research has developed with respect to methodological as well as to substantive issues. Meanwhile, there are a number of comprehensive studies about the concern and the international development of time use research: Kramer (2005) has recently provided an historic overview, Harms and Gershuny (2009) focus on time budgets and time use issues, Gershuny (2001) covers time use methods, and Harvey (1999, 2004), Harvey, Szalai, Elliott, Stone, and Clark (1984), Andorka (1987), or the volume on “*Time Use—Research, Data and Policy*” (Merz & Ehling, 1999) give a general and recent overview about the field (recited from Merz, 2009).

The patterns of time use and allocation are key elements in influencing one’s ► **quality of life (QOL)**. The researches about time use have shifted their focus from just pattern of time use or determinant of it (Andorka, 1987; Clark, Harvey, & Shaw, 1990; Shaw, 1986) to the outcome of it. The latter mainly concerned with the work performance in organization or QOL in personal life (Cho et al., 2009; Galay, 2007; Jia & Lubetkin, 2009; Labianca, Moon, and Watt, 2005).

After analyzing the patterns of time use and ► **happiness** in Bhutan, Galay (2007) reported that respondents who had longer work hours or very short work hours express lower happiness than those who worked an appropriate amount of time. He also confirmed that the nonwork activities, such as sociocultural activities and sports and leisure, have a positive impact on the level of happiness. Also, in the simple descriptive statistics, ► **community participation** and religious activities reveal the positive impact on the happiness.

The time use pattern is a critical factor for patients to influence the QOL. By analyzing time use and life satisfaction, Cho et al. (2009) compare the quality of life of the poor farming households with the nonpoor one. They found that nonpoor farming household members spent more time in social participation and voluntary activities, while the poor ones spent more time in social gathering and leisure. However, the impact of such difference on subjective well-being is

mixed: A general life satisfaction levels between the poor and the nonpoor shows no significant difference for individual life, but the second reveals a higher satisfaction with family life.

Also, based on data from 375 women with rheumatoid arthritis (RA), Jia and Lubetkin (2009) tested hypothesis that time use imbalances would be associated with psychological distress. They found that spending 2 hours per day in obligatory activities was not significantly related with poor psychological status, but spending no time in committed and discretionary activities was related with lower life satisfaction and higher depressive symptoms.

Moreover, the European Quality of Life Survey of 2003 reported a strong correlation between time use and ► **subjective well-being**: People who had long work hours generally had low subjective well-being (Böhnke, 2005).

In measuring the time budget, the respondents in sample are usually asked to record the durations and moments of specific events within given period of time. Most of time studies used the diary method. For example, in adopted diary method in the 12-nation time budget survey of 1965–1966, Szalai (1972) collected the data about the times of beginning and finishing the daily activities from midnight to midnight in two ways: (1) by diaries written by the respondents or (2) by interviews with the sampled persons. There are variants in methods of collecting data about time budget according to covered period and targeted information. The quality of time information decreases when the scope of covered time expands: For example, yearly based time data appeared less exact than daily based ones, even if the former could collect more information about activities than the latter did.

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## Time Budgeting

- ▶ Time Trade-Off

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## Time Competition

- ▶ Time Pressure

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## Time Distance

- ▶ Inter-temporal Aspect of Well-Being

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## Time Distance to Death

- ▶ Objective and Subjective Nearness to Death

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## Time Needed to Travel to Work

Margo Hilbrecht  
Faculty of Applied Health Sciences, University of Waterloo, Waterloo, ON, Canada

## Synonyms

Commute time

## Definition

*Time needed to travel to work* refers to both the quantity and quality of time spent travelling between a person's place of residence and his or her workplace.

## Description

The relationship between time needed to travel to work and quality of life is influenced not only by

the amount of time allocated to travelling but also the quality of that time, including simultaneous activities like listening to music and external factors such as traffic congestion and predictability. The amount of time spent travelling to work varies according to several factors. Those who need the most time are more likely to be male, highly educated, earn a higher than average income, spend longer hours working for pay, and live in urban centers (Besser, Marcus, & Frumkin, 2008; Hansson, Mattisson, Björk, Östergren, & Jakobsson, 2011; Lyons & Chatterjee, 2008). Robinson and Godbey (1997) note that about 30 % of daily travel time is spent commuting, with the remaining travel time allocated to leisure activities, and personal and family care.

Time needed to travel to work is most often considered in terms of time trade-offs. With only 24 h each day, more time needed to travel to work means less time is available for other activities. More specifically, longer travel times to work have been associated with less time for leisure, sleep, and other subsistence activities. Furthermore, when more time is spent travelling to work, less time is allocated to travel for the purpose of maintaining social relationships (Kitamura et al., 1992). More recently, Besser et al. (2008) found similar results when examining the effect of time required to travel to work on access to social capital. Those who spent 90 min or more commuting had significantly fewer socially oriented trips, such as going out to dinner with friends or attending school activities, which suggests a travel time threshold that can have a limiting effect on personal relationships.

The inability to fulfill commitments and obligations in other life spheres because of time needed to travel to work can lead to role conflict, especially among women who generally have a disproportionate responsibility for caregiving and domestic activities (Roberts, Hodgson, & Dolan, 2011). For Canadian women, long commute times rank among the five most important predictors of role overload (Duxbury, Lyons, & Higgins, 2008), perhaps due to different travel experiences from men, including the following: less access to flexible work hours to help avoid

peak traffic times, different use of public transit, or the expectation of integrating household responsibilities with commuting, which necessitates multiple trip interruptions and lengthens travel time.

Much of the concern about health effects associated with time needed to travel to work is related to longer periods of sedentary activity for those who use cars or public transit as their primary mode of transportation. Longer amounts of time required for travelling to work are linked to health issues such as hypertension, obesity, and decreased cardiovascular fitness (Hoehner, Barlow, Allen, & Schootman, 2012), and can contribute to low energy, everyday stress, and illness-related absence from work (Hansson et al., 2011). In a recent US poll, employees requiring more than 90 min to travel to work reported a higher incidence of back and neck pain, obesity, and high cholesterol compared to workers whose travel time was 10 min or less (Crabtree, 2010). Traffic congestion and lengthy commutes are associated with higher stress levels among full-time workers (Turcotte, 2011). Traffic congestion has a particularly negative effect on the quality of travel time. As the unpredictability associated with traffic congestion and other factors beyond drivers' control increases, so do perceptions of stress (Evans, Wener, & Phillips, 2002; Gottholmseder, Nowotny, Pruckner & Theurl, 2009).

The adverse effects of time needed to travel to work on well-being are part of the *burden* discourse. In contrast, the *gift* perspective suggests that time spent travelling to work can potentially enhance quality of life. When viewed as a *gift*, travel time allows a *transition time* for individuals to focus their thoughts as they shift between different spheres of activity. It can also create a *time out* from other commitments and responsibilities (Jain & Lyons, 2008). Moreover, by equipping for the journey with mobile technologies and reading materials, social-, leisure-, and work-related activities can occur simultaneously with travel. Lyons and Urry (2005) envision a continuum of productivity during travel time to work, ranging from unproductive or *wasted* time to *ultra productive*



time, where more is accomplished during the journey than may have been otherwise. The level of productivity and ensuing benefits depend largely on equipping appropriately but can be influenced by other factors such as life stage, health status, and travel conditions. In other words, depending on individual characteristics, travel circumstances, transportation mode, and preparation for the journey, time spent travelling to work has the potential to enhance daily life.

It is possible, too, for both the gift and burden discourses to exist simultaneously. Transition time and leisurely moments during travel time may contribute to enhanced quality of life, but if time needed to travel to work precludes other activities related to well-being or contributes to poor health outcomes, it can be detrimental. As such, considering both time trade-offs and the use and experience of time needed to travel to work is important in order to understand the relationship to quality of life.

## Cross-References

- ▶ [Commuting](#)
- ▶ [Health](#)
- ▶ [Obesity, an Overview](#)
- ▶ [Quality of Life](#)
- ▶ [Sleep, an Overview](#)
- ▶ [Stress](#)
- ▶ [Time Trade-Off](#)
- ▶ [Traffic Mobility](#)
- ▶ [Transit Systems and the Quality of Life](#)
- ▶ [Transportation and the Quality of Life](#)
- ▶ [Work Time](#)

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## Time Poor

- ▶ [Time Poverty Thresholds in the USA](#)

## Time Poverty Thresholds in the USA

Charlene Marie Kalenkoski<sup>1</sup> and  
Karen S. Hamrick<sup>2</sup>

<sup>1</sup>Department of Economics, Ohio University,  
Athens, OH, USA

<sup>2</sup>U.S. Department of Agriculture, Economic  
Research Service, Washington, DC, USA

### Synonyms

Discretionary time indicators; Time poor; Time scarcity; Time stress; Time-adjusted income poverty; Time–pressure illusion

### Definition

Time poverty is the concept that individuals do not have enough discretionary time – the time available after engaging in necessary activities like sleep and in the committed activities of paid and unpaid work – to engage in activities that build their social and ► [human capital](#). Time poverty thresholds define a level of discretionary time below which individuals are considered to be “time poor.” Such thresholds are often defined relative to a population distribution although absolute thresholds can be defined based on the minimum amount of time required to perform certain tasks.

### Description

Time constraints, like money constraints, affect individuals’ well-being. Everyone has 24 h in a day, but some individuals have more control or flexibility over their time than others.

People who are “time poor” do not have enough discretionary time to engage in activities that improve their social and ► [human capital](#). Yet, the focus of policy discussions is ► [income poverty](#). Indeed, when time poverty was initially suggested as a social problem in the 1970s, Vickery (1977) modified existing income poverty

thresholds to define time-adjusted income poverty thresholds for the United States (US). She based the thresholds on her estimate of the minimum amount of time that would be needed to complete household tasks, based on the average amount of time non-employed homemakers spent on household tasks according to US time budget data and on other assumptions regarding how much time was necessary for certain activities. Vickery calculated different thresholds based on ► [household composition](#) – the number of adults and the number of children in the household – to account for differences in household time resources and needs. Similar time-adjusted income poverty measures were constructed by Douthitt (2000) for the United States using 1985 data and by Harvey and Mukhopadhyay (2007) for Canada using 1998 data. However, it is important to measure time poverty separately from income poverty as the relationship between time poverty and income is not clear a priori.

Rather than use ad hoc assumptions about how much time is needed for various tasks, other researchers have constructed time poverty thresholds as relative measures. These thresholds are defined as some percentage of median discretionary time. Bittman (2002), Bardasi and Wodon (2006), and Burchardt (2008) constructed relative thresholds for Australia, Guinea, and the United Kingdom, respectively.

Because such relative time poverty thresholds were lacking for the United States, Kalenkoski, Hamrick, and Andrews (2011) constructed several sets of thresholds using nationally representative data on individuals’ actual activities from the American Time Use Survey (ATUS). The ATUS is a continuous survey that the US Bureau of Labor Statistics began in 2003 (<http://stats.bls.gov/tus/>). The time-diary component of the ATUS is a 24-h diary such that individuals’ own descriptions of their activities are coded into standardized activities. The questionnaire portion of the ATUS provides information on the respondent’s ► [household composition](#) as well as demographic and labor force participation for the respondent and the respondent’s household members. The time-diary method of collecting information on

**Time Poverty Thresholds in the USA, Table 1** Time poverty thresholds for the total population and by household composition, 2003–2006

	Group percent of population	Median discretionary minutes	Median discretionary hours	60 % of median discretionary minutes
Total population	100.0	483	8.1	289.8
<i>One adult, no children</i>	14.4	583	9.7	349.8
<i>One adult, one child</i>	1.5	408	6.8	244.8
<i>One adult, 2 or more children</i>	1.7	390	6.5	234.0
<i>Two adults, no children</i>	32.5	535	8.9	321.0
<i>Two adults, one child</i>	8.8	418	7.0	250.8
<i>Two adults, two or more children</i>	15.9	382	6.4	229.2
<i>Three or more adults, no children</i>	14.1	525	8.8	315.0
<i>Three or more adults, one child</i>	5.9	480	8.0	288.0
<i>Three or more adults, two or more children</i>	5.2	440	7.3	264.0

Source: Kalenkoski et al. (2011)

individuals is considered a neutral method of collecting activity information, less subject to social desirability bias than a questionnaire asking about specific activities (Stinson, 1999). Time-diary data can be used to develop an objective measure of time poverty; a subjective measure would use survey data that asked respondents whether they felt ► [time pressure](#) or time stress.

Kalenkoski et al. (2011) first defined an individual's daily discretionary minutes to be 1,440 min (the total number of minutes in a day) minus minutes spent in *necessary* and *committed* activities. The authors defined necessary activities to be those activities that an individual must perform for himself or herself, such as sleeping and grooming. They defined committed activities as those activities that an individual must perform given prior commitments, such as market work, childcare, and household work:

*Necessary activities [ATUS major activity code]:*

- Personal care (sleeping and grooming) [01]

*Committed activities [ATUS major activity code]:*

- *Household activities* [02]
- *Caring for and helping household members* [03]
- *Work and work-related activities* [05]

A person's remaining activities were then defined as discretionary activities, and the total duration of time spent in these activities was defined as discretionary time. What might be referred to as recreational time or free time was included in discretionary time, but activities such as caring for non-household members, education, and civic obligations were also included.

Kalenkoski et al. (2011) defined alternative thresholds at 50 %, 60 %, and 70 % of the population median of this discretionary time. For example, 289.8 min was the threshold calculated at 60 % of the median population discretionary minutes. They then defined similar alternative thresholds based on the median of discretionary time for various subgroups in the population based on household composition and employment status. They adopted 60 % of the median as the time poverty threshold (Table 1).

After defining these thresholds and calculating time poverty rates for various groups in the population, Kalenkoski et al. (2011) performed multivariate regression analysis using the ATUS data to determine the correlates of discretionary time and time poverty. The authors found that, controlling for other factors, an additional household child substantially decreased a person's daily discretionary time and increased the

probability of being time poor. However, an additional household adult did not affect a person's daily discretionary time or his or her probability of being time poor. Being employed for pay, however, was the most significant factor determining a person's daily discretionary time and whether or not the person was time poor. Income was not associated with discretionary time or time poverty, supporting the creation of time poverty measures apart from income poverty measures.

### Other Approaches

Goodin, Rice, Parpo, and Eriksson (2008) developed a time–pressure measure defining discretionary time to be the minimum time necessary for paid work, household tasks, and personal care. They defined *time–pressure illusion* as the time difference between the actual time spent on these activities and the minimum amount of time necessary.

The Organisation for Economic Co-operation and Development (OECD) included time-use measures in its Better Life Initiative report on measuring ► [well-being](#) across its member counties (OECD, 2011). However, instead of using time poverty thresholds, the OECD used a group of indicators to assess ► [work-life balance](#). The indicators were working more than 50 h per week, time in leisure and personal care, commuting time, satisfaction with work-life time allocation, and employment rate of mothers with school-age children.

Davis and You (2011) used a cost difference approach to create money-time thresholds for food production, where household production time was valued at a market rate. They found that, for single-headed households, time is more of a constraint than money in reaching the nutritional recommendations of the US Department of Agriculture Thrifty Food Plan.

### Discussion

Researchers can apply time poverty thresholds to a variety of questions to see if lack of discretionary time is a determining factor to an observed outcome. For example, time poverty may be a determinant of energy balance behaviors,

that is, physical activity levels and food intake. Traditionally, policymakers have used income poverty measures to identify individuals and households lacking sufficient material resources. However, time is also a scarce resource that affects individuals' well-being. Lack of time to exercise or eat healthily may lead to obesity and its associated health problems. Recognition of the importance of time poverty could further improve analysis and policymaking in a wide variety of public assistance and public welfare contexts.

### Cross-References

- [Gender and Poverty](#)
- [Poverty](#)
- [Poverty Lines](#)
- [Poverty Measurement](#)
- [Relative Poverty Rate](#)
- [Social Indicators](#)
- [Time Budget\(s\)](#)
- [Time Trade-Off](#)

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## Time Preference

- ▶ [Inter-temporal Aspect of Well-Being](#)

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## Time Pressure

Tanja van der Lippe  
Department of Sociology, Utrecht University,  
Utrecht, The Netherlands

### Synonyms

[Combination pressure](#); [Scarcity of time](#); [Time competition](#)

### Definition

There are only 24 h in a day, which means that, by definition, the time devoted to one activity leaves less time for other activities. The scarcity argument, which is commonly used for real time, can also be applied to time as experienced. If someone puts in more hours at work, he or she will perceive a reduction in the number of hours which are available for family obligations. This can cause someone to feel pressed for time (van der Lippe, Jager, & Kops, 2006).

### Description

These days people often feel busy and hurried (Gleick, 1999). For many women and men in

paid employment, balancing work and family obligations has grown into a major problem, which is hard to solve. In families where both spouses are active in the labor market, difficulties may arise as to who should bear the responsibility of domestic and caring duties (van der Lippe, 2007). Running the household does not just mean that competing responsibilities have to be juggled: parenting standards and job expectations have risen as well (Jacobs & Gerson, 2004). With respect to the latter, employers seem to demand an ever greater willingness of their employees to be permanently available.

All in all, then, the scarcity of time appears to have grown more urgent in both the family and the workplace, with people frequently feeling torn between the two. As Schor (1992) states, the modern employee faces a serious distortion in the allocation of time between paid work and the private sphere; Hochschild (1997) notes that, in the USA, work has become home, and home has become work. Although Gershuny (2000) argues that, in the past 50 years, the amount of leisure time in Western society has increased, in actual practice, people seem to be running out of time. Employed couples tend to feel they have to make the most of the amount of time there is available and experience ever more and greater pressure. As a consequence, a growing number of people suffer from ▶ [stress](#) due to work-home interference, with fatigue or even serious health problems, such as ▶ [burnout](#), as a result.

In particular when work cannot be finished at the office and must be completed at home, such problems might arise. The work-family conflict is sometimes thought to have become more similar for men and women. However, it is a well-known fact that the amount of time spent in the labor market varies less for men than women. In addition, more hours of paid employment tends to put greater time pressure on women as compared to men. And not only the actual number of hours spent at the office will be of influence on the time pressure experienced, the amount of overtime is a contributing factor as well. Flexible work schedules, for instance, can pose a serious threat to maintaining stable relations

at home (Presser, 2000). If someone needs to work evenings or weekends instead of just office hours, stress and tension in the private sphere may result, because ordinary family activities, such as eating together or leisure, have to be canceled or postponed. This means that working overtime can increase the time pressure experienced by women as well as men.

Apart from the number of hours actually spent on work, job content will also influence whether someone experiences work-related strain or not. The more demanding a job is in terms of responsibility and supervision, the more likely it is that time pressure will arise. In particular managerial jobs often lead people to complain that work never seems to be finished. Even if they put in the maximum number of hours, people in such jobs often continue to feel burdened by the sheer intellectual demands that are made on them.

With regard to home and family, the demand hypothesis states that the more care is needed at home, the more time is invested in the household. The demand for care depends, first of all, on whether there are any children present in the household and, if so, how old these are. The younger a child is, the more care he/she needs, which leads to higher experienced time pressure on the main carer in the household. As is often observed, women usually devote relatively more time to household and caring tasks. An explanation for this division of labor can be found by applying an exchange perspective. In the exchange framework, the division of household tasks results from implicit negotiations between spouses about input (earnings or financial resources) and output (who performs household and caring tasks).

Another contributing factor to the common perception that time is scarce and flying by which is often mentioned is that of the diffusion of new forms of information and communication technology (ICT). Yet research has shown that it is not necessarily true that the option of keeping in continuous contact offered by mobile phones has accelerated the pace of life beyond people's perceived capacity to cope comfortably with this. For example, an analysis of phone logs

(Bittman, Brown, & Wajcman, 2009) has provided no indication that more frequent use of mobile phones leads to an increase in the feeling of being pressed for time: in itself, using a mobile phone does not put a strain on people. Quite the contrary, it seems likely that the mobile phone has provided a new means for solving time dilemmas, as arrangements can be made and rescheduling can be done directly and on the spot.

Time pressure is not only caused by household and work-related factors, for the country someone lives in is of influence as well. Countries vary in their social policies and how these are institutionalized, and several typologies have been developed for describing international differences between welfare states in ideology, functioning, and the practical outcome of this for citizens. Family-friendly government policies, in particular, can make a big positive difference to citizens' work and family lives. Supportive measures such as the supply of sufficient childcare facilities and paid maternity and parental leave can greatly facilitate the combination of work and care responsibilities. In countries with a more family-friendly climate, households are expected to experience less time pressure (van der Lippe et al., 2006).

To conclude, the exact relation between experienced time pressure and the level of happiness of citizens in different countries remains somewhat unclear. Garhammer (2002) speaks about the time pressure-happiness paradox in modern West European societies. The feeling of being stressed because of role conflict and simultaneous tasking, and the sense of being overstimulated by all kinds of novel experiences, is a common phenomenon in Western Europe. At the same time, though, the Danish, the Dutch, and the Swedish are ranked among the happiest people in the world. Happiness is generated by making progress in life, a sense of flow, being able to mobilize resources, and taking an active part in society. Feeling pressed for time is the flip side of this golden coin – an adverse effect with which, according to Garhammer (2002), people in modern society have learned to cope.



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## Time Reference

- ▶ [Reference Period](#)

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## Time Scarcity

- ▶ [Time Poverty Thresholds in the USA](#)

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## Time Spent with Children by Parents

- ▶ [Parental Time and Child Well-Being](#)

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## Time Stress

- ▶ [Time Poverty Thresholds in the USA](#)

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## Time Trade-Off

William Michelson

Department of Sociology, University of Toronto,  
Toronto, ON, Canada

### Synonyms

[Fixed resource allocation and time](#); [Time budgeting](#)

### Definition

In a system in which people are all allocated a fixed and equal amount of time in the day or week, marginally more time devoted to one or more activities will take time then not available for other activities. Time is hence traded from some potential activities to others, either explicitly or implicitly.

### Description

The conceptual model of the *zero-sum game* is a fundamental reference point in the analysis of time use. As applied by Staikov, (1973), this model posits that time is a fixed resource, as everyone is allocated 24 h in the day and 168 h in the week. Time withdrawn from this sum for one or more activities debits the total time available by exactly that much, leaving less time for other potential activities during the stated period of time. The day and week are surely long enough for multiple activities to occur, but the total amount of time to be disposed is finite and imperious to expansion. Thus, the choice of what to do and how long to do it presents limitations on what else a person might do within the same time period. Devoting marginally more time to particular activities, whether by choice or by fiat, leaves less time for others. Hence, people are said to trade-off their time, putting more of their fixed time resources into some activities while leaving less for others. In some situations,

this trade-off is voluntary and rational, while in others, it may reflect external obligations and pressures such as employment contexts, cultural traditions, religious prescriptions, gender roles, and more. Whether or not the trade-off is desired, it is a function of fixed time resources. (Michelson, 2005; Robinson, 1977).

This model is also implicitly the foundation for a field of study commonly called Time Geography, developed by the late Swedish geographer, Torsten Hägerstrand. Hägerstrand examined the contexts in which people carry out activities during specific periods of time, from single days to a lifetime. His underlying point of view was that, in the limited time of these periods, what people do at the start of these periods and what they are also committed to do limit the time available for alternative and successive activities. As a geographer, he emphasized how tangible factors that come to bear on timing and time consumption in human communities exercise constraints on human activity. This has become the basis for widespread research activity pertinent to decision making in the public realm. (Carlstein, 1978; Carlstein, Parkes, & Thrift, 1978; Parkes & Thrift, 1980).

In the study of time use, trade-offs between activities are a focus of interest. Time devoted to paid work is highly variable in the population, but when pursued, accounts for a substantial proportion of the waking minutes of the day. Thus, it is not surprising that its trade-offs with other activities are considerable. For example, Harvey's analysis of data from Halifax, Nova Scotia, in the 1970s showed that time devoted to the general category of paid work was strongly correlated in an inverse direction with time devoted to each of the other general categories of activity, such as household work, child-care, shopping, personal needs, education, and recreational activities (Harvey et al., 1984, p. 106).

More current correlation analysis of representative American national time use data, from the American Time Use Study, focuses on a selection of specific activities among adults between 25 and 64 years of age on weekdays only. Figure 1 shows the correlation coefficients

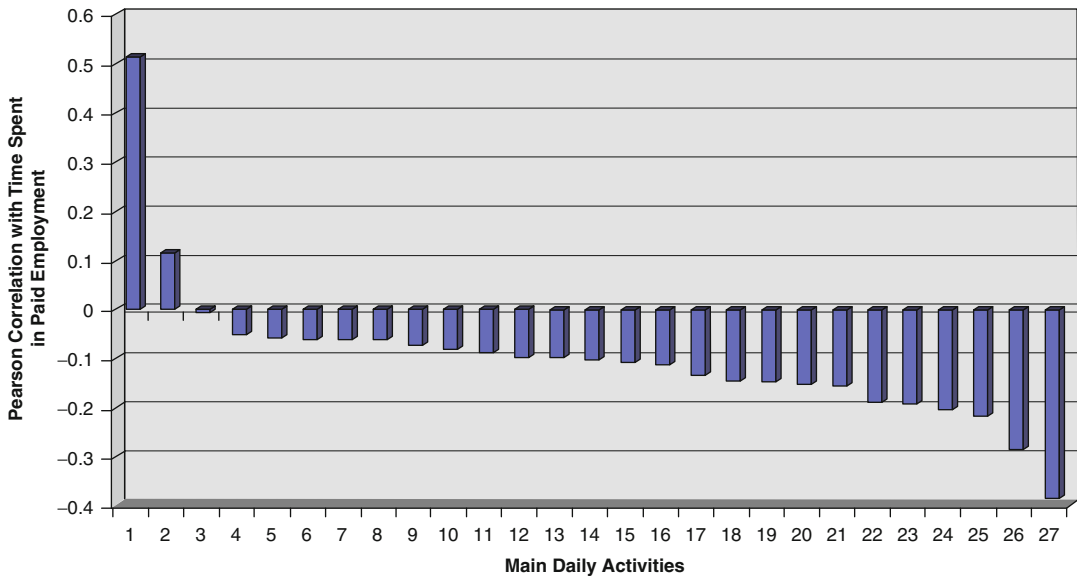
of time devoted to paid employment to 27 other common daily activities. It supports Harvey's earlier, more general analysis in that 24 of the 27 correlations are inverse. Sleep has the greatest inverse correlation with time spent in paid work. Two activities, however, are directly correlated with paid work time: time spent on commuting and on grooming. One use of time, travel for family care, does not vary in one direction or the other with paid work time (Michelson, 2011).

While the logic underlying time trade-offs and empirical evidence of trade-offs are highly supportive, there are circumstances that offer exceptions to their absolute applicability.

The zero-sum game, as applied to time resources, suggests that devoting time to activities is mutually exclusive—that you cannot do two things at once. You can only do one activity at a time, thus consuming time that might be used for another activity. Although this is true for much activity, there are common exceptions. Doing more than one activity at a time is known as *multitasking*. Not all time use creates an inherent need for trade-offs. Much of child care is multitasked: keeping an eye on children while cleaning, cooking, watching television, shopping, and much else. Estimates are that about 60 % of child care is performed as a secondary activity, while also doing something else considered as the primary activity at the time. (Bittman & Pixley, 1997; Mattingly & Bianchi, 2003). The pioneering multinational time use study in the mid-1960s had also documented from 12 nations how much of radio and television consumption, reading, and conversation were occurring as simultaneous activities (Szalai, 1972).

Another strategy to deal with activities that are potentially mutually exclusive, in view of limited available time, is to cut down the duration of each, resulting in more but shorter episodes of activity in the day. This is known as *intensification* (Hargreaves, 1990) and sometimes *fractionation* (Gunthorpe, 2003; Mattingly & Bianchi, 2003).

Both multitasking and intensification/fractionation have been observed as adaptations



**Time Trade-Off, Fig. 1** Main Daily Activities: 1. Commuting, 2. Grooming, 3. Travel for family care, 4. Leisure travel, 5. Relaxing/thinking, 6. Travel for household activities, 7. Leisure computing, 8. Travel caring for non household adults, 9. Games, 10. Travel for eating and drinking, 11. Playing with children, 12. Travel grocery shopping, 13. Eating and drinking, 14. Physical care for

children, 15. Travel for socializing, 16. Reading, 17. Travel for other shopping, 18. Grass cutting and landscaping, 19. Religious services, 20. Kitchen cleanup, 21. Laundry, 22. Shopping other than for groceries, 23. Socializing, 24. Food preparation, 25. House cleaning, 26. TV and movies, 27. Sleep

employed more frequently by women than by men, in view of gender-based roles in an everyday life that increasingly involves paid employment. (Bittman & Wajcman, 2000; Peters & Raaijmakers, 1998; Sullivan, 1997). Such adaptations are not just objective adjustments but are frequently experienced as subjectively stressful. Thus, when the correlation of paid work duration to time spent in other daily activities among husbands and wives with full-time employment resulted in results comparable to Fig. 1 (and to Harvey et al. (1984) correlations for both genders), it was also the case that the trade-offs, accompanied by gender-related intensification/fragmentation, were experienced as having many more sources of stress for the wives than for their husbands (Michelson, 1986).

Time trade-offs are therefore not only fundamental dynamic elements in time use but are the basis for adaptative responses that are themselves affectively experienced.

## Cross-References

- ▶ [Time Needed to Travel to Work](#)
- ▶ [Time Pressure](#)

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## Time Trends and Their QOL Implications

John Robinson  
Department of Sociology, University of Maryland, College Park, MD, USA

### Synonyms

Time-diary trends in time use, and their QOL implications; Time, subjective; Time use activity patterns

### Description

Time figures prominently in the structure and quality of people's lives. Not only is it

experienced in terms of Ben Franklin's familiar equation, "time is money," but in terms of the increased years of ► **life expectancy**, decreased hours in the workweek, and the decreased days of work layoffs and strikes that analysts have used to argue for improvements in the ► **quality of life (QOL)** in society over the last 100 years.

Reflecting time's importance, government and academic researchers from most Western countries are now collecting full 24-h time-diary data to monitor and understand how daily life differs across demographic groups, across decades, and across countries. For that reason, extensive national diary data are now being collected on an ongoing basis by the **American Time Use Survey [ATUS]**, as can be accessed by googling "ATUS-X." Diary data from more than 25 other countries have been collected via the Multinational Time Use Survey (MTUS), as archived at the University of Oxford via its website [www.timeuse.org](http://www.timeuse.org).

Time trends have been monitored in two basic ways:

1. **Objective time:** Documentation and accounting of the hours spent on various daily activities, like paid work, TV viewing, and time alone. While the QOL or positive benefits of engaging in particular daily activities are often not obvious, social observers seem to concur that increases in daily activities like child care, ► **volunteering**, and other potentially altruistic behaviors, as well as (voluntary) free time, represent improvements in a person's or society's QOL, while increases in time spent on routine ► **housework**, repair activities, and TV viewing are seen as less desirable. Empirical support for many of these assumptions is provided in [Table 1](#) below.
2. **Subjective time:** Survey questions asking how people perceive their time use and how they feel about and value the way they spend their time. Subjective time measures fall into three categories:
  1. Affect: ► **Enjoyment** and ► **satisfaction**, with questions about how much ► **pleasure** respondents obtain from specific activities or their lives more generally, as in [Table 1](#).

**Time Trends and Their QOL Implications, Table 1** Enjoyment ratings from diary activities vs. in general (on a scale from 10 = enjoy a great deal to 0 = dislike a great deal) (1985 and 1975 national data, from Robinson & Godbey, 1999, Appendix O)

1985 DIARY (average = 7.0)	1975 GENERAL (average = 6.8)
10 – ENJOY A GREAT DEAL	10 – ENJOY A GREAT DEAL
9.3 Sex	
9.2 Play sports	
8.7 Playing/reading with children	8.9 Child care
8.5 Church, religion	
8.5 Sleep	8.6 Play with children
8.2 Meals away	8.0 Socializing, talking
8.2 Socialize, visit others	8.0 Work
8.0 Socialize with family	
8.0 Work breaks	
7.9 Reading	7.5 Sleep
7.8 Meals at home	7.4 Eating
**7.8 TV	7.4 Washing, dressing
7.4 Hobbies, crafts	7.3 Church, religion
7.2 Exercise	7.0 Reading
7.2 Baby care	
7.2 Organizations	
*7.0 Work	
7.0 Bathing	
6.6 Cooking	6.8 Hobbies
6.6 Other shopping	6.5 Play sports
6.4 Child care	6.5 Cultural events
6.4 Help others	6.2 Cooking
6.3 Work commute	
6.1 Dressing	
5.8 Other housework	**5.9 TV
5.5 Grocery shopping	
5.5 Home repairs	5.1 Home repairs
5.2 Pay bills, financial, etc.	5.0 Organizations
5.0 Yardwork	
4.9 Clean house	4.6 Grocery shopping
4.9 Laundry	4.3 Other shopping
4.8 Health care, doctor	4.2 Clean house
4.7 Car repair	
0 – DISLIKE A GREAT DEAL	0 – DISLIKE A GREAT DEAL

2. *Time pressure*: Perceptions of ► **time pressure** and ► **stress**, with questions about feeling rushed, time crunch and personal stress, or spending enough time with one’s spouse or children.

Among the long-term US trends observed in these diary studies for the working-age population 18–64 are:

1. A decline in paid-work time by men (mainly due to more years of education and earlier effective retirements) coupled with an increase in paid-work hours of women (mainly due to their higher employment rates, not hours worked per week)
  2. Declines in the unpaid work (family care) by women, coupled with increased unpaid work by men
  3. Slight increases in hours of sleep coupled with decreases in eating meals and grooming
  4. Increases in free time, particularly in TV viewing time, IT use and fitness activity
- Documentation of these trends can be found in Robinson and Godbey (1999), Robinson and Land (2008), Aguiar and Hurst (2009), Robinson (2009), and Robinson and Martin (2012). Lack of increases in arts and sex participation, two activities not adequately measured in diary studies are described in Robinson (2010).
3. **Output**: Questions related to outputs from time inputs, such as being more satisfied with house cleanliness and how well one’s children are doing in life. These have supplemented with more objective measures of output, like grades in school, house cleanliness, or obesity.

Turning to each of these subjective topics in more detail

1. *Affect*: As reflected in **Table 1**, activity satisfaction can be obtained
  - (a) As rated in “real time,” that is, integrated as part of the time diary, by follow-up questions after each reported activity in a time diary (Krueger et al., 2009; Robinson & Godbey, 1999)
  - (b) As rated in *general*, as in the survey question “On a scale from \_\_ to \_\_ how much do you enjoy doing \_\_\_\_\_(activity)?”

Interestingly, these diary ratings of some activities in the first column of **Table 1** differ

significantly from the responses derived from the general survey questions in the second column. For example, respondents rated their diary work time enjoyed an average of about one point *lower* on these 0–10 scales than when asked about their work in general, and the particular TV programs they watched as one point *higher* than TV viewing in general.

Nonetheless, there was much more convergence on other activities, such as ratings of child care and socializing being toward the most enjoyable end of the scale vs. housework and repair activities being at the bottom. Kahneman, Krueger, Schkade, Schwarz, and Stone (2004) and Krueger et al. (2009) argue for using the real-time subjective ratings in the diary as supplemental measures to the gross domestic product (GDP) to more fully reflect a country's QOL. At the same time, the general ratings did perform well in a 1975 panel study in being a major predictor of diary times, providing an important example of attitudes predicting behavior (activity).

The ► **General Social Survey (GSS)** has been regularly asking time-estimate questions on several activities since 1972, also asking these same respondents several QOL questions, especially on ► **happiness**. Robinson and Martin (2008) found that GSS respondents who more often attend religious services, read newspapers, and socialize with relatives, neighbors, and friends report being progressively more happy (after major demographic predictors of happiness are taken into account). This suggests that there is something involved in doing these activities that makes people happier or that happy people enjoy them more or both. The one exception was for watching TV, with heavier viewers reporting themselves as significantly less happy (Kubey and Czikszentmihalyi 1990).

2. **Time Pressure:** A separate issue regarding the time-QOL connection involves feelings of time pressure, of being rushed or under stress, with the general assumption that the less of this in one's life, the better (Mack 1925). These mainly have come in the form of single questions asked about:

*Feeling Rushed:* Asked first in the 1965 American time-diary study and more than 10

national surveys in the interim (Robinson & Godbey, 1999, Chap. 15), the question showed a significant increase in those "always" feeling rushed between 1965 and early 1990s. A companion question from 1965 asks the opposite – how often respondents "... have time on their hands you don't know what with?" with those saying "almost never" rising from 48 % in the 1960s and 1970s to about 60 % in the 1990s.

However, that situation changed significantly in 2010, when the proportion feeling always rushed dropped seven percentage points and those feeling almost never having time on their hands about five points. At the same time, that 10 % of the public subscribing to both positions reported about a 50 % level of being "very happy" compared to less than 25 % in the rest of the population (Robinson 2012).

*Stress:* Given the great medical concern and societal attention paid to the stressful lifestyles in America, it is surprising that there are so few data using standardized trend questions on stress. The National Center for Health Statistics did include a direct question on perceived stress in its very large 1985 and 1995 surveys, and it did find a significant rise from 50 % to 56 % between 1986 and 1993, but then a surprising decline to 48 % in 1995 (paralleling the 1995 decline in feeling always rushed).

*Other Measures:* Robinson and Godbey (1999) report results on a 10-item measure of "time crunch" scale that has since been used in several other countries. As with the rushed and stress questions, women and those aged 25–44 were most likely to respond being under more time crunch.

Another single item asked respondents whether they would be willing to give up a day's pay to get a day off from work. Only 18 % of workers in both 1975 and in 1998 reported being "very tired" at the end of a workday. Time pressure concerns are also evident in questions asking respondents whether they have more or less free time than 5 years previously, or whether they spend enough time with their children, or how well balanced their work and family lives are.



3. *Outputs from Time Inputs*: Here, there are concerns about the productivity or consequences of various ways of spending time. Thus, one set of survey questions has asked parents about how well their children are doing in life, about their satisfaction with the amount of time the family spends together, or about awareness of where their children are at times when they are not with them (Bianchi, Robinson, & Milkie, 2006). Other survey items have asked how satisfied respondents are with the cleanliness of their homes (Robinson & Milkie, 1998) or the quality of the family meals (Juster & Stafford, 1985).

A few studies have examined more objective measures of output, such as Schuman, Walsh, Olson, and Etheridge (1985), finding little relationship between study time and grades in school, and Robinson and Godbey (1999), little relation between time spent on housework and respondent satisfaction with household cleanliness, as rated either by the respondent or by the survey interviewer – nor by the presence of household appliances. Similarly, respondents who reported longer work hours were slightly *more* likely to attend arts events or to engage in sex. In general, these analyses support Parkinson's (1962) most insightful observation that “work expands to fill the time available for its completion.”

Some more promising advances in linking time to output and welfare have been recently proposed by economists. Bittman and Ironmonger (2011) have presented a typology outlining options to simply placing monetary values on work, unpaid work, and free time, one that moves beyond the initial strategy of valuing time in terms of the implicit wage rate of the individual. Goodin, Rice, Parpo, and Eriksson (2008) assert that time is an inherently superior metric than money, reversing the usual process of valuing time in dollars and instead expressing money in terms of the time required to earn it. Discretionary time thus represents an advance over the more conventional category of “free time” as a new metric of welfare.

On the negative end of the ► **welfare** scale, there is the concern about the possible negative impacts

of time spent eating (Janes, Hamrick, & Lacey, 2011; Zick & Stevens, 2011). Brown, Nicholson, Broom, and Bittman (2011) present evidence that TV viewing is accompanied by increased consumption of high-calorie snack foods.

*Policy Issues*: Time diaries provide clear evidence of several ► **social inequalities**. In the case of the division of housework between men and women, **Table 1** shows that both men and women rate housework as quite low in terms of enjoyment. Yet women continue to do twice as much of it. The “Take back your time” movement (DeGraff, 2003) has proposed that American workers stop all paid work after mid-October, so that their total annual work hours would be made equivalent to those of European workers. The “Turn off your TV” movement has designated 1 week a year for people to leave their sets off and to instead participate in more potentially gratifying activities (although **Table 1** suggests that, although people rate TV in general as relatively low on the **Table 1** enjoyment meter, the programs they watched on the diary day rated far higher in enjoyment).

Of all the potential policy issues related to time use, possibly the most impressive is the lack of solid data on the marginal outputs that workers produce and obtain for their inputs of work time. Some data suggest that the same work productivity can be achieved with 20–50 % less time spent on the job (Parkinson, 1962; Schor, 1992; Schuman et al., 1985) and that many workers put in simple “face time” to impress their employers.

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## Time Use Activity Patterns

- ▶ [Time Trends and Their QOL Implications](#)

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## Time Use(S)

- ▶ [Time Budget\(s\)](#)

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## Time, Subjective

- ▶ [Time Trends and Their QOL Implications](#)

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## Time-Adjusted Income Poverty

- ▶ [Time Poverty Thresholds in the USA](#)

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## Time-Diary Trends in Time Use, and Their QOL Implications

- ▶ [Time Trends and Their QOL Implications](#)

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## Time-Location Sampling

John Karon<sup>1</sup> and Cyprian Wejnert<sup>2</sup>

<sup>1</sup>The Centers for Disease Control and Prevention, Albuquerque, NM, USA

<sup>2</sup>DHHS/CDC/OID/NCHHSTP/DHPSE/BCSB, Atlanta, GA, USA

## Synonyms

[Time-space sampling](#); [TLS](#); [Venue-based sampling](#)

## Definition

TLS (also known as time-space sampling and venue-based sampling) is used to collect data

from hard-to-reach populations, such as men who have sex with men (MSM), who can be found at identifiable locations. Locations are selected at random from the ► [sampling frame](#) of candidate locations, and persons are enrolled by sampling at these locations. Because the probability of being sampled varies among enrolled persons and persons enrolled at the same location may have similar characteristics, TLS data should be analyzed using sample-survey methods in order to make inference to the population of persons attending these locations.

## Description

Most analyses of TLS data have regarded the persons sampled as an independent, identically distributed sample chosen with equal probability from an infinite population. These assumptions are appropriate for a simple random sample; we call the corresponding analysis a naive analysis. If frequency of attendance at locations in the ► [sampling frame](#) varies (resulting in variation among sampling probabilities) and is associated with an outcome of interest, point estimates from such an analysis will be biased. In addition, clustering of persons with similar characteristics and variation among sampling probabilities causes the naïve analysis to underestimate standard errors of estimates.

We assume that the population of interest is the population of persons attending locations. We obtain a sample using a multistage sampling procedure. The first stage sampling frame consists of all locations (identified using formative research, also known as venues) at which enough persons from the population of interest can be found on some day during a specified duration (such as 4 h) to make recruitment worthwhile. This sampling frame can be redefined periodically. At the start of each specified calendar period (such as each month), investigators choose a random sample of locations (a simple random sample without replacement) of a specified size from this sampling frame. For each location selected, the investigators choose a day and then a time period for sampling at that location. Finally, the

investigators count the number of persons seen at the location who appear to meet the eligibility criteria and obtain data from a sample of those persons (MacKellar et al., 2007).

To make inference to the population of persons attending these locations, the appropriate analysis is that of a multistage cluster sample survey. The first stage is the locations (the primary sampling units, PSUs). If we group the sampling events at a location, the sampling of persons within the PSUs is a second stage. The probability of being sampled depends on many factors, including whether a person goes to any location in the sampling frame, whether he goes to such a location when sampling takes place there, and the proportion of eligible persons sampled at that location. We define weights which approximately reflect the differential probability of enrollment in the study; we include the effect of all factors that affect the sampling probability in these weights, so that the data can be analyzed as a two-stage rather than a three-stage sample (software for analyzing a two-stage sample is more readily available than for a three-stage sample). Using these weights and the location from which a person was enrolled (the cluster) in an analysis accounts for the effects of variation among the weights and of clustering on point estimates and the standard errors of these estimates (Karon & Wejnert, 2012).

In a sample-survey analysis, a weight  $w_j$ , the inverse of the probability of being sampled, is defined for each person. Let  $x_j$  and  $w_j$  be the observed quantity of interest and the weight, respectively, for the  $j$ th person in the sample. Then the estimated mean value in the sample is the sum of the  $w_j x_j$  divided by the sum of the weights  $w_j$ . Note that the mean is unchanged if all the weights are multiplied by a constant. The variance of an estimate based on a sample survey is a sum of the variances for each PSU. Each of these variances is an expression times  $1 - \text{fpc}$ , where  $\text{fpc}$  (the finite population correction factor) is the probability that the PSU was sampled. Without this correction, the estimated variance is too large if a substantial proportion of the PSUs are sampled.

The sampling probability  $p$  for a person enrolled in a TLS is similar to the cumulative probability from a negative binomial distribution, as shown by Eq. 1 below. Let  $s_i$  be the probability that the person is enrolled during the  $i^{\text{th}}$  sampling event, given the person's behavior (how often the person attends locations in the sampling frame, which location the person attends, and when he attends these locations). Then,

$$p = s_1 + (1 - s_1)s_2 + (1 - s_1)(1 - s_2)s_3 + \dots \quad (1)$$

That is, the person could be enrolled during the first sampling event, or not enrolled during that event but enrolled during the second, or not enrolled during the first two events but enrolled during the third, etc. If the  $s_i$  are constant, the summands of Eq. 1 are the successive terms of the negative binomial probability distribution.

The probability that a person is sampled during the  $i$ th sampling event is the product of four probabilities:  $g_i$ , the probability that a person attends any location in the sampling frame on the day when that sampling event takes place;  $a_i$ , the probability of attending the location at which sampling takes place given that the person attends some venue on that day;  $b_i$ , the proportion of potential venue sampling time on that day during which sampling took place; and  $f_i$ , the sampling fraction at that sampling event. Thus,

$$s_i = g_i a_i b_i f_i \quad (2)$$

If  $f_i$  is computed as the number who participate divided by the number believed eligible, and if we do not stratify the response probability and the sampling fraction by personal characteristics, then  $f_i$  includes the effect of nonresponse.

To obtain a simple approximation to a person's sampling probability, we assume that, for a person in the sample,  $s_i$  is constant and equal to  $s$  ( $s$  may vary among persons). This will be true if, for that person,  $g_i$ ,  $b_i$ , and the  $a_i$  are constant during the study period (i.e., the person's attendance pattern is unchanged during the study), and the sampling fractions are equal at all locations the person

attended. Assume that there are  $k$  sampling events. Since the probability of not being sampled at each event is  $1 - s$ , the probability of being sampled is:

$$p = 1 - (1 - s)^k = ks - k(k - 1)s^2/2 + \dots$$

using the power expansion of  $(1 + x)^k$ ; the omitted terms contain terms of at least order  $k^3 s^3$ . Because  $g_i$  and  $b_i$  are at most 1, because sampling fractions will be substantially less than 1 at the larger locations at which many persons can be sampled, and because  $a_i$  will be small if the venue sampling frame is large enough, we expect the  $s_i$  to be much less than 1. If the number of sampling events is not too large,  $ks$  is small, and the remaining terms are of order  $(ks)^2$  or smaller. Because the higher order terms are small compared to  $ks$ ,  $p$  is approximately equal to  $ks$ , and  $p$  is approximately proportional to  $s$ , provided that the person attends locations in the sampling frame throughout the study period.

The information necessary to obtain approximate estimates of  $a$  and  $g$  can be obtained in interviewing a person who is sampled. The value of  $b$  for the day on which a person is sampled is known. The mean or overall sampling fraction at a location is computed from the numbers sampled and estimated to be eligible at each sampling event. If sampling fractions at larger locations remain small near the end of the study,  $ks$  will be small enough that  $p$  is approximately proportional to  $s$ . Therefore, we use  $1/s$  as our weight,  $w_j$ .

The variance of an estimate from a sample with unequal probabilities of sampling or clustering compared to that from a simple random sample (SRS) from an infinitely large population is quantified as the *design effect (DE)*, defined as the variance computed based on the sampling design, divided by the variance that would be obtained if the sample were from a SRS. Assume we want to estimate a proportion  $p$ . The denominator of the DE can be calculated as  $p(1 - p)/n$  if we our observed value is  $p$  from a sample of size  $n$  and ignore the finite population correction factor. If all weights are equal, then DE is approximately  $1 + (m - 1)\rho$  where  $m$  is the mean

cluster size and  $\rho$  is the *intracluster* (or *intra-class*) *correlation coefficient* (ICC) (Kish, 1965). The ICC measures the variability among clusters compared to the variability in the entire population. The ICC is 1 if  $\rho$  is 0 or 1 within each cluster; in this case, the DE is approximately  $m$ . If  $\rho$  is constant across clusters, then the ICC is negative and is equal to  $-1/(n - 1)$  if all clusters are of size  $n$  (this is the minimum value for the ICC; in this case, the DE is approximately 0 – the effective sample size is the number of clusters). Zou and Donner (2004) give three estimators (one of which is a kappa-type estimator) of the ICC and their variances for binary data  $x$  under the hypotheses that the probability  $\Pr(x = 1)$  is constant across clusters, and that observations from different clusters are independent.

Using our proposed weights to analyze data on MSM collected by the Centers for Disease Control and Prevention (CDC) using TLS illustrates the effects of weighting, variation among the weights, and clustering on prevalence estimates, on estimates of the association between prevalence and a risk factor, and on the standard errors of estimates (Karon & Wejnert, 2012). This analysis estimates the proportions with HIV, with hepatitis B, and reporting unprotected anal intercourse (UAI) within the last 6 months in four of the six metropolitan areas in which the study was conducted. The analysis considers weights both including and excluding the sampling fractions at the locations at which men were recruited. For most analyses, weighting had at most modest effects on the estimates of prevalence (clustering has no effect on these estimates) but substantial effects on the observed DEs (for weighted analyses of the prevalence of HIV, observed DEs were 3.5–5.2). The observed DEs for these prevalences are greater than those predicted from the kappa-like DE estimator. The analysis also uses logistic regression to evaluate UAI as a risk factor for HIV and hepatitis B in two metropolitan areas. Again, observed DEs for clustered weighted analyses are substantially greater than 1. With hepatitis B as the outcome in one metropolitan area, the  $p$ -values for the

naïve and clustered unweighted analyses are small (at most 0.01) but are at least 0.12 for the clustered weighted analyses.

## Discussion

Special methods are required for sampling hard-to-reach populations (those for which there is neither a list of the population members nor a list of where they can be found). Kalton (2009) reviewed methods for sampling these populations. The most popular methods for sampling populations such as men who have sex with men and injection drug users are time-location sampling, respondent-driven sampling, and snowball sampling. Two recent reviews contain substantial discussions of time-location and respondent-driven sampling (Marpsat & Razafindratsima, 2010; Semaan, 2010).

Reports of TLS data analyses should clearly state the population to which the estimates apply. If the data are analyzed as a simple random sample, the results apply to a population resembling the persons actually sampled, rather than the population from which the sampled persons are drawn. If only the sampling fractions  $f$  in equation (1) are used to compute weights for prevalence (frequency of attendance at venues and the proportion of potential time used in sampling [ $g$ ,  $a$ , and  $b$  in Eq. 1] are not used), or if the analysis is unweighted but the sampling fractions are approximately constant, then prevalence point estimates refer to the population of visits to the locations in the sampling frame, ignoring the fact that there is variation in the frequency with which persons appear at those locations and the sample is biased toward more frequent attendees. Unless the possibility of clustering within locations is accounted for, the confidence interval for a prevalence estimate from such an analysis may be too narrow, provided that we can ignore the finite population correction factor for the sampling of locations (the primary sampling units). Analyses of the CDC TLS study of MSM show that using weights and accounting for clustering can yield point estimates that are somewhat different from those obtained and standard error estimates that

are substantially different from those obtained if the data are regarded as arising from a simple random sample.

Our proposed weights are proportional to the inverses of estimated sampling probabilities for the study. These estimated probabilities rely on assumptions that would be hard to verify using self-reported data, resulting in weights that can only be approximations to the correct weights. CDC is currently working with consultants to develop weights based on the stages of sampling (selection of locations from the sampling frame, selection of the day and period when sampling will occur at a location, selection of persons attending the location, and frequency with which a sampled person attends locations); these weights may be closer approximations to correct weights based on the probabilities that persons are sampled.

To evaluate the potential for biased estimates as a result of incorrect weights, the data analysis should include an evaluation of associations between weights and both outcomes of interest and important covariates. If there are clear associations, appropriate care should be used in drawing conclusions from the study. More robust analyses (such as using trimmed weights) should be considered if some persons are assigned relatively large weights (Karon & Wejnert, 2012). Because weights are approximations to the correct weights, the true standard errors of estimates are likely to be larger than the computed standard errors. As a result of the possible bias in a point estimate and underestimation of its standard error, conclusions from analyses of TLS data should be made cautiously. For example, an analysis with a p-value not very much less than the nominal significance level (such as 0.05) or a confidence interval excluding but not very far from the null value should be considered to give at best weak evidence for a significant result.

Sample sizes for a TLS must take into account possible large design effects. These design effects probably cannot be estimated in advance; analyses of the CDC MSM TLS data show that design effects may be large. Variation in the weights increases the design effects. To our

knowledge, the importance of DEs in the analysis of TLS data has rarely been considered.

The primary alternative to TLS is respondent-driven sampling (RDS) (Heckathorn, 1997). Two studies in Brazil found substantial differences between the estimates from these two sampling methods, possibly as a result of yielding samples with very different distributions of a characteristic that may be associated with an outcome of interest (Kendall et al., 2008; McKenzie & Mistiaen, 2009). Inference from TLS is limited to the population of persons attending locations in the sampling frame; a report on a TLS study should summarize characteristics of locations at which no persons could be recruited and assess whether individuals attending these locations are systematically different from individuals who can be recruited at reachable locations to assess possible differences between the reachable population of location attendees and the complete population of location attendees. TLS is also likely to be slower and more expensive than RDS (Kendall et al., 2008). We have outlined the assumptions required to compute valid analysis weights for a sample-survey analysis of TLS data. Theory for RDS depends on assumptions concerning respondents' knowledge of their network, the way respondents recruit others, the character of the network, and the recruitment process (Gile & Handcock, 2010; Volz & Heckathorn, 2008). See Semaan (2010) for further discussion of software and evaluation. Two studies have shown that current RDS theory may not estimate uncertainty properly (Geol & Salganik, 2010; Wejnert, 2009). Current RDS theory does not cover fitting linear and logistic regression models.

The choice between TLS and RDS should consider ease of implementation, time needed to complete the study, cost of the study, coverage of the population of interest, assumptions required for the analysis to be valid, data required for the analysis, and difficulty and feasibility in doing the analysis. Compared to RDS, a TLS analysis based on sample-survey methods has the advantages of a firmer theoretical basis, the ability to fit models, and the use of widely



available software. Both methods have design effects greater than one; further research is needed to determine which, if either, method has a consistently smaller design effect than the other.

## Cross-References

- ▶ [Representative Sample](#)
- ▶ [Sample Survey](#)
- ▶ [Sampling Error](#)

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## Time–Pressure Illusion

- ▶ [Time Poverty Thresholds in the USA](#)

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## Time-Related Quality of Life

- ▶ [Temporal Satisfaction with Life Scale \(TSWLS\)](#)

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## Time-Space Sampling

- ▶ [Time-Location Sampling](#)

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## Tipping Points

Ren Thomas  
 Department of Geography, Planning, and  
 International Development Studies, University of  
 Amsterdam, Amsterdam, The Netherlands

## Synonyms

[Points of no return](#); [Thresholds](#); [Trigger events](#);  
[Turning points](#)

## Definition

Tipping points are moments in time signaling periods of rapid and intense change in behaviors,

perceptions, actions, or conditions. Depending on the context, these points in time can mark irreversible changes (as in the natural sciences or complexity theory), or those that are so significant that they could be said to mark paradigm shifts (as in political regime change).

## Description

In the bestselling book *The Tipping Point: How Little Things Can Make a Big Difference* (2000), Malcolm Gladwell defined a tipping point as “the moment of critical mass, the threshold, the boiling point.” Gladwell explored the diffusion of ideas, products, and messages, proposing that they can spread “infectiously” under three conditions: they are supported and spread through people with specific social connections (categorized as connectors, mavens, or salesmen); they use language that sticks in the memory; and the social context facilitates their use or adoption. In Gladwell’s case studies, which include the surge in popularity of Hush Puppies shoes in the mid-1990s, the adoption of hybrid corn by Iowa farmers in the 1930s, and a recent drop in the New York City crime rate, small changes turned out to have major effects which then catalyzed rapid change.

Although Gladwell popularized the use of the phrase, the concept of the tipping point predates his work by several decades and crosses disciplinary boundaries. The concept can be found in fields as diverse as physics, climatology (Lenton, 2012; Russill, 2008), and sociology (e.g., Giles, Cataldo & Gatlin, 1975; Meyerson & Banfield, 1955; Schwab & Marsh, 1980). In physics, a tipping point is “the point at which an object is displaced from a state of stable equilibrium into a new equilibrium state qualitatively dissimilar from the first” (The Free Dictionary). Several iterations of this definition can be found in other scientific fields: in a study of abrupt changes in arctic climates, Lenton (2012, 11) wrote that “the tipping point (or threshold) is the corresponding critical point—in forcing and a feature of the system—at which the future state of the system is

qualitatively altered.” Urry (2008, 244) cites complexity theory: “If a system passes a particular threshold with minor changes in the controlling variables, switches may occur and the emergent properties turn or tip over.” In epidemiology, epidemics such as influenza start slowly with a few cases, tipping at a certain point then rising sharply as the majority of cases are recorded and falling away as the few remaining cases are recorded. While scholars seem to agree that tipping points signal periods of significant change, there is disagreement on whether the changes mark points of no return; whether the tipping point is indeed “the time at which a change or an effect cannot be stopped” (Cambridge Dictionaries). Lenton (2012) noted that not all climate tipping points are bifurcations leading to irreversible change; in the social sciences, tipping points are associated with major sociopolitical or paradigm shifts which can be enduring, but are hardly irreversible.

Some of the earliest uses of the term “tipping point” in the social sciences were in sociological research (e.g., Meyerson & Banfield, 1955), where the tipping point concept became established as a way in which to frame discourse on residential concentrations (Schwab & Marsh, 1980) and school desegregation based on race (Giles et al., 1975). Researchers examined whether there was a point at which the percentage of African American residents in a neighborhood, or school children in desegregated schools, had increased enough to affect increased out-migration of whites. According to Schwab and March (1980, 386), “The reluctance of whites to share residential areas is reflected in such popular terms for neighborhood change as ‘block busting’, ‘invasion’, ‘tipping’, ‘resistance’, and ‘encroachment.’” The tipping point model of neighborhood change was vigorously challenged; Schwab and Marsh (1980) and Giles et al. (1975) found that the model did not operate uniformly across neighborhoods or over time and that out-migration did not increase above a certain threshold. Although there was a change in concentration of racial groups in the neighborhoods they studied, the

pattern did not follow the epidemiological model of rapid change above a certain threshold.

Researchers have also used the tipping point concept to study rapidly changing social events such as political regime change (Pelling & Dill, 2010) and shifts in ► [public opinion](#) or perception (Bentley & Ormerod, 2010; Russill, 2008; Wood, 2006). In many cases, researchers examine historical events to try to determine what specific actors, policies, or agents caused rapid change: in Bentley and Ormerod's exploration of public knowledge on the avian flu and swine flu epidemics, the authors analyzed real-time online data to examine the search intensity of these topics on the internet. They found that a specific political event "brought public awareness past the tipping point" (2010, 485). Pelling and Dill (2010) examined whether natural disasters had determined the direction and significance of political change. They wrote that in any political regime the balance between citizens and the state contributes to a sort of social contract; at critical historical moments such as the post-disaster period (potential tipping points), regime instability allows the terms of the social contract to be tested and renegotiated. Similarly, Wood (2006) tried to determine whether a specific political settlement between the tobacco industry and several US states was a significant enough event to be considered the tipping point (or "focusing event") that forced smoking into the public agenda. Urry (2008) discussed several small developments in governance and technology that might topple the current car-dominant paradigm into one of "post-automobility."

The definition of tipping points in the sociopolitical context, then, is far more subjective than in the scientific context. Tomalty (2009) describes a tipping point in urban planning in the early twentieth century, when declining ► [public health](#), increased ► [poverty](#), and unsanitary building conditions led to planning initiatives such as ► [zoning](#) and building regulations. However, when he compares this period of intense activity to the current emphasis on sustainable ► [community planning](#), he writes that "the movement has gradually gathered

momentum as the public exerts pressure on elected officials and administrators to adopt policies and plans that will promote economic and social development, while respecting environmental limits" (Tomalty, 2009, 15). He does not distinguish between a point beyond which rapid policy shift takes place and a gradual increase in awareness over time. However, Wood (2006) distinguishes between "triggering" events (those with the potential to catapult an issue from relative obscurity on the systemic agenda to a place of prominence on the institutional agenda) and "focusing events" (large-scale, dramatic events intuitively recognized as a potential catalyst for major policy action, which upset the balance of power and continue to affect policy for many years). One characteristic of these focusing events or tipping points is that they become known to policymakers and the public almost simultaneously; Wood made the case that public and policy awareness of smoking (and its health and quality of life effects), on the other hand, had been gradually rising for decades. Russill (2008) traced the use of the tipping point concept in discussions of climate change and suggested that the use of this concept among high-profile individuals "signals a broader trend towards epidemiological models of explanation likely to activate public health styles of intervention for addressing climate change impacts" (2008, 133). He wrote that the tipping point is an example of a set of metaphors, images, and cultural references that evoke a sense of viral contagion. Reformulating problems as epidemics to facilitate solutions and using epidemiological inquiry in the narrative form helped popularize public health perspectives in the media (e.g., Berton Rouche, Richard Preston, and Malcolm Gladwell, all staff writers for *New Yorker* magazine). Examples include recasting obesity as a disease in the 1980s and cigarette smoking as an addiction in the 1990s (Wood, 2006). In Russill's view, the use of the tipping point concept "signals the potential relevance of epidemiological reasoning in conditions of urgency and uncertainty" (2008, 140); in climate change discussions, he believes that increasing use of

the term among representatives of public agencies has shifted concern from erratic weather patterns to human health and quality of life dimensions.

Although tipping points evoke the imagery of rapid and irreversible change in contexts of national or international significance, the term is sometimes used to describe much smaller, more gradual, or localized shifts. For example, Mabry, Olster, Morgan and Abrams (2008) argued that our ability to understand the causes of preventable common diseases has reached a threshold beyond which achieving optimal health and ► [well-being](#) is inevitable; Ramirez (2006) used the tipping concept to describe the increase in consumers' tastes for healthy foods.

The power of the tipping point as a metaphor is the intrinsic notion that ideas, concepts, and behaviors can take hold within a very small group of people; if these are the "right" people, broadly connected to others in a variety of fields and at different spheres of influence, they can catalyze major change. In scientific terminology, "a key feature of complexity thinking is that, although there are long-term irreversibilities, nothing is fixed forever..." (Urry, 2008, 345). Understanding this can help professionals in many fields spread targeted concepts or behaviors, such as encouraging drug addicts to exchange clean needles, increasing awareness of diabetes, or politicizing climate change to affect action. Of course, the concept can also be used by advertisers, political figures, and social media to sell products or advance ideas that may or may not improve quality of life or be in the ► [public interest](#). In Gladwell's words, "Tipping Points are a reaffirmation of the potential for change and the power of intelligent action. Look at the world around you. It may seem like an immovable, implacable place. It is not. With the slightest push—in just the right place—it can be tipped" (2000, 259).

## Cross-References

► [Social Change](#)

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## Tiredness

► [Fatigue](#)

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## TLS

### ► [Time-Location Sampling](#)

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## Tobit Models

Oriol Cunillera  
Health Services Research Unit, IMIM-Hospital  
del Mar, Barcelona, Spain

### Synonyms

[Heckit, sample selection models \(type II Tobit\);  
Normal censored data, regression model](#)

### Definition

Family of statistical regression models that describe the relationship between censored or truncated continuous dependent variables and some independent variables.

### Description

The **Tobit models** are a family of statistical regression models that describe the relationship between a censored (or truncated, in an even broader sense of this family) continuous dependent variable  $y_i$  and a vector of independent variables  $x_i$ . The model was originally proposed by James Tobin (1958) to model nonnegative continuous variables with several observations taking value 0 (household expenditure).

Generally, the Tobit models assume there is a latent continuous variable  $y_i^*$ , which has not been observed over its entire range. It can happen due to truncation or censoring.

When truncation occurs, individuals on certain range of the variable  $y_i^*$  are not included in the dataset. In the database we only observe individuals taking values on the variable in

a restricted range; individuals out of that range have been excluded of the dataset or in fact do not exist.

When censoring occurs, there is no exclusion of individuals in certain ranges of  $y_i^*$ , but  $y_i^*$  is not observed over its entire range anyway; instead of observing this variable, we only observe  $y_i^*$ , which is a censored observation of  $y_i^*$ . Unlike in the case of truncation, the variable takes (or hypothetically would take) values all over its entire range in the individuals of the database; however, for some ranges, it is not correctly observed, taking a different given value. For example, measuring heights with a 2-m tape measure could lead to individuals higher than 2 m being censored to that value; taller individuals would be in the database but all we know is they are censored (so their “2” value indicates they are at least 2 m tall).

Tobit models carry the idea of the censored normal distribution into regression models, assuming that this latent variable  $y_i^*$  linearly depends on  $x_i$  via a parameter (vector)  $\beta$ .

### Tobit in HRQoL

In the area of quality of life, Tobit models are used to model measures suffering from ► [ceiling effect](#) (proportion of individuals reporting the best health status describable by the instrument), usually in order to model preference-based indexes, such as EQ-5D, HUI, or 15D. Utility scores are anchored in values 0 (corresponding to death) and 1 (perfect health). These indexes tend to present a common problem of ceiling effect at 1 in certain populations (Guo et al., 2008; Luo et al., 2009; Moock & Kohlmann, 2008; Vainiola et al., 2010), which is especially marked in general population, where, for example, the EQ-5D index shows ceiling effects around 47–65 % (Bharmal & Thomas, 2006; Johnson & Pickard, 2000; McDowell, 2006; Petrou & Hockley, 2005). The presence of a relevant ceiling effect supposes the violation of the normality assumption ordinary least squares models are based on, which has motivated the use of different alternatives, such as Tobit, two-part, or censored least absolute

**Tobit Models,**

**Fig. 1** Formulation and likelihood function of Type I Tobit model

$$y_i^* = \beta x_i + u_i$$

$$y_i = \begin{cases} a & \text{if } y_i^* \leq l \\ y_i^* & \text{if } l < y_i^* < r \\ b & \text{if } y_i^* \geq r \end{cases}$$

$$L = \prod_{y_i = a} \Phi\left(\frac{l - \beta' x_i}{\sigma}\right) \cdot \prod_{a < y_i < b} \frac{1}{\sigma} \varphi\left(\frac{y_i - \beta' x_i}{\sigma}\right) \cdot \prod_{y_i = b} \Phi\left(\frac{\beta' x_i - r}{\sigma}\right)$$

deviations (CLAD) models. Tobit models assume these indexes are a right-censored observation of quality of life at 1.

Although Tobit models are applicable to all kind of censored data, they have been classically developed for left-censored data. In the area of quality of life, though, Tobit models are, in most cases, applied for right-censored data (ceiling effect).

**Types of Tobit**

Depending on the type of limited data (censored or truncated) and according to similarities in the likelihood function, we can define at least 5 different types of Tobit models.

**Type I Tobit**

In 1958, Tobin presented a model considering a limited dependent variable with a lower limit  $L$  that has a concentration of individuals in the limiting point (left censored, with values for the censored individuals equal to the limiting point,  $a = l$ ), with residuals  $u_i$  assumed to be normally distributed. Despite this, further work has defined the specific case of the data Tobin used in his article (left censored at zero,  $a = l = 0$ ,  $u_i \sim N(0, \sigma^2)$ ) as the standard normal Tobit model (or type 1 Tobit), which simplifies a lot all formulation, but type I Tobit models are widespreadly conceived in a more general way as shown in Fig. 1, where  $y^*$  is assumed to be a latent partially observed variable that can take values beyond the limiting points. Under the assumption of normality and homoscedasticity,

its likelihood function is shown in the same figure, whose Hessian has been proven, with some reparametrization, to be negative definite (Olsen, 1978; Iwata, 1993). The parameters  $\beta$  of the model can then be obtained by maximum likelihood. This estimation has been proven to be consistent (Amemiya, 1973).  $\beta$ s must be interpreted as the marginal effect (effect on the conditional mean of the dependent variable of a change in one of the regressors) of  $\tilde{x}$  on the latent unobserved variable and so have a direct effect on the observed variable as well as on the probability of being censored.

Type I Tobit is the model usually used for health measures with presence of ceiling effect.

**Type II to V Tobits**

Although other types of Tobit models have not received much attention in the quality of life area, they can easily be found in econometrics. Apart from type II Tobit (aka Heckit), which can be a valid alternative to type I Tobit for variables with ceiling effect as a kind of two-part model, other types of Tobit models generally appear too complex for usual purposes in quality of life research.

Following the summary of the different types of Tobit models given by Amemiya (1984), these can be summarized in the attached table, III to V responding to their classical presentation in the case of left censoring at 0, and where the number and the type (C = Censored, B = Binary) of dependent variables vary across Tobit types. Type II Tobit presents a censored continuous



$$\frac{\partial E[y_i | x_i]}{\partial x_{ij}} = \beta_j \cdot \left[ \Phi\left(\frac{r - x_i' \beta}{\sigma}\right) - \Phi\left(\frac{l - x_i' \beta}{\sigma}\right) + \frac{l - a}{\sigma} \varphi\left(\frac{l - x_i' \beta}{\sigma}\right) - \frac{r - b}{\sigma} \varphi\left(\frac{r - x_i' \beta}{\sigma}\right) \right]$$

**Tobit Models, Fig. 2** Marginal effect on the observed variable in the Type I Tobit model

$$E[y_i | x_i] = a \cdot \Phi\left(\frac{l - x_i' \beta}{\sigma}\right) + x_i' \beta \cdot \left[ \Phi\left(\frac{r - x_i' \beta}{\sigma}\right) - \Phi\left(\frac{l - x_i' \beta}{\sigma}\right) \right] + \sigma \cdot \left[ \varphi\left(\frac{l - x_i' \beta}{\sigma}\right) - \varphi\left(\frac{r - x_i' \beta}{\sigma}\right) \right] + b \cdot \Phi\left(\frac{x_i' \beta - r}{\sigma}\right)$$

**Tobit Models,**

**Fig. 3** Expected value of the observed variable in the Type I Tobit model

variable for which its censoring is modeled separately as a binary variable. Type III Tobit models two variables, adding to type I Tobit a second variable observed censored for the same cases as for the first variable. Types IV and V add a third variable in more complex relations.

More detail on validity of these models and their likelihood functions can be found in Schnedler (2005).

**From Latent to Observed**

For many psychometric scales with presence of ceiling effect, it would be acceptable to use a type I Tobit model and assume that the underlying latent variable represents real quality of life. When using Tobit models to model utilities, this is not acceptable as researcher is interested in the interpretation as utilities (0 and 1 representing death and perfect health, respectively). In that case, the main interest is on estimating the marginal effect of  $\tilde{x}$  on the observed variable  $y$ , more than the obtained  $\tilde{\beta}$  coefficient of the model on the latent variable  $y^*$ . This is important when the goal is to interpret results on utilities or on ► **QALYs** that can be derived from these indexes, not on quality of life in a more general sense. Estimations on latent variables of models for censored variables cannot be interpreted as utilities and cannot be used to derive ► **QALYs**.

Different approaches have been proposed to transform estimations on the latent variable into estimations on the observed variable, for either marginal effects of explanatory variables or the expected value of the dependent variable.

The exact marginal effect of  $\tilde{x}$  on the observed variable  $y$  can be seen in Fig. 2. This theoretical exact marginal effect, though, is not one-dimensional for each  $\beta$ ; by applying this formula, one estimation of the effect for each variable is obtained for each individual. Different approaches can be carried out to obtain a unique estimation for each explanatory variable.

Although the mean of these individual effects is recommended as the estimation of the marginal effect (Greene 1997), it is far more frequent to evaluate this function at the mean values of  $\tilde{x}$ .

In some articles (Clarke, Gray, & Holman, 2002; Hasan, Subhani, & Osman, 2011), marginal effects on the dependent variable have been obtained by multiplying the coefficients on the latent variable by the probability of a non-limit observation. In the case of left censoring at zero  $l = 0$  with  $l = a$ , the individual marginal effect is simplified to  $\beta$  multiplied by the individual probability (given the covariates) of having a latent value beyond zero; McDonald and Moffitt (1980) omitted in their notation that “individual” nature of this non-limit probability, which led to Clarke’s extrapolation and establishment of this rough procedure, which can be a simple approximation but it is not theoretically justified Greene (1999).

In order to obtain estimations of the expected values for the observed variable, some researchers aggregate the expected values for the latent variable beyond the limit points to the limit values (i.e., expected values for the EQ5D index above the limiting point below 1 get value 1). Although intuitively sensible, it



Type	Dependent variables			Likelihood	Formulae
	$y_1$	$y_2$	$y_3$		
1	C	-	-	$\prod_{cens} P(y_1 \text{ censored}) \cdot \prod_{obs} P(y_1)$	$y_{1i}^* = \beta_1 x_{1i} + u_{1i}$ $y_{1i} = \begin{cases} a & \text{if } y_{1i}^* \leq 0 \\ y_{1i}^* & \text{if } y_{1i}^* > 0 \end{cases}$
2	B	C	-	$\prod_{cens} P(y_1 \text{ censored}) \cdot \prod_{obs} P(y_1 \text{ observed}, y_2)$	$y_{1i}^* = \beta_1 x_{1i} + u_{1i}$ $y_{2i}^* = \beta_2 x_{2i} + u_{2i}$ $y_{2i} = \begin{cases} a & \text{if } y_{1i}^* \leq 0 \\ y_{2i}^* & \text{if } y_{1i}^* > 0 \end{cases}$
3	C	C	-	$\prod_{cens} P(y_1 \text{ censored}) \cdot \prod_{obs} P(y_1, y_2)$	$y_{1i}^* = \beta_1 x_{1i} + u_{1i}$ $y_{2i}^* = \beta_2 x_{2i} + u_{2i}$ $y_{1i} = \begin{cases} y_{1i}^* & \text{if } y_{1i}^* > 0 \\ 0 & \text{if } y_{1i}^* \leq 0 \end{cases}$ $y_{2i} = \begin{cases} y_{2i}^* & \text{if } y_{1i}^* > 0 \\ 0 & \text{if } y_{1i}^* \leq 0 \end{cases}$
4	C	C	C	$\prod_{cens} P(y_1 \text{ censored}, y_2) \cdot \prod_{obs} P(y_1, y_2)$	$y_{1i}^* = \beta_1 x_{1i} + u_{1i}$ $y_{2i}^* = \beta_2 x_{2i} + u_{2i}$ $y_{3i}^* = \beta_3 x_{3i} + u_{3i}$ $y_{1i} = \begin{cases} y_{1i}^* & \text{if } y_{1i}^* > 0 \\ 0 & \text{if } y_{1i}^* \leq 0 \end{cases}$ $y_{2i} = \begin{cases} y_{2i}^* & \text{if } y_{1i}^* > 0 \\ 0 & \text{if } y_{1i}^* \leq 0 \end{cases}$ $y_{3i} = \begin{cases} 0 & \text{if } y_{1i}^* > 0 \\ y_{3i}^* & \text{if } y_{1i}^* \leq 0 \end{cases}$
5	B	C	C	$\prod_{cens} P(y_1 \text{ censored}, y_2) \cdot \prod_{obs} P(y_1 \text{ observed}, y_2)$	$y_{1i}^* = \beta_1 x_{1i} + u_{1i}$ $y_{2i}^* = \beta_2 x_{2i} + u_{2i}$ $y_{3i}^* = \beta_3 x_{3i} + u_{3i}$ $y_{1i} = \begin{cases} y_{1i}^* & \text{if } y_{1i}^* > 0 \\ 0 & \text{if } y_{1i}^* \leq 0 \end{cases}$ $y_{2i} = \begin{cases} 0 & \text{if } y_{1i}^* \leq 0 \\ y_{2i}^* & \text{if } y_{1i}^* > 0 \end{cases}$ $y_{3i} = \begin{cases} 0 & \text{if } y_{1i}^* > 0 \\ y_{3i}^* & \text{if } y_{1i}^* \leq 0 \end{cases}$

Tobit Models, Fig. 4 Amemiya's summary of the different types of Tobit models

ignores the construction of the model, in which the expected value of the latent variable is implicitly conditioned to be observed.

With the estimation obtained from the model, being  $x'_i\beta$  the expected value for the latent variable, the expected value for the observed variable is correctly calculated by the formula in Fig. 3.

### Assumptions

Standard Tobit assumptions hold on normality and homoscedasticity of residuals, and Tobit models have shown poor robustness to their violation.

The Tobit models have been found to be non-consistent and inefficient in the case of heteroscedasticity (Arabmazar & Schmidt, 1981; Hurd, 1979; Maddala & Nelson, 1975). In this case, CLAD models are generally accepted as a robust alternative to regress censored variables (Clarke et al., 2002; Payakachat et al., 2009; Petrou & Kupek, 2009; Pullenayegum et al., 2010; Saarni et al., 2006; Sullivan & Ghushchyan 2005, 2006). While CLAD models present a valid alternative to type I Tobit models, they do not allow any exact post-estimation on observed variables; approximations used for Tobit for that objective, mentioned in last section, have been used in the literature for CLAD models as well (Clarke et al., 2002; Sullivan & Ghushchyan, 2006); however, these approximations have no basis to be applied with these models, so the use of CLAD models for utilities/► QALYs should be carefully studied (Fig. 4).

### Cross-References

- [Ceiling Effect](#)
- [Quality Adjusted Life Years \(QALY\)](#)
- [Utility](#)

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## Tolerance

Allison Carter

Department of Sociology and Anthropology,  
Rowan University, Glassboro, NJ, USA

### Definition

Tolerance, the attitude, and toleration, the practice, are associated with liberal philosophies of inclusion (Brown, 2006, 13). While tolerance does not necessarily imply complete acceptance or assimilation into the social order, it does imply the refusal of complete rejection (p. 27).

Tolerance can be practiced by governments toward their citizenry, by individuals toward others' diverse modalities of worship and lifestyle, and by citizens toward the abusive actions taken by their government. As part of liberal discourse, tolerance is associated with freedom from bigotry and impartiality (p. 25). For neo-Marxists such as Marcuse, tolerance as practiced has turned into its opposite and is associated with a repressive society.

### Description

Two exemplars of the liberal espousal of tolerance are Jeffrey Alexander and Gustav Niebuhr. Alexander sees the solidarity of the civil sphere of society “as exhibited and sustained by public opinion, deep cultural codes, distinctive organizations – legal, journalistic and associational—and such historically specific interactional practices as civility, criticism, and mutual respect” (Alexander, 2006, p. 31). Alexander believes that justice in democratic societies derives from the civil sphere's “ambition” for universality, inclusiveness, and a balance between collective obligation and individual autonomy (p. 34).

Gustav Niebuhr, writing from a liberal, religious perspective, sees tolerance as a beginning. “Simply tolerating people is not likely to make you know them any better” (Niebuhr, 2008, p. 43). Despite the limits of merely coexisting in the same space, the interactions that result can lead to knowledge and hopefully mutual appreciation. “To reach beyond tolerance is to open oneself to getting to know others, to appreciate their role in the world. In that sense, it's an activity that involves recognizing (with some humility) that one can actually learn from others” (p. 28). Niebuhr cites the mainstream Christian (Presbyterian, Methodist, Episcopalian, Congregationalist) churches' repudiation of the doctrine of supersessionism, according to which the New Testament negated the Jewish covenant with God (p. 135). For example, the Alliance of Baptists, splitting from the conservative Southern Baptist Convention, issued a statement acknowledging

that the “dehumanizing attitudes that lead to the events collectively known as the Holocaust did not occur overnight or within the span of a few years, but were the culmination of centuries of Christian teaching and church-sanctioned action directed against the Jews...” (p. 137). In the wake of the events of September 11, 2001, it is Muslims who are subject to the possibility of stereotyping and violence (pp. 5–11). For Niebuhr, what is needed is an “era of conversation”; he advocates the practices of the interfaith movement which brings together Christians, Jews, and Muslims to explore their divergent traditions and develop an appreciation not only for one another’s beliefs, but for the particularity of their own (p. 134).

Tolerance is a feature of political discourse. As a political term tolerance is understood in different ways. It is famously associated with the liberal political philosophy of John Stuart Mill. In *On Liberty*, published in 1859, tolerance is seen as an enlightened response to recognizing and optimizing the potential universal rational character of humanity despite differences in social background and as a means of peaceful and productive coexistence among individuals. Composed of essays by Robert Paul Wolff, Barrington Moore, Jr., and Herbert Marcuse, *A Critique of Pure Tolerance*, published in 1965, sets the terms for subsequent debate over our understanding of tolerance. Wolff addresses the limits of Mill’s individualistic understanding for analyzing complex societies and sees tolerance as the particular virtue of industrial democratic pluralism. Moore echoes Mill’s intellectual concern for the role of toleration in a scientific discourse which aims for truth in the face of the recognition of the political subjectivity of its practitioners. Marcuse sees tolerance in an administered society as a force for repression that has contradicted its original connection to freedom and truth. In this essay, we take up the debate over tolerance that these three authors create as they build on their predecessor, John Stuart Mill.

“The liberty of the individual must be thus far limited; he must not make himself a nuisance to other people. But if he refrains from molesting others in what concerns them, and merely acts

according to his own inclination and judgment in things which concern himself, the same reasons which show that opinion should be free, prove also that he should be allowed, without molestation, to carry his opinions into practice at his own cost. That mankind are not infallible; that their truths, for the most part, are only half-truths; that unity of opinion, unless resulting from the fullest and freest comparison of opposite opinions, is not desirable, and diversity not an evil, but a good, until mankind are much more capable than at present of recognising all sides of the truth, are principles applicable to men’s modes of action, not less than to their opinions” (John Stuart Mill, *On Liberty*).

According to Robert Paul Wolff, “for Mill and the classical libertarian philosophy, tolerance is the readiness to respect the inviolability of the private sphere of the individual’s existence. A man may choose to wear strange clothes, grow a beard (or shave one off, if others wear them), practice unfamiliar religions, deviate from the sexual norms of his community, or in any other way reject the tastes and habits of society. The liberal philosophy demands that society refrain from interfering with his practices, either by legal or by informal social sanctions” (Wolff, 1965, 25–26). Tolerance is conceived of as a relation between individuals and between society and the individual. What begins as “grudging acceptance” hopefully turns into “positive enjoyment of diversity” (p. 26). With the individual as the basic unit of analysis, Mill’s utilitarian philosophy sees society as the “intersection of all the public sphere of the individuals who make it up, . . . a marketplace or battleground in which each individual pursues his private goals to the greatest extent compatible with the analogous pursuits by others.” Wolff continues his analysis by contrasting Mill’s conception with an understanding of tolerance in industrial democracy as based on pluralism rather than individualism.

According to Wolff, tolerance as a political virtue should be considered the linchpin of pluralistic democracy. He contrasts it with other political virtues: equality as the virtue of liberal democracy and fraternity as the virtue of socialist

democracy (p. 4). For Wolff, our understanding of the practice of tolerance should not be centered on psychologies of prejudice but rather on the political dimension of what allows pluralistic democracy to work. Where liberal democracy is centered on the individual citizen, pluralistic democracy emerges out of the modern industrialized state where corporations displace family firms and labor unions and trade associations are organized, mediating the relationship of individuals to the state. With universal adult franchise and the growth of industrial economic institutional frameworks, the scale, and organization of industrial society made the classical democratic paradigm based on the individual obsolete; "intermediating bureaucratic organizations are necessary whether the economy is private and capitalist or public and socialist in structure" (pp. 7–8).

As the United States developed, both federalism which reinforced the "natural ties of tradition and emotion binding each citizen to his [sic] native colony" and the American "penchant," first pointed out by Tocqueville, for joining voluntary associations as a means of addressing social problems contributed to the development of a pluralistic democracy organized around compromises balancing the interests of particular group formations. Neither turning to "God" or "the state" when confronted with social problems, "Americans instinctively form a committee, elect a president and secretary-treasurer, and set about finding a solution on their own" (p. 9). While warning that this image is idealized, Wolff notes that the US Constitution arose as "a series of compromises among competing interests—large states versus small, agriculture versus commerce, slave-holding versus free labor" (p. 8). Politics became understood as a conflict between "more or less permanent groups" and an individual participated in the nation's political life, not as an individual but as a member of one or more of these groups (p. 9).

This was particularly true in the case of religious groups. While many of the colonies had been founded with particular religious

identities, the federal government did not allow for an established religion, and thus diversity of religious perspectives came to be recognized. This legitimation of religious communities eventually extended beyond the Protestant sects to Roman Catholics and Jews. Nineteenth century immigration reinforced this sense of diversity of religious group life as cities became "national enclaves," composed of "Little Italies, Chinatowns, Polish ghettos, German communities," etc. (p. 12). Wolff comments that eventually those descending from the original settlers received their own "identifying acronym, WASP" (p. 13). The USA became "a nation of minorities," where each "'hyphenated' community (Italian-American, Polish-American, etc.) had its own churches," particular religious practices, newspapers in their language of origin, clubs, societies, businessmen's associations, and trade union branches, "all based on the ethnic or religious unity of the local community" (pp. 12–13). And it was as a member of these religious and ethnic groups that immigrants participated in political life, as these groups used their voting populations as a way to gain power, have a say in local politics, and elect members to office (p. 13).

Wolff examines various justifications for pluralism and hence intergroup tolerance. Either it is a necessary evil, a way to balance power such that groups get taken into account based on their voting strength, or a way to transfer loyalty from the group to the state as a whole. The danger of "in-group loyalty" is its "natural accompaniment," "out-group hostility," or intolerance (p. 22). On the other hand, to weaken these "primary ties" is to invite in the specter of "'mass man,' the unaffiliated, faceless member of the lonely crowd" (p. 22). Instead society invites an appreciation of "primary group diversity," so that group members maintain their distinctiveness rather than melt into "a universal brotherhood." The new ideology claims that it is a positive good for society to be constituted by multiplicity, many faiths, races and ethnicities, and lifestyles. Pluralism is necessary for the survival of modern industrial



society, and tolerance is the social psychological orientation that allows it to function.

Much of Wolff's discussion is centered on a critique of John Stuart Mill's notion of political tolerance based on the freedom of the individual. Wolff invokes Emile Durkheim's study of suicide to depict individuals as inherently social and dependent on society to teach them to constrain their impulses and egoistic tendencies which result in higher suicide rates for groups such as Protestants which are based more on individualism than on group affiliation such as Catholics and Jews (pp. 32–33). For Wolff, "the individual is not capable of the self-regulation which Mill's doctrine of liberty presupposes" (p. 34). Yet tolerance poses its own threat to the integrity and survival of traditional allegiances and beliefs. For Wolff, despite its dangers, we cannot retreat from modernity with its promises of liberation to an era of superstition (p. 35). Democratic pluralism maintains a tension between "the union of 'liberal' principles and 'conservative' sociology" (p. 36).

Where classical tolerance was directed to individuals and noninterference in the private spheres of life, the tolerance of democratic pluralism focuses on groups – religious, ethnic, and racial – as the "units of society between which tolerance and mutual acceptance are to be exercised" (p. 37). Mill's arguments about individuals are transformed into "arguments for the right of a social group to differ from other social groups" (p. 37). Wolff cites the "catch-phrase of tolerance, without regard to race, creed, color, or national origin" (p. 40). The ideal of democratic pluralism is to achieve a "healthy balance" between these groups and others based on socioeconomic function, owners, workers, consumers, and different sectors of the economy (pp. 40–41).

Two problems emerge with this theory of democratic pluralism. On the one hand, tolerance of groups seems to coexist with a lack of tolerance for the nonconforming individual; tolerance of many religious groups does not entail tolerance of the individual atheist (p. 37). On the other hand, as it works in practice, democratic

pluralism extends tolerance only to groups which are recognized as legitimate; the conception of acceptable social groups "becomes frozen" and "favors groups in existence against those in process of formation" (p. 41). As new groups emerge – Wolff cites migrant workers, interfaith couples seeking adoption, peace, and poverty movements, but we might also think of Muslim Americans, gays, lesbians, and the transgendered – they may or may not achieve inclusion in the sphere of democratic tolerance. Then pluralistic democracy and tolerance may function as an ideology, ensuring rights for those already legitimated and making it more difficult for members of groups who are excluded (pp. 39, 45).

"The opinion which it is attempted to suppress by authority may possibly be true. Those who desire to suppress it, of course deny its truth; but they are not infallible. They have no authority to decide the question for all mankind, and exclude every other person from the means of judging. To refuse a hearing to an opinion, because they are sure that it is false, is to assume that their certainty is the same thing as absolute certainty. All silencing of discussion is an assumption of infallibility. Its condemnation may be allowed to rest on this common argument, not the worse for being common." (John Stuart Mill, *On Liberty*)

For Barrington Moore, Jr. in "Tolerance and the Scientific Outlook," toleration, as he calls it after Mill, is part of the scientific endeavor, by which he includes literary and philosophical inquiries, in addition to hard science: any inquiry which is governed by sound reasoning and evidence and submits itself to verification. He is arguing against a form of "pseudotolerance" that occurs in academic debate that holds that objective knowledge is impossible (Moore, 1965, 55). For Moore, there are criteria – aesthetic and pragmatic/political – that allow us to understand the difference between trivial and significant questions. "One criterion for distinguishing significant from trivial truth is...the amount of benefit or harm that comes from its discovery" (p. 57).

For Moore, different interpretations of history may differ and supplement each other as long as both are based on evidence; if they contradict each other, the disagreements are to be solved by appeal to evidence. Moore does not believe in abstract tolerance, or as he calls it, “watery toleration of every doctrine” because it might yield some contribution, nor in being doctrinaire (p. 54). He does not advocate tolerance on the basis of different “Weltanschauungen,” or different worldviews, because he believes that contradictions between differing interpretations can be resolved through scientific inquiry (pp. 60–61). Moore acknowledges a subjective and even partisan element in all interpretive activity. “In the social sciences and history, significant facts are bound to be partisan in the sense that they upset *somebody’s* cherished pre-conceptions” (p. 61). While there is a greater probability that “truth will be subversive of the established order, . . . there is no guarantee whatever that a critical conception of society is a correct one” (p. 61). Toleration of ideas is necessary to maintain an open-mindedness that is necessary to scientific inquiry which requires that “every idea, including the most dangerous and apparently absurd ones, deserves to have its credentials examined.” This “does not mean accepting the idea. Toleration implies the existence of a distinctive procedure for testing ideas, resembling due process in the realm of law” (p. 63). Such procedures and their development are the hallmark of the scientific outlook (p. 63). Moore continues his essay by illustrating some of these procedures; he analyzes the features of what he calls a “rational social criticism” of Nazism and concludes with a discussion of “the conditions under which the resort to violence is justified in the name of freedom” (p. 75). In his discussion of revolutionary violence, he uncovers three considerations: that the regime is repressive and society could exist with less suffering and constraint, that a revolution is possible with enough popular support to be successful, and that the suffering caused by the revolutionary activity is outweighed by the suffering entailed by maintaining status quo (pp. 75–77).

“Protection, therefore, against the tyranny of the magistrate is not enough: there needs protection also against the tyranny of the prevailing opinion and feeling; against the tendency of society to impose, by other means than civil penalties, its own ideas and practices as rules of conduct on those who dissent from them; to fetter the development, and, if possible, prevent the formation, of any individuality not in harmony with its ways, and compel all characters to fashion themselves upon the model of its own.” (John Stuart Mill, *On Liberty*).

“It is easy for any one to imagine an ideal public, which leaves the freedom and choice of individuals in all uncertain matters undisturbed, and only requires them to abstain from modes of conduct which universal experience has condemned. But where has there been seen a public which set any such limit to its censorship? or when does the public trouble itself about universal experience? In its interferences with personal conduct it is seldom thinking of anything but the enormity of acting or feeling differently from itself; and this standard of judgment, thinly disguised, is held up to mankind as the dictate of religion and philosophy, by nine-tenths of all moralists and speculative writers. These teach that things are right because they are right; because we feel them to be so. They tell us to search in our own minds and hearts for laws of conduct binding on ourselves and on all others. What can the poor public do but apply these instructions, and make their own personal feelings of good and evil, if they are tolerably unanimous in them, obligatory on all the world?” (John Stuart Mill, *On Liberty*).

In his essay on “Repressive Tolerance,” Herbert Marcuse aims at restoring to tolerance its original “partisan goal” of a “subversive liberating notion and practice” (Marcuse, 1965, 81). He concludes that what is needed is to reverse strategies, to practice “intolerance toward prevailing policies, attitudes, and opinions, and the extension of tolerance to policies, attitudes and opinions which are outlawed or suppressed” (p. 81). For Marcuse, “tolerance is an end in itself,” linked to the

creation of a humane society which is predicated on eliminating violence and reducing suppression (p. 82). As Marcuse sees it, contemporary societies such as the USA are saturated with violence and governed as administered states which control the minds of their citizenry. As practiced in these societies, tolerance is part of the problem rather than the solution. Tolerance reinforces “the tyranny of the majority” while being “withdrawn from the opposition,” where it would allow for energetic debate and the search for truth. Tolerance becomes passive rather than active, as citizens adopt a “laissez-faire” attitude toward the status quo (p. 82). Tolerance has become repressive rather than liberatory. “Tolerance toward that which is radically evil now appears as good because it serves the cohesion of the whole on the way to affluence or more affluence. The toleration of the systematic moronization of children and adults alike by publicity and propaganda, the release of destructiveness in aggressive driving, the recruitment for and training of special forces, the impotent and benevolent tolerance toward outright deception in merchandising, waste, and planned obsolescence are not distortions and aberrations: they are the essence of a system which fosters tolerance as a means for perpetuating the struggle for existence and suppressing the alternatives” (p. 83).

For Marcuse, tolerance as practiced in “an administered society” such as the USA is a force for repression because such practices as the tolerance of free speech in protest movements ultimately serve to confer legitimacy on the state, attesting to its democratic character, while simultaneously limiting liberty to practice through word rather than deed, with no threat to the status quo. Marcuse’s perspective is complex because his dialectical approach not only sees the administered whole by which he means the educative and ideological apparati of the state as determining and limiting the character of the part – in this case, free speech – but sees the existence of these liberties also functioning as reminders of “their original oppositional function” (pp. 83–84). For Marcuse, tolerance depends on its universality among all members

of society and is therefore dependent on equality. In a society such as the USA, constitutional or formal equality coexists with “institutionalized inequality” in the socioeconomic class structure. This inequality serves to undermine the efficacy of opposing viewpoints, as the power of education and the media, as well as the police and armed forces, resides with the dominant interests in society, resulting in suppression in the name of national security. Marcuse’s concern is focused on the centrality of military violence in the national consciousness (pp. 83–86).

Marcuse examines John Stuart Mill’s liberalist understanding of tolerance, liberty, and truth, citing Mill’s connection of liberty to truth; Mill sees liberty as applicable to rational human beings who “have become capable of being improved by free and equal discussion” (Mill 1859, 86). For Marcuse, the ability to think freely and express one’s thoughts is linked essentially to one’s ability to think one’s way to freedom; this “necessitates *tolerance*.” However, tolerance should not be indiscriminate; it should not protect false ideas or legitimate deeds that “counteract the possibilities of liberation” (p. 88). “Tolerance of free speech is the way of improvement, of progress in liberation, not because there is no objective truth, and improvement must necessarily be a compromise between a variety of opinions, but because there is an objective truth which can be discovered. . .” (p. 89). Where freedom and peace are concerned, “certain things cannot be said, certain ideas cannot be expressed, certain policies cannot be proposed, certain behavior cannot be permitted without making tolerance an instrument of servitude” (p. 88). While he is against censorship in art, here Marcuse seems to espouse a political correctness in speech such as we see in contemporary issues of hate speech and the outlawing of Nazism in Germany. For Marcuse, Mill’s liberalist ideal of tolerance was predicated on the “(potential) individuals who could learn to hear and see and feel by themselves, to develop their own thoughts, to grasp their true interests and rights and capabilities, also against established

authority and opinion. This was the rationale of free speech and assembly” (p. 90). However, this rationale does not seem to apply when we confront “manipulated and indoctrinated individuals who parrot, as their own, the opinion of their masters,” who claim freedom of thought and moral independence in the very language that forms what Marcuse seems to understand as their administered false consciousness (p. 90).

Given its link with truth and freedom, tolerance depends on free and equal, rational discussion and “independent thinking, free from indoctrination, manipulation, extraneous authority. The notion of pluralism and countervailing powers is no substitute for this requirement.” In an unequal society, balancing of powers is impossible as dominant interests far outweigh their potential opponents and “coagulate...into an overwhelming whole, integrating the particular countervailing powers by virtue of an increasing standard of living and an increasing concentration of power” (p. 93). The real conflicts of interest between labor and management, consumer and producer, and intellectual and employer become inarticulable and appear unreasonable as their would-be proponents “submit” to the system; alternatives to this whole are relegated to a “utopian dimension in which...[they are] at home, for a free society is indeed unrealistically and undefinably different from the existing ones” (p. 93).

The liberating dimension of democracy as a system is its focus on the role of dissent. When this is undermined by the existence of “monopolistic media,” which function as instruments of domination for the prevailing economic and political powers, the possibility of free thought is undercut by the particular rigid use of language in which the “meaning of words is rigidly stabilized. Rational persuasion, persuasion to the opposite is all but precluded. The avenues of entrance are closed to the meaning of words and ideas other than the established one—established by the publicity of the powers that be, and verified in their practices.

Other words can be spoken and heard, other ideas can be expressed, but, at the massive scale of the majority (outside such enclaves as the intelligentsia) they are immediately ‘evaluated’ (i.e., automatically understood) in terms of the public language—a language which determines a priori the direction in which the thought process moves. Thus the process of reflection ends where it started: in the given conditions and relations. Self-validating, the argument of the discussion repels the contradiction because the antithesis is redefined in terms of the thesis” (pp. 95–96).

Paradoxically, while effective dissent is undermined, the tolerant society produces a cacophony of voices and perspectives: communist and fascist, left and right, and for armament and for disarmament. Each opinion is treated as equal to the other: “the stupid opinion is treated with the same respect as the intelligent one, the misinformed may talk as long as the informed, and propaganda rides along with education, truth with falsehood” (p. 94). The justification is that no one is in sole possession of the truth or able to determine right and wrong; all opinions are to be judged in the court of public opinion. This notion presupposes that the public “must be capable of deliberating and choosing on the basis of knowledge,” that they are given access to appropriate information and are capable of independent thought (pp. 94–95). According to Marcuse, this is precisely what is not the case. While an impartial reading of competing ideas is central to the democratic ideal, impartiality can result in a “*neutralization* of opposites,” as when a “newscaster reports the torture and murder of civil rights workers in the same unemotional tone he uses to describe the stockmarket or the weather, or with the same great emotion with which he says his commercials” (pp. 97–98). For Marcuse, this kind of impartiality or “objectivity” is false and manifests as an inhuman tolerance for acts of cruelty and injustice. “The tolerance expressed in such impartiality serves to minimize or even absolve prevailing intolerance and suppression” (p. 98). The audience has been “indoctrinated,”

is incapable of recognizing their indoctrination, and cannot “transcend” the “conditions under which they live and think” (pp. 98–99). The “facts” are always mediated by those who frame them, and any perception of the truth which underlies the facts requires a “rupture with their appearance. This rupture-prerequisite and token of all freedom of thought and speech cannot be accomplished within the established framework of abstract tolerance and spurious objectivity because these are precisely the factors which precondition the mind *against* the rupture” (p. 99).

Nevertheless, for Marcuse, societies with democratic tolerance are more humane than dictatorships which institutionalize intolerance. Marcuse goes on to discuss when violence may be necessary and what criteria would be used to justify violence in the repressive affluent-democratic society. It would be important to recognize that violence is performed by the state, but this recognition is “clouded by ideologies which serve the perpetuation of violence. . . . [V]iolence actually prevails; it is practiced by police, in the prisons and mental institutions, in the fight against racial minorities.” In the name of expanding freedom and free markets, it is carried into developing countries as well (p. 102).

Marcuse presents a vivid depiction of false consciousness as it functions in an administered state. Because of this perspective, he differs from Mills, who believes that better ideas will eventually win out in the court of public opinion. His attempt to show how the philosophical rupture that is necessary to apprehend truth is prevented by the practices of tolerance does not describe how that rupture is experienced or how he and the enclave of intellectuals he mentions achieve transcendent viewpoints capable of seeing beyond given conditions. His arguments for censorship and “precensorship” seem dangerous, even as one can appreciate his point that “hidden censorship. . . permeates the free media” (p. 111). For Marcuse, a tolerance that mainly serves to maintain a repressive society, silence opposition, and makes people

“immune” to each other and a vision of a better life is ultimately perverted from its aims (p. 111). Ultimately, Marcuse sees intellectuals and others who have escaped false consciousness as dispersed among the population, rather than located in one revolutionary class determined by their material conditions. Their task, as he sees it, is to try and make a space for reflection. “The effort of emancipation becomes ‘abstract’; it is reduced to facilitating the recognition of what is going on, to freeing language from the tyranny of the Orwellian syntax and logic, to developing the concepts that comprehend reality. More than ever. . . progress in freedom demands progress in the *consciousness* of freedom.” What is needed is “political education (or rather countereducation)” (pp. 111–112).

## Cross-References

- ▶ [Democracy](#)
- ▶ [Freedom](#)
- ▶ [Human Rights](#)
- ▶ [Ideology](#)
- ▶ [Liberty](#)
- ▶ [Pluralism](#)

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## Tolerance Toward Partner Violence

► [Public Attitudes Toward Partner Violence Against Women](#)

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## Tool for Research Synthesis on Happiness

► [World Database of Happiness](#)

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## Top Ten US Best Towns: Outside Magazine

Ariel Rodríguez and Burcu Kaftanoglu  
School of Community Resources and  
Development, Arizona State University,  
Phoenix, AZ, USA

### Description

*Outside* is a magazine circulated throughout the United States in paper and online formats. Its readers are largely outdoor ► [recreation](#) enthusiasts (Outside, 2013a). Each year, *Outside* searches for the city in the United States with the best overall ► [quality of life](#) with the help of its readers (Outside, 2013b). Their selection is based on the cultural vibrancy (including nightlife), economic well-being (including home prices and job prospects), stress-free living, and proximity to the outdoors of various cities (Outside, 2013c).

In 2011, the selection of the “Best Town” within the USA was based on a two-stage process. First, *Outside* provided a list of ten cities they deemed had reasonable home prices, culture, jobs, stress-free living, and proximity to the outdoors. The specific criteria for what is “reasonable” are not readily available. Then, *Outside* opened up the voting on their Facebook page.

In 2011, a total of 21,975 individuals voted on the *Outside* Facebook site (Outside, 2011).

### Ten Best Towns of 2011

1. Chattanooga, Tennessee (33.8 %) (Outside, 2011)
2. Tucson, Arizona (27 %)
3. Charleston, South Carolina (10.2 %)
4. Boulder, Colorado (7.7 %)
5. Ashland, Oregon (5.3 %)
6. Burlington, Vermont (3.6 %)
7. Madison, Wisconsin (3.4 %)
8. Portland, Maine (3.2 %)
9. Portland, Oregon (3.1 %)
10. Santa Fe, New Mexico (2.7 %)

### Selection Process Critique

In reviewing the selection process of past years, a major component of the selection process is done in-house by staff members of *Outside*. Additionally, the recent introduction of voting via Facebook reflects *Outside*'s efforts to use social media in their voting process. An outcome of this is the lack of a consistent selection process. As such, it is not uncommon to have different cities on the “Best Towns” list from 1 year to the next. For instance, in 2008, the top five cities included (1) Washington, DC; (2) Chattanooga, Tennessee; (3) Ogden, Utah; (4) Portsmouth, New Hampshire; and (5) Tacoma, Washington (Outside, 2008). In 2009, the top five cities included (1) Colorado Springs, Colorado; (2) Seattle, Washington; (3) Atlanta, Georgia; (4) Austin, Texas; and (5) Boston, Massachusetts (Outside, 2009). In 2010, the top five cities included (1) Boise, Idaho; (2) Carbondale, Colorado; (3) Portland, Maine; (4) Chattanooga, Tennessee; and (5) Grand Rapids, Michigan (Outside, 2010). From the lists, one may conclude a great amount of change occurs in cities throughout the United States from 1 year to the next. However, these differences in lists are more likely a product of the different methodologies implemented from year to year.

### Best Towns Online

In addition to the overall “Ten Best Towns” list provided by *Outside*, they also provide



a customized “Best Town” for individual readers based on an expansive list of top 19 best towns for the current year selected by *Outside* staff. The list includes the top ten best towns voted upon by its readers but adds an additional nine which were not voted upon by its readers. This option is produced online through their interactive website (<http://www.outsideonline.com/adventure-travel/best-towns>). The categories readers may select from include Nightlife and Culture, Affordability, Population, Weather, Running, and other outdoor activities.

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## Top-Down QOL Models

Michael Stones<sup>1</sup> and Samuel Shye<sup>2</sup>

<sup>1</sup>Department of Psychology, Lakehead University, Thunder Bay, ON, Canada

<sup>2</sup>The Van Leer Jerusalem Institute and The Hebrew University of Jerusalem, Jerusalem, Israel

## Synonyms

Adaptation-level theory; Analysis of quality of life (QOL) models; Decomposition; Set point theory; Synthesis of quality of life models

## Definition

The ► **quality of life (QOL)** literature refers to the *top-down versus bottom-up* distinction in two ways. With respect to *model design*, the point of departure for the top-down modeling is the formulation and specification of a general “umbrella” concept that serves as a key construct for defining QOL. Then the general concept is successively decomposed, or differentiated, into lower levels of components to attain the level of concrete QOL items. The bottom-up approach builds models by specifying concrete QOL items or lower-level components in detail and then groups them into larger and larger subsystems to form top-level components.

Diener (1984) introduced the terms top-down and bottom-up to differentiate *explanatory* theories of ► **subjective well-being (SWB)**. Top-down theories assume that phenotypic variation accounts for differences in feelings, emotions, and behavior when individuals interact with their environments. Bottom-up model theories assume that SWB represents an aggregate of feelings and emotions associated with such variables as economic status, ► **health condition**, and ► **social support**. Whereas top-down theories assume that “a person enjoys pleasures because he or she is happy,” bottom-up theories suggest that a happy life consists of “an accumulation of happy moments” (Diener, 1984, p. 565).

## Description

### Model Design

Taillefer, Dupuis, Roberge, and Le May (2003) reviewed 68 models of QOL, finding that the umbrella (i.e., top-level) concept could be any *one* of the following: ► [happiness](#), well-being, satisfaction, performance, level of functioning, goal attainment (including gaps between a person's goals and condition in different life domains), needs satisfaction, and health. Many of these concepts relate to an individual's *evaluation* of global or specific facets of well-being; others to appraised standing, or status, but without concomitant evaluation.

An example of a top-down model design is the ► [Systemic Quality of Life \(SQOL\)](#) model (Shye, 1989), which derives from the wider ► [Faceted Action System Theory](#). The point of departure is the notion of QOL as an overall grand system, defined as the effective functioning of the human individual. Then, by a process of successive partitioning, the model systematically divides the whole QOL content space into classes of functioning, thereby identifying increasingly more specific contents domains (in effect, subsystems, sub-subsystems, and so on), such that each progressively lower order subsystem can be represented by one or more concrete observational items.

This *partitioning design* (as opposed, e.g., to the *tree design*) for going from the top downward ensures the following properties at every level of analysis. (1) The resulting systems are exhaustive (cover the entire universe). (2) The resulting systems are exclusive (each representing a distinct content not shared by another). (3) With the partitioning carried out in a systematic and balanced fashion, the subsystems at any given level are at a similar level of abstraction. For example, the SQOL envisions four modes of functioning (adaptive, conservative, expressive, integrative), gauges their effectiveness within each of the four domains of functioning (cultural, personality, physical, and social), and measures that effectiveness by QOL items (questions) that sample each of the resulting 16 mode-domain interactions.

In contrast, a bottom-up QOL model begins by searching for, and subsequently selecting, a set of

items intended to sample the intended content universe. The process of item selection is typically eclectic, with suitable items assembled (e.g., by the researcher, a panel of referees) and then grouped in stages into a manageable number of classes. The grouping process may be formal (e.g., using facet technique) or informal (e.g., clustered by apparent conceptual similarity). Dalkey (1972) exemplified the bottom-up approach. He obtained some 250 QOL items from his students and combined them in stages, first into 45 groups, then into 13 "actors."

### Explanatory Theories

Philosophical discussion of what became known as bottom-up versus top-down dichotomy for understanding variability in the happiness of people contrasted Lockean reductionism with Kantian idealism (Stones & Kozma, 1980). The former understands concepts like SWB by reference to its elements (e.g., relative numbers of pleasant and unpleasant experiences), whereas Kant reasoned that SWB depends upon "satisfaction with one's condition . . . with what nature bestows" (Wike, 1994, p. 2).

Diener (1984) reasoned that challenges for top-down modeling were to ascertain how a person acquires a sanguine temperament, how resistant it is to change, and how it interacts with changing circumstance. Evidence supporting top-down interpretations of SWB derives from studies of monozygotic and dizygotic twins, personality, and evaluative cognitions:

1. *Twin studies*. Findings from at least nine studies of monozygotic and dizygotic twins during the past 15 years showed that genetically related effects explained 40–60 % of variance in onetime assessment of QOL (i.e., mainly SWB measures) and 80 % of variance in phenotypic cross-time correlations (Stones, Kozma, McNeil, & Worobetz, 2011). Weiss, Bates, and Luciano (2008) included both SWB and the Big Five personality traits among their measures (cf. ► [Five Factor Model of Personality](#)). They concluded that "subjective well-being was genetically indistinct from personality traits" (p. 209).

A further conclusion by Weiss et al. (2008) was that “the relationship between subjective well-being and a range of health and social-relationship factors may also be mediated by common genetic effects” (p. 209). Schnittker (2008) provided evidence of genetic mediation for marital status, marital support, and wealth, but not for support from friends, employment status, or income. Although researchers routinely consider life domain measures bottom-up influences on QOL, Schnittker’s (2008) findings suggest that some are subject to the same genetic endowment that applies to SWB. Consequently, claims that the totality of bottom-up effects accounts for 10–15 % of the variance in SWB (Diener, Suh, Lucas, & Smith, 1999) may be an overestimate.

2. *Personality*. Research on personality provides abundant evidence that neuroticism and extraversion correlate with SWB. A meta-analysis by Steel, Schmidt, and Schultz (2008) reported correlations of .25–.44 between ► [positive affect](#) and extraversion and .46–.54 between ► [negative affect](#) and neuroticism. Other findings indicate that Rushton and Irwing’s (2011) General Factor of Personality shared 60 % of variance with the ► [Positive and Negative Affect Schedule \(PANAS\)](#) and the ► [Satisfaction with Life Scale \(SWLS\)](#) (Musek, 2007).
3. *Evaluative cognitions*. Findings on evaluative cognitions indicate covariation between measures of well-being irrespective of their content. Stones and Kozma (1985) found that a single higher-order factor subsumed relationships between composite scores on 27 measures of SWB. Findings on relationships between different types of well-being (e.g., ► [eudaimonic well-being](#), psychological well-being, SWB) similarly found substantial covariation (Stones, Worobetz, & Brink, 2011). Such evidence is suggestive of a *general factor of well-being* (gWB) (cf. ► [Personal Well-being](#)).

Studies of relationships between global measures of SWB and life domain satisfactions provide a paradigm to test between

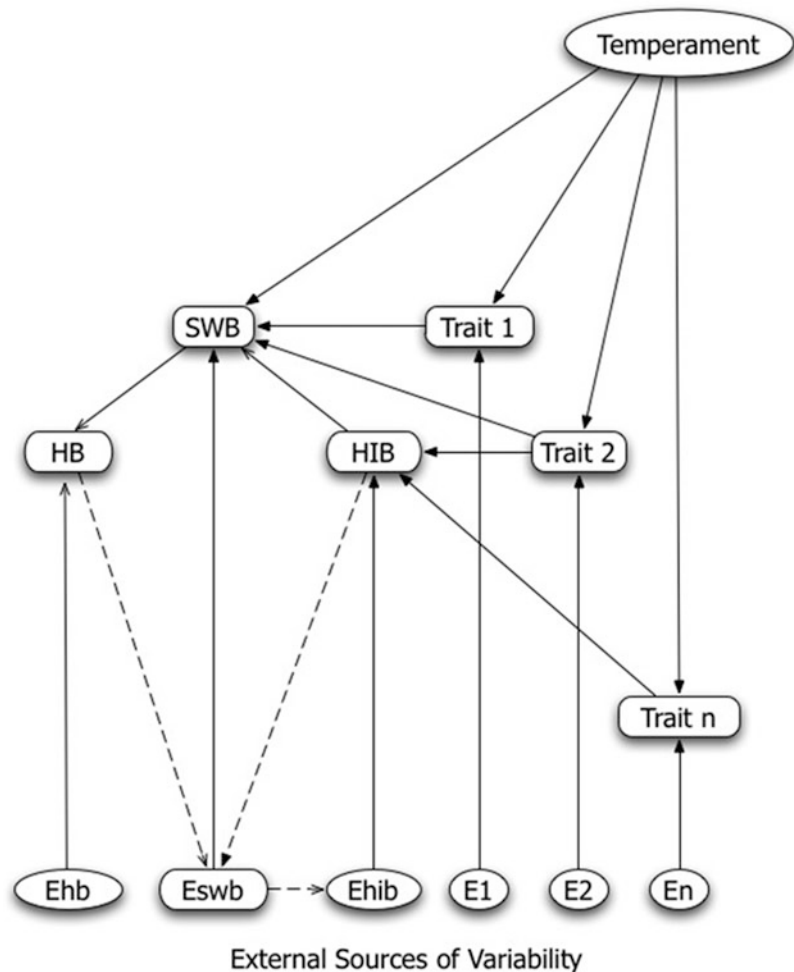
top-down and bottom-up explanations. Findings from designs including one or repeated measurements more frequently showed that global SWB subsumed variance in domain satisfactions than vice versa (Stones, Kozma, McNeil, & Worobetz, 2011; Stones, Worobetz, & Brink, 2011). Stones and Kozma (1986), for example, found support for top-down over bottom-up explanation in 17/18 comparisons. These findings indicate that Diener, Suh, Lucas, and Smith (1999) were correct to consider domain satisfactions a component of (rather than an influence on) SWB.

4. *Template for a top-down explanatory model*. Although ► [adaptation](#)-level and set point theories address the stability of SWB, they lack the flexibility to account for lasting effects of changing circumstance on some people. The best available evidence suggests that *temperament* provides an encompassing umbrella concept for the design of top-down explanatory model possessing such flexibility. Individual differences in temperament, acquired through nature and nurture, include heritable personality traits, cognitive evaluations, and their behavioral manifestations. The latter include *happiness-inducing behaviors* (HIB; e.g., savoring the moment, acts of generosity) (Warner & Vroman, 2011) and *happy behaviors* (HB) (i.e., behavioral manifestations of positive affect). Bottom-up term influences include substantive variables (e.g., life circumstance, life change) and unobserved variation (i.e., error).

Properties of the model in [Fig. 1](#) include stability in SWB due to common effects from temperament and specific effects from personality traits (cf. Weiss, Bates, & Luciano, 2008). Such stability is consistent with Shye’s (1989) affirmation of *conservative* properties that safeguard the integrity of systemic structures from assault from external sources (e.g., as immune functions restore damage due to disease). However, massive external assault may impede recovery. Examples include individuals with multiple or chronic health problems that lead to prolonged loss in SWB (cf. Diener et al., 1999). Although usually interpreted as direct attribution (Eswb > SWB), such findings might

**Top-Down QOL Models,**

**Fig. 1** Template for a top-down explanatory model (Known effects indicated by *solid arrows*; probable effects by *dashed arrows*. Substantive variables represented by rectangles; unmeasured variables by ellipses)



plausibly represent mediation via HIB (e.g.,  $E_{swb} > E_{hib} > HIB > SWB$ ), such that incapacitating illness limits opportunities for positive health and/or social behaviors.

Structural relationships of temperament variables indicate that personality traits contribute variance to SWB both *directly* (Trait  $>$  SWB) and *instrumentally* through mediation by HIB (Trait  $>$  HIB  $>$  SWB) (Tkach & Lyubomirsky, 2006; Warner & Vroman, 2011). Warner and Vroman (2011) found that neuroticism contributes directly to SWB, agreeableness and extraversion both directly and instrumentally, and conscientiousness and openness only instrumentally (as represented by traits 1, 2, and 3 in Fig. 1). Such functioning corresponds to the *integrative* mode in Shye's (1989) SQOL

model, the purpose of which is to engender harmony among structural components.

Shye (1989) proposed that a purpose of *expressive* functioning is to shape the environment in directions compatible with internal structures. Figure 1 represents expressive functioning by contributions from HB and HIB to variance in external correlates of SWB (HB  $>$  Eswb; HIB  $>$  Eswb). Although previous research allows indirect inferences about environmental effects due to HB and HIB, the evidence for such effects is compelling. Examples include findings that prior positive affect (HB) predicted subsequent success in socially valued life domains (e.g., health, income, marriage), with behaviors subsumed by HIB including those anticipated to elicit positive environmental change (e.g., acts of kindness)

(Lyubomirsky, King, & Diener, 2005; Warner & Vroman, 2011). Adaptive functions in Shye's (1989) model represent compensatory exchanges between the environment and behavior. Figure 1 represents adaptive functioning by the recursive loop from Eswb > Ehib > HIB > Eswb.

### Summary

Top-down refers to both model design and directional effects in explanatory modeling. Based on the best available evidence, we illustrate a template designed from temperament downward that takes account of upward contributions to QOL from external circumstance. Although necessarily framed at an abstract level, the template may guide the design of more detailed models.

### Cross-References

- ▶ [Adaptation-Level Theory](#)
- ▶ [Affective Component of Happiness](#)
- ▶ [Genetic Disposition of Quality of Life](#)

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### Toronto

John Lorinc  
Toronto, Ontario, Canada

### Definition

Toronto is the capital city of the province of Ontario in Central Canada.



## Description

Located on the north shore of Lake Ontario, the Greater Toronto Area (GTA) sits on a stretch of highly arable land straddling several river systems that originate from the Oak Ridges Moraine, a geologic landform created in the wake of the last ice age.

The GTA is Canada's largest metropolitan region, with a population of about 5.7 million people. The City of Toronto sits at the core of the GTA, with 2.7 million residents, or about 43 % of the region's total, according to the 2011 census (City of Toronto, 2012). The city proper is surrounded by suburban and exurban municipalities that developed rapidly in the 1970s. The city's population grew 4.5 % between 2006 and 2011, but it represents a shrinking proportion of the GTA overall.

The region accounts for approximately a fifth of Canada's GDP and 18 % of the country's total population, which is highly diverse, both socially and culturally. There are over 140 languages spoken in the city and its surrounding suburbs.

The GTA's economy is also highly diversified and includes a range of major industrial/commercial sectors/clusters, including financial services, aerospace, automotive manufacturing, food processing, biomedical research, fashion/apparel, design, and media/entertainment ([The economy of the Toronto region is as large as it is diverse, n.d.](#)). Many of Canada's leading media (print and broadcast) and cultural institutions are located in Toronto.

The City of Toronto has two major public school boards, a 98-branch public library system, four universities, and four community colleges arrayed over several campuses ([Universities and colleges in Toronto, n.d.](#)). It is also home to Canada's largest medical school, whose faculty are linked to several teaching hospitals, including the University Health Network, a regional cancer care network, and the Hospital for Sick Children.

Finally, Toronto, by virtue of its geography, has extensive opportunities for outdoor activity in its ravine network, along the waterfront, and in large urban parks, such as Rouge Park. The region, moreover, is located within a few hours

drive of a wide range of rural areas that offer a wide range of recreational activities, including cottages, hiking, skiing, riding, cycling, flying, and boating. The city also has two commercial airports, including a major international hub, Lester B. Pearson International, and a smaller shuttle airport, the Billy Bishop Toronto City Airport, which is located in the harbor area and provides turbo-prop flights to destinations within a 90-min radius.

Consequently, the GTA consistently scores well on various global city rankings. *The Economist's* 2011 Liveability Ranking placed Toronto fourth overall (Gulliver, 2011). While widely cited, global cities' rankings have attracted critical scrutiny from some researchers (Taylor, 2011).

## History

In the precontact period, the Toronto region, and specifically the Humber River valley, served as a meeting place for local Huron tribes and communities. The French briefly maintained a military foothold in the area, known Fort Rouille, but withdrew in 1759. British colonialists arrived a few decades later and formally established a settlement, known as York, in 1793. During the nineteenth century, the City of Toronto, formally incorporated in 1834, became a political and industrial hub where education reformers made significant strides building a public education system. By the dawn of the twentieth century, however, Toronto was experiencing significant growth pressures.

By the 1910s, many of the city's residents were struggling with infectious disease epidemics, slum conditions, and water shortages. Many residents relied on privately operated streetcar services that suffered from overcrowding and unsafe conditions that resulted in accidents, injuries, and deaths.

Between the early 1910s and World War Two, the city experienced a period of rapid modernization and growth. Civic reforms led to progressive public health services, extensive upgrades to municipal infrastructure, significant improvements in water quality and an associated decline in infant mortality, expansion of public



transit into newly developing “streetcar suburbs,” and the development of comfortable middle-class neighborhoods on the urban periphery.

The postwar period saw accelerated development, the construction of a subway network, and the evolution of new master planned suburbs, such as Don Mills, which segregated land-use categories and featured curvilinear residential streets, shopping malls, and industrial parks. Postwar housing shortages also spurred the development of social housing projects, such as Regent Park, intended to provide subsidized apartments for low-income families.

In the early 1950s, the provincial government established a two-tier federated structure on Toronto and the rapidly growing suburban municipalities on its fringes. The Municipality of Metropolitan Toronto (“Metro”) had broader powers than a traditional county government and was overseen, initially, by councilors appointed by the lower-tier municipalities. It had responsibility for regional planning, major roads and other large-scale infrastructure, transit, and ► [social housing](#). Its borders are coterminous with the current City of Toronto (est. 1998).

Metro played an important role in the evolution of Toronto’s quality of life because it was able to concentrate office, industrial, residential, and apartment development through the use of regional planning authority and infrastructure investment. So while much postwar development reflected a more automobile-focused approach to urban planning, the population density of Metro (amalgamated City of Toronto) – approximately 11,250 per square miles – is sufficient to sustain one of North America’s busiest transit agencies (Toronto Transit Commission; “List of North American,” 2012).

In 1997, the provincial government decided to dissolve Metro and amalgamate it with the six lower-tier municipalities to create the current City of Toronto. The move was opposed by many residents and critics who argued that amalgamation – and other related reforms to the funding and delivery of municipal – would not yield financial savings. While the amalgamated City of Toronto has made significant policy moves on a range of issues, from water quality

to social services and infrastructure, it nonetheless struggles to identify sufficient sources of revenue to maintain, enhance, and expand important municipal services, ranging from transit to libraries and social housing.

### Transportation/Travel

Much of Toronto’s core – developed between the late nineteenth century and the beginning of World War Two – features a compact urban form featuring dense residential neighborhoods focused on urban retail strips. In the 1970s, municipal reformers and residents’ groups successfully fought to protect the city’s historic downtown form from urban redevelopment projects or so-called “slum clearance” campaigns, as well as the development of downtown highways.

During that period, the city also promoted mixed-use development in the commercial core, pedestrian-oriented neighborhoods and cycling – a set of progressive policies that triggered successive waves of ► [gentrification](#) of older working class neighborhoods and combined high-rise condo development in the downtown area. The result is that in Toronto’s prewar core, there is a firmly established pattern of “downtown living.”

According to a 2008 walking survey conducted for the City of Toronto, more than three in ten Torontonians walk regularly to work, school, or shopping. “Walking, all the way, is the main mode of choice when going to work, school, shopping or leisure/entertainment activities for 31% of Torontonians. Even among the 41% of Torontonians who take public transit, almost all walk to their transit stop, which is an average 5 minute walk.”

But due to land-use planning and infrastructure decisions made by the Ontario government in the 1960s and the 1990s, the outer band of the GTA suffers from extensive sprawl, with the result that car usage and congestion have become significant stressors. The GTA’s main east–west thoroughfare, Highway 401, is in places the busiest restricted access highway in North America (in terms of annual average daily volumes). The region loses an estimated \$6 billion a year, in

terms of lost productivity, due to gridlock, according to the Toronto Region Board of Trade (BOT).

The congestion has increased commute times. The BOT estimates that the average two-way commute in the GTA is 66 min (2011), compared to 56.2 min in Los Angeles. A Pembina Institute survey conducted in 2012 puts the GTA one-way average commute at 43 min. That survey also shows that about two-thirds of drivers experience commuting-related ► [stress](#), and 84 % must use a major highway to get to work. Over half of the respondents reported that they did not have access to rapid transit (either subway or commuter rail).

Congestion impacts ► [air quality](#). In the early 2000s, Toronto Public Health, using so-called “burden of illness” population health techniques, estimated 1,700 premature deaths and 3,300–6,000 hospitalizations annually within the city due to poor air quality and the presence of microparticles, sulfur dioxide, nitrogen oxide, and ozone (Pengelly & Sommerfreund, 2004). The causes include vehicle exhaust as well as emissions from industrial facilities and coal-burning electrical plants situated southwest of the GTA.

Toronto has sought to improve air quality with measures such as anti-idling policies, tree planting, transit promotion, and energy conservation campaigns. The regional transportation authority – which was established in 2006 by the provincial government and is known as Metrolinx – is also promoting a 25-year/\$50 billion transit/demand management strategy designed to reduce gridlock ([The big move, n.d.](#)). The strategy, known as “the Big Move,” involves the construction of light rail, bus rapid transit, subways, and additional commuter rail service, as well as the use of measures such as high-occupancy vehicle lanes, carpooling, and congestion charges. As of spring, 2013, Metrolinx had released a series of recommendations for funding the new transit projects, but was awaiting final approval from the Government of Ontario.

Such transportation planning moves are taking place within a larger planning context. In 2005, the provincial government established a

one-million hectare greenbelt around the GTA and then passed legislation, known as “the Places to Grow Act,” that seeks to limit so-called greenfield development but requiring municipalities to direct growth to areas within the existing urban envelope. The goal of both policies is to contain sprawl and direct infrastructure investment so as to promote more compact urban form, intensification, pedestrian-oriented communities, and other travel options besides the private automobile (Places to Grow Act, 2005).

### Social Cohesion

Since the beginning of the twentieth century, Toronto’s population has grown because of immigration, initially from eastern and southern ► [Europe](#) and then ► [Asia](#), south Asia, Latin America, and Africa. During the postwar period, the city also benefited from economic growth related to the baby boom, manufacturing, and key financial sectors, such as mining finance.

The growth created a large demand for suburban residential housing. In the years immediately following the end of World War Two, acute housing shortages prompted the federal government to underwrite the development of Canada’s first subsidized housing complex ([CMHC Official opening – Regent Park buildings, n.d.](#)), known as Regent Park and situated in an area (“Cabbagetown”) known for its ► [poverty](#) and deteriorating housing stock.

During the 1960s and 1970s, the city saw the development of much more multiunit residential housing, both in the form of high-rise “slabs” and clustered town-house complexes. Some of it was developed by public housing agencies and some by private developers taking advantage of financially attractive tax measures. During the 1970s and 1980s, some co-op and mixed-income housing was also developed – mostly downtown and mid-rise in scale – using various forms of financial support from the federal and provincial governments.

The result, in terms of built form, is that the City of Toronto has a very large concentration of high-rise apartment buildings. Toronto architect Graeme Stewart has estimated approximately 1,000 high-rise slab apartments constructed

between the 1950s and 1980s ([About tower renewal, n.d.](#)). It also has a large proportion of tenants – about 50 % of the city’s overall population, by most estimates (Federation of Metro Tenants’ Associations, 2011).

Since the 1980s, the combination of immigration and the nature of the city’s housing stock have created a distinctive social dynamic related to the more general trend in large urban centers towards income polarization. In particular, older apartment buildings, both private and subsidized, account for a rapidly growing share of the city’s low-income residents/families, including many immigrants. In 1981, one-third of the city’s low-income residents lived in high-rise apartments; by 2006, that figure had risen to 43 %, a phenomena described as “vertical poverty” by the United Way of Greater Toronto (United Way Toronto, 2011). Many of these buildings – about three-quarters of which are privately owned and managed – have shown signs of significant deterioration (e.g., chronically broken elevators) and lack of rehabilitative investment (e.g., replacement of drafty windows) in recent years.

The growing concentration of poverty in high-rise apartments is further reflected in the spatial change in neighborhood-level poverty over time. University of Toronto sociologist David Hulchanski has documented these trends in his “Three Cities” study, a landmark work (Hulchanski, 2007). They show that over the past three decades, large swaths of the city’s postwar suburbs – and especially Scarborough – have become conspicuously poorer, with a growing concentration of low-income families and a declining contingent of middle-income households. Over the same period, the city’s wealthiest families have become increasingly concentrated in neighborhoods along the subway corridors and in gentrifying downtown areas.

Overall, the proportion of low-income neighborhoods in Toronto jumped from 19 % to 53 % between 1970 and 2005, while the ratio of middle-class communities fell from 66 % to 29 %. Prof. Hulchanski posits that if this spatial income polarization dynamic continues, middle-income neighborhoods could all but disappear within the next two decades.

There is extensive academic literature on the relationship between growing income polarization and declining ► [quality of life](#) in terms of ► [health](#), ► [social cohesion](#), and so on (Harrell, 2009). In Toronto and as Saskia Sassen (n.d.) has documented in many other global cities, there has also been an economic shift away from manufacturing in favor of services – a trend that creates both high-end professional services positions as well as a more part-time, low-wage, and nontraditional employment. So while these trends are not unique to the City of Toronto, they are nonetheless a cause for concern in terms of the city’s quality of life.

Toronto, historically, has had a low crime rate by comparison to other large North American cities ([Safety, n.d.](#)). What is more, there are broad levels of acceptance towards newcomers (Reitz, 2003), which is demonstrated in various ways (e.g., multilingual provision of services and government information and ethno-cultural education programs in the public school system) in both the central city and the surrounding suburban municipalities (e.g., Mississauga). Unlike some larger American cities in the late 1960s and a handful of European cities more recently, the GTA has not experienced race riots or violent incidents involving disenfranchised immigrant youth.

In the mid-2000s, however, a handful of highly publicized shootings drew broad public and policy attention to the dearth of social, recreation, health, cultural, and other youth-related services in some low-income communities (CBC News, 2005; Ontario Ministry of Children and Youth Services, 2011). In response, the city, the provincial government, the school boards, and various social service organizations in 2006 adopted a preventative approach – the “Strong Neighbourhoods Taskforce” (Strong Neighbourhoods Task Force, 2005) – by targeting resources at thirteen “priority neighborhoods,” which have more crime, higher dropout rates, less employment, and relatively few social supports. Local law-enforcement agencies have also adopted measures geared to these areas, including more community policing, public engagement, crime statistics analysis, and targeted anti-guns and gangs campaigns.

The city's housing agency, Toronto Community Housing Corporation (TCHC), also sought to improve living standards in some of the oldest and most decrepit public housing projects. Approved by Toronto council in 2007, the revitalization of Regent Park began with the demolition of old low-rise units and the temporary relocation of tenants. The project employed a cross-subsidization formula, whereby private developers build market condo housing on a portion of the area's property, and the proceeds are used to develop new subsidized units – a mix of apartment buildings and town houses on the same precinct ([Regent Park revitalization, n.d.](#)).

While the market and subsidized units are in physically separate structures, the Regent Park area overall now has a greater mix of incomes. The project also includes other measures to improve local quality of life, such as the introduction of a new supermarket (Regent Park was considered an urban “food desert” due to the lack of local grocery stores), other retail services, and a cultural facility. TCHC required some of the retail tenants to provide part-time jobs to local youth. The agency and the city are looking at replicating this approach on other sites ([Building a plan in Alexandra Park, 2012](#)).

### **Questions about the Sustainability of Toronto's Urban Lifestyle**

Two significant lifestyle trends characterize the evolution of Toronto as a global city: the proliferation of high-rise condominiums and speculation-driven inflation in residential property values, especially in older downtown neighborhoods experiencing gentrification. These factors, driven by changes in regional planning and the globalization of the GTA's economy, speak to the city's livability and the perceived desirability of Toronto's urbanized core. But they also raise questions about the sustainability of the city's quality of life.

As of 2012, Toronto exceeded all other North American cities in terms of the number of active high-rise condo projects ([Alexander, 2012](#)). Demand for such apartments, many of which are small bachelor or one-bedroom flats, has

been fueled by various factors, including investment activity by offshore investors, planning constraints on greenfield tract housing on the GTA's exurban fringe, rising fuel prices, commuting difficulties, and the influx of immigrants from high-density Asian cities where high-rise apartment living is the norm.

The result is that a record number of condos were sold in the GTA in 2012 while the market for new single-family home has remained sluggish, according to media reports and real-estate data ([Johnson, 2012](#)). Likewise, the resale home-buying market has broken records every year for over a decade, with the average GTA sale price now exceeding \$500,000, a figure that rivals Vancouver, which has long had Canada's most costly residential real estate ([Pigg, 2012](#)). Such trends have made the city increasingly unaffordable for middle-income families, the working poor, students, and artists.

Gentrification is not unique to Toronto, but the city's gentrification cycle has accelerated greatly because the older parts of Toronto are generally considered to be safe and readily accessible by transit. Unlike many North American cities, main street retail remains highly viable in much of the older core, and residents in such neighborhoods also have easy access to public spaces, parks, and other amenities.

Some condo developers are developing in such areas, promising buyers ready access to an urban lifestyle. Others locate near major transit hubs and transportation corridors. And there's a third category that has focused on downtown brownfield sites (the former rail lands, the port lands, and other former industrial sites that have been cleaned up and rezoned for mixed-use housing).

Critics of current development trends downtown argue that the city has rushed to approve high-rise condo developments without making sufficient investments in the public realm, transit, and other services geared to growing downtown populations. Some, like Toronto councilor Adam Vaughan, have warned that many of the new condos going up in the core are not suitable for families with children because the vast majority of the units have two or fewer

bedrooms (Ireland, 2012). Therefore, unlike previous waves of downtown revitalization driven by the renovation of older homes in somewhat derelict working class neighborhoods, the condo boom may not produce stable “vertical” communities but rather transitional high-rise environments dominated by speculators, singles, or first-time buyers.

In conclusion, the city’s greatest challenge in coming decades – besides solving its traffic congestion problems – may involve confronting difficult questions about whether the very attractiveness of certain aspects of Toronto’s quality of life (mixed-income, green, pedestrian-friendly neighborhoods) has triggered a speculative real-estate boom that could actually erode those very urban virtues.

## Cross-References

- ▶ [Canada: Social Cohesion](#)
- ▶ [Globalization and Well-Being](#)
- ▶ [Multicultural Quality of Life Research](#)
- ▶ [Multiculturalism](#)
- ▶ [Walkability](#)

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## Torres Strait Islander

- ▶ [Australian Indigenous Peoples](#)

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## Tostan

Molly Melching  
Tostan International, Dakar, Senegal

### Brief History

Tostan is the name of a nongovernmental organization dedicated to community-led development in Africa. In Wolof, the most widely spoken language in Senegal, Tostan means “breakthrough,” as in the hatching of an egg. The name was suggested to Tostan’s Founder and Executive Director, Molly Melching, by the renowned African scholar, Cheikh Anta Diop, which describes the sharing and spreading of knowledge by the people themselves, in their

own language, and using their own cultural traditions (Gillespie & Melching, 2010). Tostan believes that when program participants start with what they already know, they can expand and “breakthrough” to new understandings and practices and easily share with others what they have learned (Tostan, 2009).

### Mission

Tostan’s mission is to empower African communities to bring about ▶ [sustainable development](#) and positive social transformation based on respect for ▶ [human rights](#). Working in sub-Saharan Africa, primarily in remote regions, Tostan provides a participatory and nonformal education program in local languages for adults and adolescents who have had little to no access to formal schools. Tostan has demonstrated that providing nonformal education, which focuses on the educational needs of learners and involves them in curriculum creation, is transformative both for individuals and their communities, leading to meaningful and sustainable ▶ [social change](#) (Gillespie & Melching, 2010). Tostan’s curriculum, known as the Community Empowerment Program (CEP), is facilitated over the course of 3 years. Participants attend sessions based on their educational needs and, using their acquired skills and knowledge, are encouraged to use what they learn in their daily lives. Through community-led outreach activities, they share the information from these sessions with members of their community, neighboring communities, and extended ▶ [social networks](#). As a result, Tostan has transformed the lives of millions of Africans (Tostan, 2009).

### Community Empowerment Program

As of 2012, Tostan has implemented the CEP to nearly 900 villages in 8 African countries: Djibouti, Guinea, Guinea Bissau, Mali, Mauritania, Senegal, Somalia, and The Gambia. Communities most frequently learn about the CEP by word of mouth, and Tostan implements the program in communities based on the availability of funding while also considering factors such as location and local language. Tostan provides all educational material and a trained facilitator.



The community must supply a meeting place for the CEP sessions, as well as feed and house their facilitator, who lives in the community and facilitates one adult and one adolescent class of 25–30 participants each, three times a week (Tostan, 2009).

The CEP has two phases, both containing modules organized around a theme. The first phase, lasting a year, is called the *Kobi*, a Mandinka word that means “to prepare the field for planting.” The sessions are shared orally, since most participants beginning the program cannot read or write. Facilitators draw on oral traditions, such as proverbs and skits, which spark debate and dialogue on issues related to the community’s well-being. Participants sit in a circle and express their ideas about the session topics.

The first part of the *Kobi* covers the core themes of ► [democracy](#), human rights, and problem solving. Rooted in theories of democratic education, such as those of John Dewey (1944) and Paulo Freire (2002), the CEP introduces new information through a process of shared inquiry, starting from the very first session when participants are asked to express their future hopes for the community. As class members describe a future that often includes peace, ► [health](#), ► [economic growth](#), ► [security](#), ► [education](#), work, ► [solidarity](#), and lack of discrimination, they transition to examining what they have already been doing that will help them to succeed. These visioning sessions are highly relevant to the introduction of democracy and human rights and also serve as a reference for the rest of the educational program, as the goals identified are reviewed, discussed, revised, and implemented throughout the CEP. Participants examine current practices that are blocking progress toward their goals, and using the problem-solving strategies included in the *Kobi*, they develop strategies to overcome problems (Gillespie & Melching, 2010).

The second part of the *Kobi* focuses on health and hygiene. Participants learn about their own mental and physical development, the systems of the body, infectious diseases and the preventative significance of vaccinations, the reproductive

process and proper birth spacing, HIV/AIDS and other sexually transmitted infections, and the health consequences of traditional practices such as female genital cutting (FGC) and child/forced marriage. The module also promotes positive, health-enhancing traditions, such as breastfeeding and infant massage. By examining these topics in the context of democracy, human rights, and problem solving, participants speak out and take action based on the information studied (Gillespie & Melching, 2010). For example, after learning about germs and how to stop their transmission, participants weigh the benefits of prevention against the costs of treatment.

The second phase of the CEP is called the *Aawde*, a word in the language of Fulani, meaning “to plant the seed.” Devoted to economic ► [empowerment](#), this phase includes sessions on ► [literacy](#), numeracy, and small-project management. Over the course of 18 months and 130 sessions, participants learn to read and write in their own language, which they practice by writing short letters, reports, stories, poems, and songs. They also gain basic math and project management skills. Participants also learn how to assess the feasibility of income-generating activities and then select, implement, and manage their own projects. Examples of projects include developing products for sale such as soap or dyed fabrics or offering a needed service such as managing a cell phone recharge station or orchestrating a village cleanup. Participants practice their new skills using interactive workbooks, which also serve to review the information facilitated during the *Kobi* phase.

In 2010, Tostan added Mobile Phones for Literacy and Development to the CEP, which enables participants to continue practicing and reinforcing their skills in reading, writing, and math. In addition, the SMS project enables participants to communicate with people in their extended family networks on a more regular basis and to save money through texting rather than making phone calls (Beltramo & Levine, 2010).

Throughout the CEP, Tostan emphasizes the development of critical thinking and research

skills, which help participants to investigate the issues affecting their own communities. For example, Tostan provides data on maternal and infant mortality rates for analysis and uses illustrations that teach the steps involved in preventing dehydration from diarrhea. In areas where there is deforestation, Tostan shares information about how to construct fuel-efficient stoves and use solar-powered cookers (Tostan, 2009).

In 2011, Tostan began to pilot new modules focused on reinforcing parental education (RPE). The modules were developed by a team of pedagogic specialists in early childhood education to address concerns over traditional parenting practices that negatively affect infant and child development. Using the same participatory, nonformal, and human rights-centered approach used throughout the CEP, the RPE sessions aim to equip participants with information that enable them to uphold children's rights within their families and communities, understand the different forms of intelligence (emotional, social, psychomotor, verbal/linguistic, and logical/mathematical), understand how babies and young children learn, adopt positive practices that can contribute to the success of their children in school and in life, and use disciplinary alternatives that exclude ► [violence](#) and abuse.

### The Community Management Committee

Simultaneous to leading the CEP, the facilitator helps establish and train a Community Management Committee (CMC), which ensures the coordination, management, and ► [sustainability](#) of community development activities. Composed of 17 democratically selected members, at least nine of whom are women, these committees represent the first step in establishing democratic community leadership. The training curriculum for CMCs provides the knowledge and skills necessary to identify, prioritize, and address human rights violations occurring in their communities, using the same participatory and reflective methods applied throughout the CEP. CMCs also organize social mobilization activities and propose and manage development

projects in problem areas, often identified during CEP sessions and CMC meetings, in the areas of health and sanitation, the environment, and child protection. As of 2012, Tostan has trained over 2,000 CMCs, hundreds of which have become officially registered community-based organizations (Tostan, 2012).

In 2006, Tostan created the Empowered Communities Network (ECN) to help CMCs address needs in their communities by facilitating partnerships with trusted NGOs, service providers, donors, and decentralized government services. ECN projects are related to the environment (solar electrification, waste management, solar cookers), health (family planning services, construction of community health centers, further training for health agents), and economic empowerment (community grants, small businesses, agricultural projects).

### Organized Diffusion

In the communities in which Tostan works, decisions about important matters are never limited to one individual village and are instead made by a large and complex network of interrelated neighborhoods and communities, connected through marriage and family ties, trade, local resources, and a host of other influences. In order to bring about sustainable development and positive social transformations, all these networks must be included in the educational process. Based on this understanding, a central aspect of the CEP is the dissemination of information and ideas discussed in sessions to the community as a whole and to other communities in its extended social network. This process, termed *organized diffusion*, is achieved through a variety of activities including:

*The “adoption” of other community members and villages:* By adopting a friend or family member, participants share and discuss program topics with their community at large. Similarly, the community itself goes on to “adopt” surrounding communities and family members in the diaspora, leading to the development of consensus opinions within extended social networks at regional, national, and international levels.

*Community-wide social mobilization and awareness-raising activities:* Led by the CMC, these activities serve to share important information on issues affecting the community and develop strategies to resolve them. These issues include infectious diseases, harmful traditional practices, maternal health, ► [school enrollment](#), and birth registration.

*Intervillage meetings:* Organized between interconnected and adopted villages, these meetings provide a platform for participants to discuss important issues and, by promoting open dialogue and consensus opinions, foster collective and coordinated social transformations of ► [norms](#) and practices that undermine or violate certain human rights.

*Radio programs:* Broadcast weekly in regions where Tostan implements its program, these provide yet another means of disseminating information on topics such as democracy and health and human rights, in local languages, to affected populations. Broadcasts also provide community members with a forum for sharing positive participant and CMC accomplishments, generating further discussion and support for local social mobilization initiatives.

### **The Current Program: Origins and Evolution**

Though officially founded in 1991 as a US 501(c) (3) nongovernmental organization, Tostan's origins date back to 1976 when founder Molly Melching established a children's center known as *Démb Ak Tey* (Yesterday and Today), in a low-income area of Dakar. With Senegalese cultural specialists, she published educational materials in Wolof for hundreds of street children who soon flocked to the center (Harrell-Bond, 1981). In an effort to expand their audience, Melching's team produced the first radio program for Senegalese children using traditional songs, stories, and proverbs, which they collected as they traveled through Senegal.

As Melching continued to work in marginalized rural communities in the region, she noticed that the general lack of basic education in national languages was a major barrier to development.

While the villagers were motivated, they lacked the vital information and skills required to improve their communities. Working with the same team of specialists and villagers from the rural community of Saam Njaay, a village located 100 km north of Dakar, Melching began to develop adult educational materials based on the African traditions and learning styles of dialogue and active participation. The program proved particularly beneficial to the women of the community, providing a forum for them to discuss their needs and hopes and take a more active role in community development. Based on their feedback about the problems their community faced, Melching and her team refined the modules, culminating in the creation of a six-module program in 1987 (Gillespie & Melching, 2010). In 1988, Melching began an ongoing collaboration with UNICEF Senegal to train local facilitators to implement the program in 55 rural villages in the regions of Thiès and Kolda.

In 1995, Tostan conducted a year-long research study with thousands of former participants to assess potential future educational themes of interest. Women overwhelmingly stated their desire to learn about their own bodies, puberty, the reproductive cycle, menopause, sexuality, and best practices for good health, and sessions covering these themes were subsequently added to the program. However, during this period, Tostan also discovered that the low status of women in participating communities and their lack of decision-making power impeded their abilities to effectively advocate for change. Indeed, despite having received information on health, a lack of knowledge of their human rights, such as the right to express their views freely, meant that they were unable to voice their opinions and desires publicly or take concrete actions to promote the health care of themselves and their children. Based on these findings, Tostan subsequently added sessions on women's rights and children's rights before the sessions on health and early childhood development (Gillespie & Melching, 2010).

While the addition of sessions specifically addressing women's and children's rights proved effective in contextualizing the information

provided on health and childhood development, they had an adverse effect on the engagement of the men in participating communities, who felt that their paternal authority was being undermined and that they were being excluded from the development process. Thus, in 2000, modules that had initially discussed “women’s rights” or “children’s rights” were rewritten as “human rights” and placed at the beginning, as the foundation for the entire program (Gillespie & Melching, 2010). Similarly, men were invited to attend classes and participate more actively in the CEP process.

### Activities/Major Accomplishments/Contributions

#### Approach

Tostan’s local knowledge has facilitated the development of innovative strategies and curricula that are contextually and culturally sensitive as well as relevant to villagers’ lives and experiences (Diouf, Sheckley, & Kehrhn, 2000). From the beginning, Tostan’s educational practices have diametrically opposed more authoritarian pedagogy prevalent in the French model of school systems in Senegal. Teachers are called facilitators and students are participants. Tostan’s long-term facilitator training focuses on helping facilitators unlearn stereotypes of the teacher as the authority and the student as a passive recipient (Gillespie & Melching, 2010). Drawing on the theories of Cheikh Anta Diop, who believed that to foster democracy, development must be *educational for all involved* and always rooted in and growing out of existing cultural practices and local knowledge, Tostan hires and trains local field staff, often of the same ethnic group as the community in which they work (personal communication between Molly Melching and Cheikh Anta Diop, date unknown).

The CEP itself is facilitated in local languages and taught in a participatory manner to encourage dialogue and consensus building, both of which are highly valued in African societies. Inspired by

traditional culture, participants create songs, dances, plays, and poetry to reinforce new knowledge. It is through these pedagogic methods that active participation and reflection is encouraged and participant feedback can be received so as to quickly adapt to changing circumstances.

#### Results

According to both internal and external evaluations, Tostan has had results in the following domains:

- *Women’s empowerment*: Women coordinate over 80 % of Tostan-trained CMCs and often go on to take up roles in local councils and regional federations or associations. Female participants also frequently report decreased incidences of ► [domestic violence](#) following CEP implementation (Diop, Faye, et al., 2004; Diop, Zakari, et al., 2004; UNICEF, 2008).
- *Children’s rights*: The Tostan program promotes community efforts to protect children’s rights, resulting in increased primary school enrollment and birth registration rates (Diop et al., 2008; Diop, Faye, et al., 2004).
- *Maternal and child health*: Community-led efforts to improve maternal and child health have led to increased vaccination rates, increased prenatal consultations, family planning, and a decline in the incidence of malnutrition (Diop et al., 2008; UNICEF, 2008).
- *Environmental health*: CEP communities organize regular community cleanups, reforestation activities, and construct fuel-efficient stoves (Diop, Faye, et al., 2004; Diop, Zakari, et al., 2004).
- *Community grants*: CMCs set up community grant operations based on rotating funds and create small businesses for the production of soap or mosquito repellent or the resale of sugar and grains.

#### Movement to Abandon Female Genital Cutting (FGC)

In addition to the results discussed above, some of the most significant impacts of the Tostan CEP are the public declarations made by

participating communities to abandon FGC. By examining the practice in the context of the human rights to health, to a family, and to be free from violence and abuse, participating communities are able to come to their own conclusions as to whether FGC constitutes an abuse of human rights and decide if they wish to continue the practice. Political scientist Gerry Mackie's theoretical work on the processes involved in the community-led shift toward the abandonment of FGC has helped inform Tostan's approach. Mackie argues that harmful practices such as FGC persist because they are reinforced by social conventions linked to marriageability. If a family chooses not to conform to this social expectation, their daughter's marriage prospects and reputation would face serious adverse effects. Mackie's work (1996, 2000) illustrates that shared social conventions cannot be overturned by one individual alone but require group dialogue and a shared commitment to abandon a practice. According to a 2008 evaluation conducted by UNICEF and Macro International, FGC rates had dropped by 77 % among Tostan participants who had declared their abandonment of FGC 10 years earlier. Since the first public declaration for the abandonment of FGC made by 30 women from the village of Malicounda Bambara, Senegal, in 1997, nearly 6,000 additional communities from eight countries in Africa have followed suit, publicly declaring their abandonment of the practice. Based on its success, the Tostan approach to FGC abandonment has been integrated into various national and international strategies including those of the international Donor's Working Group on FGM/C and the Government of Senegal's Action Plan for the complete abandonment of FGC by 2015.

### Social Norms

Tostan's understanding of the social norms that underlie FGC has been greatly aided by the work of philosopher Cristina Bicchieri (2006). Social norms are clusters of expected behaviors that bind people within a community or culture.

In communities where Tostan has implemented the CEP, community members have operated for thousands of years under the shared expectation that all girls and daughters needed to be cut. As an established social norm, this practice was accepted by all members of the community and continued without question. As these communities experienced the CEP, the dialogue and reflection integral to the Tostan approach allowed them to reflect on the assumptions and beliefs upholding this practice. By creating a safe space for dialogue, the communities are able to come to a collective decision on whether FGC merits continuation and act accordingly. If the community reaches the decision to abandon the practice, they organize a public declaration, often in conjunction with others in their kinship network, to publicly announce their decision and understand that the practice has been overturned. These public declarations give rise to a new social norm or behavioral expectation that FGC is no longer practiced.

### External Evaluations

Tostan has been evaluated extensively by various external agencies including (but not limited to) the Ministry of the Family, National Solidarity, and Women's Enterprise and Micro-credit of the Government of Senegal in 2008 and Frontiers in Reproductive Health with the Population Council in 2003 and 2004.

In the 2008 study conducted by the Ministry of the Family, National Solidarity, and Women's Enterprise and Microcredit of the Government of Senegal, researchers found that:

The only activities that had been totally accomplished and with an unprecedented rate of success within the framework of the Government National Action Plan of 2000-2005 were those implemented by the NGO Tostan in terms of nonformal education and social mobilization activities.

In the 2004 Frontiers study conducted between 2000 and 2003 to evaluate the success of the Tostan CEP in 20 participating villages, researchers found that, in terms of knowledge, ► [attitudes](#), and behavior regarding reproductive



health, human rights, and FGC, program results were noteworthy. The study states:

The impact of the Tostan program on women's and men's well-being has been substantial. The program has been able to bring about a social change within the community and to mobilize the villagers for better environmental hygiene, respect for human rights, and improvement of health.

### Prizes and Accolades

Tostan has been awarded the following prizes for its work in community-led empowerment and development:

- Skoll Award for Social Entrepreneurship, 2010
- Conrad N. Hilton Humanitarian Prize, 2007
- UNESCO King Sejong Literacy Prize, 2007
- Sweden's Anna Lindh Prize, 2005

In addition, the Tostan program has been cited as a best practice for achieving sustainable development and changing social norms by the following studies:

- *Solutions to End Child Marriage*, International Center for Research on Women, 2011
- *Innovation for Women's Empowerment and Gender Equality*, International Center for Research on Women, 2009
- *Start with a Girl: A New Agenda for Public Health*, Center for Global Development, 2009
- *Girls Count: A Global Investment & Action Agenda*, Center for Global Development, 2008
- *Coordinated Strategy to Abandon Female Genital Mutilation/Cutting in One Generation*, UNICEF, 2008
- *Eliminating Female Genital Mutilation: An Interagency Statement*, ONCHR, UNAIDS, UNDP, UNECA, UNESCO, UNFPA, UNHCR, UNICEF, UNIFEM, WHO, 2008
- *Working with the Community for Improved Health*, Health Bulletin, no. 3. Washington, DC: Population Reference Bureau, 2006
- *Ending a Harmful Traditional Practice: Female Genital Mutilation/Cutting*, UNICEF, 2005

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## Total Quality Management (TQM)

### ► Service Quality in New Public Management

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## Total Survey Error

Willem Egbert Saris  
Research and Expertise Centre for Survey  
Methodology, Universitat Pompeu Fabra,  
Barcelona, Spain

### Synonyms

Survey errors

### Definition

The combination of errors occurring in a survey.

### Description

From the very beginning, the emphasis in survey research was on the variation in survey estimates due to the probability sampling of the elements in the sample developed by Neyman (1934). However, this uncertainty estimation is based on the untenable assumption that all other aspects of the survey do not introduce further errors. Deming (1944) was the first to develop the idea of multiple error sources in survey research. Many classifications of error sources have been made. Perhaps the most elegant presentation of the total survey error components linked to steps in the measurement and representational inference process has been given by Groves, Fowler, Couper, Singer, and Tourangeau (2004) which is presented in Fig. 1.

The elegance of this picture is that it brings together in a simple way the error sources studied by statisticians with respect to sampling, especially coverage errors, sampling errors, and nonresponse errors, and the errors studied by

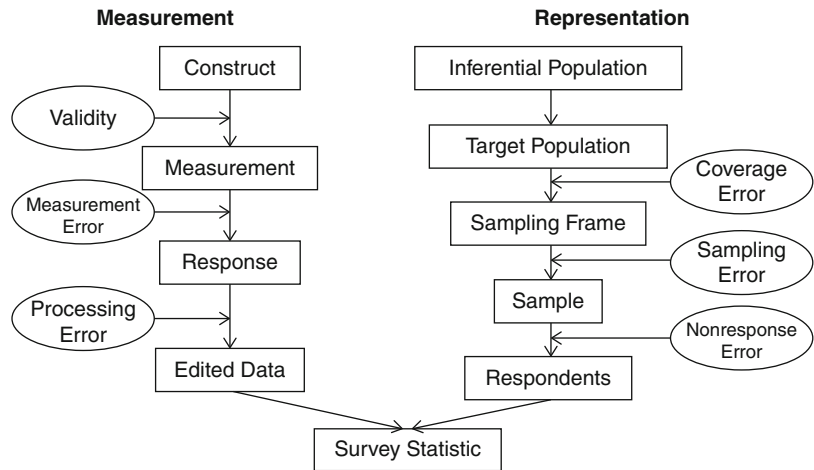
survey researchers concerned with measurement error such as validity errors, measurement error, and processing errors. Before the book of Groves (1989), these two fields were two different worlds with very little contact. The book of Groves brought these two approaches to survey error sources together. After the publication of that book, a conference was dedicated to this issue as well (Biemer, Groves, Lyberg, Mathiowetz, & Sudman, 1991). Since then, many efforts are made to study the different types of errors and not only sampling errors. However, so far there is no simple procedure to determine the total error of a survey estimate combining all the errors mentioned in Fig. 1. There are many studies concentrating on a specific type of error. It is rather complex and expensive to design survey research that also evaluates the total error of the estimates of interest. Only in some large scale, continuous research, one can see this development (ESS, PISA).

There is also criticism on the concept of total survey error. For example, Morillon (2005) suggested many more criteria for indicator quality including also credibility and relevance. The reason is that a measure can have an excellent quality (a small total error) but not be accepted by researchers because of lack of relevance or lack of credibility of the institute that developed the measure.

The total survey approach has led to a lot of studies that concentrate on specific error sources and its causes. So there are many studies directed to detect the reasons for measurement errors, to mention some, Sudman and Bradburn (1982), Schuman and Presser (1981), Saris and Gallhofer (2007), and Alwin (2007). Similar studies have been made to detect sources of the nonresponse errors (Stoop, Billiet, Koch, & Fitzgerald, 2010). If these sources of errors are better understood and models are developed for prediction of the errors, the size of the errors can be predicted. With respect to measurement errors, this kind of predictions is developed. The program SQP for prediction of the quality of survey questions on the basis of questions characteristics is an example (Saris & Gallhofer, 2007, Saris et al., 2012). It would be possible to develop similar

**Total Survey Error,**

**Fig. 1** Total survey error components linked to steps in the measurement and representational inference process



models and programs for other errors, for example, nonresponse errors. However, this will require more knowledge of the sources of nonresponse. So far, our knowledge is still rather limited.

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## Town and Country Planning

- ▶ [Garden City Movement](#)
- ▶ [Land-Use Planning](#)
- ▶ [Planning, Spatial](#)

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## Town Planning (UK)

- ▶ [Community Planning](#)

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## “Town-Gown” Relations

- ▶ [Community-University Partnership\(s\)](#)

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## Towns

- ▶ [Cities, Characteristics of](#)

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## Township

- ▶ [Local Government](#)

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## Tracking

- ▶ [Monitoring](#)

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## Traditional Ecological Knowledge

- ▶ [Education, Traditional](#)

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## Traditional Ecological/ Environmental Knowledge (TEK)

- ▶ [Indigenous Knowledge](#)

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## Traditional Knowledge

- ▶ [Indigenous Knowledge](#)

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## Traditional Neighborhood Design

- ▶ [New Urbanism](#)

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## Traditional Way of Living

- ▶ [Subsistence in the Arctic](#)

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## Traffic Mobility

Konrad Götz  
ISOE Institute for Social-Ecological Research,  
Frankfurt/Main, Germany

## Synonyms

[Movement](#); [Transportation](#); [Travel](#)

## Definition

While the heading of this essay is “traffic mobility,” it is necessary to begin by distinguishing between mobility and traffic.

There is an interactive, an economic and a transportation dimension to the word “traffic.” “Traffic” consolidates in one word the interpersonal and inter-market trade-offs that depend on movement and transportation – traffic in the name of commerce – along with the interaction and communication involved in social intercourse between people, bodies, and genders. In this very broad sense, the idea of traffic defines an area in which being mobile is a question of social integration, participation, and even reproduction.

The modern connotation of traffic comes down to transport and denotes the rational, instrumental activities designed to move objects and people around, with the help of means of transportation and the corresponding infrastructure. This idea of “traffic” adopts a systemic, functional perspective focusing on the overall transport network and its level of efficiency and rationality. Traffic in this sense is a core element of any economic system, which reaches beyond the subsistence economy. The development of canals as waterways, the building of paved avenues, the expansion of the rail network, and increase in transport capacity were key prerequisites and components of the social transformation processes ultimately leading to the Industrial Revolution. The mobilization of the masses along with the creation of urban rail hubs in the

cities was part of an urbanization process without which the dissolution of the prevailing feudal, rural structures would never have been possible (cf. Wehler, 1995, pp. 68–75).

So, whereas the term “traffic” signifies transportation and the transport system, “mobility” – from the Latin *mobilitas* or *mobilis* – denotes the potential for movability or “the state of being moveable” (Rammler, 2000, p. 41). Movability and movement are at the heart of perception and the way in which reasoning and individuation as a whole develop. With the help of movement, the toddler “transforms its perceptual field.” It performs “perceptual activity” (Piaget, 1971, pp. 33–38). For example, the three-dimensional properties of objects can only be learned through changing perspectives, in other words movement.

In later stages of personal development, mobility with and without means of transportation becomes an instrument for fulfilling needs and wishes. In our industrial society, domiciles, workplaces, and social and leisure venues are spatially separated, indeed often miles apart. It is impossible for people to cope without traffic mobility. They need the kind of mobility provided by transportation in order to get to their workplace and back. They have to be mobile to reach schools, vocational training, and universities. People wish and need to be mobile in order to shop for provisions and meet up with friends and relations. Last but not least, all out-of-home leisure activities rely on mobility.

The heading “traffic mobility” as used here refers to mobility and transport together and looks at the kinds of movability and movement in physical space realized outside the home through the use of transportation.

## Description

### Mobility as a Basic Need

The possibility of being able to move, with or without transportation, is a crucial factor when it comes to fulfilling needs and hence achieving quality of life. Those forbidden to move or incapable of doing so are subject to restricted freedom – and herein lies the deterrent potential

of a prison sentence. Individuals without access to transportation see their options curtailed, whether this is a question of getting to work and providing for themselves; finding fulfillment through culture, sport, or travel; or cultivating social contacts in other locations. The fact that, far from being a luxury, this is actually one of life’s necessities is shown by people whose leisure mobility is so restricted by their underprivileged social status that they do not know the meaning of holiday and holiday trips (Götz, 2009).

### Purposes and Means of Transport

This is not to say that every type of movement serves social, socially meaningful, or even rational purposes. What people consider to be meaningful mobility is a highly subjective area (Holz-Rau & Scheiner, 2009). For example, adolescents particularly enjoy cruising around just for fun, as can be seen in countless movie classics. Then, car driving is an outlet for aggression and a means of regaining equanimity or traveling with friends as a vehicle for social integration. Certain leisure activities actually revolve around movement: walking, hiking, horse riding, cycling, land and water motorsports, swimming, kayaking, sailing, and flying sports planes and gliders. They are along with all forms of recreational exercise in water and on the beach, with and without a parachute. In Germany, leisure traffic makes up as much as one third of the overall person distance traveled.

Besides the reasons for traffic mobility as reflected in purposes for travel – work, education/training, leisure, shopping, escorting/accompanying – research is also interested in the means of transportation used. Human beings start out by moving around on all fours and then go upright on two legs before eventually taking to transportation such as a child’s scooter, roller skates, bicycle, tram, underground, bus, train, plane, and the car. Added to these possibilities are ships, cable cars, skateboards, skis, sledges, down to horse-drawn vehicles. With developments in electric mobility, we are seeing new forms of two wheelers (e.g., segways, electric bicycles, motorbikes, and motor scooters), three

wheelers (e.g., hybrid scooters with two front wheels), and also four-wheeled electric light vehicles.

### Travel Behavior Research

People's choice of transportation is frequently examined in transport research, appearing, for instance, in the regular reports on mobility in Germany (MID – Mobilität in DeutchLand, 2008) or in international comparative studies. These studies, whose methods are the subject of international congresses and scientific organizations such as the International Association of Traffic Behavior Research (IATBR), look not only at the spread of transportation choices, the so-called modal split but also at the time spent outside the home along with the purposes and distances involved. Research into transport behavior has ascertained that the number of journeys outside the home has in Germany hardly changed almost in the past 35 years (from 3.1 trips per day 1977 to 3.3 in 2002) what is changing with increasing income is the motorization and the time and distances involved, along with the CO<sub>2</sub> emissions per household – from 27 km/day in 1977 to 37 km/day 2002. In the USA the trips per day increased from 2.9 to 4.1 and the distances from 42 km/day to 59 km/day (Bühler & Kunert, 2006).

Traffic mobility differs within the various social groups and sociodemographic factors. Taking Germany as an example, older people (60+) have fewer journeys to make than the average. They make more frequent use of public transport, walk more often, and use the car to a disproportionately low degree. However, today's older citizens do use the car more often than past older generations. The group exhibiting the most person kilometers traveled per day is the 40–49-year-old segment, most of whose members are gainfully employed. People on a high income manifest a greater person distance traveled – they use the car more frequently and are more likely to own their own car. There are also gender differences, but these even out more and more over time. Men make slightly more journeys than women, covering more person kilometers per day on average. However,

this is not the case among the under-18 age groups – here, the figures for women are either the same or even higher than those for men. This is doubtless linked to possession of car usage. Men use the car more often than women. They make their ways more often by foot and make less use of the car. Women in the older cohorts are less likely to have a driving license than the men, whereas the gender ratio in the younger generation is more equal. The car is used more in rural areas than in cities (MID, 2008). Urban areas have a better and more consolidated public transport infrastructure. The big cities manifest the most car-free households. That is not to say that these belong solely to disadvantaged groups. In the cities of Western Europe, one increasingly finds social milieus choosing to live without a car, even though they are more than able to afford one.

Hence, there are socially and spatially defined differences in traffic mobility. There are differences in the provision of transportation, differences in access to traffic infrastructure, and differences in the accessibility of locations. Whether for social and socio-spatial reasons, due to physical limitations, or because of a traffic infrastructure that fails to cater to their needs, those who are unable to move around easily have their quality of life compromised, or even find themselves socially excluded (Cass, Shove, & Urry, 2005).

### Negative Impacts

The reverse, however, is not necessarily true, that is, that quality of life increases along with greater mobility. And it is even less true to say that quality of life is enhanced with increasing traffic. Traffic volume or distances traveled may well rise with increased income, but this has repercussions that in turn can compromise quality of life. These repercussions are unequally distributed.

As early as the 1970s, the negative ecological and social consequences of the growing number of private cars and other motorized traffic like freight transport in Western European countries were becoming increasingly apparent. The traffic jam was emblematic of the traffic problem.

The growing amount of traffic was interpreted in terms of a demand to which traffic planners had to react by offering still more infrastructure. The result was those multilane motorways intersecting our cities and with which we struggle today. Although such urban motorways are still being built, it is actually clear to all that the idea of supply and demand triggers a spiraling dynamic in which traffic is responded to with traffic infrastructure which then attracts still more traffic that in turn has to be accommodated by adding infrastructure.

In the 1980s it was becoming increasingly obvious that rising automobility was not only contaminating a common good, namely, the air that we breathe, but also that car-based urban planning would worsen mobility for those not using in a car. Walkways and public transport were transferred underground to allow car traffic to drive through unhindered. Trams and train systems were cut back.

And then there is the long-term impairment to quality of life for the countless people seriously injured in traffic accidents. In 1970, 19,000 people died in accidents on Germany's roads – at the present time 4,000. The car industry may have invested heavily and with some success in research to find technical means of improving passenger safety, while legislators introduced a seat belt law. But this gave rise to a plethora of performance features and safety measures. Each new generation of vehicles saw improved acceleration and with this came the need to improve safety. Since enhanced crash and interior safety means greater weight, vehicle performance had to be boosted to an exorbitant degree to ensure that top speeds and acceleration could likewise increase.

People are using the car not just to get from A to B as quickly and economically as possible (as hoped by traffic economists), they are also taking an active and fun-based approach to driving, traveling fast and taking risks, and coveting and emotionalizing the car. A car is of particular benefit to families, and it is highly symbolic of the level of affluence achieved.

But the “side effects” cannot be ignored. After a long period of concentrating solely on the

prosperity-enhancing aspect of the car, in the 1980s people started to shift their perspective, and this is still effective today. The first major goal is to reduce emissions. The different stages in catalytic converter technology have meant that today's cars produce far less in the way of toxic substances. However, diesel vehicles are still emitting considerable amounts of carcinogenic micro particles. In mega cities such as Delhi, Teheran, Sao Paulo, or Peking, air pollution from emissions remains a highly visible, disease-inducing problem of daily life. Two different methods are being attempted to combat ultrafine particles. There is the classic end-of-the-pipe technology involving particle filters combined with environmental zones barred to vehicles without filter technology, as practiced in many German cities for example in Frankfurt/Main. The slightly more radical version of this approach is to create car-free districts like Freiburg Vauban or the Floridsdorf district in Vienna. While residents here commit voluntarily to living without a car, London, for example, simply imposes a “congestion charge” to encourage a reduction in traffic. Along with reconsideration of the benefits to be had from a densely populated, mixed-function city, attention also turned to the irreversible destruction of historical substance and evolved structures: the sealing of landscapes with motorways and their sprawling intersections; the consequences of suburbanization and urban sprawl and the way it eats away at the boundaries between town and country side; the countless victims of roadkill; traffic noise as a cause of illness and a mechanism leading to social segregation as high-grade historical residential areas are sacrificed to traffic, abandoned as attractive housing space, and given over to disadvantaged groups whose situation worsens as a result. And last but not least the exhaustion of energy reserves: before the first oil crisis (1973), the Club of Rome in its “Limits to Growth” study was quick to point out the impending end of fossil fuels (Meadows, Meadows, Randers, & Behrens III, 1972). Today, 40 years later, these early warnings have proved to be farsighted. The results of research on peak oil show that oil extraction has already



peaked and that further sources can only be opened up at a very high cost to society.

Today, practical measures revolve around slowing down the rate of climate change by reducing carbon dioxide emissions, to which road traffic contributes 15–17%. Research findings in this field were long a subject of debate – today a social consensus has been reached and even major car manufacturers are declaring zero emissions as their goal for the future.

It is thus fair to say that an increasing volume of motorized traffic can seriously lower one's quality of life; the car-friendly city is no longer considered a modern model. The more details that emerge about the risks and problems posed by a mobility based on mass private car ownership, the clearer it becomes that they can only be solved via inter- and transdisciplinary collaboration (cf. Bergmann & Schramm, 2008). This means that the various approaches to problem solving are no longer mutually exclusive; they need to be intertwined. We are talking here about urban and regional planning measures to reduce distances and improve accessibility, technological advancements to increase efficiency and reduce emissions, car sharing services installed on smart phones, and legislation to promote public transport, cycling and walking, and roll back motorized individual traffic (cf. Banister, 2008). Such advancements are today being combined with measures derived from socio-scientific findings: the lifestyle Approach in combination with results of travel behavior research lead to mobility styles (Götz, 2003). On this base it is possible to develop target group specific alternatives to the private car and geared to different lifestyles and their differing definitions when it comes to quality of life (cf. Götz & Ohnmacht, 2011). New offerings must be fun and appeal to people's hedonistic side. Getting around on foot and by bike is quick, considered a healthy option, and can take far more individualistic forms than driving a car.

Modern urban design projects such as those in Zürich or Malmö combine so-called hard and soft measures with a new kind of mobility culture (Deffner & Götz, 2008). They focus on the integration of planning and communication and the

new paradigm of quality of open spaces, taking individuals' subjective mobility needs as their starting point. Fulfillment of these needs is seen in terms of quality of life and identification with the city. It is no longer the primary purpose of urban roads and squares to promote a quick and smooth flow of mass traffic; they are also designed to serve individual experiences: space for strolling around, allowing people to chat to each other as they walk, providing senior citizens with opportunities to rest and to drink, and recreational fun for the younger generation. This way, the different social milieus are able to take back possession of their city. They can win back the spaces taken up by cars and use them for individual modes of transport. Mobility is then defined, as outlined above, as potential for movement with a view to satisfying wishes and needs, a mobility that does not necessarily have to be realized in terms of traffic economy.

## Discussion

Mobility or movability (good access to transport infrastructure, accessibility of localized functions such as work, social contacts, household provisioning, home living, and leisure activities) has a crucial impact on quality of life in the sense of fulfilling needs and desires. However, the realization of such mobility via more and more individual motorized transport affects quality of life through noise, environmental pollution, urban destruction, and impairment of natural livelihoods. A conflict arises between enjoying the freedom to achieve each and every goal as quickly as possible and yet avoiding the damage this causes.

A much debated proposal is the partial decoupling of need fulfillment and passenger transportation, mobility and harmful consequences, affluence, and increasing traffic. This kind of sustainable mobility “allows the basic access and development needs of individuals, companies and societies to be met safely and in a manner consistent with human and ecosystem health and promotes equity within and between successive generations” says the European Union Council of Ministers of Transport (2001). Moreover, it is “affordable, operates fairly and efficiently, offers choice of transport mode,

and supports a competitive economy, as well as balanced regional development.” Such a mobility “limits emissions and waste within the planet’s ability to absorb them.” It “uses renewable resources at or below their rates of generation, and, uses non-renewable resources at or below the rates of development of renewable substitutes while minimising the impact on the use of land and the generation of noise.”

In other words, sustainable mobility is need-related mobility with less traffic (cf. Becker, 2003).

## Cross-References

- ▶ [Air Quality](#)
  - ▶ [Built Environment](#)
  - ▶ [Car Ownership](#)
  - ▶ [Eco-Efficiency](#)
  - ▶ [Ecological Footprint](#)
  - ▶ [Environmental Sustainability](#)
  - ▶ [Land Use](#)
  - ▶ [Mobility](#)
  - ▶ [New Urbanism](#)
  - ▶ [Social Mobility](#)
  - ▶ [Spatial Planning \(Europe\)](#)
  - ▶ [Suburbanization](#)
  - ▶ [Sustainable Development](#)
  - ▶ [Sustainable Lifestyles](#)
  - ▶ [Sustainable Transportation and Well-being](#)
  - ▶ [Sustainable Urban Design](#)
  - ▶ [Time Needed to Travel to Work](#)
  - ▶ [Traffic Noise Abatement](#)
  - ▶ [Transportation and the Quality of Life](#)
  - ▶ [Urban Design](#)
  - ▶ [Urban Ecology](#)
  - ▶ [Urban Life, Quality of](#)
  - ▶ [Walkability](#)
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## Traffic Noise

- ▶ [Traffic Noise Abatement](#)

## Traffic Noise Abatement

Michael A. Minor<sup>1</sup> and Thomas W. Sanchez<sup>2</sup>

<sup>1</sup>Michael Minor & Associates, Portland, OR, USA

<sup>2</sup>Urban Affairs and Planning, Virginia Tech, Blacksburg, VA, USA

### Synonyms

Highway noise; Noise abatement; Road noise; Sound reduction; Traffic noise

### Definition

Human response to noise is subjective and can vary greatly from person to person. Factors that can influence individual response include the loudness, frequency, and time pattern, the amount of background noise present before an intruding noise, and the nature of the activity (e.g., sleeping) that the noise affects.

The sensitivity of the human ear to sounds of different frequencies is measured by the A-weighted decibel scale (dBA). A 10-dBA change in noise levels is judged by most people as a doubling of sound level. The smallest change in noise level that a human ear can perceive is about 3 dBA. Increases of 5 dBA or more are clearly noticeable. Normal conversation ranges between 44 and 65 dBA when the people speaking are 3–6 ft apart.

Table 1 shows sound levels for some common noise sources and compares their relative loudness to that of an 80-dBA source such as a garbage disposal or food blender. Noise levels in a quiet rural area at night are typically between 32 and 35 dBA. Quiet urban nighttime noise levels range from 40 to 50 dBA. Noise levels during the day in a noisy urban area are frequently as high as 70–80 dBA. Noise levels above 110 dBA become intolerable and then painful; levels higher than 80 dBA over continuous periods can result in hearing loss. Constant noises tend to be less noticeable than irregular or periodic noises.

## Description

### Traffic Noise Sources and Propagation

Noise sources associated with transportation projects can include passenger vehicles, medium trucks, heavy trucks, and buses. Each of these vehicles produces noise; however, the source and magnitude of the noise can vary greatly depending on vehicle type. For example, while the noise from passenger vehicles occurs mainly from the tire-roadway interface and is therefore located at ground level, noise from heavy trucks is produced by a combination of noise from tires, engine, and exhaust, resulting in a noise source that is approximately 8 ft above the ground. The following list provides information on the types of transportation noise sources that will be part of a roadway project and describes the type of noise each produces.

- **Passenger Vehicles (cars):** Noise emitted from 0 to 2 ft above roadway, primarily from tire-roadway interface. This category includes normal passenger vehicles, small and regular pickup trucks, small- to midsize sport utility vehicles, and mini- and full-size passenger vans. Typical noise levels for passenger vehicles are 72–74 dBA at 55 mph at a distance of 50 ft.
- **Medium Trucks (MT):** Noise emitted from 2 to 5 ft above roadway, combined noise from tire-roadway interface and engine exhaust noise. This category includes delivery vans, such as UPS and Federal Express trucks, large sport utility vehicles with knobby tires, large diesel engine trucks, some tow trucks, city transit and school buses with under vehicle exhaust, moving vans (U-haul-type trucks), small to medium recreational motor homes, and other larger trucks with the exhaust located under the vehicle. Typical noise levels for medium trucks are 80–82 dBA at 55 mph at 50 ft.
- **Heavy Trucks (HT):** Noise emitted from 6 to 8 ft above the roadway surface, combined noise sources includes tire-roadway interface, engine noise, and exhaust stack noise. This category includes all log-haul tractor-trailers (semitrucks), large tow trucks, dump

**Traffic Noise Abatement, Table 1** Sound levels and relative loudness of typical noise sources

Noise source or activity	Sound level (dBA)	Subjective impression	Relative loudness (human judgment of different sound levels)
Jet aircraft takeoff from carrier (50 ft)	140	Threshold of pain	64 times as loud
50-hp siren (100 ft)	130		32 times as loud
Loud rock concert near stage, jet takeoff (200 ft)	120	Uncomfortably loud	16 times as loud
Float plane takeoff (100 ft)	110		8 times as loud
Jet takeoff (2,000 ft)	100	Very loud	4 times as loud
Heavy truck or ©motorcycle (25 ft)	90		2 times as loud
Garbage disposal, food blender (2 ft), pneumatic drill (50 ft)	80	Moderately loud	Reference loudness
Vacuum cleaner (10 ft), passenger car at 65 mph (25 ft)	70		1/2 as loud
Large store air conditioning unit (20 ft)	60		1/4 as loud
Light auto traffic (100 ft)	50	Quiet	1/8 as loud
Bedroom or quiet living room, bird calls	40		1/16 as loud
Quiet library, soft whisper (15 ft)	30	Very quiet	
High-quality recording studio	20		
Acoustic test chamber	10	Just audible	
	0	Threshold of hearing	

Sources: Michael Minor & Associates, Inc.

trucks, cement mixers, large transit buses, motor homes with exhaust located at top of vehicle, and other vehicles with the exhaust located above the vehicle (typical exhaust height of 12–15 ft). Typical noise levels for heavy trucks are 84–86 dBA at 55 mph at 50 ft<sup>2</sup>. Several factors determine how sound levels decrease over distance. Under ideal conditions, a line noise source (such as constant flowing traffic on a busy highway) decreases at a rate of approximately 3 dB each time the distance doubles. Under real-life conditions, however, interactions of the sound waves with the ground often result in attenuation that is slightly greater than the ideal reduction factors given above. Other factors that affect the attenuation of sound with distance include existing structures, topography, foliage, ground cover, and atmospheric conditions such as wind, temperature, and relative humidity. The following list provides some general information on the potential affects each of these factors may have on sound propagation.

- **Existing Structures:** Existing structures can have a substantial effect on noise levels in any given area. Structures can reduce noise by physically blocking the sound transmission. (Under special circumstances, structures may cause an increase in noise levels if the sound is reflected off the structure and transmitted to a nearby receiver location.) Measurements have shown that a single-story house has the potential, through shielding, to reduce noise levels by as much as 10 dB or greater. The actual noise reduction will depend greatly on the geometry of the noise source, receiver, and location of the structure. Increases in noise caused by reflection are normally 3 dB or less, which is the minimum change in noise levels that can be noticed by the human ear.
- **Topography:** Topography includes existing hills, berms, and other surface features between the noise source and receiver location. As with structures, topography has the potential to reduce or increase sound depending on the geometry of the area. Hills and berms, when placed between the noise

source and receiver, can have a significant effect on noise levels. In many situations, berms are used as noise mitigation by physically blocking the noise source from the receiver location. In some locations, however, the topography can result in an overall increase in sound levels by either reflecting or channeling the noise towards a sensitive receiver location.

- **Foliage:** Foliage, if dense, can provide slight reductions in noise levels. FHWA provides for up to a 5-dBA reduction in traffic noise for locations with at least a 30-ft depth of dense evergreen foliage.
- **Ground Cover:** The ground cover between the receiver and the noise source can have a significant effect on noise transmission. For example, sound will travel very well across reflective surfaces such as water and pavement but can be attenuated when the ground cover is field grass, lawns, or even loose soil.

### Traffic Noise Mitigation

In theory, there are a number of options that can be used to reduce or mitigate traffic noise. These include traffic management, highway design, and noise barriers including earthen berms. In reality, noise mitigation is often infeasible due to space requirements, aesthetic issues, and financial costs or because the costs outweigh the benefits. Any specific mitigation measure recommended as part of a project must be feasible and have a reasonable cost in relation to the benefit. Potential mitigation measures are described below.

- **Traffic Management:** Traffic management measures include modification of speed limits and restricting or prohibiting truck traffic. Due to the plan purpose of most projects, traffic management measures are rarely used as noise mitigation. Restricting truck use on a given roadway would reduce noise levels at nearby receivers since trucks are louder than cars. However, displacing truck traffic from one roadway to another would only shift noise impacts from one area to another and may conflict with the planned function of the roadway (e.g., an arterial generally carries truck traffic). While reducing speeds may

reduce noise, a reduction of at least 10 mph is needed for a noticeable difference in noise to result. Also, because roadways are planned and designed to support speeds consistent with their functional classification (e.g., 35–45 mph on an arterial), changing speeds for the purpose of noise mitigation is not common.

- **Roadway Design:** Roadway design measures include altering the roadway alignment and depressing roadway cut sections. Alteration of roadway alignment could decrease noise levels by moving the traffic farther away from the affected receivers. Because there are usually noise-sensitive receivers along both sides of a street, changing the alignment may benefit one side of the street but would increase noise levels on the other.
- **Noise Barriers:** Construction of noise barriers between the roadways and the affected receivers would reduce noise levels by physically blocking the transmission of traffic-generated noise. Barriers can be constructed as walls or earthen berms. Earthen berms require more right of way than walls and are usually constructed with a 3-to-1 slope. Using this requirement, a berm 8 ft tall would slope 24 ft in each direction, for a total width of 48 ft. Berms are not feasible in some areas because of the right-of-way requirement. Noise walls should be high enough to break the line of sight between the noise source and the receiver. They must also be long enough to prevent significant flanking of noise around the ends of the walls. Openings in the wall, such as for driveways and walkways, can significantly reduce the barrier effectiveness.

### Cross-References

- ▶ [Environmental Impact Assessment](#)
- ▶ [Social Impact Assessment](#)

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### Tragedy of the Commons Avoidance

- ▶ [Fostering Pro-environmental Behavior](#)

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## Training

Martina Dieckhoff

Research Unit Skill Formation and Labor

Markets, Social Science Research Center, Berlin,  
Germany

### Synonyms

[Job-related continuing education and training;](#)  
[Learning](#)

### Definition

The focus here is on job-related continuing education and training, which the OECD has defined as follows: “job-related continuing education and training refers to all organised, systematic education and training activities in which people take part in order to obtain knowledge and/or learn new skills for a current or a future job, to increase earnings, to improve job and/or career opportunities in a current or another field and generally to improve their opportunities for advancement and promotion” (OECD, 2002:369). In empirical practice, however, the definition and measurement of continuing education and training varies substantially across surveys, making the comparison of different research on labor market outcomes of training difficult if they did not draw on the same data source (e.g., Kuckulenz, 2006).

### Description

The centrality of training and learning opportunities for the quality of work is increasingly acknowledged (Gallie, 2003: 65). Empirical investigations of training outcomes to date, however, have predominantly been concerned with wage effects. This work has arrived at very different results. Some studies suggest significant wage returns (e.g., Booth & Bryan, 2005; Muehler, Beckmann, & Schauenberg, 2007),

but very often extant work has reported small or no wage impacts (e.g., Conti, 2005; Görlitz, 2011; Leuven & Oosterbeek, 2008). Work on nonpecuniary returns – hitherto much more scarce than studies on monetary returns – by contrast, appears to provide more consistent evidence showing that training participation increases workers’ objective as well as subjective employment ► [security](#) (Bassanini, 2006; Ok & Tergeist, 2003) and also improves their promotion aspects (Melero, 2010). Since job security and promotion opportunities are considered to be important extrinsic constituents of global ► [job satisfaction](#) measures, it seems likely that training participation indeed increases individuals’ subjective well-being at work. Training can also be expected to trigger more intrinsic job rewards by promoting self-actualization (e.g., Burgard & Görlitz, 2011). Only recently, however, has research started to directly investigate the impact of training on subjective well-being at work. D’Addio, Eriksson, and Frijters (2007) analyze the determinants of ► [job satisfaction](#). Employer-provided training in the past 12 months is one of the predictors they analyze, and their satisfaction measure pertains to individuals’ overall satisfaction with their main job or activity (D’Addio Eriksson & Frijters, 2007: 2419). The authors use the European Community Household Panel for Denmark and find that training is an important determinant of men’s job satisfaction – even after individual fixed effects are controlled for – while this is not the case for women. Jones, Jones, Latreille, and Sloane (2009) estimate the impact of training on seven dimensions of job satisfaction using the British Workplace Employee Relations Survey (2004). Their training measure comprises any training during the past 12 months that was paid for or organized by the employer (excluding any health and safety courses). They find that having participated in training is associated with notable increases in individuals’ satisfaction with both extrinsic (e.g., job security, pay) and intrinsic (e.g., influence over the job, scope for using own initiative) job features. When estimating separate models for men and women, the authors



find important differences, however. While training participation increases men's satisfaction with all dimensions, women only experience this effect on four of the dimensions. Notably, the three dimensions which appear unaffected by female workers' training participation pertain to intrinsic properties of jobs. Burgard and Görlitz (2011) use the German Socio-Economic Panel to analyze the impact of training on job satisfaction (using a composite measure of overall job satisfaction). In their study training measures "participation in formal training that is organized in courses, seminars or lectures." The authors show that participation in job-related training has significant positive effects for men, but not for women. While men are more likely to take part in longer training or in training that was funded by employers than women, the authors show that these differences in training composition do not explain the lack of association between training incidence and job satisfaction among women.

### Discussion

Existing work on the relationship between training participation and job satisfaction suggests that training positively affects job satisfaction. However, this is mainly the case for men. An important avenue for future research in this area is to unveil the mechanisms behind the gender gap in satisfaction returns on training. While high levels of job satisfaction are a desirable labor market outcome in and of itself, job satisfaction has also been shown by some to be associated with life satisfaction (e.g., Heller, Judge, & Watson, 2002; note, though, that the direction of causality remains heavily debated). Continuing training may thus not only be an important instrument to increase workers' happiness with their work, but it may possibly also have the potential to increase a society's overall well-being levels. Unfortunately, however, continuing training participation remains low in many EU countries. Moreover, opportunities for job-related training are heavily stratified with older and low-skilled employees as well as those employed part-time or on temporary contracts

being at a significant disadvantage (e.g., Dieckhoff, Jungblut, & O'Connell, 2007).

### Cross-References

- ▶ [Exercise](#)
- ▶ [Job Satisfaction](#)
- ▶ [Job Security](#)

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## Trait Affect

- ▶ [Core Affect](#)

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## Trait Reporting

- ▶ [Retrospective Reports](#)

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## Traitlikeness of Happiness

- ▶ [Happiness Levels Stability](#)

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## Trait-State Associations in Women's Well-Being

- ▶ [Personality and Quality of Life in Middle-Aged Women](#)

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## Trajectory Analysis

- ▶ [Longitudinal Data Analysis](#)

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## Tranquility

- ▶ [Peace of Mind](#)

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## Transcendence

- ▶ [Religion/Spiritual Fulfillment, Satisfaction with](#)
- ▶ [Spiritual Needs of Those with Chronic Diseases](#)

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## Transcendental Experience

- ▶ [Peak Experiences vs. Everyday Feelings](#)

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## Transdisciplinary Studies

- ▶ [Meta-studies](#)

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## Transformational Planning

- ▶ [Community-Based Planning](#)

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## Transformative Leaders

Laura Lorente<sup>1</sup> and Marisa Salanova<sup>2</sup>

<sup>1</sup>Work & Organizational Psychology, Universitat de València, Valencia, Spain

<sup>2</sup>Work & Organizational Psychology, University Jaume I, Castellón, Spain

### Definition

Leader behaviors that transform and inspire followers to perform beyond expectations while transcending self-interest for the good of the organization (Avolio, Walumbwa, & Weber, 2009).

### Description

Traditionally, transformational or charismatic leaders have been compared to transactional

leaders because they often appear at the same time and share certain characteristics. Transactional leaders, however, base their relationship with followers on continuous exchange and interactions, while transformational leaders try to bring about a change in them.

The concept of transformative leadership was initially introduced by James MacGregor Burns in 1978 and was subsequently taken up again in 1985 by Bernard Bass, who developed the Transformational Leadership Theory (Bass, 1985). This theory assumes that transformational leadership influences followers positively at both the individual and the group levels, and it has four components:

1. *Idealized influence*: this reflects the extent to which leaders choose to do what is right rather than what is simple or expedient. It builds, above all, mutual ► [trust](#) and respect between managers and employees.
2. *Inspirational ► [motivation](#)*: leaders challenge employees to do their very best and convince both employees and work groups that they can perform beyond expectations. This enhances employees' feelings of ► [self-confidence](#) and ► [self-efficacy](#), thereby enabling them to perform optimally in their jobs.
3. *Intellectual stimulation*: this consists in encouraging employees to think for themselves, to challenge cherished assumptions about the way in which work takes place, and to think about old problems in new ways; thus, leaders foster employee growth and control in the workplace.
4. *Individualized consideration*: leaders care about the work-related ► [development](#) of their employees, promoting ► [social support](#) at work.

Thus, in contrast to the transactional leader, who practices contingent reinforcement of followers, the transformational leader inspires and intellectually stimulates and is individually considerate of them. This leadership is therefore characterized by higher quality leader-member relationships. Hence, a transformational leader will foster closer relationships with subordinates, which are characterized by a short power distance and by individualized consideration of members'

needs and capabilities. This relationship is sustained by mutual trust and openness (House & Shamir, 1993) and by the richness of verbal communication between leaders and members (Klauss & Bass, 1982).

In recent decades, transformational leadership has been widely studied. It has been found to be positively associated with leadership effectiveness and relevant positive individual and collective outcomes across many different types of contexts, organizations, and levels of analyses. More especially, important efforts have been made to analyze the processes involved in the relationship between transformational leadership and positive constructs. Such processes include subordinates' task performance, work engagement, and extra-role performance (Dumdum, Lowe, & Avolio, 2002; Salanova, Lorente, Chambel, & Martínez, 2011); self-efficacy, ► [organizational commitment](#), and ► [job satisfaction](#) (Walumbwa, Lawler, Avolio, Wang, & Shi, 2005); organizational citizenship behavior (Wang, Law, Hackett, Wang, & Chen, 2005); and ► [well-being at work](#) and motivation (Turner, Barling, & Zacharatos, 2002).

A large number of studies have focused on the positive influence of transformational leadership and ► [performance indicators](#), attitudes, and behaviors at work. For example, in their recent meta-analytic review, Wang, Oh, Courtright, and Colbert (2011) concluded that transformational leaders lead individuals, teams, and organizations to achieve higher levels of performance. Moreover, they also concluded that transformational leadership has an augmentation effect over contingent reward leadership in predicting followers' individual-level contextual and team-level performance.

Some authors, however, have focused on less positive aspects of this leadership style. This arises as a result of some criticism launched against transformational leaders. Many of these critics argue that transformational leadership is unethical. They contend that it manipulates followers into ignoring their own best interests, without distinguishing between transformational and pseudo-transformational leadership (Bass & Steidlmeier, 1999). Therefore, the

authors advocate the need for authentic leadership, which includes two main concepts: a central core of moral values (Walumbwa, Avolio, Gardner, Wernsing, & Peterson, 2008) and servant leadership, which only focuses on follower development (Walumbwa, Hartnell, & Oke, 2010). Both of them have opened up new horizons in research.

But despite the criticism, transformational leadership currently inspires many studies and research also needs to be conducted in this area. For example, future research should try to determine what the main antecedents of this leadership are as well as the main consequences it has for both employees and organizations that promote this type of leadership. It would be particularly interesting to analyze in greater depth the underlying psychological processes through which transformational leaders may encourage followers to attain higher levels of motivation and organizational citizenship behaviors. Moreover, as Avolio et al. (2009) suggested, researchers need to incorporate alternative research designs in which they dare to introduce mixed methods rather than simply limiting themselves to experimental designs. Wang and Howell (2010) also suggested that more multilevel analyses are needed in transformational leadership research. Finally, the main challenge for researchers is to apply the results of research studies to professional practices in order to be able to promote this type of leadership and, consequently, encourage the development of healthy organizations.

## Cross-References

- ▶ [Development](#)
- ▶ [Experimental Design](#)
- ▶ [Job Satisfaction](#)
- ▶ [Mixed Method](#)
- ▶ [Motivation](#)
- ▶ [Multilevel Analysis](#)
- ▶ [Organizational Commitment](#)
- ▶ [Performance Indicators](#)
- ▶ [Self-confidence](#)
- ▶ [Self-efficacy](#)

- ▶ [Social Support](#)
- ▶ [Transformative Leaders](#)
- ▶ [Trust](#)
- ▶ [Well-being at Work](#)

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## Transit Systems and the Quality of Life

Muhammad (Ahsan) Habib  
School of Planning, Department of Civil and  
Resource Engineering (cross), Dalhousie  
University, Halifax, NS, Canada

### Synonyms

Mass transportation; Public transport and quality of life

### Definition

Transit systems refer to the common carrier type of passenger transport systems used for conveying people from one place to another, especially within an urban or regional boundary. Generally, these are public transport systems with fixed routes and schedules, available for use by all persons who pay the fare (e.g., bus, light rail transit, and rapid transit/metro). Physical components of a transit system include vehicles, rights-of-ways, stops/stations, control systems, and routes.

### Description

Public transit has a substantial impact on quality of life and social well-being. When transit is not available as a better transportation choice, cities

remain highly automobile dependent, which, as Shay and Khattak (2010) explain, is untenable in the long term due to high level of congestion and energy consumption, reduced safety, and reduced environmental and human health. Steg and Gifford (2005) offer an extensive literature review on the definition of quality of life and approaches to measuring quality of life in relation to sustainable transport alternatives.

Equity in access to opportunities (e.g., employment, services, ► [education](#), and ► [health care](#)) that contribute to meeting basic human needs and aspiration for a better life is central to understanding the impacts of transit on quality of life (Boschmann & Kwan, 2008). Inadequate access to employment for disadvantaged and minority workers in US cities created spatial mismatch, higher level of unemployment, more costly commute, or compromised wages (Preston & McLafferty, 1999). Similar evidence is found in the UK and in Canadian cities (e.g., Morency, Paez, Roorda, Mercado, & Farber, 2011).

Public transit affects many aspects of daily activities, including commuting to work or school. Wener, Evans, Phillips, and Nadler (2003) suggest that improved mass transit reduces commuting ► [stress](#). The long-term impacts of such stress on psychological and physical health, including depression and cardiovascular disease, have been well documented. Recently several researchers investigated how public transit is directly related to human health (see Litman, 2010). According to the 2001 National Household Travel Survey, only 3.1 % of adults in the US walk to or from transit during a typical weekday, and only 30 % of public transit users meet the required 30 min of physical activity daily (Besser & Dannenberg, 2005). Wener and Evans (2007) found that the average New York City train commuter walked about 9,500 steps per day, 30 % more steps compared to the average car commuter. Edwards (2008) concluded that the potential benefits of modal shifts towards transit will generate savings of around \$5,500 per person in avoided medical expenses through increased ► [physical activity](#) and decreased obesity in the United States.

Many other benefits of transit influence ► [social well-being](#). For instance, public transit

increases social capital: transit tends to promote a lifestyle that focuses on collective and societal goals. High-quality transit promotes transit-oriented development (TOD): mixed-use communities with pedestrian-friendly environments served by public transportation nodes, which encourage active lifestyles. A growing body of empirical research examines transit impacts on urban form (see Badoe & Miller, 2000). Several studies also investigate the impact of transit on land and property values: values tend to be higher near commuter rail and subway stations (e.g., Habib & Miller, 2008). Chatman and Noland (2011) review theoretical and empirical studies that examine how public transport improvements increase economic productivity and agglomeration economies.

Despite literature suggesting multifaceted impacts and benefits of public transit, empirical relationships between public transit and the quality of life remain implicit and to some extent unknown. Recent studies examine alternative methodologies exploring the effects of temporary mode switching to public transit on happiness and satisfaction (e.g., Abou-Zeid, Witter, Bierlaire, Kaufmann, & Ben-Akiva, 2012). Further empirical research in this area will offer better in-depth understanding of how public transit systems are directly influencing the quality of life and social well-being.

## Cross-References

► [Transportation and the quality of life](#)

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## Transition Questions or Items

David Morley, Crispin Jenkinson and Helen Lloyd  
Department of Public Health, University of Oxford, Oxford, UK

## Definition

Transition questions ask respondents to assess whether they consider their health or functioning



to have stayed the same, improved, or worsened compared with a previous time point, often a pre-intervention time point.

## Description

Central to the importance of measuring patient-reported outcomes are methods that evaluate changes in health-related status over time. Transition questions do this by directly asking respondents to assess whether they consider their health or functioning to have stayed the same, improved, or worsened compared with a previous time point, as illustrated below:

Thinking of the overall effects that your arthritis may have had on you, how would you describe yourself compared to the last time I interviewed you (month)? Do you feel that you are ‘much better,’ ‘slightly better,’ ‘the same,’ ‘slightly worse’ or ‘much worse’? (Fitzpatrick, Ziebland, Jenkinson, Mowat, & Mowat, 1992)

These questions elicit evaluative judgments from the patient’s perspective of their health changes over time. The benefits of using transition questions to involve patients in the direct assessment of health services have been acknowledged by several authors, mainly as a result of their validity and practicality (Feinstein & Wells, 1977; Tugwell et al., 1987). Many generic and disease-specific health and health-related ► [quality of life](#) measures include a global transition question to measure the impact or outcome of surgery, medical intervention, or health services (Guyatt, Norman, Juniper, & Griffith, 2002). Transition items are often used to determine minimally important differences on standard format patient-reported outcome measures. As an assessment of outcome, this approach has become increasingly important as a test of the success of medical or surgical care considered important to patients.

There is, however, debate as to the ► [reliability](#) and meaningfulness of global transition questions as outcome measures (Knox & King, 2009). Firstly, single questions cannot be subject to standard tests of reliability such as inter-item consistency (Norman, Stratford, &

Regehr, 1997). A further concern is the issue of “present state bias” whereby respondents tend to rate their change in health status in line with their current health and consequently underestimate the severity of the previous health state (Cella, Hahn, & Dineen, 2002; Norman et al., 1997). Furthermore, while transition items may indicate perceived change, they are not a good indicator of present health status: i.e., it is possible to report relatively substantial improvements in health yet remain in poor health.

## Cross-References

- [Minimal Important Difference](#)
- [PROs, Patient-Reported Outcomes](#)
- [Quality of Life](#)
- [Reliability](#)

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## Transition to Retirement

- ▶ [Retirement Effects, Quality of Life](#)
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## Transition Towns

- ▶ [Sustainable Communities Movement](#)
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## Translating Health Status Questionnaires/Outcome Measures

Abigail Griffin<sup>1</sup>, Diane Wild<sup>2</sup> and Alyson Grove<sup>3</sup>

<sup>1</sup>Oxford Outcomes, Oxford, UK

<sup>2</sup>eCOA, Oxford Outcomes Seacourt Tower, Oxford, UK

<sup>3</sup>Oxford Centre for Innovation, Oxford, UK

### Synonyms

[ClinRO](#) – clinician-reported outcome; [COA](#) – clinical outcomes assessment; [HSQ](#) – health status questionnaire; [PRO](#) – patient-reported outcome

### Definition

A health status questionnaire (HSQ) is a tool that is used to measure patients' health status. It is usually completed by the patient but it may also be completed by a clinician or caregiver. HSQs may be disease specific, such as the Asthma Quality of Life Questionnaire (AQLQ), which was developed specifically for use among asthma patients, or generic and therefore appropriate for use across diseases or conditions (e.g., SF-36 or EQ-5D).

### Description

#### Rationale

The development of both disease-specific and generic health status questionnaires (HSQs) has

meant that there is now a broad range of health outcomes that can be measured in a consistent, rigorous, and scientific way. The inclusion of HSQs in clinical trials allows subtle changes in health status over time and between treatment groups to be assessed more effectively (Price et al., 2009). In recent years, not only has there been an increase in patient awareness of their healthcare options but also there have been huge advances in information technology and a proliferation of ways in which patients can record and send information. This has resulted in an increased interest in and availability of patients' opinions about the outcome of their treatment.

HSQs are increasingly used in multinational studies, not just in Europe and the USA but more recently in Asia, South America, and Africa. The majority of HSQs are developed in UK or US English and therefore need to be translated and culturally adapted to make them appropriate for use in other countries. In order for data generated from different countries within multinational studies to be pooled, the validity of the original measure must be preserved across all languages.

It is therefore essential that careful attention is paid to the way in which HSQs are translated. This is particularly challenging because of the inherent potential ambiguity of language generally and the possible cultural sensitivity of some questions and concepts in particular. Correct interpretation of every part of a HSQ is vital for the validity of the questionnaire to be maintained across different languages.

In the USA, the Food and Drug Administration (FDA) has taken an increasing interest in how HSQs are translated. They now require evidence to support claims of linguistic equivalence and content validity between the source and translated text when a HSQ has been used to collect data for making a product label claim (Eremenco, Cella, & Arnold, 2005).

There has therefore been discussion over recent years regarding the optimal methodology for the translation and linguistic validation of HSQs (Beaton, Bombardier, Guillemin, & Bosi Ferraz, 2000). In 2005 Wild et al. worked

collaboratively with other practitioners in the field to develop a “best practice” methodology, based on the requirements for accuracy and cultural relevance within the context of real-world experience. It has subsequently been adopted as standard by those sponsoring and regulating multinational clinical studies (Wild et al., 2005).

### Example Methodology

The following is an example of a translation methodology which is consistent with Wild et al.’s paper (2005) (Fig. 1):

#### Preparation

Once an appropriate HSQ has been identified and before any translation work commences, it is essential that permission to translate and use the instrument should be sought from the instrument developer or copyright owner. It is also advisable for an explanation of all the concepts included in the measure to be developed, which can be made available for reference throughout the translation process.

#### Forward Translation

The source English measure is translated into the target language independently by two native speakers of that language. One of these acts as the “in-country investigator” and should be resident in the target country. The second forward translator does not necessarily need to reside in their native country but it is preferable.

#### Reconciled Translation

The two forward translations are then reconciled into a “best of both” translation. This could be carried out by the in-country investigator, but this is not the only method of achieving a reconciled forward translation.

#### Backward Translation

Two independent back translations should be carried out by native speakers of the original language, who are fluent in the target language. Ideally, they should reside in the source language country but this is not essential.

The back translators should have no previous knowledge of the instrument.

#### Back Translation Review

The two back translations should be compared with the source text to determine points of difference. Any discrepancies are highlighted and revised until the translation is deemed to match the source on every question or item.

#### Developer/Clinician Review

For some measures, the developer may require an opportunity to review the translation. Any changes suggested by the developer should be discussed with the in-country investigator before finalizing the translation. In addition, some questionnaires, particularly those to be used with a specific patient population, may benefit from a clinician review. The clinician’s role is to ensure that the language used is appropriate for the target patient population and understandable to all.

#### Harmonization

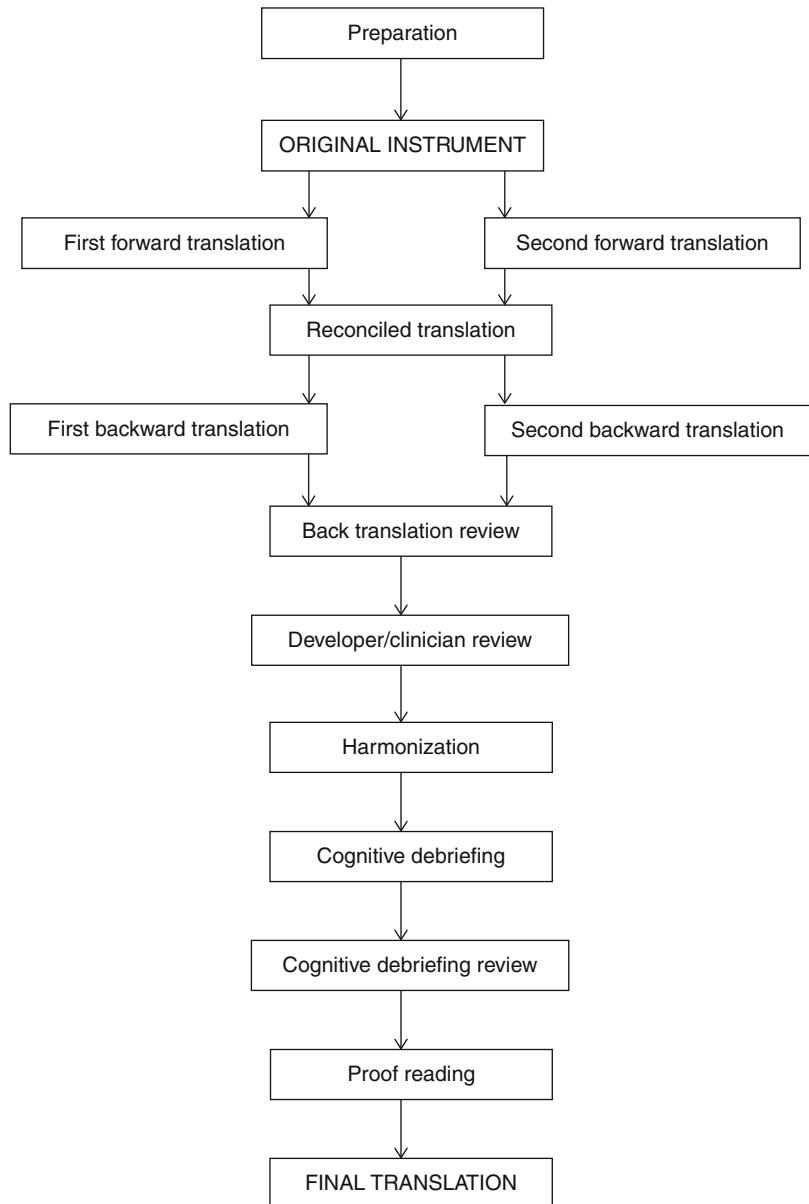
Harmonization is the process by which conceptual equivalence across different translations is checked, which helps to ensure inter-translation validity and allow reliable pooling of data from randomized controlled trials and other clinical studies. However, how harmonization might best be achieved is a matter as yet unresolved, and thus, it is not normally included as a formal step in linguistic validation guidelines.

Where it is considered necessary, the preferred solution is to hold a harmonization meeting to which in-country investigators or back translators are invited to represent each language.

#### Cognitive Debriefing

The translated questionnaire is tested on a number of respondents, who ideally should be part of the target patient population. However, it is recognized that setting strict criteria, which would be difficult to meet in real-world situations, should be avoided, though it is still important to ensure that interviewee-recruitment recommendations are rigorous enough to give meaningful results. Advice on the number of

**Translating Health Status Questionnaires/ Outcome Measures, Fig. 1** An example translation methodology



respondents to be interviewed varies, but the minimum number recommended is five.

#### Cognitive Debriefing Review

The cognitive debriefing results are reviewed and any revisions to the original translation should be agreed with the in-country investigator. Sometimes it might be useful for clarification to be sought from the developer.

#### Proofreading

As a final quality control step, it is recommended that two proof readings are carried out in order to catch and correct any remaining minor errors.

#### Discussion

Although this type of approach is widely used and has been accepted as standard methodology by

the FDA, very little research has been carried out to examine the value of these methods as compared to other methods available.

However, some applied research has been carried out (Gordon-Stables, 2008) to evaluate the contribution that each of the individual steps outlined here makes to the final translation. The results of research demonstrated that refinements are made to the translation during each step, which together result in a final translation that is conceptually equivalent to the source.

The most contentious aspect of the process, however, is the backward translation (Mckenna & Doward, 2005), with some contributors suggesting that it might encourage unnecessary changes to be made to the reconciled translation. In an attempt to evaluate whether this might indeed be occurring, Gordon Stables and Wild carried out some research to consider the extent to which translations are amended during the back translation stage and whether these amendments are, in fact, unnecessary and only made as a result of the process. They concluded that translators are not pressured into changing their translation because of queries raised at the back translation review stage (Gordon-Stables, 2008) and therefore that back translation is actually a useful tool to catch important misunderstandings and errors in the translation.

Some researchers believe that, rather than developing a HSQ in one language and translating it into the target languages, it would be better to develop measures concurrently in each culture (Mckenna & Doward, 2005). While this approach has been employed on a few occasions (e.g., WHOQOL), it is very time- and resource-consuming, making it impractical for most studies and relatively uncommon. The methodology described here, then, is the most accessible and widely used in current translation practice. Despite ongoing discussion about relative demerits of including back translation, there are dangers in omitting it from this type of translation, including a risk that the translation includes questions or items that are conceptually inaccurate (Wild et al., 2009).

In the absence of an alternative methodology offering the delivery of the same quality of translation within the same cost and time constraints, it remains the accepted standard in the field. It is recommended that further research is carried out to explore the specific value of each stage in the translation process.

## Cross-References

- ▶ [Disease-Specific Questionnaire](#)
- ▶ [HSQ – Health Status Questionnaire](#)

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## Translation Research

Acquadro Catherine and Katrin Conway  
Mapi Research Trust, Lyon, France

### Definition

What does *translating* mean? While theories are discussed elsewhere (Acquadro, Jambon, Ellis, & Marquis, 1996), the definition given by Umberto Eco (2008) seems refreshing and sensible: translating means “saying *almost* the same thing.” What, however, is the extent of *almost* and how do you evaluate it? According to Eco, being faithful to a source document is not performing a *word for word* translation but a *world for world* translation, and negotiating with the requirements of the source world becomes the key issue. In other words, the elasticity of *almost* depends on criteria which should be discussed and defined before embarking on the translation as such and in collaboration with the author of the original text.

### Description

When preparing Patient-Reported Outcome (PRO) instruments for use internationally, it is helpful to remember Umberto Eco’s observation. There are currently three strategies for the international development of PRO instruments: the sequential, parallel, and simultaneous approaches (Bullinger et al., 1996). The (1) *sequential approach* involves the translation into one or multiple target languages of a PRO measure which was initially developed for and within one cultural setting. This approach may be regarded as the least time consuming and most frequently used, although it is criticized for its potential risk of insufficient cultural and conceptual relevance in the target country (Guyatt, 1993; Hunt, 1993). The (2) *parallel approach* defines a process which includes an international consensus among several teams about the conceptual framework and concepts to be used in a PRO

measure which is then developed in one language and subsequently translated into others. This is the strategy chosen by the European Organization for Research and Treatment of Cancer (EORTC) Group (Aaronson, Cull, Kaasa, & Sprangers, 1994). The (3) *simultaneous approach* was used by the World Health Organization (WHO) to develop a measure applicable to a large variety of cultures, with equivalent versions developed simultaneously in many languages (Sartorius, 1993). Although this approach may be regarded as the ideal one as it strives to maximize cross-cultural equivalence of concepts while integrating country-specific considerations, it can be time consuming and costly. In addition, a range of criticisms has been raised regarding the conceptualization and the metric quality of some dimensions of the WHOQOL, in particular the social one (Hagerty et al., 2001; Schmidt & Bullinger, 2007).

These three approaches to international development lean on a key concept: equivalence. While the best method to maximize this is still being discussed, multiple taxonomies have been developed (Herdman, Fox-Rushby, & Badia, 1997; Herdman, Fox-Rushby, & Badia, 1998; Hui & Triandis, 1985; Sartorius & Kuyken, 1994; Stewart & Napoles-Springer, 2000). Stewart and Napoles-Springer provide the latest classification for assessing equivalence that integrates and modifies the approaches of numerous researchers. They describe six levels of equivalence and the basic methods for addressing each type of equivalence. Conceptual equivalence of constructs and items is achieved when the constructs exist, are relevant and are acceptable in all cultures. Semantic equivalence is obtained when the words used to express the items mean the same thing to people from different groups in both the source and target languages. Operational equivalence is achieved when standardized methods of survey administration are appropriate in both the source and target culture. Psychometric or measurement equivalence is achieved when comparable psychometric properties are observed in the source and target measures. Item equivalence is observed when (a) items are not differentially more difficult (e.g., biased) in the target culture



than in the original, (b) item weights reflect comparative importance of items in all groups, and (c) the meaning of and distance between response choices is similar across cultures. Finally, criterion equivalence is obtained when the interpretation of scores is the same across groups and when compared with norms for each group. Translated versions should also demonstrate similar associations with any previously set independent criteria established during the validation of the original version.

As most PRO questionnaires for global use are developed according to the sequential approach, regulators have focused their interest on the validity of the translations and their ability to express and investigate equivalent concepts across all language versions: the European Medicines Agency (EMA) published a reflection paper on the “regulatory guidance for the use of health-related quality of life (HRQL) measures in the evaluation of medicinal products” (European Medicines Agency [EMA], 2005), and the United States Food and Drug Administration (FDA) (US Department of Health, Food and Drug Administration, 2009) released a report on the use of PROs in the evaluation of medical products. With the question, “Are health-related quality of life (HRQL) instruments internationally validated?” (Chassany et al., 2001), the EMA clearly made the aspect of equivalence one of the key issues of HRQL evaluation. The FDA shares this view in its guidance, section III.G.3. and provides some recommendations (US Department of Health, Food and Drug Administration, 2009). The guidance states: “Regardless of whether the instrument was developed concurrently in multiple cultures or languages or whether a fully developed instrument was adapted or translated to new cultures or languages, we recommend that sponsors provide evidence that the content validity and other measurement properties are adequately similar between all versions used in the clinical trial. We will review the process used to translate and culturally adapt the instrument for populations that will use them in the trial.”

Recent reviews suggest that translations using a rigorous and multistep process with centralized review procedures may lead to better translations

and can meet the regulators’ requirements stated above (Acquadro, Conway, Hareendran, & Aaronson, 2008; Wild et al., 2005). There is, however, no agreement on the *best method* to be used. The multistep process usually reveals difficulties when adapting the format, instructions, concepts, idiomatic expressions, response scales, or demographic items to different languages. To overcome these difficulties, a Translatability Assessment can be performed *before* starting the translation. Translatability Assessment can be defined as the evaluation of the extent to which a PRO measure can be meaningfully translated into another language. A *meaningful translation* in the context of international clinical trials is one that is conceptually equivalent to the source text and culturally and linguistically appropriate in the target country to facilitate comparison and pooling of data. The goal of Translatability Assessment is to identify translation difficulties before embarking on the translation process as such. The process involves the critical review of an original instrument developed in one cultural setting in order to assess the appropriateness and relevance of its key aspects to the target culture: items, response choices, format, and instructions. It defines the concept of the original item, proposes acceptable alternatives for translations, and suggests alternative formulations for the original if it is still modifiable. Ideally, the process is conducted by linguists in collaboration with the developer of the measure prior to finalizing the wording of the original. It takes into account the context and constraints of other languages and cultures with the goal of optimizing the original measure for subsequent translation efforts and for its use in international settings. To speak with Eco, Translatability Assessment defines the specific requirements of the source text in the context of international clinical trials in order to facilitate and guide subsequent negotiations and to ultimately produce meaningful translations.

## Discussion

Several methods are available to translate standardized measures. Although there is no

agreement on the *best method* to be used, multistep approaches seem the most appropriate to ensure that the content validity between the original and the translations is comparable. The Translation and Cultural Adaptation Special Interest Group (TCA-SIG) within the ► [International Society for Quality of Life Research \(ISOQOL\)](#) is currently promoting research in the translation of standardized measures. Its objectives are the following: (1) to identify and advance research into practices and outcomes of translation and cultural adaptation of patient-reported outcome instruments, (2) to provide an evidence database on translation and cultural adaptation of PROs, and (3) to promote visibility of cross-cultural issues in development and use of PROs in ISOQOL. One of the subgroups of the TCA-SIG has set up the following research agenda: (1) *When should an original questionnaire and its translations be revised and updated?* (2) *Which aspect of the currently employed linguistic validation methodologies makes a difference?* (3) *What should be reported on a given linguistic validation and how should this be organized/presented?* (4) *What are the components of the «reconciliation» process?* More information on the TCA-SIG activities can be found on the ISOQOL website ([www.isoqol.org](http://www.isoqol.org)).

## Cross-References

- [International Society for Quality of Life Research ISOQOL](#)
- [Translating Health Status Questionnaires/ Outcome Measures](#)

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## Translational Process, Quality of Life

- ▶ [Cross-Cultural Adaptation](#)

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## Transmigrants

- ▶ [Immigrants, an Overview](#)

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## Trans-national Comparison

- ▶ [Cross-National Comparison\(s\)](#)

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## Transport

- ▶ [Transportation and the Quality of Life](#)

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## Transport Mobility

- ▶ [Transportation and the Quality of Life](#)

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## Transportability

- ▶ [Mobility Issues for People with Disabilities](#)

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## Transportation

- ▶ [Traffic Mobility](#)

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## Transportation and the Quality of Life

Litman Todd

Victoria Transportation Policy Institute, Victoria, BC, Canada

## Synonyms

[Mass transit and qol](#); [Transport](#); [Transport mobility](#)

## Definition

*Transportation* (or just *transport*) refers to people's ability to travel and the amount and type of travel activity that occurs in an area.

## Description

Transportation affects the quality of people's lives in many ways:

- Transportation is an essential activity that provides access services and activities, such as education, employment, shopping, and social events. The quality of transport options available affects people's ability to participate in social and economic activities.
- Active modes (walking and cycling and their variants such as travel by wheelchair and

scooter) provide enjoyment and exercise, so the quality of walking and cycling conditions in a community can affect residents' happiness and health.

- Transportation costs can be a significant financial burden, particularly to lower-income households.
- Transportation activities impose significant indirect and external costs, including traffic congestion, road and parking facility costs, accident risk, plus air and noise pollution.
- Transportation facilities and activities affect community development patterns. A transportation system designed for walking and public transit will result in very different land-use development patterns than an automobile-oriented transport system.

These impacts affect people in many ways. People who are physically, economically, or socially disadvantaged tend to be particularly vulnerable to certain impacts and constraints. For example, people with disabilities, low incomes, children, and young adults tend to be particularly sensitive to the quality of walking, cycling, and public transit services in their communities.

Conventional planning tends to overlook and undervalue many of these factors, particularly indirect and nonmarket impacts that tend to be difficult to quantify. Such impacts are often called *intangibles* with the implication that they cannot be measured and so can be ignored. However, new evaluation methods allow many of these impacts to be quantified and *monetized* (measured in monetary units), so they can be incorporated into planning and economic evaluation (Litman, 2009; Maibach et al., 2008).

Transportation can be defined and measured in different ways that lead to very different conclusions concerning which transport improvement options are optimal. Conventional planning often assumes that transportation means *traffic* (vehicle travel) or *mobility* (physical movement) and measures transport system performance based on automobile travel speed and distance. This tends to favor automobile-oriented

improvements over improvements to walking, cycling, and public transit. However, mobility is not usually an end in itself; it is generally a way to access services and activities. When evaluated based on overall access, travel speed is only one factor in transport system quality; equally important are land-use accessibility (the location of activities within a community), transportation affordability, and the quality of mobility substitutes such as telecommunications and delivery services (Litman, 2010). Table 1 compares three different ways of defining and measuring transportation.

In addition, active transport (walking and cycling) is an important form of recreation and exercise, benefits that are often overlooked in conventional transport planning. As a result, transportation planning tends to undervalue walking and cycling improvements, based on the assumption that transportation systems are intended to provide utilitarian travel rather than supporting recreational or exercise activities.

A paradigm shift (a fundamental change in the way problems are defined and potential solutions evaluated) is occurring in the way people think about and evaluate transportation and its quality of life impacts. This shift expands the range of transport options, objectives, and impacts considered in transport planning. This is sometimes called *sustainable transport planning*. This approach allows much greater consideration of quality of life impacts such as affordability, social equity, and physical fitness (Table 2).

In general, transportation planning that incorporates sustainability and quality of life objectives tends to recognize the following objectives:

- *Diversity*. A sustainable transportation system tends to provide a diverse range of mobility and accessibility options, including walking, cycling, automobile, public transit, telecommunications, and delivery services. This allows users, including those who cannot drive due to physical, economic, or social constraints, to choose the best option for each trip.
- *Service quality*. Improving service quality, such as the quality of walking and cycling

**Transportation and the Quality of Life, Table 1** Comparing transportation measurements

	Traffic	Mobility	Access
Definition of transportation	Vehicle travel	Person and goods movement	Ability to obtain goods, services, and activities
Unit of measure	Vehicle miles and vehicle trips	Person miles, person trips, and ton miles	Trips
Modes considered	Automobile and truck	Automobile, truck, and public transit	All modes, including mobility substitutes such as telecommuting
Common performance indicators	Vehicle traffic volumes and speeds, roadway level of service, costs per vehicle mile, parking convenience	Person trip volumes and speeds, road and transit level of service, cost per person trip, travel convenience	The quality of different transport modes, land-use accessibility, quality of telecommunications and delivery services
Assumptions concerning what benefits consumers	Maximum vehicle mileage and speed, convenient parking, low vehicle costs	Maximum personal travel and goods movement	Maximum transport options, convenience, land-use accessibility, cost efficiency
Consideration of land use	Favors low-density, urban fringe development patterns	Favors some land-use clustering, to accommodate transit	Favors land-use clustering, mix, and connectivity
Favored transportation improvement strategies	Increased road and parking capacity, speed, and safety	Increased transport system capacity, speeds, and safety	Various strategies to increase transport and land-use system capacity, efficiency, and safety

Source: Author’s analysis

This table compares the three major approaches to measuring transportation

**Transportation and the Quality of Life, Table 2** Comparing transportation planning paradigms

	Old paradigm	New paradigm
Options	Transportation primarily means automobile travel. Other modes are unimportant	Transportation includes various modes: walking, cycling, public transit, telecommunications, delivery services, etc.
Objectives	Maximize travel speeds, minimize user costs, particularly vehicle operating costs and traffic crash injury rates	Maximize overall accessibility and support various strategic economic, social, and environmental objectives
Impacts	Congestion delay	Congestion delay
	Roadway costs	Roadway and parking facility costs
	Vehicle operating costs	Vehicle ownership and operating costs
	Traffic accident rates per vehicle mile	Accessibility for nondrivers
		Physical fitness and activity
		Energy consumption
		Per capita traffic accident rates
	Energy consumption	
	Pollution emissions	
	Strategic land-use objectives (smart growth)	

Source: Author’s analysis

Transportation planning is becoming more comprehensive, considering more options, objectives, and impacts than previously

conditions, and the convenience and comfort of public transit service, are important but often overlooked ways to improve transport system users' quality of life.

- *Affordability.* Affordability refers to the cost burdens imposed on lower-income users. Increasing transport system affordability by reducing costs and improving the quality of affordable modes (walking, cycling, ridesharing, public transit, and delivery services) helps improve accessibility and reduce financial burdens on lower-income people.
- *Efficient system management.* Transport system performance can often be improved by favoring higher value trips and more efficient modes over lower-value trips and less efficient modes. This can be done, for example, through more efficient pricing of roads, parking, and fuel and through roadway management that favors high-occupancy vehicles.
- *Transportation land-use integration.* More integrated planning can increase land-use accessibility, so less travel is needed to access desired goods and services, and reduce negative impacts caused by transportation facilities, for example, by encouraging more compact, infill development that reduces travel distances and impervious surface area.
- *Supports active modes.* Walking and cycling play an important and unique role in an efficient transport system by providing affordable basic access, providing recreation and exercise, and reducing external costs such as traffic congestion and pollution emissions. Walkability also tends to contribute to community cohesion, that is, the quality of interactions among people in a community and therefore public safety. As a result, improving walking and cycling conditions and encouraging nonmotorized modes tend to improve residents' quality of life.

*Transportation demand management* (TDM, also called *mobility management*) refers to various policies and programs that encourage more efficient use of the transportation system. It typically includes improvements to alternative

modes (walking, cycling, public transit, etc.), incentives to use the most efficient mode for each trip (more efficient road, parking, and fuel pricing; roadway management that favors more space-efficient modes such as public transit; and commute trip reduction programs), and smart growth development policies that create more accessible land-use patterns. TDM tends to support efforts to incorporate quality of life objectives into transport planning.

Transportation professionals increasingly apply multimodal planning tools that consider walking, cycling, and public transit travel conditions, as well as automobile travel conditions (Dowling et al., 2008). This allows decision makers to better understand the impacts and trade-offs involved in particular planning decisions. For example, with conventional planning, expanding a roadway is generally assumed to be desirable because it improves automobile travel speeds, and impacts on other modes or land-use development patterns are not quantified. Multimodal level-of-service indicators recognize that roadway widening often has negative impacts on walking and cycling conditions and tends to stimulate sprawl which reduces land-use accessibility. This type of analysis can help evaluate more quality of life impacts of transport planning decisions.

## Cross-References

- ▶ [Accessibility](#)
- ▶ [Environmental Sustainability](#)
- ▶ [Land-Use Planning](#)
- ▶ [Public Health](#)
- ▶ [Quality of Place](#)

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## Transprejudice

- ▶ [Homophobia and Transphobia](#)

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## Trauma/Compassion Fatigue Scale

- ▶ [Emergency Workers' Quality of Life](#)

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## Traumatic Brain Injury

Leonard Jason<sup>1</sup> and Sharon Song<sup>2,3</sup>

<sup>1</sup>Center for Community Research, DePaul University, Chicago, IL, USA

<sup>2</sup>Clinical Practice Guidelines Unit, Department of Research and Scientific Affairs, American Academy of Orthopaedic Surgeons, Rosemont, IL, USA

<sup>3</sup>Internal Medicine/Psychology Section, Presence Resurrection Medical Center, Chicago, IL, USA

### Synonyms

[Concussion](#); [Contusion](#); [Craniocerebral trauma](#); [Head injury](#)

### Definition

Traumatic brain injury (TBI) refers to acquired damage to parts of the brain, including the skull, dura mater, blood vessels, myelinated fibers, and axons.

### Description

Traumatic injury to the brain can be open or non-penetrating and arises when sudden force is inflicted to the head usually secondary to motor vehicle accidents, firearm assaults, ▶ [child abuse](#), or sports injuries (Langlois et al., 2006). Although diagnostically simple to identify, the condition is associated with medical and neurocognitive complications that make its course heterogeneously complex (American Academy of Neurology, 2013).

Since the brain and skull are discrete organs that have cerebral spinal fluid separating them, a strong blow can set the head in motion with delayed movement of the cerebrum, or motion of the head can be arrested despite the occurrence of internal forceful movements. Additionally, the brain is attached to the head at the brain stem, which creates torque to the cerebral hemispheres during traumatic brain injury. When the cerebral hemispheres pathologically rotate and shift, the following aftereffects can occur: bruising, hemorrhages, tearing of myelinated fibers, shearing or rupturing of axons to the nerve fibers, and skull fractures (Ropper & Samuels, 2009).

The National Institute of Neurological Disorders and Stroke has described Phineas Gage as the most legendary TBI patient in the history of medicine (NINDS, 2011). He worked as a railway construction foreman for more than 25 years on the Rutland and Burlington Railroad in Vermont. Brain function was not well understood, and there were not any protocols for treating injury to it in 1848 when an explosion propelled a three-foot pointed rod through his head. This type of injury would usually cause death due to bleeding or infection. The object entered at the top of Gage's head, passed through his brain, and exited the skull near his temple.

A physician named John Harlow treated him for 73 days and miraculously helped him to survive the event. Of note was that before the accident, Gage was quiet and mild-mannered, but he became obscene, obstinate, and self-absorbed after his injuries. He suffered personality and behavioral problems for the remainder of his life (See Rosenthal & Ricker, 2000; White et al., 2009).

Skull fractures can have severe sequelae. Depending on their location, certain fractures can precipitate major medical emergencies if they cause lacerations to arteries that result in life-threatening bleeding. Skull fractures may end up allowing foreign particles to enter the brain, or vital fluids can be lost. They can also create blood flow problems and cause autoimmune dysfunction (Dutton & McCunn, 2003).

Life-threatening bleeding results when core arteries and veins have been torn that are typically located in the lobes nearest to the top and sides of the head. Although the bleeding eventually clots, the time frame involved is several hours. During this time, bleeding can spread to multiple regions, and paralysis or coma can result. Early recognition, removal of the clot, and surgical repair of torn vessels are essential for increasing the likelihood of survival (Shukla et al., 2011).

Contusion and concussion occur when the head accelerates or decelerates at critically high velocities. Sudden loss of consciousness is experienced for altering periods of time due to the flinging of the coils along the cerebral hemispheres against the bony and dense surfaces of the inner skull. Duration of unconsciousness is directly related to the seriousness of the head injury (Dutton & McCunn, 2003). Severe damage can lead to brain death (i.e., a medical term meaning irreversible cessation of all life-sustaining bodily functions), partial paralysis, vision loss, and speech and language deficits. When an injury is primarily concussive, its course is characterized by drowsiness and confusion with a relatively rapid return to consciousness. When there is contusion, altered mentation can be prolonged, and recovery varies based on if hemorrhages or subdural hematomas develop and

if the injury type is penetrating (e.g., open) (Ropper & Samuels, 2009).

If there is bleeding underneath the arachnoid or dura (layers of the skull) that becomes arrested by intracranial pressure, asymptomatic clots form that are usually small and do not necessitate medical intervention. In contrast, subdural hematomas require immediate attention. They form when encasements of blood have collected in the subdural space and have become encapsulated by adjacent membranes that abnormally attach to the dura (Ropper & Samuels, 2009). These types of fluid sacs frequently enlarge, and when they do, the risk of compression or displacement of the underlying brain increases. If neurological dysfunction such as headache, confusion, paralysis, or inability to swallow progressively worsens, then surgical drainage becomes necessary (Shukla et al., 2011).

Traumatic brain injury is a widespread ► [public health](#) problem that affects more than one million people in the United States each year (Rutland-Brown et al., 2006). With one third of soldiers wounded in the Iraqi and Afghanistan Wars sustaining head injuries, it has received increased attention by the Veterans Administration (Department of Veterans Administration, 2010). In the nonmilitary sector, falls, automobile accidents, and assaults are the first, second, and third most common causes of traumatic brain injuries. There is a higher incidence of TBI among males, infants, adolescents, the elderly, and individuals who abuse substances (Rutland-Brown et al., 2006).

In addition to a gap in memory from the point where consciousness is lost to the time when consecutive memories can be reconstructed, postconcussion syndrome often results from traumatic brain injury when persistent headache, fatigue, irritability, light-headedness, concentration difficulties, sleep disturbances, depression, and ► [anxiety](#) complicate healing (White et al., 2009). Prevalence rates are higher when litigation is involved (Rosenthal & Ricker, 2000). The most common cognitive sequelae of TBI are diffuse reductions in attention and information processing, impaired learning and

retrieval of new information, sensory processing deficits, and executive dysfunction (i.e., poor planning and organizing, impaired motor execution, perseveration, impulsivity) (Lucas & Addeo, 2006).

## Cross-References

- ▶ [Anxiety](#)
- ▶ [Child Abuse](#)
- ▶ [Cognitive Abilities](#)
- ▶ [Public Health](#)
- ▶ [Substance Abuse](#)

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## Traumatic Life Events

- ▶ [Stressful Life Events](#)

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## Travel

- ▶ [Traffic Mobility](#)

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## Travel Child Care

- ▶ [Parental Time and Child Well-Being](#)

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## Treatability of Illness

- ▶ [Duke Severity of Illness Checklist](#)

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## Treatment Choice

- ▶ [Decision Making](#)

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## Treiman's Standard Index of Occupational Prestige Scale (SIOPS)

- ▶ [Social Inequalities](#)

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## Trend Analysis

Alasdair Rae  
Town and Regional Planning,  
University of Sheffield, Sheffield, UK

### Synonyms

[Trend evaluation](#); [Trend studies](#)

### Definition

Trend analysis is, fundamentally, a method for understanding how and why things have changed – or will change – over time. One issue to be aware of when attempting to understand trend analysis is the wide variety of disciplinary contexts within which it is discussed. This makes it more difficult to define in a universal sense, but for the purposes of clarity, it can be defined here as an approach to analysis which collates data and then attempts to discover patterns, or trends, within that data for the purposes of understanding or predicting behaviors. This typically involves the elimination of “noise” or error in a time-series dataset. Thus, this encyclopedia entry is about statistical trend analysis.

### Description

Given the definition for trend analysis provided here, and alternative definitions in existence, it is useful to first give a contextualized example. For this purpose, imagine a time-series dataset for a particular area, with population values available for ten different time points within a 100-year period. Many readers will recognize this situation from national censuses, as in the United States or the United Kingdom. Through a statistical analysis of trends within the time-series dataset, it would be possible to make direct inferences on trends or patterns existing within the dataset (e.g., “baby booms”) and it would also be possible to make predictions for the future (e.g., population growth or decline).

These basic principles have been applied in statistical trend analyses in a number of ways in the past and continue to be important in scenario-building exercises and futures research. For example, Lutz, Sanderson, and Scherbov (2001) applied this approach in their study of world population growth, and Hirsch, Slack, and Smith (1982) adopted trend analysis in their analysis of water quality. The range of statistical methods used in such studies varies and there are no “automatic” trend analysis techniques which can provide all the answers so in a sense trend analysis is imprecise, but it does allow analysts to understand patterns and trends which would not otherwise be possible.

In recent years, one of the most ambitious and complex trend analyses carried out was the United Nations’ “World Population to 2300” report (United Nations [UN], 2004). In this ambitious project, statistical trend analyses were carried out for low- and high-growth regions from 1950 to 2300, and assumptions based on previous trends were used as the basis for statistical extrapolation forward to the year 2300. This document in itself is a good indicator of the level of complexity and uncertainty that trend analysis often deals with since it includes many figures and charts which visualize trends over time.

Trend analysis is an important technique in the quality of life research “toolbox,” but because of its complexity, it is not often fully utilized. Nonetheless, it remains a valuable and powerful method which should not be ignored.

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## Trend Evaluation

► [Trend Analysis](#)

## Trend Studies

### ► Trend Analysis

## Trends in International Mathematics and Science Study (TIMSS)

Martin Guhn<sup>1</sup>, Anne Gadermann<sup>2</sup> and Amery D. Wu<sup>3</sup>

<sup>1</sup>Human Early Learning Partnership, School of Population and Public Health, University of British Columbia, Vancouver, BC, Canada

<sup>2</sup>Health Care Policy, Harvard Medical School, Boston, MA, USA

<sup>3</sup>The Department of Educational and Counselling Psychology, and Special Education, The University of British Columbia, Vancouver, BC, Canada

### Definition

The *Trends in International Mathematics and Science Study* (TIMSS) is a large-scale international comparative study that has collected data on students' knowledge and skills in mathematics and science since 1995. Data are collected every 4 years from students in grade 4 and grade 8, that is, at about 9–10 and 13–14 years of age.

### Description

The *Trends in International Mathematics and Science Study* (TIMSS) is an ongoing international study that intends to compare mathematics and science achievement across international education systems as well as over time. Every 4 years, cross-sectional data on math and science achievement are collected via standardized assessments from representative samples of students in grade 4 and grade 8 in participating education systems. The TIMSS assessment is designed to align with the curricula in mathematics and science in the participating countries and education systems. Score results are used to suggest the degree to which students have learned the concepts and skills with respect to the

curricula. In addition to math and science achievement data, TIMSS collects contextual information on students, teachers, schools, curricula, and official education policies that may be related to student achievement.

### History and Purpose of TIMSS

Originally, the acronym TIMSS stood for *Third International Mathematics and Science Study*. The *Third International Mathematics and Science Study* was conducted in 1995, following the *First International Mathematics Study* (FIMS; 1964; [www.iea.nl/fims.html](http://www.iea.nl/fims.html)) and the *Second International Mathematics Study* (SIMS; 1980–1982; [www.iea.nl/sims.html](http://www.iea.nl/sims.html)), as well as the *First International Science Study* (FISS; 1970–71; [www.iea.nl/fiss.html](http://www.iea.nl/fiss.html)) and the *Second International Science Study* (SISS; 1983–1984; [www.iea.nl/siss.html](http://www.iea.nl/siss.html)).

The program was designed and remains coordinated by the ► *International Association for the Evaluation of Educational Achievement* (IEA). The IEA is an “independent, international cooperative of national research institutions and governmental research agencies [which] conducts large-scale comparative studies of educational achievement and other aspects of education” ([www.iea.nl](http://www.iea.nl)).

Since 1995, TIMSS has collected five cycles of data. In the most recent TIMSS data collection in 2011, over 500,000 students from over 60 educational systems around the world participated. An overview of countries participated in which cycles/years of TIMSS can be found at <http://nces.ed.gov/TIMSS/countries.asp>.

TIMSS data are published in publicly accessible reports, with the goal to inform the general public, educators, and policy makers about the variability in math and science achievement (1) between different education systems, (2) between different student subpopulations, and (3) between different points in time.

### Assessment Design and Data Collection

The questions in the TIMSS assessment have been designed by international panels of educators to broadly reflect the aligned grade 4 and grade 8 math and science curricula in the participating education systems.

TIMSS assessments are administered by trained staff – not by classroom teachers – in two blocks of 36 min for grade 4 students or two blocks of 45 min for grade 8 students, followed by a 30-min administration of the school and home environment survey.

TIMSS uses a matrix-sampling design where each student responds to one of the set of booklets. The entire set of booklets represents the pool of mathematics and science items at each grade level. Booklets are distributed among students in participating classrooms in a predetermined order so that approximately equal numbers of students complete each booklet and that the groups of students completing each booklet are approximately equivalent in terms of ability.

In order to establish representative results, participating education systems need to meet certain sampling criteria. The goal is that each education system collects data for a minimum of 4,500 students, with a “combined participation rate” of 75 % (see Provasnik et al., 2012, for further details).

### Score Reporting and Results

TIMSS assessment scores are reported on a scale from 0 to 1000 with a mean score of 500 and a standard deviation of 100, separately for each domain and each grade. Data of subsequent cycles have been rescaled and linked so that scores are comparable across cycles despite the data being cross-sectional (see, Provasnik et al., 2012, for discussion).

Reports of TIMSS in general explore educational issues, such as monitoring relative standing of an education system in a global context, change in achievement over time within an education system, and establishing achievement standards and goals for system improvement or curriculum reform. Detailed reports and summaries of results can be found at the international IEA website ([www.iea.nl](http://www.iea.nl)) as well as on national websites of participating countries. Two comprehensive websites featuring the TIMSS results for the USA can be found at the government’s National Center for Education Statistics website ([nces.ed.gov/TIMSS/index.asp](http://nces.ed.gov/TIMSS/index.asp)) and the TIMSS and PIRLS website at Boston College (<http://timssandpirls.bc.edu>).

### Related Studies and Projects

TIMSS is related to several other international programs on assessment of academic achievement. A study that is also conducted by the IEA is the ► *Progress in International Reading Literacy Study (PIRLS)*. PIRLS complements TIMSS, as it covers an additional foundational aspect of academic achievement – reading literacy. In combination, TIMSS and PIRLS cover the three areas of reading, mathematics, and science. PIRLS is conducted only on grade 4 students (at 9–10 years of age) on a 5-year cycle.

A project that covers the same domains as TIMSS and PIRLS, but is conducted with older students, is the ► *Programme for International Student Assessment (PISA)*. The PISA is coordinated by the Organisation for Economic Co-operation and Development (OECD; [www.oecd.org/pisa/](http://www.oecd.org/pisa/)). Like TIMSS, the PISA examines student academic achievement via standardized assessments in the areas of numeracy, literacy, and science. However, the PISA data are collected from students at the age of 15. PISA data have been collected on 3-year cycles since 1997, in over 70 countries worldwide.

In the USA, the ► *National Assessment of Educational Progress (NAEP)* is a representative study on student achievement in multiple subjects, including mathematics, science, literacy, and the arts. NAEP data has been linked to the TIMSS data allowing comparisons in the assessment of achievement of similar subjects within and across the states of America (see further details at <http://nces.ed.gov/timss/naeplink.asp>).

### Use and Criticism

TIMSS data have evoked debates about education among the general public, educators, education researchers, and policy makers. Advocates of TIMSS have highlighted its major accomplishment, that is, the establishment of the first international database on academic achievement that uses standardized assessment tools across countries. This arguably greatest asset of the TIMSS has, however, been subject to criticism, as far as the interpretability and validity of cross-national comparisons is concerned. In particular, it has been questioned whether TIMSS



data can be used to evaluate the “quality” of education systems, because (1) it has been found that one of the strongest correlates of TIMSS scores has been socioeconomic status (e.g., parental level of education; see Bos & Kuiper, 1999), (2) education systems may not be equivalent in regard to curricula and learning goals (Wang, 2001), and (3) sampling procedures may differ from country to country, making it impossible to conclude whether average scores are representative for given populations and sub-populations of students (Rotberg, 1998).

### Resources

Detailed documentation of the TIMSS study design, implementation, and results is available on the websites IEA (see above; [www.iea.nl](http://www.iea.nl)), as well as on websites of several of the organizations that coordinate TIMSS in participating countries. Two comprehensive resources on TIMSS are provided on the website of the *National Center for Education Statistics* (NCES) of the US Department of Education’s *Institute of Education Sciences* (<http://nces.ed.gov/timss/>), and on the website of the TIMSS and PIRLS International Study Center at Boston College (<http://timssandpirls.bc.edu>).

### Cross-References

- ▶ [International Association for the Evaluation of Educational Achievement \(IEA\): Civic Education Study of 1999](#)
- ▶ [National Assessment of Educational Progress \(NAEP\)](#)
- ▶ [Programme for International Student Assessment \(PISA\)](#)
- ▶ [Progress in International Reading Literacy Study \(PIRLS\)](#)

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## Trends of Youth Violence in Five European Countries

Zuzana Podaná<sup>1</sup> and Dirk Enzmann<sup>2</sup>

<sup>1</sup>Department of Sociology, Charles University in Prague Faculty of Arts, Prague, Czech Republic

<sup>2</sup>Institute of Criminal Sciences, University of Hamburg, Faculty of Law, Hamburg, Germany

### Definition

Youth violence generally refers to any socially disapproved violent behavior of young people (children and juveniles) under 18 years old. A narrow definition equates it to violent crime in a legal sense (e.g., aggravated assault or robbery), whereas a broader criminological approach includes misdemeanors or misbehaviors (e.g., ▶ [bullying](#), minor assaults, carrying of weapons). Trends of youth violence are routinely studied on the basis of official police statistics which have, however, many problematic aspects, and additional information from victim surveys or from self-report studies is needed for a deeper understanding of (the extent of) the problem. This entry discusses trends of youth violence in five European countries, namely, the Czech Republic, Germany, Poland, Russia, and Slovenia.

### Description

The general term ▶ [violence](#) comprises many phenomena which can be distinguished into

several types of different nature (Krug, Dahlberg, Mercy, Zwi, & Lozano, 2002). A long-term growing sensitivity to violence seems to be a feature typical of late modern societies in which various forms of violence, which used to be tolerated in the past, have gradually become disapproved. As an example, we can name physical punishment of children by parents which was legally banned in Sweden in 1979. Since then similar laws have been passed in many European countries, as well (Gershoff & Bitensky, 2007; Commissioner for Human Rights, 2009). This sensitization to violence resulting in diminishing violence from many spheres of everyday life contributes positively to well-being and ► [quality of life](#). Trends in officially registered and self-reported physical youth violence, which is the topic of this entry, might also be affected by this general tendency. This hypothesis will be further discussed based on results from ► [victimization](#) and self-report delinquency surveys.

In the recent years, there have been serious concerns about supposedly growing rates of ► [youth violence](#), expressed often by the general public, the media, and politicians but also by scientists who reflected the upward trends in officially registered violent offending during the 1990s found in police statistics across Europe. Youth violence is naturally a disturbing phenomenon which has not only serious negative consequences for the victims but affects also the ► [quality of life](#) in the community by contributing to social disorder and increasing ► [fear of crime](#). To investigate whether the trend of youth violence actually continued to grow after the year 2000, we used data from five Central and Eastern European countries: the Czech Republic, Germany, Poland, Russia, and Slovenia.

Until recently, the only possibility to compare the level of juvenile crime across countries was to make use of official police statistics. These comparisons are, however, seriously limited by many factors. The most important problems are differences in legal definitions of criminal offenses, different police practices in recording crime, and different willingness of victims to report crimes to the police (Enzmann, 2012). Reporting

behavior is directly affected by the extent of sensitivity to violence but also by the level of general trust to the police which is lower in post-socialist countries compared to Nordic and Western European countries (Kääriäinen, 2007). A unique source of data summarizing police statistics from European countries is the *European Sourcebook of Crime and Criminal Justice Statistics* (Killias et al., 2010). Its data indicate that during the 1990s in Europe, the trend of violent crime for adult population grew substantively (Aebi, 2004). In Central and Eastern European countries, this tendency is partly supported by data from victimization surveys (Gruszczynska, 2004). Studies by Estrada (1999) and Pfeiffer (2003) found an increase in violent crime committed by juveniles in the same period, as well. However, as to the five countries under consideration, extending the time frame until 2006, a continuation of the increase of assault and robbery victimizations of adults is apparent only in Germany (and partly in Russia), whereas in the Czech Republic, Poland, and Slovenia, the trends have stabilized or even seem to decline (Killias et al., 2006, 2010).

The limitations of police statistics render them highly problematic especially for the comparison of crime level and crime development across countries. For this purpose, a better source of data is self-report surveys which are capable of capturing latent crime and allow to obtain detailed information on offenders, as well. Self-report surveys are, nevertheless, also not flawless. Known limitations are, for instance, their focus on less serious crime and a likely underrepresentation of high-risk youth (see, Junger-Tas & Marshall, 1999; Thornberry & Krohn, 2000). Although internationally comparable self-report surveys are still rare, an important milestone of these efforts represents the *International Self-Report Delinquency Study* (ISRSD). Its first sweep took place in 1992, and the second in 2006 (Junger-Tas, Terlouw, & Klein, 1994; Junger-Tas et al., 2010, 2012). The five countries under consideration were involved not only in ISRSD-2 study but also in similar self-report surveys (SRD) which took place in 2000 in selected cities. Although the design of both

surveys was not identical and the comparison is, therefore, limited (for details, see Enzmann & Podana, 2010), the studies allow to investigate trends of attitudes toward violence, victimization experiences, and self-reported violent behaviors.

The main results of the comparison of SRD and ISRD-2 can be summarized as follows (Enzmann & Podana, 2010):

- Between 2000 and 2006, a substantial decrease in juveniles' attitudes toward violence occurred in all five countries. The decrease in acceptance of violence was considerable both as to wanton violence ("violence as being fun") and concerning culturally accepted violence ("to hit back").
- The prevalence rate of wanton violence was higher in the Czech Republic and Germany than in the other three countries in 1999 and dropped significantly in both countries in 2006. The level of wanton violence remained similar in Poland, Russia, and Slovenia between 1999 and 2006. Since the definition of wanton violence included also less serious offenses (group fights) in 2006, it is most likely that the trend actually decreased in all countries in this period.
- Instrumental (acquisitive) violence was highest in Russia and Slovenia in 1999 and lowest in the Czech Republic. By 2006 it decreased substantially in all countries except for Germany where it remained on the same level.
- A considerable significant drop between 1999 and 2006 can also be observed in the victimization rates of juveniles by both assault and robbery. The only exception is Poland where the decrease is lower and statistically insignificant.

In summary, survey data of youth in the five countries clearly indicate that the increase in ► **youth violence** apparent from police statistics during the 1990s did not continue after the year 2000. To the contrary, there is evidence that it has rather decreased. The drop in experiences of violent victimizations and in self-reported violent behavior is very likely related to a growing sensitivity toward violence in the society, which is well reflected in the observed dramatic change

in juveniles' attitudes toward violence. Although the higher sensitivity to violence among juveniles could have resulted in underreporting of their own violent behavior, the concurrent decrease in victimization experiences by violent offenses rather supports the assumption that the decrease in youth violence is real. Finally, these results lend support to the hypothesis that the process of increasing sensitization to violence applies to youth violence, as well. One should expect that growing sensitivity toward physical acts of violence is accompanied by a lower threshold to report incidences of violence to the police. Of course, this optimistic outlook of a general trend in the decrease in violent behavior needs confirmation by further research.

The findings clearly underscore the importance of internationally comparative self-report delinquency research. Its potential is not only in comparison of offending rates and trends across different countries but also in the possibility to capture changes in ► **attitudes**, lifestyle, living conditions, etc., which are highly relevant for the interpretation and explanation of changes in crime rates. Therefore, it is most welcome that the ISRD studies will be continued, and hopefully, even more countries will take part in the next sweep.

## Cross-References

- [Crime Estimates](#)

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## Trias Politica (Separation of Powers)

Jan Ott

Erasmus University Rotterdam, Rotterdam,  
The Netherlands

### Synonyms

[Control of corruption](#); [Rule of law](#)

### Definition

The *trias politica* is the philosophy that there has to be a strict separation between three independent powers in every nation: for legislation, administration, and jurisdiction.

### Description

This philosophy is developed by the French enlightenment philosopher Charles de Montesquieu and published in his book “De L’esprit des Lois” in 1748. This philosophy had a substantial impact on the American Constitution (1789), on the French Revolution (1791), and on political philosophy in many European nations. The separation of powers is one of the two pillars of the modern state; the other pillar is the separation of the state and religion. There is no specific indicator for the separation of powers, but this separation is reflected in the assessment of the rule of law and control of corruption by the World Bank’s Government Indicators.

## Ratings “Rule of Law”

<http://info.worldbank.org/governance/wgi/index.asp>

## Cross-References

- ▶ [Good Governance and Happiness in Nations](#)
- ▶ [World Bank World Development Indicators](#)

## Reference

Data-Sources, See site

## Tribute Fees

- ▶ [Taxes](#)

## Trigger Events

- ▶ [Tipping Points](#)

## Trioxxygen (O<sub>3</sub>)

- ▶ [Ozone](#)

## Tropospheric Ozone

- ▶ [Ozone](#)

## Trouble Shooting Alternatives in Program Planning

- ▶ [Program Planning](#)

## Truancy

- ▶ [School Attendance](#)

## Trust

Jan Delhey  
School of Humanities and Social Sciences,  
Jacobs University, Bremen, Germany

## Synonyms

[Confidence](#); [Culture of trust](#); [Faith in people](#); [General trust](#); [Interpersonal trust scale](#); [Particular trust](#); [Political trust](#); [Radius-adjusted trust](#); [Social trust](#); [Trust and the theory of role complexity](#); [Trust in most people](#)

## Definition

Trust can be defined as the belief that others will not, at worst, knowingly or willingly do you harm and will, at best, act in your interests. When we trust, we give others the benefit of a doubt, because we cannot know for sure how they will behave. Trust includes commitment, since by trusting, we commit ourselves “to action with at least partly uncertain and unpredictable consequences” (Sztompka, 2001, p. 15913). There is a general consensus among social scientists that social trust is important at all levels of human organization. Unusually in the increasingly specialized academic world, the interest in trust covers several disciplines. Social trust is a core component of social capital (Putnam, 1995) and is normally used as a key indicator of it. Trust is also at the center of other concepts that are no less important for social science theory than for ▶ [quality of life](#) (QOL), including ▶ [subjective well-being](#), ▶ [health](#), economic prosperity, education, societal well-being, ▶ [community](#), civil society, and ▶ [democracy](#).

## Description

### Types of Trust

The most important distinction is between *social trust* and *political trust*. The former is trust in

(categories of) people, whereas the latter is confidence in key sociopolitical institutions and its representatives. Some argue for a close link between social and political trust, but the empirical evidence is mixed (Newton, 2007). In the remainder, this entry deals exclusively with social trust.

Scholars commonly separate *particular* from *general trust* (e.g., Sztompka, 1999, chap. 3). Particular trust is the “thick” trust prevailing in people whom we know personally and with whom we have a lot in common, such as family members, friends, and neighbors. General trust, in contrast, is the “thin” trust in unfamiliar people who are often unlike us – large categories of people and strangers. It is widely accepted that general trust is particularly important in large-scale societies which are complex, heterogeneous, and individualistic. An often-heard assumption is that particular trust and general trust are antithetical, yet recent research suggests a positive relationship between them (Delhey & Welzel, 2012; Glanville & Paxton, 2007).

### Functions of Trust

The assumed positive functions of trust are so many (Sztompka, 1999, chap. 5) that Eric Uslaner (2002) refers to trust as the chicken soup of social life. Trust, it is said, contributes to ► **economic growth** and efficiency in market economics, to the provision of public goods, to ► **social integration**, to cooperation and harmony, to personal ► **life satisfaction**, to democratic stability and development, and even to good health and longevity. Two general functions of trust stand out (cf. Phillips, 2006): As a *lubricant*, trust metaphorically oils the wheels of society by lowering transactions costs (Fukuyama, 1995); as a *social glue*, trust works as an integrative force in society (Simmel, 1950).

### Theories of Social Trust

Several theories about what trust is and where it comes from exist side by side.

*Rational choice* theory views trust as a rational calculation (Coleman, 1990). The potential truster calculates his potential gain (G) from cooperating, his potential loss (L), and the

likelihood that the cooperation partner will behave trustworthy (p). Only if the calculation turns out positive (i.e.,  $p/(1-p) > L/G$ ), trust is placed.

According to a well-developed *social-psychological* school of thought developed in the 1950s and 1960s, social trust is a core personality trait (e.g., Erikson, 1950), closely related to optimism and belief in cooperation. Since its foundations are laid in childhood, especially through warm-hearted parents-child interactions, trust tends to persist in later life, changing only slowly as a result of major events thereafter.

According to a third school of thought, trust crucially depends on people’s *life experiences* (Hardin, 1998). When we generally experience our fellow citizens as behaving fair, honest, and polite, we tend to trust them; when our experiences are overwhelmingly negative, we tend to distrust them. As a consequence, the capacity to trust is not fixed but constantly updated.

The *culture of trust approach* (Sztompka, 1999, chap. 6) is a macrolevel theory. Trust is conceptualized as a *social norm* which is historically rooted and dependent on collectively shared positive experiences with trust. The social conditions which produce, in the long run, a robust trust culture can be many, among them normative coherence, stability of social order, the accountability of institutions, and socioeconomic security.

A final set of theories is about the general role of trust in (modern) society. The *theory of role complexity* (Seligman, 2001) sees trust as an essentially modern phenomenon. Only when social roles become complex and the expectations tied to them flexible, the need to trust arises in order to deal with uncertainty. Similarly, Niklas Luhmann has described trust as a mechanism to reduce the complexities of modern life so that we are able to act in a confident manner (Luhmann, 1979).

### Measuring Social Trust

The standard measure of general trust is *trust in most people*: “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?” This



question, devised by Noelle-Neumann in 1948, has the merits of simplicity and is associated with trustworthy behavior (Fehr, Fischbacher, von Rosenblatt, Schupp, & Wagner, 2002) and with plausible correlates at the level of individuals and countries (see below).

However, recent research has shown that the standard question is not unproblematic in world-wide comparisons, because the wording leaves “most people” unspecified. Obviously, “most people” is rather narrowly understood in countries with a Confucian heritage and more broadly in Western prosperous nations (Delhey, Newton, & Welzel, 2011). To make up for this difference in trust radiuses, a *radius-adjusted* measure of trust in most people has been suggested, which is better comparable across countries. Currently, adjusted scores are available for 50 countries.

Another measure for general trust is the three-item scale for *faith in people* (Rosenberg, 1957). Next to trust in most people, this question asks respondents about the perceived fairness of other people and their general helpfulness. At least in the European context, this instrument produces results which are fully comparable across nations (Reeskens & Hooghe, 2008).

In psychology, the *interpersonal trust scale* (Rotter, 1967) is widely used, which collects respondents’ trust in various persons and social categories such as parents, classmates, and politicians; additional items tap into respondent’s general optimism regarding society. Due to its length, it is rarely used in international surveys.

Few research studies combine attitudinal and behavioral-experimental measures of trust (Fehr et al., 2002). Another recent innovation is a new trust battery issued in the World Values Survey 2005, which allows measuring both particular trust in in-groups and general trust in out-groups (see Delhey et al., 2011).

### Determinants of Social Trust

Why are some individuals more trustful than others? Whereas some determinants seem to be country-specific, others are more universal (cf. Delhey & Newton, 2003). Characteristics of personal success and well-being are generally positively associated with individual trust: higher

education, occupation, income, status, high life satisfaction, and income satisfaction. Likewise, strong ► [social support](#) networks are conducive to individual trust in many societies, as is a positive assessment of society by the respondents, e.g., when social conflicts are perceived to be low. In contrast, personality characteristics such as optimism and membership in clubs and civic associations are less consistently related to individual trust.

In international comparisons, the Nordic countries and Switzerland usually come on top of the trust ranking, while Latin American and Muslim countries are on the bottom. Why are some nations more trusting than others? Crucially, income inequality lowers trust (e.g., Bjornskov, 2008b). Others stress the modernization syndrome, since in rich and well-governed countries, people tend to trust each other more (Delhey & Newton, 2005). Yet others emphasize effective and fair street-level bureaucracies (Rothstein & Stolle, 2008). Finally, countries with a Protestant legacy score consistently high on general trust, whereas the positive role of ► [Confucianism](#) is debated. Notably, population diversity with respect to ethnicity, religion, or language has been rarely found to lower general trust, at least not in international comparisons. Yet there is evidence that diversity plays out negatively in local and regional settings (Putnam, 2007).

### Trust in Quality of Life Research

Trust is a key component in many accounts of QOL. Welfare concepts such as social capital, ► [social cohesion](#), and social quality, which aim at ► [social well-being](#) of communities, regions, and societies, incorporate social trust as a key dimension or indicator. Trust flows into the OECD’s *Better Life Index* as a proxy for “community” and into the *Legatum Prosperity Index* as a proxy for social capital.

Since trust is crucial for forming social relations, and social relations are crucial for ► [happiness](#) and life satisfaction, it comes as no surprise that many studies discovered a link to SWB. This is particularly true for individuals – trusting persons tend to be happy and satisfied

with life (e.g., Helliwell & Wang, 2011). Yet since most studies are cross-sectional, it is difficult to disentangle causality: Are more trustful individuals happier, or are happier individuals more trustful?

Largely mirroring the results from the microlevel, SWB tends to be higher in countries with a strong trust climate, over and above the effect of other favorable conditions such as national income and good governance. Deviating from the mainstream, Rati Ram (2010) reports a fragile relationship between trust and average life satisfaction. Yet he also found trust to be more important for average life satisfaction in a subsample of rich nations than of poor nations, in line with other studies (Bjornskov, 2003). Obviously, for poor nations, the benefits of a trust climate are more instrumental, flowing mainly through higher GDP. Further evidence – both cross-sectional and longitudinal – for a close link between trust and SWB in rich nations comes from the USA (Bjornskov, 2008a). In this context, it has also been suggested that for the USA, the ► [Easterlin paradox](#) can be resolved by accounting for the declining stock of trust and social capital.

### Conclusion

Trust is a flourishing, multidisciplinary topic which has a lot to offer for QOL researchers (cf. Michalos, 1990); it is common sense that trust is an important ingredient of the well-being of individuals and nations. One issue for future research is to accumulate more knowledge about determinants and consequences of *particular trust*, which has been somewhat neglected in past research. A second challenge is a yet more systematic methodological review of *trust in most people* as the key indicator of general trust, in order to make worldwide country rankings shakeproof.

### Cross-References

- [General Fair Treatment Index](#)
- [Life Satisfaction](#)
- [Personal Fair Treatment Index](#)

- [Quality of Life](#)
- [Social Cohesion](#)
- [Social Integration](#)
- [Social Interaction](#)
- [Social Well-being](#)
- [Subjective Well-being](#)
- [Values](#)

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## Trust and the Theory of Role Complexity

- ▶ [Trust](#)

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## Trust in Government

- ▶ [Confidence in Government](#)

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## Trust in Institutions

- ▶ [Confidence in Government](#)
- ▶ [Confidence in Institutions](#)

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## Trust in Most People

- ▶ [Trust](#)

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## Trust in People

- ▶ [Faith in People](#)

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## Trust, Satisfaction, and Donor Retention

Julia Naskrent

University of Applied Sciences for Economics and Management, Essen, Germany

### Synonyms

[Determinants of donor loyalty](#); [Factors for maintenance of financial support](#)

### Definition

Donor retention, in the sense of establishing long lasting relationships with donors, is an important goal in fund-raising. Here, it is understood as a target latent variable which should be explained with the help of a structural equation model. ▶ [Trust](#) and satisfaction as well as two other factors (commitment and involvement) are latent variables which determine donor retention.

### Description

Raising funds has become extremely difficult in the past decades. A more or less constant amount

of ► **charitable donations** opposes a growing number of nonprofit organizations (in the following: NPOs), and the competitive pressure has grown tremendously (Sargeant, 2001). Therefore, the reasons why donors continue donating and supporting organizations play an important role for those NPOs. The knowledge of the significance of determinants of donor retention is an essential requirement for the formulation of effective and efficient fund-raising strategies.

Donor retention represents the target variable, which has to be explained through determinants. In the commercial field of marketing, the related phrase customer retention is often referred to as a noncoincidental sequence of market transactions between a buyer and a supplier (Royce, 1971). In general, donor retention can be understood as a long-term and consistent relationship between the donor and the NPO.

For NPOs, long-term relationships with donors are advantageous, since many projects and activities are of lasting or permanent duration and require well-founded, long-term financial planning with continuous and dependable financial support. Due to the decline of government subsidies, such planning is not possible without donations. Promoting retention among donors with appropriate actions is a central task in fund-raising.

When considering the effects of donor retention, one can differentiate between stability-related, revenue-increasing, and cost-reducing potentials (Hennig-Thurau, Gwinner, & Gremler, 2002). Over time, the relationship gains stability, which translates into security for the organization. This is based on the insights of the needs and intentions of their donors gained through the long-term relationship. Donor retention also represents a central determining factor in expanding an NPO's share of the donation market. Along with an increase in the average donation size, with which the donor provides increased support for a project, a loyal donor can also show a readiness to increase her/his donation frequency. This contributes to an increase in the NPO's donation volume (Sargeant, 2009). Promoting retention among donors is a means of reducing costs, something that is appealing particularly with regards to the widespread request

for NPOs to allocate their resources efficiently (Lee, 2002). These cost-reducing potentials are created by the fact that focusing on existing donors allows for a reduced emphasis on donor recruitment. The acquisition of new donors can be neglected, since the NPO is able to maintain its existing donor base by developing and strengthening their relationship on the one hand and because the NPO will automatically acquire new donors through recommendations and references on the other hand. Tight relationships between the NPO and its donors also create savings in information and coordination costs. This means, costs for donor care are thus reduced.

In summary, it can be said that donor retention can increase the capabilities and profitability of the NPO and enables the organization to concentrate its efforts on fulfilling its mission. In order to actualize these effects of particular importance to NPO, it is necessary to foster the retention of donors. The following paragraph will introduce the influencing factors.

Research in the area of commercial marketing centered a lot around behavioristic, organization-specific determinants of customer retention in the past. Two latent variables dominate the research: ► **trust** and satisfaction (Mittal & Kamakura, 2001).

Trust is usually defined with two dimensions: *ability* describes the confidence of one party regarding the performance capability of another party, i.e., in this case the trusted NPO (Shelley & Polonsky, 2002), while *willingness* describes the expectation of the donor regarding the NPO's reliability (Sirdeshmukh, Singh, & Sabol, 2002).

Satisfaction, understood as a process of comparing expectations of donors with the actual perceived performance of the NPO, is a very important determinant of retention (Garbarino & Johnson, 1999).

Besides trust and satisfaction, two other determinants have been discussed to have an impact on donor retention: commitment and involvement.

Commitment is usually defined through three different dimensions: normative, calculative, and affective. Normative commitment is an emotion of duty and responsibility (Allen & Meyer, 1990) and is an important aspect for donor retention.

Moral concerns or the fulfillment of perceived obligations frequently dominate the motivation of the ongoing donations to an NPO (Bennett & Ali-Choudhury, 2009). Calculative commitment represents a rationale and the “emotionless” position of the donor to the supported organization. A net “gain” that is based on a rational cost-benefit analysis fosters the retention of the donor (Johnson, Herrmann, & Huber, 2006). The last dimension, affective commitment, is an emotion of inner, psychological affection, which is based on a true sympathy of the donor for the NPO (Allen & Meyer, 1990).

The fourth determinant, involvement of a donor, can be understood as a permanent interest in the NPO and the donor’s perceived personal relevancy of the NPO (Mittal, 1995). While involvement in this context “merely” represents the personal meaning of the NPO for the donor, commitment describes a more holistic approach and signifies the appreciation of the entire relationship with the NPO.

The previous paragraphs already indicated that the four determinants trust, satisfaction, commitment, and involvement have a direct effect on donor retention. According to the literature, commitment represents the central influencing variable of donor retention as it forms the basis for the willingness to continue with the exchange relation (Sargeant & Woodliffe, 2007). But also the other determinants are mentioned as important prerequisites to establish a stable donor-NPO relationship (Shabbir, Palihawadana, & Thwaites, 2007).

In addition to these direct effects, the determinants trust, satisfaction, and involvement also have indirect effects on donor retention (Causal Inference). First of all, all three variables increase the level of commitment, which then has a positive impact on donor retention (Sargeant & Woodliffe, 2007).

A further interdependency exists between satisfaction and the establishment of trust. Trust is based on experiences with the NPO. The experiences gained in a certain period of time facilitate the foundation of trust; they support the creation of the donor’s expectation with regard to the reliability and the integrity of the NPO (Crosby,

Evans, & Cowles, 1990). A further interdependency is the influence of involvement on satisfaction. Through the intensive dealing with the charitable donation, the donor becomes aware of the valuable support she or he gives. This realization fosters her or his satisfaction and helps to keep up the financial support for a longer period of time (Bennett & Ali-Choudhury, 2009).

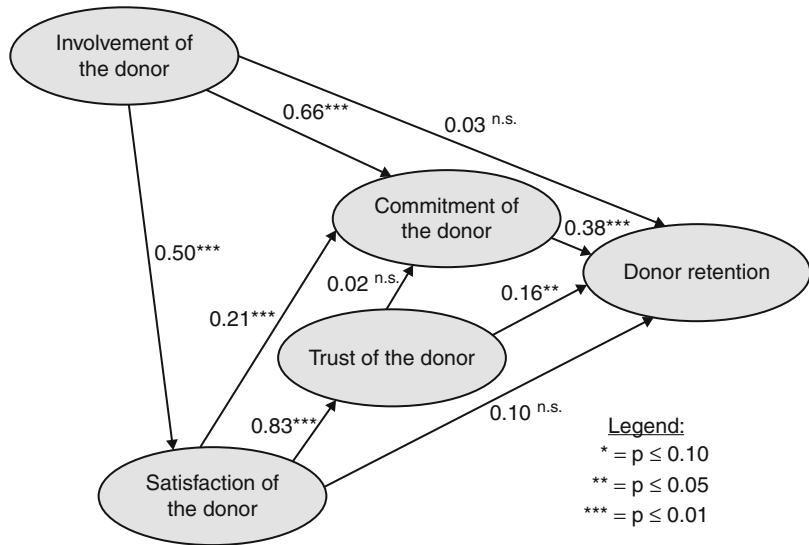
Naskrent and Siebelt (2011) suggest a structural equation model aligning these interdependencies and relationships. This model is depicted in Fig. 1. All arrows represent the influencing relations between the factors as described. In addition to the arrows, Fig. 1 also discloses the strength and significance (symbolized by the stars) of the path coefficients which give evidence on how much an exogenous construct influences an endogenous construct. The data, conducted from a study interrogating 364 donors, allows the following interpretation: Negative values show a relation that is contrary to the postulated hypotheses. Values close to zero represent a weak explanatory contribution of a latent variable, while values close to one imply a strong relationship. In the model of Naskrent and Siebelt, three of the postulated hypotheses show insufficient path strengths and significances, while the other hypotheses could be verified.

A further angle to evaluate the inner model is the coefficient of determination (abbreviation:  $R^2$ ). The  $R^2$  represents the share of the explained variance of the latent variable. This means that it analyzes the effect strength of all exogenous constructs explaining an endogenous construct. Values of  $R^2$  range between 0 and 1. The higher the value of  $R^2$ , the higher is the explained variance. Results above 0.3 are average and values below 0.19 are weak. For donor retention, the study of Naskrent and Siebelt (2011) yields an  $R^2$  of 0.33, for commitment 0.63, for trust 0.69, and for satisfaction 0.25. Therefore, all endogenous variables deliver satisfactory results.

The empirical tests conducted by Naskrent and Siebelt (2011) confirmed six of the nine hypotheses, which represent a nomological validity of the model. Even if involvement and satisfaction do not directly influence donor retention, they do have an indirect effect.

### Trust, Satisfaction, and Donor Retention,

**Fig. 1** Trust and satisfaction as part of a structural equation model of influencing factors of donor retention (Source: Naskrent and Siebelt (2011))



### Discussion

In the study of Naskrent and Siebelt (2011), involvement does not seem to have a direct effect of donor retention. A theoretical explanation for this could be that NPOs and charitable donations cause more extreme forms of involvement than commercial consumption situations where values in the middle range are quite common (Rothschild, 1979). Donor involvement might have more bipolar characteristics: Either people possess an extremely high involvement with regards to an organization and are consequently willing to engage emotionally and to support the NPO financially or they do not show any involvement, meaning they would never consider giving money to it (Rothschild). Therefore, involvement might rather represent a precondition for the acquisition of new donors and as a result does not have a direct but an indirect effect on donor retention.

The fact that the satisfaction of the donor does not have a large-scale impact on donor retention shows that the latent variable does not have the general importance that the marketing and non-profit research ascribes to it. Some studies already yielded the result that donor satisfaction does not have such a big impact on retention as it is frequently assumed (Arnett, German, & Hunt, 2003; Michalski & Helmig, 2010). Anyhow, the authors (Arnett et al., 2003) concluded that the result of

their study does not neglect the common importance of satisfaction for the donor-NPO relation.

These speculations are starting points for further research. A replication study could for example yield valuable findings. A further research gap exists in a long-term study (► [Longitudinal Data Analysis](#)) of donor retention.

### Cross-References

- [Altruism](#)
- [Charitable Donations](#)

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## Tune

- ▶ [Music](#)

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## Turning Points

- ▶ [Tipping Points](#)

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## Twin Relationship

- ▶ [Twinship](#)

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## Twin-Parents Relationship

- ▶ [Twinship](#)

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## Twinship

Luca Rollè, Piera Brustia and Eva Gerino  
Department of Psychology, University of Torino,  
Torino, Italy

## Synonyms

[Dizygotic twin](#); [Identical twin](#); [Monozygotic twin](#); [Multiples](#); [Twin relationship](#); [Twin-parents relationship](#)

## Definition

Multiple pregnancy involves the simultaneous development in the uterus of two or more fetuses. Twins could be identical or ► [monozygotic](#) (MZ – one zygote means a single egg is fertilized), or they could be nonidentical or dizygotic (DZ – two or more different eggs are fertilized). This clarification is important because it highlights the wrong, but common, belief that *twinship* is synonymous with equality; in fact, the term *twins* refers not only to monozygotic individuals but also to siblings who are born on the same day and are the result of the same pregnancy (dizygotic twins). *Twinship* is the condition of two or more subjects at the same birth with a focus on the relationship between a twin and his/her co-twin as well as between them and their parents, family, and social environment. The very close relationship of twins begins from the day of conception: the start of nine months together in a very close relationship (Zazzo, 1984).

## Description

Risk pregnancies are those in which actual or potential pathological conditions (risk factors) may endanger the health or life of the mother, the fetus, or both. Because of the high risk of complications in the fetus and in the pregnant woman, twin pregnancy falls into this category. Also, twin delivery may present peculiar problems relating to the period and to the types of delivery. These aspects can be risk factors for the physical and psychological well-being of mothers and, consequently, of the fathers and the twins themselves. Starting from the diagnosis of a multiple pregnancy, it is possible to also consider the twins' situation as particular because of the psychological aspects derived from it. Often, pregnant women have reactions characterized by strong conflicts and ambivalence: next to the happiness and pride stemming from the uniqueness of twin pregnancy, fear, worry, confusion, sense of loss, difficulty of acceptance, and, sometimes, despair emerge.

In fact, beyond the medical risks, the twin pregnancy may be emotionally engaging and unsettling. In all pregnancies, women have to create physical and mental space for the unborn child; representations contained in the mental space concern both herself and the partner as future parents. Fantasies, hopes, fears, and desires coexist in this mental place. In the case of twins, an individual sense of inability to meet children's concurrent needs and a discrepancy perceived between parental aspirations and reality could complicate the transition to parenthood and postnatal adjustment (Brustia, 2012).

The father's role is very important because it is a source of support for the mother to cope with material and emotional situations. In addition to having to create a double space in his mind, the father also has to support his wife in family commitment. This great paternal involvement means that he often becomes a main ► [attachment](#) figure, acting as a surrogate for the mother and playing an important role in the twinship (Brustia, Rollè, & Pogliano, 2009).

Twinship is a peculiar condition because of the high genetic resemblance and familiarity of the involved parts, which have a deep effect on the dyadic relationship, shaped by genetic and environmental influences (Neyer, 2002).

The literature identifies twinship as a unique relationship, not comparable to any other type of interpersonal relationship in terms of the level of intimacy and intensity (Ebeling et al., 2003; Fraley & Tancredy, 2012; Neyer, 2002; Tancredy & Fraley, 2006). Indeed, twin relationship is different from that established between singletons (Ebeling et al., 2003). From the earliest stages of pregnancy, twins' bond takes shape with specific interactional patterns, and it continues, although in different ways, even after birth. Thanks to the development of more and more advanced ultrasound instruments, recent studies concern the prenatal life of twins. New ultrasound techniques allow researchers to observe the fetal spontaneous activity as well as the early complex sensory and perceptual skills of children. In utero, the interaction between twins is continuous (first reciprocal stimulations can be observed in the 11th week or 12th week

of gestation), and they are mutually influencing in terms of both physical and psychological development. For example, one of the complications that can occur during twin pregnancy is the loss of a fetus. Since the mutual stimulation becomes a constant feature of intrauterine life, the survivor will suffer although he/she does not know he/she was a twin – in some way he/she will feel the loss of the stimulation that was coming from the co-twin; especially same-sex twins may feel a pervasive feeling of loss and deep loneliness and, consequently, the need to find a special bond with someone (Woodward, 1998).

It is important to consider that each twin perceives the intrauterine environment differently from the other. Many sensations of fetuses are different and, since the early stages of pregnancy, they show clear differences in temperament (Piontelli, 2002). Twins have a close relationship, an interdependence linked to genetic similarity and the sharing of similar experiences (Neyer, 2002). Besides genetic makeup and environmental influence, a third factor exists: the so-called couple effect (Zazzo, 1984); namely, to differentiate oneself from his/her co-twin, who is perceived as deeply similar to him/her, a twin needs to structure his/her own personality in a way that is opposite of his/her co-twin's personality but often still complementary to the co-twin's personality.

At birth, twins can be considered psychologically part of each other, and only gradually, with the help of parents, each will learn to see himself/herself as distinct and independent from the co-twin. This initial unity in twin couples generates a very intense attachment, where sharing is a normal state of existence, while the experience of separation is atypical (Tancredy & Fraley, 2006). In twins, the concept is referred to as the individuation-separation process (Mahler, Pine, & Bergman, 1975). This process may be more complex for twins than for singletons due to the difficulty in overcoming the symbiosis with both the mother and the co-twin (Brustia, Marino, Garbarini, & Gerino, 2011). The separation and identification process in twins is different from that in singletons because

it can occur more slowly (due to the strong twinship), but, equally, it may lead to the establishment of a healthy personality possessing a greater degree of empathy for and harmony with another person (Barbieri & Fischetti, 1997). Parents have to interact with two or more children at the same time and develop a close relationship with each twin individually, which is not easy. By taking care of each single child, the mother can learn to recognize each child's specific physical and temperamental characteristics. In this way, the individuality of each child is recognized not only by correlating him/her with the co-twin but also by focusing on his/her peculiarities so that each child can develop his/her sense of full identity (Brustia, 2012).

Due to the exclusive twinship relation, it is important that each child can enjoy separate moments and experiences in order to encourage the internalization of the other so that each of them learns to be separated from the other. Separating twins from an early age not only helps them to have their own experiences but also allows their parents to *think* of their children as two separate individuals and not as a whole (Brustia, Rollè, & Ambrosoli, 2011).

The more exclusive and prolonged a twin's identification with the co-twin is, the more it interferes with the mother-child relationship and reduces the twin's likelihood of being in relationship with anyone other than the co-twin; this often happens because the relationship between twins is very pleasing both for the children and for the parents. If adults recognize each twin as a separate and unique individual, the children will more easily be able to have two independent lives; if twinship becomes the center around which their lives are structured, their identities will merge together. However, if a balance exists among each element, the twins will have no difficulty in establishing a personal identity (Bernier, 2006). Studies on the dynamics of twins in childhood and early adolescence showed negative effects such as delay in social communication, isolation, social dysfunction, strong conflicting dominant-dominated, and *status* asymmetry dynamics in the twins. Adolescence and early adulthood, because of the importance

of differentiation and independence needs, are often considered critical stages for multiples because they force the twins to begin a psychological process of separation from both parental figures and from one another; these developmental stages expose twins to frequent feelings of loss, loneliness, and fear of losing the special bond with one another (Ebeling et al., 2003). Twins can use nonverbal forms of mutual understanding and perception, and sometimes, this causes a language development retardation. Some twins have serious language difficulties, such as cryptophasia, that complicate the development of communicational skills, causing isolation in severe cases. The shift from initial psychological comfort to subsequent dependence is quick. However, it is important to consider the positive aspects of twinning; for instance, young twins can give and receive reassurance and emotional support.

Each twin pair has an internal equilibrium that is not solely based on an unlimited amount of love and resemblance: for example, psychophysical imbalance frequently induces a twin to dominate and the other to submit. It is normal that twins would structure the complementary roles. Indeed, an unexpected transferring of roles from one to another also can happen because children develop at different times. Rotation of roles is normal: difficulties actually arise when a role is fixed and rigid, thus forcing children into a conflicting and unchangeable polarity (Ebeling et al., 2003).

The bond of twins can be considered a particular form of close relationship that usually satisfies attachment needs. Research results seem to indicate a greater liking of twins to establish mutual sibling attachment relationships, while non-twin siblings mainly use parents as attachment figures (Bernier, 2006; Fraley & Tancredy, 2012; Tancredy & Fraley, 2006). Even in adulthood, the twin relationship meets the typical criteria of attachment relationships such as proximity seeking, separation distress, secure base, and safe haven. Tancredy and Fraley (2006) highlight some aspects that distinguish the twin bond from all others, such as empathy, sharing activities, and the inclusion of the other (the co-twin) in the Self. In addition, the tendency of twins to

contact each other more frequently, to seek common experiences, and to live geographically closer could indicate behaviors of proximity seeking. From childhood, separation anxiety (separation distress) would not be linked only to the separation from the mother but also to the separation from the co-twin; furthermore, the twin would continue to be considered among the main supportive resources in case of need (safe haven). Finally, the mutual function of secure base is demonstrated by the comfort given by the co-twin's presence in social exploration experiences. In twins, relational rather than structural factors seem to favor the maintenance of this type of sibling attachment bond.

With regard to these aspects, a study on adult twins by Neyer (2002) showed that, as pointed out in sibling bonds, contact and emotional closeness between twins seems to decrease until they reached thirties or forties and increase in late adulthood. Monozygotic adults would be likely to keep higher levels of contact and proximity (spatial and emotional) than dizygotic twins did, especially the female-female pairs. Moreover, among twins, social support seems to grow into adolescence, remain constant in adulthood, and increase significantly in old age. By comparing twinship (twin-and-co-twin) and twin-sibling relationships, we can infer that the twin bond is closer (for frequency of contact, intimacy, and social support – both instrumental and emotional) but also more conflicting than the brotherly one (Neyer, 2002).

The twinships, given their temporal continuity and importance in the life cycle, can be included among the relationships that potentially contribute to the social and emotional well-being for the twins (Neyer, 2002; Scharf, Shulman, & Avigad-Spitz, 2005). From this point of view, the twin bond seems to be important for mental health: the co-twin may represent a referent object of security, a primary attachment figure, a constant presence, a main internalized object, and even a source of ambivalence toward constraining unity and incompleteness (Bernier, 2006). Psychic and emotional elaboration of the detachment from the co-twin is necessary for the development of a harmonious personality. In addition,

the degree of dominance-submission in the couple seems to be a good predictor of psychological well-being in twins: being subdued can generate a strong discomfort in the subject, with negative consequences (depression, anhedonia, low self-confidence, and psychosomatic symptoms) (Ebeling et al., 2003). Regarding the positive characteristics of the relationship between twins, a bond characterized by closeness and intimacy can prevent or reduce unpleasant feelings, such as loneliness. In particular, Woodward (1998) found a higher sense of loneliness and isolation in a twin who faces grief related to the co-twin's or the partner's death compared with the case of a singleton's reaction to the loss of a sibling or a partner. In analyzing the research results on the topic of twinship, it is interesting to note that the focus of investigations is on the distinctive features of twins' personality development, which source is ascribing to genetic or environmental influences or to the interaction of both factors in terms of active, passive, or reactive effects. However, few investigations analyze the shape, structure, and consequences of the twin relationship. *Trait d'union* between the studies on this subject is the observation that the process of construction of Self in twins has a peculiarity: the influence of couple dynamics on individuals (Zazzo, 1984). From this point of view, the issue regarding the connection between identity development, dyadic effects, and well-being in twins remains still broadly unexplored and could be considered one of the more interesting and fascinating future research themes.

## Cross-References

- ▶ [Attachment](#)
- ▶ [Mother-Father Relationship](#)
- ▶ [Siblings, Overview](#)

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## Two-Stage Sampling

- ▶ [Subsampling](#)

## Type I Diabetes Mellitus and Quality of Life

Berit Rokne<sup>1</sup> and Marit Graue<sup>2,3</sup>

<sup>1</sup>Department of Global Public Health and Primary Care, University of Bergen, Bergen, Norway

<sup>2</sup>Centre for Evidence-Based Practice, Bergen University College, Bergen, Norway

<sup>3</sup>Department of Pediatrics, Haukeland University Hospital, Bergen, Norway

### Synonyms

Diabetes mellitus type 1; T1D

### Definition

Type 1 diabetes is a hormonal and metabolic disorder caused by deficiency of insulin secretion with the consequences of chronic hyperglycemia and disturbances of fat and protein metabolism. In genetically susceptible individuals, exposed to environmental risk factors, the body attacks and destroys its own pancreatic beta cells (Atkinson & Maclaren, 1994). Still the knowledge about these possible environmental risk factors for type 1 diabetes is very limited. The geographic variation in incidence of type 1 diabetes varies around the world with the highest prevalence in the Nordic countries, in particular Finland, and in Sardinia (Stoltesz, Patterson, Dahlquist, & EURODIAB Study Group, 2007). The debut of the disease occurs at all ages; however, the incidence is higher around puberty. Globally, the most common cause of death among people with type 1 diabetes is the lack of access to insulin (Gale, 2006).

### Description

The main goals for the treatment are to achieve acceptable metabolic control and to prevent or

delay possible late complications associated with the disease. Further goals are to prevent acute complications, such as burdensome episodes of hypoglycemia, ketoacidosis, and hospitalization. The management of the disease involves a complex regimen of insulin injections, home monitoring of blood glucose, and attention to dietary intake and amount of exercise (Hanas, Donaghue, Klingensmith, & Swift, 2009). Studies have documented that maintenance of tight blood glucose control is related to lower degree of late diabetes complications such as retinopathy, nephropathy, and neuropathy (Diabetes Control and Complication Trial (DCCT), 1993). The disease and its treatment has a major impact on the daily life of people with diabetes, and in industrialized countries, the relationship between metabolic control and overall well-being and health-related quality of life (HRQOL) has been assessed in many studies. The impact of insulin pump therapy on HRQOL, as well as capturing the consequences of diabetes-related complications for the afflicted, provides a way to better understand how diabetes and its treatment affect the individual. During the last decades, numerous instruments have been developed to obtain information on HRQOL, and standardized measures are used to assess the relationship with diabetes self-management behavior and motivational aspects of care (de Wit, Delemarre-van de Waal, Pouwer, Gemke, & Snoek, 2007, Speight, Reaney, & Barnard, 2009). Over the years, considerable efforts have been made to optimize the insulin regimen by multiple daily injections or insulin pump therapy. Intensified regimens might induce better metabolic control and are shown to be associated with slightly improved quality of life in larger studies (Hoey et al., 2001). However, glycemic control has not been convincingly improved by the introduction of new insulins, intensive treatment regimens, and new technology (Skinner & Cameron 2010). Achievement of tight blood glucose control is difficult to maintain, and a greater focus on psychosocial issues related to living with the disease seems to be fundamental to improve the health



and quality of life of people with diabetes (Funnell et al., 2011). Self-management support is the keystone to successful diabetes care and management. However, evidence shows that better outcomes, medical as well as psychosocial, are difficult to achieve. It seems to be the burden of symptoms or complaints, rather than their existence or frequency that determines quality of life (Schipper, Clinch, & Olwency, 1996). Furthermore, intervention studies suggest that patients' perceived ability to control their disease is associated with improved quality of life (Rubin & Peyrot, 1999). In addition to traditional biomedical indicators, instruments that measure HRQOL are increasingly used to measure the effects of interventions. The patient's role and responsibility has been frequently discussed in the empowerment approach to diabetes health care (Anderson & Funnell, 2000). Educational and behavioral interventions seem to have beneficial effects on self-management; however, the literature has not convincingly identified the most effective types of interventions for different aspects of diabetes self-care. The magnitude of effects and mechanism of changes of behavioral interventions needs to be further examined (Zhang, Norris, Chowdhury, Gregg, & Zhang, 2007). Promoting and assessing patients' HRQOL and burden of disease in clinical trials is still a challenge. Within a family approach, HRQOL should be further explored in relation to diabetes-specific family communication and the influence of family environments on diabetes outcomes. Interventions that target diabetes-specific family interactions focusing on family relationships and HRQOL should be further explored (Weissberg-Benchell et al., 2009). Also, limited evidence exists on the need for additional support for socioeconomically disadvantaged individuals living with diabetes (Imayama, Plotnikoff, Courneya, & Johnson, 2011). Thus, transcultural aspects of care and different treatment strategies are areas to be addressed in future research, and in addition studies examining the integration of HRQOL measures into routine treatment and care.

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occurring randomly. While these assumptions acknowledge that some events are more likely to occur than others, all the events are possible. At times, unlikely events do occur just by chance and NHST is unable to determine whether the unlikely event was due to a nonrandom process or did just randomly emerge (Hurlburt, 2003).

The logic of NHST dictates that when an unlikely event is observed, it is concluded that it did not occur by chance. Most times this is the correct conclusion, occasionally, it will result in a Type I error. The rate at which Type I errors will be made is indicated by the alpha or probability level that is being employed. Type I errors are generally considered to be the more serious error to make in research because it suggests that something has an effect that really does not. This will lead to a change in behavior in the hope that something will improve, when it will not. Thus, whenever a statistically significant effect is found, one needs to be aware of the risk of a Type I error (Sheskin, 2004).

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## Type I Error

► [Type II Errors](#)

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## Type I Errors

Ralph L. Piedmont  
Pastoral Counseling Department, Loyola  
University Maryland, Columbia, MD, USA

## Synonyms

[Errors of the first kind](#); [Hypothesis testing error](#); [Type II error](#)

## Definition

A Type I error is an incorrect conclusion drawn from a Null Hypothesis Significance Test (NHST). Also known as a “false positive,” a Type I error is concluding that a nonrandom effect was observed when in fact it was not (Aron & Aron, 2003). Technically, a Type I error is falsely rejecting a true null hypothesis, or saying there was an effect when there was not. All NHSTs are based on a certain set of assumptions about the likelihood of certain events

## Cross-References

- [Hypothesis Testing](#)
- [Null Hypothesis](#)
- [Type II Errors](#)

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## Type II Error

► [Type I Errors](#)

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## Type II Errors

Ralph L. Piedmont  
 Pastoral Counseling Department, Loyola  
 University Maryland, Columbia, MD, USA

### Synonyms

Errors of the second kind; Hypothesis testing error; Type I error

### Definition

A Type II error is an incorrect conclusion drawn from a Null Hypothesis Significance Test (NHST) (Aron & Aron, 2003). Also known as a “false negative,” a Type II error is concluding that a random effect did occur, when in fact it did not. Technically, a Type II error is incorrectly accepting a false null hypothesis, or saying there was no effect when, in fact, there was. Type II error, also known as beta error, is most closely associated with the power of a study (i.e., its ability to detect a significant effect if a significant effect is present). The more power a study has, the lower its Type II error rate. Ideally, the Type II error rate should be 0.20 or below (Hurlburt, 2003).

While Type I and Type II errors are inversely related (as one reduces the risk of making a Type I error, the probability of making a Type II error increases), their relationship is not direct because

other factors affect Type II error rates aside from alpha level (e.g., effect size, sample size, and power). While generally viewed as the less severe error to commit, in certain circumstances (such as when using a test as a screener), it can be the more serious error. A consideration of Type II error rates is particularly relevant when a study fails to reject the null hypothesis. It would need to be determined whether the effect is really not there or if the study simply missed detecting the effect (Sheskin, 2004).

### Cross-References

- ▶ [Hypothesis Testing](#)
- ▶ [Null Hypothesis](#)

### References

- Aron, A., & Aron, E. N. (2003). *Statistics for psychology* (3rd ed.). Upper Saddle River, NJ: Prentice Hall.
- Hurlburt, R. T. (2003). *Comprehending behavioral statistics* (3rd ed.). Belmont, CA: Wadsworth/Thomson Learning.
- Sheskin, D. (2004). *Handbook of parametric and nonparametric statistical procedures*. Boca Raton: CRC Press.

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## Typomorphology

- ▶ [Urban Morphology and Citizens' Life](#)