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OARS Multidimensional Functional Assessment Questionnaire (OMFAQ)

▶ Duke Older Americans Resources and Services Instrument

Obesity, an Overview

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Definition

Obesity is defined as a body mass index (BMI) $\geq$30 related to excess fat storage. Class I obesity is defined as a BMI 30–34.9, class II obesity as a BMI 35.0–39.9, and class III obesity as a BMI $\geq$40. Severe obesity is defined as a BMI $\geq$40 or $\geq$35 with obesity-related comorbidities (WHO, 2000).

Description

This entry is about severe obesity (SO), as this condition is especially associated with impairments in many aspects of quality of life (QoL). There is however large variation in QoL within individuals with SO. Patients with SO who seek bariatric surgery often tend to have poorer QoL, than those seeking a lifestyle intervention programs or no treatment at all (Kolotkin, Meter, & Williams, 2001).

The Physical Dimension

Most subjects with SO have some kind of physical limitations (Dixon, Dixon, & O'Brien, 2001). Many patients suffer from chronic pains in the joints and/or muscles, making walking difficult. Sometimes the physical limitations can be quite severe, leading to loss of ability to sufficient self-care. The physical limitations of a person with obesity are considered to relate strongly to the degree of personal tolerance of excess weight. Thus, some persons may have severe physical problems at a BMI of 35, while others first will have the same kind of problems at a BMI of 45.

The Mental Dimension

Mental health problems are more prevalent in subjects with severe obesity than in the general population, and about 50 % of all patients who seek obesity surgery seem to have some sort of mental problems (Sullivan, Karlsson, Sjöström, & Taft, 2001). Interestingly, there seems to be a link between the degree of limitations in physical functioning, pain, and mental problems. Thus, mental problems related to severe obesity often occur in those with the poorest physical health (Andersen et al., 2010). Although there are no reasons to doubt that reciprocity exists between obesity, physical limitations, and mental health, depressive symptomatology has been

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reported to flow mainly from poor physical health to poor mental health rather than in the reverse direction (Gayman, Turner, & Cui, 2008).

The Social Dimension

The negative impact of obesity on social functioning is very common and can be considerable (Kolotkin et al., 2001). Several mechanisms might explain this. First, impaired physical health might be a real barrier since it can limit the ability to being physically active with others. Second, patients seeking bariatric surgery have, as mentioned, more mental problems. This may increase the risk for social isolation. Furthermore, it is also a sad fact that discrimination against obese individuals is a very real problem. Discrimination occurs in key areas in our society, even inside the health services (Puhl & Brownell, 2001). Thus, this is something health professionals should bear in mind when providing care and treatment to patients with severe obesity.

The Economic Dimension

Persons who seek bariatric surgery may have an increased risk for not having a paid job. A systematic review has shown a J-shaped relationship between BMI and the risk for disability pension (Neovius, Johansson, Rossner, & Neovius, 2008). This is often directly related to the effect severe obesity has on health. However, a comprehensive literature review has also described numerous work-related stereotypes reported in over a dozen laboratory studies (Puhl & Brownell, 2001). These stereotypes could affect wages, promotion and termination, and finally participation in paid work.

Quality of Life After Treatment for Severe Obesity

Main goals in the treatment of severe obesity is to reduce the excess weight $\geq$50 % and avoid inducing severe complications or side effects. The excess weight starts at a BMI >25. Thus, if a patient has an initial BMI of 50, the threshold for successes is a BMI below 37.5. Such weight loss, or even smaller weight loss, has been associated with large improvements in all domains of QoL, as long as the side effects are tolerable (Karlsson, Taft, Ryden, Sjöström, & Sullivan, 2007).

Several methods can be applied in the treatment of morbid obesity, including diet, physical activity, behavioral therapy, pharmacotherapy, and bariatric surgery. If nonsurgical strategies are combined, weight loss may be improved in some patients, but convincing long-term data after nonsurgical interventions in patients with severe obesity are lacking (Colquitt, Picot, Loveman, & Clegg, 2009). It is important to acknowledge that sustained weight loss after nonsurgical interventions is a hard task for patients with severe obesity, due to their strong genetic predisposition for obesity. Thus, only bariatric surgery has demonstrated sufficient and sustained long-term weight loss in this patient group (Colquitt et al.). There are several prospective and cross-sectional studies that have shown good QoL after different types of bariatric surgery (Karlsson et al., 2007; Marinari et al., 2004; de Zwaan et al., 2002). However, some studies have shown no or negative changes in the mental domains (van Hout, Boekestein, Fortuin, Pelle, & van Heck, 2006). Insufficient long-term weight loss occurs in approximately 30 % of patients and is associated with dissatisfaction from the patient's point of view (Biron et al., 2004).

A limitation in this field is the scarcity of long-term studies (>5 years of follow-up). However, some studies suggest that a relatively good QoL can be maintained as long as 10–25 years after bariatric surgery (Våge, Solhaug, Viste, Bergsholm, & Wahl, 2003; Karlsson et al., 2007). Most patients in these studies had a BMI between 30 and 35 at follow-up.

Coping with Life After Major Weight Loss

Qualitative research has given novel insight in the lives of those who have lost large amounts of weight (Bocchieri, Meana, & Fisher, 2002). It has been shown that large weight loss may induce some potential tension areas that must be coped properly with to maintain a good QoL. This includes changes in self-concept due to the radically change in outlook and changes in social relations and skill acquisitions like eating behavior and social skills.

Conclusion

Severe obesity is a strong risk factor for a poor QoL. If weight loss is successful, QoL usually improves radically. However, large weight loss may also induce life changes that must be coped with. Thus, patients with severe obesity often need lifelong support.

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Object of Art

► Arts and Quality of Life

Objectified Body Consciousness

► Self-Worth and Measures of Body Image

Objective and Subjective Deprivation

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Synonyms

Deprivation poverty; Income deprivation; Material deprivation; Multidimensional deprivation; Multiple disadvantage; Resources deprivation

Definition

Objective deprivation refers to the enforced lack of basic needs or necessities in life. Subjective deprivation refers to the perception of

disadvantage or the feelings of deprivation. Being objectively deprived of a good or service many other people in society or their peers have (basic needs and status goods) causes someone to feel more deprived than when someone lacks a good that only few people have (luxury goods). Lacking caviar for dinner lets someone feel less deprived than lacking food necessary for not being hungry every day. Deprivation is necessarily a multidimensional concept since it refers to a variety of things or resources in life from which one might be or feel deprived of such as income, consumption, lifestyle, functions, capabilities, human rights, health, housing, education, employment, and social participation. Attempts in the rich literature to define and calculate a multidimensional deprivation index require therefore the aggregation over and the weighing of these various dimensions and items which raises a number of methodological issues. The available evidence on the relationship between deprivation and subjective well-being show a negative relation between the two.

Description

Objective and Subjective Relative Deprivation

As Nolan and Whelan (2011) rightly point out, ► deprivation has always been central to the definition of *poverty* in developing countries and to notions of ► income poverty and ► social exclusion in more developed nations in the West. The underlying rationale might be found in the famous controversy between Sen and Townsend about the absolute versus relative nature of poverty (cf. Sen, 1983; Townsend, 1979, 1985). According to Sen, any definition of poverty must be able to assess to what extent people's standard of living is below a more or less objectively defined absolute minimum standard in terms of "basic needs" or nutritional needs for physical functioning and survival. At the same time, he argued that how much money you need to afford these absolute "basic needs" is also dependent on how much money others have especially when "basic needs" are scarce as is the case in developing countries. If you need 1,500 cal per day and this need can only be fulfilled with rice but rice is scarce and there is not enough for everyone to provide the minimum amount of calories, the amount you can afford depend on the money you have as well as the money others have. In Townsend (1979) view however, poverty in developed countries is completely relative since most people in the Western world have sufficient means to survive and to allow a decent standard of living but lack the material resources to afford the goods and things in life that are needed to be able to participate effectively in the ordinary life of the society in which one lives (see also Goodin, Heady, Muffels, & Dirven, 1999). The implicit idea that effective ► social participation is not a matter of money alone but involves a number of other things in life which are considered important for a "good life" such as education, good health, family, friends, children, and voice has paved the way for defining measures of relative deprivation which entail a broader range of resources than income or consumption alone (Runciman, 1966; Mack & Lansley, 1985). Runciman's definition departs from a subjective interpretation of the deprivation concept. According to him people compare their own living standard as measured by the possession of particular goods with that of other people in their reference group. People feel deprived when they want a good that others have but that they themselves cannot afford. In Runciman's subjective interpretation, ► social comparison is a very important phenomenon to understand the prevalence of subjective deprivation in society.

Income Deprivation Indices

In Sen's approach, a more objective interpretation is used especially in his work on the construction of an income deprivation index (Muffels & Headey, 2012; Sen, 1983). In the income distribution literature, the focus has been on defining income ► inequality and income deprivation indices (cf. Berrebi & Silber, 1985; Hagenaars, 1986; Yitzhaki, 1979). Berrebi and Silber (1985) have shown that all income inequality indices can be rewritten as

a weighted sum of individual deprivation coefficients being the difference between the share of people with higher and lower incomes weighted with the share of the own individual income. The relationship of this measure of objective income deprivation (sum of the income gap with richer people) with subjective well-being has been studied by D'Ambrosio and Frick (2007) and Bellani and D'Ambrosio (2011), showing a negative correlation after controlling for income, marital status age, and employment status.

A Relative Deprivation Index

Muffels and Fouarge (2004) used Runciman's subjective deprivation concept to define and calculate a so-called deprivation index. The deprivation index they calculated is a summary measure of deprivation based on the information on deprivation as contained in the European Community Household Panel survey that ran from 1994 to 2001, covering 14 European countries. They have called their deprivation index the resources deprivation index (RDI) because it was based on a broad list of deprivation items derived from especially Mack and Lansley's work in the early 1980s. These deprivation items refer to the possession of a number of consumption durables, housing amenities, environmental quality, and things people can or cannot afford and do such as eating with friends. The RDI is calculated as the weighted sum of the item deprivation scores (0 or 1) weighted with the proportion of haves of that particular item in society. The way the RDI is calculated makes it a subjective deprivation index. A similar approach is followed by Guio, Fusco, and Marlier (2009). Others have used different weighting schemes and a different selection of items, e.g., including only items dealing with material deprivation (Layte, Nolan, Whelan, & Maître, 2001; Whelan, Layte, & Maitre, 2002). These indices generally aim at measuring objective material deprivation instead. In the framework of EU social policy making, in particular concerning the policies to prevent and combat social exclusion, the deprivation indices methodology is embraced by the Commission to define and measure the rather ambiguous concept of social exclusion. The list of deprivation items as contained in the ECHP is in a modified form and also included in it its successor, the EU-SILC data which started in 2003 with a limited number of countries but gradually extended to cover most of the EU member states in 2010. In 2009, under the French presidency, a commission led by some Nobel laureates published a report on the measurement of economic and social progress in which they break a lance for the use of subjective well-being measures supplementary to GDP per capita measures (Stiglitz, Sen, & Fitoussi, 2009). In this report Sen's related capability framework has been used to derive indicators for measuring economic progress.

Sen's Capability Approach

In his later work, Sen has developed a so-called capability approach (CA) in which capabilities are considered important to create freedom of choice to people to achieve the things in life which one has reason to value most for his or her personal life (Sen, 1993, 1999). For Sen these capabilities determine in the end someone's personal well-being. In Sen's vocabulary these freedoms are the capabilities to achieve particular functionings (the doings and beings) such as finding a partner, getting a job, or following education. Capabilities are in Sen's world the real freedom people have or the opportunities and choices available to them. Central is the notion of "freedom of choice" (Alkire, 2007; Muffels, Tsakloglou, & Mayes, 2002; Nussbaum, 1997). People make choices during their life, contingent on their capabilities which in the end impact their well-being outcomes. Sen's model implicitly has a behavioral component while it presumes that people strive for "freedom," making them happier the more their efforts and choices allow them to do the things they value most. In a recent test of Sen's capability framework on German and British data, Muffels and Headey (2012) developed an empirical model for examining the relationship between capabilities (indicated by human capital, social capital, cultural capital, and psychological capital), people's choices and the events they encounter, and well-being outcomes. They showed the

relevance of the capability approach for explaining differences in subjective well-being. Sen's capability approach might provide a new avenue for research into the prevalence and distribution of multiple advantage and disadvantage in society and the effects on different measures of objective and subjective well-being.

Discussion

The notion of deprivation has been translated into various measures of objective and subjective deprivation which has been used in the past by the European commission to define a number of indicators to monitor the development of poverty and social exclusion in the EU Member States. In the meantime, new approaches have been developed in the tradition of the deprivation methodology but also beyond those in Sen's capability framework. These approaches might provide new avenues for research and development of indicators in the social domain and in the domain of measuring social and economic progress including the development of indicators on the environmental dimension of quality of life. They supplement the information as contained in traditional measures of economic and social progress with new objective and subjective well-being-oriented measures. Innovative ideas and research is needed to make this effort academically and politically a success.

Cross-References

- ▶ Deprivation
- ▶ Inequality
- ▶ Poverty
- ▶ Social Comparison
- ▶ Social Exclusion
- ▶ Social Indicators

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Objective and Subjective Indicators Correlations in Taiwan

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Synonyms

Objective and subjective life quality

Definition

An objective dimension of ▶ quality of life usually considers socioeconomic indices in a place, which can be used to assess the level of living and to portray the achievement or failure in certain domains of quality of life for a place. ▶ Social indicators are used to monitor ▶ progress toward goals and are often incorporated into a ▶ performance evaluation model of the social system. The approach of using socioeconomic indicators to measure quality of life does not attempt to conceptually define quality of life, per se, but incorporates attributes of ▶ social well-being into a set of statistics or social models. These socioeconomic indicators are viewed as "hard" or objective indicators and include factors associated with individual status, equality, living conditions, economic status, ▶ education, ▶ health, ▶ welfare, and government performance.

A subjective dimension, on the other hand, says that an individual's cognitive perception or satisfaction with a place reveals the subjective evaluation of the life experience. Such a perspective is an orientation that focuses on the problem of defining quality of life in terms of quantifiable categories that measure various perceptions of human life conditions. From this perspective, the measures of quality of life are often viewed as "soft" or ▶ subjective indicators. The components of quality of life mainly focus on overall satisfaction and ▶ happiness, as well as specific life domains including work, neighborhood, local services, environment, personal health, crime rate and ▶ security, government performance, and environmental quality.

Description

Previous studies have examined the association between objective and subjective measures of quality of life. Some studies claimed no significant effects of the former on the latter, while others have found that improved socioeconomic conditions contributed to higher quality of life (Bradshaw & Fraser, 1989; Kao & Liu, 1984). Despite their close relationship, it is unclear whether differences among local communities and regions in one dimension are parallel to those in the other. For example, research has found that people living in economically disadvantaged communities did not necessarily indicate lower satisfaction than those who lived in more advantaged communities (see Lewis & Lyo, 1986; Schuessler & Fisher, 1985).

These findings imply that no consistent pattern can be found by using either objective socioeconomic indicators or subjective perceptions with regard to the differences in quality of life among places. This raises a question: Are objective differences in quality of life among areas at various urbanization levels parallel to subjective differences in perceptions? Or, on the contrary, is there generally a discrepancy between objective and subjective quality of life indices among areas? Such consistency or discrepancy is examined by using data from Taiwan.

Theories explaining the association between objective and subjective quality of life have included perspectives from social psychological, economic, and ecological approaches (Schuessler & Fisher, 1985). Needs theory and ▶ comparison theory are discussed here since these theoretical

approaches have been employed to examine the mutual dependence of objective and subjective quality of life (Hagerty, 1999).

Needs theory (Diener & Lucas, 2000; Diener, Oishi, & Lucas, 2003; Schyns, 1998), developed by Maslow, focuses on absolute quality of life rather than on relative differences. It is also known as ▶ livability theory (Veenhoven, 1995) for the "livability of one's society is the degree to which collective provisions and demands fit with individual needs and capacities" (p. 36). Needs theory asserts that there are universal human needs and subjective appreciation of life depends on the objective living conditions (Diener & Lucas, 2000). This approach aims to reveal the direct contribution of objective conditions to the individual's subjective perceptions where better quality of life can be obtained by improvement in social-economic conditions. However, people's perception of and satisfaction with life in socio-economically disadvantaged communities is not necessarily lower than those in advantaged communities (see Lewis & Lyo, 1986; Schuessler & Fisher, 1985). In this regard, needs theory fails to account for the differences in quality of life among places in various forms of needs fulfillment.

Unlike needs theory which focuses on the absolute quality of life standards, comparison theory assumed that people make judgments based on relative values (Hagerty, 1999, 2000; Veenhoven, 1995). It is argued that objective conditions affect subjective perceptions indirectly through comparisons with other possible alternatives (Diener & Lucas, 2000). The individual's own experience in the past or other people's is used as a reference group for comparisons, although it is not always possible to identify what the comparison base/group may be (Hagerty, 2000). For the comparison of objective conditions, researchers have suggested contextual analysis on indicators of social, economic, environmental, demographic, and medical services domains (Wu & Shih, 1996). A specific area or community within the sampling frame can be selected and used as the reference. When comparing subjective perceptions of life satisfaction, however, it is difficult to determine such a reference. The main reason is the nature of the reference, whether sociopsychological factors or certain reference persons, is unknown.

From the perspective of comparison theory, the evaluation of quality of life or satisfaction is based on a process of mental calculus in which the standards of comparison are presumed to be adjustable rather than fixed (Veenhoven, 1995). Whether an individual feels satisfied or not is closely associated with one's standards of comparison (Campbell, Converse, & Rodgers, 1976; Diener & Lucas, 2000). While objective indicators may reveal significant discrepancies among places, subjective perceptions and satisfactions among their residents may be the same (Veenhoven, 1996). Therefore, the pattern of objective indicators in quality of life may differ from that of subjective perceptions. In order to explore the consistency/difference between objective indicators and subjective perceptions of quality of life, socioeconomic indicators and survey data from the same cities and counties within Taiwan are used to represent objective and subjective dimensions, respectively, of quality of life.

Secondary aggregated data for objective indicators and subjective perceptions were employed for the purpose of analysis. Survey data on Living Conditions of Citizens in Taiwan in the year 2000 were used to analyze the individual's satisfaction with various aspects of life. A total of 4,070 completed surveys were obtained; the number of respondents ranged from 138 to 403 for each of the 23 separate administrative areas, whether cities or counties. Domains of life quality studied included medical services, domestic finances, work, education, leisure, public safety, and environmental quality. Measures of subjective life quality were satisfaction with each of the life domains mentioned above, with a range from 1 = very dissatisfied to 4 = very satisfied.

Objective indicators of quality of life were obtained from the 2000 Statistical Yearbook of Hsiens (Counties) and Municipalities in the Taiwan area (excluding the islands of Kinmen and Matsu due to unavailability of data) (Executive Yuan, 2000). Statistics for 23 cities and counties in Taiwan were compiled for the same quality of life domains. Among all of the

available data for the 23 cities and counties, indicators that may reveal the functional features and/or have previously been used as representatives for each of the domains were selected. These indicators were used as or were integrated into one index for each domain. Table 1 presents descriptions of these objective and subjective indicators, as well as their mean values and standard deviations (SD).

With regard to the objective conditions, the number of indicators for each domain ranged from one to five. For comparison purposes, some standardized Z-scores were used instead of the actual numbers. Given the various number of indicators, ▶ factor analysis was employed for each of the domains, except for the indicator of Leisure, which was with merely one indicator, in order to obtain a domain index and confirm the correlation among the indicators. One factor was extracted for each of the domains, and the results are reported in Table 2.

With respect to the subjective perceptions, mean scores of subjective satisfaction for each domain and for each population sample within each city or county were calculated as the index. In order to compare the consistency between objective and subjective rankings in each domain, the Spearman rank correlation coefficient (Spearman's rho) and Kendall's tau-b coefficient were computed.

With regard to the objective dimension of quality of life, various patterns were observed in different domains. For example, Taipei City, the capital city, ranked higher in medical services and domestic finances but low in work. On the other hand, Hsinchu County ranked lower in both medical services and work but high in domestic finances. Still others, such as Hualien County, had similar rankings across life domains. Factor scores were used for further comparison with subjective indices.

Little significant difference in subjective satisfaction was found among cities and counties (Table 3). For satisfaction with medical services, domestic finances, work, and leisure, residents in two or more cities/counties were found to report similar satisfaction levels with these domains when compared to those in other cities and counties. These cities or counties are denoted by "n" in Table 3, meaning no significant differences from others. On the other hand, satisfaction with education, public safety, and environmental quality were significantly varied across cities and counties. Eta squares that indicate the degree of the association between the independent and the dependent variable, in this study quality of life domain scores and county/city, respectively, are reported at the bottom of Table 3. The values of eta square ranged from .008 to .028, suggesting that the proportions of variance in the dependent variable that is explained by differences among groups were not high.

In order to further explore the consistency or discrepancy of rankings between objective and subjective life quality among 23 cities and counties, Kendall's tau-b and Spearman's rho correlation coefficients were calculated. As indicated in Table 4, rankings based on the numerical values of objective and subjective life quality were significantly different in education and in environmental quality, surprisingly with opposite directions. Both of the correlation coefficients were negative in education, indicating that a city/county with a higher ranking for objective conditions (average level of literacy and education) was ranked low in subjective satisfaction with educational conditions and vice versa. On the other hand, the correlation coefficients in environmental quality were both positive. A city/county that was ranked higher for objective conditions was perceived to have better environmental quality as well. Comparisons on the domains of medical services, domestic finances, work, leisure, and public safety did not have significant differences between objective and subjective rankings of quality of life. In other words, objective conditions on these domains were found to not correspond to subjective perceptions among 23 cities and counties.

In sum, mixed results were found in a further analysis of the parallel correspondence between objective and subjective rankings based on the numerical values. In particular, cities or counties with higher objective rankings in education had lower subjective rankings, while consistent rankings were found in environmental quality. No

Objective and Subjective Indicators Correlations in Taiwan, Table 1 Description of subjective and objective quality of life indicators

Domain	Type	Indicator	Mean (S.D.)	Unit of measure
Medical service	Obj. (N = 23)	Number of institutions for medical services	785.22 (702.35)	Number
		Medical personnel per 10,000 population	70.64 (28.17)	Number per 10,000 persons
		Number of hospital beds	5487.83 (4494.88)	Number
	Sub. (N = 3,711)	Level of satisfaction with medical facilities available in current life	2.63 (.65)	Score 1–4
Domestic finances	Obj. (N = 23)	Average annual normal expenditures per household	787,058.78 (166,064.92)	$
		Average annual normal income per household	1053,315.13 (200,837.54)	$
		Average disposable income per household	832,885.96 (145,528.62)	$
		Average purchases per household	605,198.43 (121,336.46)	$
		Average annual disposable income per person	232,617.86 (35,110.65)	$
	Sub. (N = 3,915)	Level of satisfaction with financial condition in current life	2.62 (.65)	Score 1–4
Work	Obj. (N = 23)	Labor force participation rate	57.31 (3.32)	%
		Unemployment rate	3.01 (.60)	%
	Sub. (N = 2,760)	Level of satisfaction with work condition in current life	2.77 (.60)	Score 1–4
Education	Obj. (N = 23)	Literacy rate for population over 15 years of age	95.32 (1.86)	%
		Higher education rate for population over 15 years of age	20.81 (8.10)	%
	Sub. (N = 3,483)	Level of satisfaction with current educational system	2.77 (.69)	Score 1–4
Leisure	Obj. (N = 23)	Area (per person) of public parks, green open space, children's recreation, or athletic fields within the city planning region	3.52 (3.27)	Square meters per person
	Sub. (N = 3,738)	Level of satisfaction with current leisure life	2.68 (.62)	Score 1–4
Public safety	Obj. (N = 23)	Number of firefighters per 100,000 persons	34.51 (15.05)	Number per 100,000 persons
		Number of fire trucks per 10,000 persons	0.97 (.31)	Number per 10,000 persons
		Death rate of accident	56.51 (20.40)	Number per 100,000 persons
	Sub. (N = 3,667)	Level of satisfaction with current public safety	2.15 (.66)	Score 1–4

(*continued*)

Objective and Subjective Indicators Correlations in Taiwan, Table 1 (continued)

Domain	Type	Indicator	Mean (S.D.)	Unit of measure
Environmental quality	Obj. (N = 23)	Weight of garbage transported daily	935.56 (836.37)	Metric tons per day
		Monthly dust fall	94.26 (26.69)	Metric tons per square km.
		Atmospheric ozone concentration	5.18 (3.00)	Parts per million
	Sub. (N = 4,019)	Level of satisfaction with current residential environment	2.76 (.64)	Score 1–4

Source 1. 2000 Statistical Yearbook of Hsiens and Municipalities, Executive Yuan, R.O.C. (Taiwan)
2. 2000 Survey on Living Conditions of Citizens in Taiwan, Executive Yuan, R.O.C. (Taiwan)

Objective and Subjective Indicators Correlations in Taiwan, Table 2 Factor analysis of objective indicators of quality of life

Domain	Objective indicator	Factor loading	% of variance
Medical service	Number of institutions for medical services	0.907	72.17
	Medical personnel per 10,000 population	0.647	
	Number of hospital beds	0.961	
Domestic finances	Average annual normal expenditures per household	0.986	95.34
	Average annual normal income per household	0.995	
	Average disposable income per household	0.984	
	Average purchases per household	0.980	
	Average annual disposable income per person	0.936	
Work	Labor force participation rate	0.807	65.20
	Unemployment rate*	0.807	
Education	Literacy rate for population over 15 years of age	0.896	80.30
	Higher education rate for population over 15 years of age	0.896	
Leisure	Area (per person) of public parks, green open space, children's recreation, or athletic fields within the city planning region	–	–
Public safety	Number of firefighters per 100,000 persons	0.756	61.38
	Number of fire trucks per 10,000 persons	0.955	
	Death rate of accident	0.598	
Environmental quality	Weight of garbage transported daily	0.732	42.88
	Monthly dust fall	0.642	
	Atmospheric ozone concentration	0.583	

*The numbers were negatively coded for the factor analysis

significant relationships between objective and subjective measures were found in the other life domains.

As the results indicate, it is not necessarily appropriate to use disparity of objective conditions among cities and counties to depict quality of life differences as felt by the inhabitants. The negative correlation between objective condition and subjective perception in education is an example. As indicated in the results, residents living in areas with better ▶ human capital, as measured by ▶ literacy and ▶ higher education rates, were less satisfied with the education system. From the perspective of comparison theory, objective conditions affect subjective perceptions indirectly through comparisons with other possible alternatives (Hagerty, 1999, 2000; Veenhoven, 1995). It is possible that

Objective and Subjective Indicators Correlations in Taiwan, Table 3 Analysis of variance for subjective quality of life[a]

Mean	Medical service	Domestic finances	Work	Education	Leisure	Public safety	Environ. quality
A. Taipei County	2.5978	2.5733	2.7719	2.2890	2.6063	2.0747	2.5714
B. Yilan County	2.4809	2.5942[n]	2.6630	2.4320	2.7537	2.1349	2.8345
C. Taoyuan County	2.7546	2.6667	2.8647	2.3125	2.7062	2.0398	2.6538
D. Hsinchu County	2.6429	2.6471	2.9010	2.2564	2.7023[n]	2.0769	2.8071
E. Miaoli County	2.6231[n]	2.6357[n]	2.9348	2.3893	2.7612	2.1024	2.8849
F. Taichung County	2.7244	2.5926[n]	2.6147	2.5000	2.6928[n]	2.1656	2.7605
G. Changhua County	2.5971	2.5714[n]	2.6869	2.3615	2.6617	2.1716	2.7114
H. Nantou County	2.6953	2.4855	2.7113	2.3193	2.7154[n]	2.0488	2.8116
I. Yunlin County	2.6508	2.6512	2.7634[n]	2.5210	2.6504	2.2500	2.8029
J. Chiayi County	2.7805	2.5522	2.8315	2.5439	2.7521	2.3008	2.7464
K. Tainan County	2.6349[n]	2.5414	2.6961	2.4386	2.7480	2.2080	2.7899
L. Kaohsiung County	2.6800	2.6519	2.8155	2.4530	2.7422	2.0476	2.7429
M. Pingtung County	2.6984	2.4887	2.7561	2.4505	2.7364	2.1930	2.8561
N. Taitung County	2.7016	2.5338	2.7778[n]	2.6316	2.8258	2.3277	2.8613
O. Hualien County	2.6719	2.6667	2.8000	2.5000	2.8031	2.2479	2.7698
P. Penghu County	2.5109	2.7244	2.7439	2.4872	2.6279	2.3220	2.8913
Q. Keelung City	2.6378	2.6304[n]	2.8269	2.3033	2.5682	2.0076	2.6739
R. Hsinchu City	2.5859	2.5612	2.8119	2.1473	2.7068[n]	2.0073	2.6429
S. Taichung City	2.6977	2.7111	2.7723[n]	2.3846	2.6692	2.0923	2.6815
T. Chiayi City	2.5702	2.5954[n]	2.6835	2.4034	2.8130	2.2397	2.7842
U. Tainan City	2.6797	2.6136[n]	2.8438	2.3250	2.7236	2.0909	2.7194
V. Taipei City	2.7128	2.5903[n]	2.7018	2.1986	2.6098	2.1234	2.7273
W. Kaohsiung City	2.6415	2.6243[n]	2.7094	2.3311	2.6516	2.0065	2.6879
F-value[b]	1.843[*]	1.247	1.854[**]	4.266[***]	2.026[**]	3.290[***]	3.347[***]
(Degrees of freedom)	(21, 3421)	(21, 3621)	(21, 2523)	(21, 3225)	(21, 3459)	(21, 3383)	(21, 3709)
Eta square	.012	.008	.016	.028	.013	.021	.019

[a]Due to missing values, the sample size for each city/county in each domain varied with 79 responses from Chiayi City in work, which existed the most missing values than other domains
[b]F-values were all significant at the 0.05 alpha rate, except for domestic finances
[n]Denotes that the city/county did not differ from any of the other cities and counties in these quality of life domains
[*]p<.05; [**]p<.01; [***]p<.001

Objective and Subjective Indicators Correlations in Taiwan, Table 4 Nonparametric correlations of objective and subjective quality of life (N = 23)

	Medical service	Domestic finances	Work	Education	Leisure	Public safety	Environ. quality
Kendall's tau-b	.146	.143	.091	−.404[**]	−.072	.281	.518[***]
Spearman's rho	.193	.163	.075	−.597[**]	−.098	.412	.701[***]

**$p < .01$; *** $p < .001$

better-educated people have higher expectations, based on comparison with others' experiences or their own in the past, for the functions that education systems may provide, resulting in lower satisfaction than that of the less educated. On the other hand, objective conditions on education may not reach a universal criterion, as the needs theory asserts, despite being superior to others. This may, in turn, damage the subjective appreciation of individuals.

Although comparison theory may explain the negative relations between the rankings in education, the insignificant relations in other domains need to be explained from an alternative perspective. It is possible that different theories were applicable for either objective or subjective dimensions but not both. It is clear that the request for the improvement of the objective dimension aims for the fulfillment of absolute criteria, as needs theory has indicated (Veenhoven, 1995). Subjective satisfaction, on the contrary, tends to be the results of social comparison. As Veenhoven (1996, p. 10) has indicated, "one's general affect is not very indicative for the adequacy of one's income." The insignificant relations between subjective and objective rankings require an explanation from an alternative perspective. While no previous study examined the consistency or disparity between objective and subjective indicators, this study provides support to previous findings that the level of subjective perceptions may not correspond to the level of objective conditions (see Lewis & Lyo, 1986; Schuessler & Fisher, 1985). Since data used in this study only provided descriptive results, more research with sophisticated analysis is needed to further demonstrate the consistency or discrepancy in quality of life measures and to provide a better view for theoretical discussions.

As it is difficult to obtain consensus on an operational definition (Ziegler & Britton, 1981), it remains a challenge to determine what should be included among all of the available indicators. While the results of this research are limited, it is hoped that they still provide some contribution to the issue and methodology of analyzing quality of life in a contemporary country that has undergone rapid development. It is possible that more detailed study can explicate the complex relationship between objective and subjective measures on a rural/urban continuum as it has evolved over recent time.

Cross-References

- ▶ Comparison Theory
- ▶ Education
- ▶ Environmental Quality
- ▶ Leisure
- ▶ Life Satisfaction
- ▶ Livability Theory
- ▶ Need Theory
- ▶ Quality of Life
- ▶ Rank-Order Correlation
- ▶ Social Indicators
- ▶ Subjective Indicators

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Objective and Subjective Life Quality

► Objective and Subjective Indicators Correlations in Taiwan

Objective and Subjective Nearness to Death

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Synonyms

Age distance to death; Ageism; Closeness to death; Mortality salience; Perceived distance to death; Perception of remaining lifetime; Socioemotional selectivity theory; Terror management theory; Time distance to death

Definition

Subjective nearness to death refers to individuals' perception of their remaining lifetime, that is, how close they are or feel to death. Objective nearness to death refers to the actual time span a person is close to death.

Description

How long am I going to live? How old will I be when I die? Nobody can answer these questions with absolute certainty, but can we at least try? Do humans have the ability to correctly judge how long they are going to live and how close they are to dying? Such questions are addressed by the concepts of objective and subjective nearness to death. Whereas objective nearness to death refers to the number of months or years a person actually lives until he/she dies, subjective nearness to death refers to the person's individual perception of how close he/she is to dying. Both objective and subjective nearness to death are particularly relevant in older (and terminally ill) persons because their lifetime is in fact coming to an end. Therefore, the following overview of research pertaining to objective and subjective nearness to death focuses primarily on older adults.

Objectiveness Nearness to Death

Even though objective closeness to death can be estimated in some cases, an absolutely accurate value for this variable can only be determined retroactively (i.e., after a person's death). The estimation of objective closeness to death is a relevant undertaking, for instance, in medicine and economy. Physicians have to estimate the remaining lifetime of a terminally ill patient, and insurance companies use estimates of ► life expectancy and remaining lifetime to determine a person's eligibility and/or premiums for purchasing life insurance. Similarly, retirement contributions are strongly influenced by objective estimates of one's remaining life- and work time. Objective nearness to death has further gained some popularity in psychological science in which researchers have begun to examine how psychological or physical functioning changes as a function of distance (or closeness) to death. Using longitudinal data of deceased persons for whom we have information about the time point of death allows investigating how psychological functioning changes as individuals approach death. This research has shown that constructs such as cognitive functioning, well-being, or positive self-perceptions of aging not only decrease as a function of age but also decline as individuals approach death (e.g., Bäckman & MacDonald, 2006; Gerstorf, Ram, Röcke, Lindenberger, & Smith, 2008b; Kotter-Grühn,

Kleinspehn-Ammerlahn, Gerstorf, & Smith, 2009). In fact, in many cases, statistical models that contrast age-, time-, and distance-to-death-related changes in psychological functioning demonstrate that distance to death seems to be a time metric that better captures changes in old age than the time metrics of age or time.

Pushing the notion of distance-to-death-related change a little bit further, some longitudinal studies are now examining whether the phase shortly before death (as opposed to the time farther away from death) is characterized by an accelerated decline in psychological functioning. This idea of "terminal decline" was already introduced into the literature several decades ago, for instance, by Kleemeier (1962) as well as Riegel and Riegel (1972), but the development of statistical tools such as dual-change-point models now allow us to empirically test whether or not terminal decline in fact takes place. For instance, using longitudinal data from the German Socioeconomic Panel Study, Gerstorf et al. (2008a) demonstrated that ▶ life satisfaction in older adults declined over the 22-year study period, and this decline could be differentiated into two phases, a preterminal decline phase and a terminal decline phase. In comparison to the preterminal decline phase, the decline in life satisfaction was about three times as steep in the very last years before participants' death, the so-called terminal decline stage. Similar findings have been reported for cognitive functioning (e.g., Sliwinski et al. 2006).

Objective closeness to death also plays a role in studies aiming at predicting ▶ mortality status (i.e., death versus alive) using psychological variables. Such studies typically contrast the psychological functioning at a specific time point of participants who either survived or died during the subsequent study period. If it is found that a variable predicts mortality, this information is further used to calculate median survival times for persons who scored either high or low on the respective variable. For example, in a study by Kotter-Grühn et al. (2009), aging satisfaction assessed at the first measurement occasion of a longitudinal study predicted mortality risk 16 years later. That is, even after controlling for variables that are typically related to a higher likelihood of dying (e.g., higher age, bad health), higher aging satisfaction at time point 1 was related to a lower risk of dying during the study period. Furthermore, it was demonstrated that persons who were satisfied with their age and aging at time point 1 had a median survival time of 6.2 years, whereas persons who were less satisfied with their aging only survived an average of 4.0 years. Thus, from knowing a person's level on a specific variable, the objective nearness to death could be calculated. Mortality analyses have become very popular over the past years, and there is now ample evidence that a variety of psychological variables (e.g., cognitive functioning, well-being, subjective health) predict mortality risk and allow calculating estimates of older adults' closeness to death (e.g., Idler & Benyamini, 1997; Mroczek & Spiro, 2007). It needs to be taken into consideration, however, that such calculations are mainly performed retroactively, that is, they rely on data of deceased participants. It is questionable whether we could and should apply the calculated median survival times to living older adults, for instance, by measuring their expression on a specific variable and then telling them that in previous studies people who had comparable scores lived on average another x years/months.

Subjective Nearness to Death

Whereas it is impossible to assess a person's objective closeness to death during his or her lifetime, we can examine how close people feel to dying, that is, their subjective perception of being close to death. Similar to objective nearness to death, subjective nearness to death has been a topic of interest, especially in the fields of economy and psychology. For instance, to understand risk perception, financial planning, and ▶ decision making when it comes to purchasing life insurance and setting contributions to retirement plans, economists have examined the concept of subjective longevity expectations (i.e., the subjective probability to survive to a certain age). Psychologists are mainly interested in the psychological correlates and consequences of feeling close to death. Several psychological theories

underscore the importance of being aware of one's closeness to death. For instance, terror management theory posits and empirically demonstrates that being reminded of one's own mortality (so-called mortality salience) can influence peoples' perception, ▶ attitudes, ▶ values, and behaviors (Burke, Martens, & Faucher, 2010). Whereas in everyday life young people are unlikely to be reminded of their own mortality on a regular basis, older adults may frequently be reminded of being relatively close to death. Those reminders may come in the form of their own age, changes in their health status and memory performance, or the death of friends and relatives. In fact, younger adults consider older adults to be "living symbols of time running out" (Martens, Greenberg, Schimel, & Landau, 2004, p. 1534). Thus, older adults may be more prone to mortality salience and its consequences. In the context of lifespan developmental psychology, subjective nearness to death can also be considered under the umbrella terms of future orientation, future perception, or future time perspective. The latter plays a major role in socioemotional selectivity theory (Carstensen, 2006) which posits that perceiving one's future or lifetime as limited is predictive of shifting one's focus from knowledge-related goals to emotional goals and emotionally rewarding ▶ social interactions (Lang, 2000). Similarly, self-regulatory theories propose that the perception of one's lifetime running out is linked to a shift from extrinsic-instrumental goals to intrinsic and ego-transcending goals and values (Brandtstädter, Rothermund, Kranz, & Kühn, 2010). That is, the goals people set for themselves typically are adapted to one's estimated remaining lifetime. A person who perceives him or herself to be close to dying is unlikely to set a goal in the far future or a goal that can only be achieved if actively pursued over many years. This is supported by research showing that older adults set fewer goals and prioritize goals differently than younger adults do (Ebner, Freund, & Baltes, 2006; Prenda & Lachman, 2001).

Considering the consequences that the subjective perception of being close to death can have, the question arises as to whether the subjective estimation of time running out is accurate. A study by Kotter-Grühn and Smith (2010) demonstrated that in old age a relationship between objective and subjective nearness exists. First, over a 16-year time period, subjective nearness to death was a significant predictor of objective nearness to death. Those participants who indicated feeling close to death at the first measurement occasion were more likely to have died over the 16-year study period (3.8 % of persons in this group were still alive after 16 years) than those who reported not feeling close to death (16 % of persons in this group were still alive after 16 years). More precisely, the people who didn't feel close to death survived an average of 6.1 years, whereas those who felt close to death had a median survival time of only 3.6 years. Second, exploring the dynamic relationship between objective and subjective nearness to death of participants who had died during the study period, it was found that when participants' objective nearness to death increased, subjective nearness to death increased as well. That is, over a long time span of old age, individuals accurately adjusted their subjective nearness to death as their remaining lifetime declined. This finding remained the same even after controlling for variables that typically predict mortality (e.g., subjective and objective health).

Note that subjective nearness to death is different from a person's desired lifetime, that is, the age to which people want to live (e.g., Lang, Baltes, & Wagner, 2007). The subjective estimation of how close one is to dying may be in part influenced by or related to one's desire to live to a certain age. However, desired lifetime and subjective closeness to death can also be independent from each other. For instance, a person may feel close to death but at the same time he/she wants to live another 20 years; or a person may not feel close to death at all but he/she actually has no desire to live several more years. Subjective nearness to death is further related to but still different from the subjective probability of surviving to a specific age.

How do older adults know they are approaching death? Of course, especially in old age, there is a logical relationship between age or time going by and closeness to death. In that regard, however, we would expect that all older adults always feel close to death, but this is not supported by empirical data. There are interindividual differences in how close older adults feel to dying, and those differences correspond to their objective closeness to death. So far, it can only be speculated how people actually evaluate/estimate how close they are to dying. When evaluating their nearness to death, older adults most likely take into account their own age and health status, they may compare their own life circumstances and health status to that of friends or relatives who recently died, they may evaluate whether or not they show symptoms that friends or relatives showed shortly before they died. As it is widely known that longevity runs in families, persons might use the age at which close relatives died as a reference point for calculating their own remaining lifetime. Furthermore, a person's evaluation of being close to death may be related to his/her will to live, the desire to live to a certain age, or the valuation of life under given circumstances. The relationship between objective and subjective nearness to death might further be a reflection of self-fulfilling prophecies in that those who believe that their life is coming to an end in fact die earlier because of this belief. On the other hand, some people might never report feeling close to dying either because they deny that life is coming to an end, they are scared of dying, or because they are overly optimistic with regard to their estimated remaining lifetime.

In conclusion, both objective and subjective nearness to death play important roles in understanding and adequately describing developmental trajectories in very old adults. Even though they are different from each other, objective and subjective nearness to death are related to each other, and subjective closeness to death can be used as a predictor of objective nearness to death.

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Objective and Subjective Poverty

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Synonyms

Deprivation from happiness and deprivation from wealth; Informal and official poverty; Material and subjective poverty; Qualitative and quantitative approaches of poverty

Definition

► Subjective poverty is the subjective perception of ► deprivation. Two approaches can be distinguished in defining subjective poverty. On the one hand, poverty can be defined by examining who is in general considered to be poor. On the other, it can also be defined by collecting their beliefs about their own position in a system of inequalities.

In most of the cases, however, poverty is defined based on some objective measure. Income level is the most widely used measure to do so. Besides, number of children, age, ► education attainment, labor market position, or level of comfort can also be applied as a basis for defining objective poverty. Three main concepts of objective poverty can be distinguished: absolute, relative, and (welfare) political.

Description

Two main concepts of poverty are distinguished in the poverty literature: subjective and objective poverty (refer to Table 1).

Subjective Poverty Concepts

Subjective concept of poverty was elaborated by two research groups. Van Praag (1971) worked out the Income Evaluation Question (IEQ) to collect data on subjective well-being. Deleeck and his staff defined CSP (subjective poverty line). Subjective poverty concept is often used in two ways. On the one hand, poverty can be defined by examining who people consider to be poor. It can also be defined by collecting peoples' beliefs about their own position in a system of social inequalities (Spéder, 2002). Subjective poverty concept can reflect ► subjective well-being.

► Happiness, a part of subjective well-being, is considered to be the ultimate goal of human life by a reasonable part of the society. Happiness research is relevant for economists for multiple reasons. It can inform economic policy decisions to make it possible to reach a Pareto-improving proposal (actions that do not entail costs for other individuals). Further, it highlights the importance of institutional conditions such as the quality of governance, the size of social capital, or the rule of law on subjective well-being, and it can also help in understanding the formation of subjective well-being (Frey & Stutzer, 2002) and peoples' values, behavior, and belief (Samman, 2007).

People can be asked about the amount of money they consider to be necessary in order to satisfy the ► minimal needs related to a minimal human lifestyle. Subjective poverty threshold can be defined based on the weighted average of per capita or per household amount of what people believe to be necessary. Information on subjective poverty and subjective well-being is usually derived from household surveys. The World Value Survey, for example, measures subjective well-being with the following questions: "Taking all things together, would you say you are very happy, quite happy, not very happy, or not at all happy?" or "All things considered, how satisfied

Objective and Subjective Poverty, Table 1 Concepts of poverty

Concepts of poverty		Income	Living conditions
Objective	Absolute	Subsistence level	Not processing certain items
		Regional minimum	Being in crisis
	Relative	Living below the 50 or 60 % of mean or median income	Deprivation index
		Lower decile, quintile	
	(Welfare) political	Existence minimum	
		Minimum pension	
Subjective		Subjective poverty	Minimal living conditions

Source: own compilation based on Spéder (2002, p. 51)

are you with the your life as a whole these days?." Subjective well-being and poverty can also be measured by other subjective measures, like personality or the evaluation of friends and relatives. Stevenson and Wolfers (2008) conclude that self-reporting standard of living and other subjective measures of well-being are usually highly correlated.

The intertemporal assessment of subjective poverty can be a big issue because of the excess amount of available data. The frequent changes in the data collection methods (like scale differences in the measurement over time) make it very difficult to draw reliable conclusions (Stevenson & Wolfers, 2008).

Objective Poverty Concepts

Besides subjective concept of poverty, three main poverty conceptions are distinguished in the literature (refer to Table 1), which are called objective poverty concepts.

Objective or official concepts of poverty are usually derived from ideology. Ideologies – no matter if they are ethical, legal, political, religious, etc. – are realized in institutions. Ideologies always belong to classes; therefore, they can never be socially neutral. The ruling ideology usually forms the essential power of the dominant class. This ideology is elaborated by the state apparatuses (Poulantzas 1978). Althusser (2008) says that ideology always interprets individuals as subjects. The term subject refers to

> (1) a free subjectivity, a center of initiatives, author of and responsible for its actions; (2) a subjected being, who submits to a higher authority, and is therefore stripped of all freedom except that of freely accepting his submission. (Althusser, 2008, p. 56)

That is why all subjects "work by themselves." In terms of poverty and inequalities, it means that a political concept of poverty reflecting the ideology of the ruling class blames only individuals for being poor, and not politics or economy. This ▶ welfare political concept derived from ideologies is independent of the beliefs of the dominated classes, who are more endangered by poverty and social exclusion than the ruling class. Thus, in order to get a clear understanding of poverty, the examination of the differences between political concept of poverty and subjective perceptions is of crucial importance.

Welfare political concept of poverty is important because many kinds of public aid (social supports, family allowances, grants for the underprivileged) are distributed using it. In most of the cases, some income level is used to define welfare political poverty. A threshold for this can be a certain portion of the minimal pension (Spéder, 2002). Besides, old age, the number of children, or the education level can also be applied as poverty lines. Any deviation between these thresholds and the subjective poverty lines has serious consequences and distorts the welfare system.

Absolute concepts of poverty assume that minimum material needs can be defined regardless of space and time. Those who are not able to satisfy these needs are considered to be poor. The subsistence level is the amount of money that ensures the fulfillment of moderate needs related to a minimal lifestyle. When subsistence levels are different for the different regions of a country, they are called regional minimum. The World Bank applies absolute poverty thresholds when it defines poverty as living below USD

1.25 or 2 a day. The use of these thresholds makes international comparison of poverty possible across countries. It, however, ignores wage and price differences that can play an important role in defining the sum of money necessary to make ends meet.

The relative conceptions define poverty as being below some relative poverty threshold. People can be considered to be poor if they fall below some average wealth level of the society to a certain extent (e.g., 50 or 60 % of mean or median income). The other approach using the relative poverty concept defines poverty line as an income level below which a certain part (one tenth or one fifth) of the population lives (Hegedus & Monostori, 2005). The European Union worked out the system of Laeken indicators in 2001, which defines several – mainly relative – measures of poverty. Its application makes it possible to compare the poverty of different level NUTS regions. The primary Laeken indicators are the following:

- Indicator 1a: At-risk-of-poverty rate, by age and gender
- Indicator 1b: At-risk-of-poverty rate, by most frequent activity status and gender
- Indicator 1c: At-risk-of-poverty rate, by household type
- Indicator 1d: At-risk-of-poverty rate, by accommodation tenure status
- Indicator 1e: At-risk-of-poverty threshold (illustrative values)
- Indicator 2: Inequality of ► income distribution – S80/S20 income quintile share ratio
- Indicator 3: At-persistent-risk-of-poverty rate, by gender (60 % national median)
- Indicator 4: Relative median at-risk-of-poverty gap, by gender
- Indicator 5: Regional cohesion (dispersion of regional employment rates)
- Indicator 6: Long-term unemployment rate, by gender
- Indicator 7: Persons living in jobless households, by age and gender
- Indicator 8: Early school leavers not in education or training, by gender
- Indicator 9: Life expectancy at birth, by gender
- Indicator 10: Self-defined health status by income quintile by gender (Guio, 2004)

Relative income concerns may help understanding many economic phenomena (Carlsson, Johansson-Stenman, & Martinsson, 2007), like aggregate consumption and saving patterns (Basmann, Molina, & Slottje, 1988), wage formation (Agell & Lundborg, 2003), labor supply (Neumark & Postlewait, 1998), or the overconsumption of goods consumed primarily to demonstrate wealth and success (Carlsson et al., 2007).

Relationship Between Subjective and Objective Concepts of Poverty

Neither absolute and relative nor political poverty measures introduce any explicit role for nonmonetary components, and therefore, they are not based on happiness. Thus, they presumably significantly differ from subjective poverty assessment. Many studies have focused on the correlation between subjective indicators and material well-being. There are two main approaches in these studies: the questionnaire-experimental approach and the subjective approach (Castilla, 2009). Results from the questionnaire-experimental approach suggest that relative income position is as important as the absolute one (Carlsson et al., 2007; Johansson-Stenman & Martinsson, 2006), while studies using subjective approach conclude that relative poverty is usually more important (Clark, Frijters, & Shields, 2008; Easterlin, 1995).

Behavioral economics takes the influence of social context into account in people's assessment about their well-being. It implies that people prefer not only to have a high income level but also to have more than others (Carlsson et al., 2007). If relative income position has any effect on subjective poverty assessments, the improvement of subjective well-being requires reducing inequality in the society. If, however, the poor are too concerned with their everyday survival to take their relative position into consideration, policies focusing on the alleviation of absolute poverty can be justified. It is crucially important to reveal the differences between subjective and objective poverty assessments since even the

best-designed policy intervention can fail because of ignoring the subjective assessment of well-being in poverty assessment (Fafchamps & Shilpi, 2008).

The so-called ▶ Easterlin paradox states that wealthier people tend to be happier than the poorer ones, but above a certain level of per capita average income (somewhere between US$10,000 and 20,000), there is no correlation between average income and subjective well-being (Easterlin, 1995). At the microlevel, however, positive correlations have been found between individual income and individual assessment of subjective well-being (Clark et al., 2008). Layard (2002) also stated that "once a country has over $15,000 per head, its level of happiness appears to be independent of its income per head" (Layard, 2002, p. 17). Ravallion and Lokshin (2002) also explored the lack of this relationship for Russia. Most of the Russian adults who feel that they are poor are not classified as such in official statistics, and most of the people who are classified to be poor do not feel that they are. Deaton (2010) also concluded that subjective assessment of well-being and income level does not correlate.

Easterlin (1974) analyzed the relationship between material and subjective well-being across countries and also within countries over time. He concluded that in case of wealthy countries, material well-being has little or no impact on subjective assessment of well-being in both cases. Other findings, however, indicated that wealthier people tend to be happier when the analysis is carried out within countries. Further studies revealed that these seemingly disconcordant findings can be explained by relative income comparisons (Stevenson & Wolfers, 2008).

Some studies about developed countries state that subjective well-being of individuals depends not only on their own standard of living but also on their relative income and relative deprivation. It means that higher earnings of the others are associated with lower level of well-being, controlling for the individual's own income (Easterlin, 1995; Frey & Stutzer, 2002; Layard, 2002; Luttmer, 2005). A study on Nepal and Malawi, however, proved that relative position of the individuals has an effect on the subjective perception of poverty only among upper income households. The poor care only about absolute deprivation (Fafchamps & Shilpi, 2008).

Stevenson and Wolfers (2008) highlight that the existence of a satiation point is quite uncertain. They argue that the curvilinear nature of the relationship between the absolute income level and the subjective assessment of well-being can be eliminated by taking into account the logarithm of the average income level instead of its absolute value. When subjective well-being is examined in the function of the log income level, the nature of the relationship seems to be linear. They also highlight that there is less consensus about the degree to which objective and subjective well-being and poverty are correlated.

The fact that objective and subjective well-being are independent of each other implies that it is no more necessary to place the increase of material well-being (p.e. the promotion of GDP growth) into the focus of economic policy. In this case, government policy should focus on the maximization of subjective well-being (Stevenson & Wolfers, 2008).

Cross-References

▶ Beliefs About Poverty
▶ Poverty Lines
▶ Poverty Measurement

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Objective Conditions, Subjective Assessments of

▶ Systemic Quality of Life Model (SQOL)

Objective Index of Quality of Life Developed for the Municipalities of the Barcelona Province

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Definition

The Composite Quality of Life Index (CQLI) for the province of Barcelona is a *weighted* (*a priori*) *arithmetic average index of partial indicators that express the relative standardized position of every individual* (*municipality*, *subsystem*, *or system*) *after combining the variability of all variables*, *with a Paasche-type temporal aggregation*. To sum up, the CQLI is an aggregate index that is computed using partial information of every dimension of quality of life. It is computed at the municipal level, for the 1991–2004 period.

Description

Objective index of quality of life developed for municipalities of the Barcelona Province.

Quality of life has been investigated and measured for many years in order to carry out comparisons between cities and urban areas

(Louis, 1976; Liu, 1978; Blomquist, Berger & Hoehn, 1988; Rogerson, Findlay, Morris & Coombes, 1989; Stover & Leven 1992), states (Liu, 1973), or nations (Slottje, 1989; Hirschberg, Maasoumi & Slottje 1991; Dasgupta & Weale, 1992, among others). Several methodologies have been used and have been adapted to specific contexts.

In Royuela et al. (2003) a composite index for municipalities at the Barcelona Province (Spain) was developed. That index was developed to allow for simultaneous comparison of time periods and areas, the aggregation of variables with different units of measurement, the aggregation of several constituents of well-being, and solving specific problems involving small areas.

The analysis was focused on the province of Barcelona, one of the four provinces in the region of Catalonia. Catalonia (NUTS II in the European administrative classification) is one of Spain's most developed regions, located in the northeast of the country. The region is divided in four administrative provinces (NUTS III in the European administrative classification), and Barcelona is the most populated, with 76 % of the region's inhabitants: 4,628,277 in 1996. Together with Madrid it is Spain's most populated and urbanized province. It has 314 municipalities, organized in 11 administrative groups, named *comarques*. Royuela and Suriñach (2005) worked with four territorial dimensions: *comarques* (of which there are 11), urban systems (24), urban subsystems (48), and municipalities (314).

The methodology on which the study was based was developed for the USA in Liu (1978). The main idea is to build a composite index using intermediate indexes computed using basic data or other indexes. The final Composite Quality of Life Index, CQLI, considered three main components:

1. *Individual Opportunities for Progress*: this first element measures personal features of people living in the municipality. It takes into account wealth, labor, education level, health level, and mobility possibilities.
2. *Index of Social Equilibrium*: this index considers the social inequalities in the area (sexual inequality, migration, housing access, commuting, and services for old people).
3. *Community Conditions of Life*: this covers global services such as housing, public transport, education and health services, environment, culture, and local taxes.

The period of analysis in that paper finally covered 4 years: 1991, 1996, 1997, and 1998.

The applied statistical method had to meet five requisites:

1. The index has to be able to aggregate quality of life indicators calculated with different units of measurement.
2. The aggregation process has to be able to compare quality of life indicators with a high level of different relative dispersion.
3. The index has to allow the construction of a scale that *lets the data talk*, that is, that reflects the statistical characteristics of the data.
4. The final index has to allow for a comparison over time: when a system's basic variables rise, the final index has to increase.
5. If the relative size of the systems changes over time, the index has to condense this information without overvaluing (undervaluing) the result for a specific system.

These criteria are the basis for our index, I, as a linear function of several, K, quality of life attributes (X). Each attribute measures quality of life, indicating the extent to which a municipality is above (below) the provincial average, which is equal to 100 in the base year. The structure of the CQLI reduces the dimensions at each level. Every attribute, X_f, is originally measured in its own units but needs to be redefined in terms of quality of life. We do so taking a relative measure, which converts the result into a percentage. If municipality i has a value in the f attribute equal to X^i_f, then we say that we can measure how far municipality i differs from the provincial average in terms of quality of life merely by computing the ratio over the variable's mean.

Then, the final index, $I''^{\,i}$, is a linear function of the attributes' vector $Y^i, Y^i = \left(Y_1{}^i, \ldots, Y_K{}^i\right)$:

$$I''^{i} = Y^i W, \tag{1}$$

where $W = (w_1, \ldots, w_K)$ are the weights given to every attribute.

Differences between municipalities can be expressed in a dispersion measurement, for example, the variance

$$VAR(I'') \text{ from } i = 1 \text{ to N},$$

where N is the total number of municipalities.

We understand that this variance is useful information about attribute Y_f. If we only had *one* quality of life attribute, then the measurement of quality of life would be defined by this particular variance. But as there is more than one attribute in each index, a general measurement for each aggregate index needs to be defined. Following (1), the total amount of information provided by the final index is:

$$VAR(I'') = VAR(YW) = W'VAR(Y)W. \quad (2)$$

So, the index information is equal to the weighted variance and covariance matrix of the attributes. This is the measurement of quality of life that we will use in the final index I'', and it allows us to say that, considering all attributes, a municipality is above or below the provincial average—and also by how much, since it was measured in relative terms.

Nevertheless, if the final index is simply $I'' = YW$, then the attributes with greater variance are overweighted. This effect can be seen in one example. If in the *Wealth Index* a municipality has a good position in four of the five attributes but is badly placed in the other (perhaps due to the fact that this attribute has a much higher variance than the others), the final result will be poor. In order to avoid this, we should compute the index as:

$$\mathrm{I}' = \mathrm{ZW},$$

where Z_f are the standardized variables. We can expect the variance of that index to be equal to one. But if there is information common to these attributes, we have:

$$\mathrm{VAR}(\mathrm{I}') = \mathrm{W}'\mathrm{RW},$$

where R is the correlation matrix between the standardized attributes. This is the reason for computing the final standardized positions (number of standard deviations away from the trend) of the municipalities as:

$$I = ZW/(W'RW). \quad (3)$$

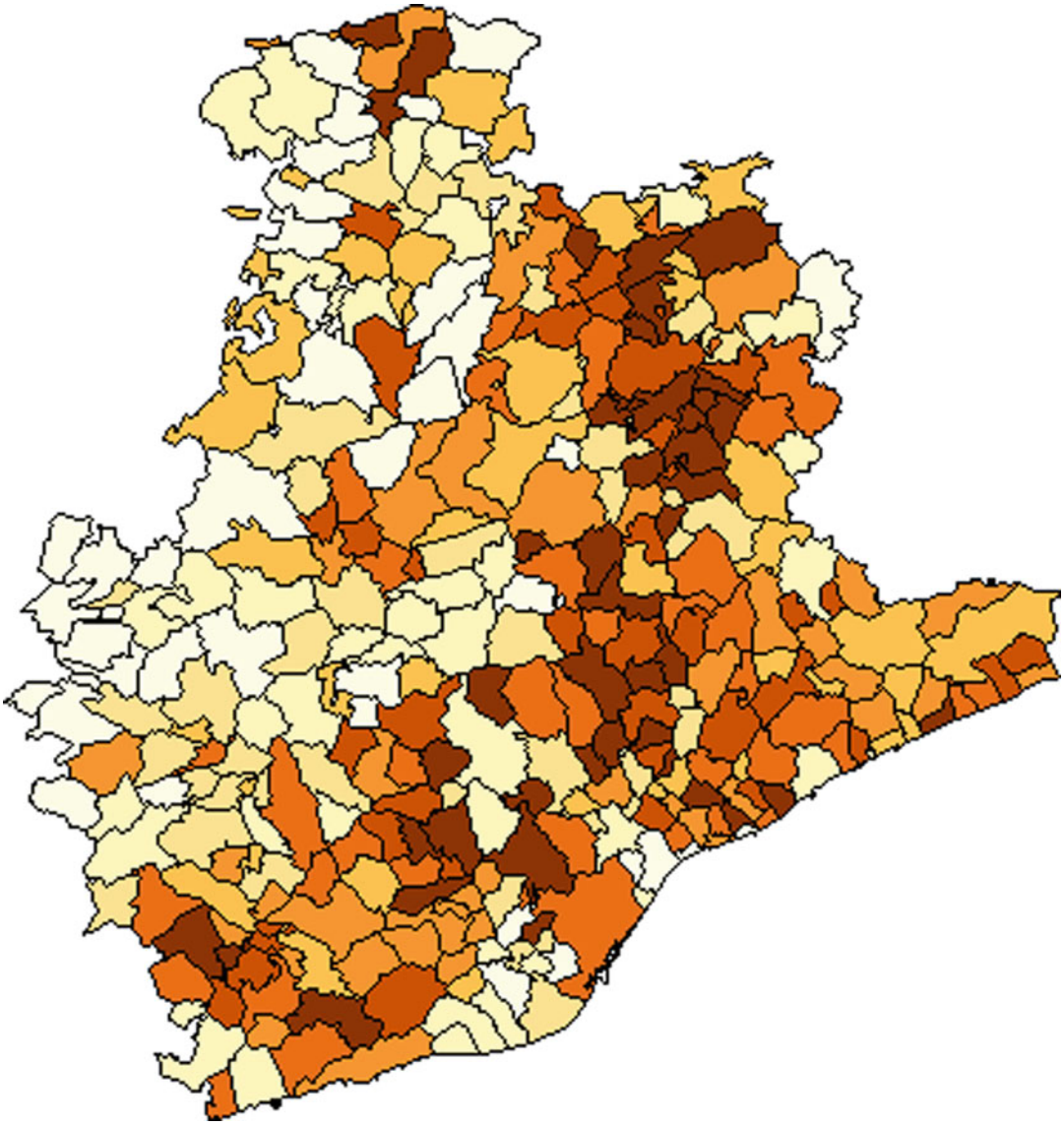
As we built the final index measurement in (2), now we only have to add it to the standardized positions of all municipalities defined in (3). In order to make it more comprehensible, we have included a level to the final measurement (100 in the base year). So, the *CQLI* is:

$$CQLI = 100\,(1 + I * [W'VAR(Y)W]). \quad (4)$$

Any interpretation of this index has to be done in relative terms. So, if $CQLI_i = 102$, municipality i is 2 % above the mean of the province in terms of this component of quality of life. This index, $CQLI_i$, is the result of considering several variables. Following the index structure described in section 3, there are many attributes that are summarized in 18 basic indexes. Then, in order to reduce the number of components from 18 to only three, we simply have to adopt the index structure again and then use this methodology, defining the weights of every component. With three main quality of life components, we do the same as before to obtain the final CQLI.

Then we can technically define the CQLI as a *weighted* (*a priori*) *arithmetic average index of partial indicators that express the relative standardized position of every individual* (*municipality*, *subsystem*, *or system*) *after combining the variability of all variables*, *with a Paasche-type temporal aggregation*. To sum up, the CQLI is an aggregate index that is computed using partial information of every dimension of quality of life.

Main results (see Fig. 1): the general improvement in quality of life throughout the province of Barcelona. Nevertheless, the improvement was far greater in some systems than in others. Among the ones that recorded above average rises were Anoia, Bages and Maresme Nord, while Baix Montseny, Barcelona, Berguedà,



Objective Index of Quality of Life Developed for the Municipalities of the Barcelona Province, Fig. 1 Composite quality of life index at Barcelona's municipalities

Garraf, and Maresme Nord rose less than the average.

The movements in the three main components explain these results. We can extract some conclusions:

- The CQLI is higher in the pre-coastal strip, in Osona, and in the city of Barcelona.
- The coastal strip has a lower CQLI than the rest of systems and is lower than the inland systems (Bages, l'Anoia or el Berguedà).
- The high IOP score explains the high general CQLI result of the pre-coastal strip systems.
- Congestion in the coastal strip and in Barcelona, together with low scores on the Social and Old Age Services Index, negatively affected the QSLI of the coastal strip systems and Barcelona.
- The provision of services is clustered in Barcelona. This leads to high CCL indexes in the city and in surrounding systems.

This work was extended over the years until 2004, what resulted in a panel of quality of life for more than 300 municipalities over 14 years. This extensive database allowed for the development of a list of academic works related with the influence of quality of life at the urban scale (see Royuela (2011), Faggian and Royuela (2010), Royuela et al. (2010), Royuela and Faggian (2009), Royuela et al. (2009), Royuela et al. (2008), Royuela and Artís (2006) and Royuela and Suriñach (2005).

Cross-References

- ▶ Objective Index of Quality of Life in Spain
- ▶ Objective Quality of Life

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Objective Index of Quality of Life in Spain

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Synonyms

Quality of life in Spain

Definition

Concept and measurement of social welfare with objective indicators

Description

Objective Index of Quality of Life in Spain

Measuring Social Welfare with Objective Indicators

Quality of life is a complex concept involving various socioeconomic domains, some of which

can be measured objectively (e.g., income level, access to health services, educational level) whereas others are more a matter of people's subjective evaluations of happiness, health, or social relationships. The 1991 Nobel Laureate Amartya Sen defines social welfare as a multidimensional concept that should not be limited to disposable income but should include other targets like education, security, health, and even personal wishes. The Spanish National Statistics Institute similarly defines welfare as the state of equal opportunities in which everyone enjoys access to all "socially desirable" tangible and intangible resources (INE, 2011).

Such a mixture of objective and subjective components is not always easy to combine in a single and exact cardinal measurement. This is why Pena (1977) recommends finding a "useful" though not necessarily exhaustive definition for quality of life, which may be measured quantitatively so that comparisons may be made and decisions taken. In the same vein, Zarzosa (1996) proposes a composite indicator for quality of life made up exclusively of objective variables, that is, discarding those subjective measures that might have different meanings in terms of social welfare depending on people's culture or psychology. This kind of indicator is what we call an "Objective Quality of Life Index" (OQLI). An OQLI is a synthetic indicator obtained from a set of objective variables, which should have a plain meaning for the majority of the population in a country or region. It is particularly useful in places with no single official data source for measuring quality of life. In such instances, a key matter is the selection of the relevant objective variables, which are provided by various institutions and combined in a single indicator.

Quality of Life Domains and Indicators Selection Criteria

The selection criteria for an adequate set of domains and variables of an OQLI should be based on the guidelines of the main international institutions, though the final selection of the variables will be very much constrained by data availability. The list of suggested quality of life domains and indicators is long. A well-known case is the Human Development Index (UNDP, 2013), which measures national development not simply by national income, as had long been the practice, but also by life expectancy and literacy. The Spanish Office for Statistics provides a wide range of social indicators classified by "fields of social preoccupations": family and social relations, education, work, income, distribution and consumption, social protection, physical environment, culture and leisure, and social cohesion and participation.

The OECD (2011) proposes differentiating between two groups of indicators:

Social status indicators describe the general conditions of the population, that is, the social outcomes that policies try to influence. These variables are, in most cases, easily and unambiguously interpreted; for example, all countries would rather have low poverty rates than high ones.

Societal response indicators include variables of government policy settings, activities of nongovernmental organizations, families, and civil society more broadly. They provide information about what society is doing to affect social status indicators. By comparing societal response indicators with social status indicators, one can get an initial indication of how effective a policy is.

Trends for both kinds of indicators must be unambiguously interpreted as "good" or "bad" for social welfare. It should be borne in mind that any one indicator may have a different meaning depending on the spatial level or even the period of time for which it has been extracted. For this reason, confusing indicators should be avoided as well as variables with narrow ranges. For instance, a basic welfare indicator such as life expectancy would not be appropriate for measuring quality of life across Spanish provinces in recent decades, since differences are minimal.

In a recent analysis, Fundación "la Caixa" (2004) built an OQLI for the Spanish regions in line with OECD recommendations. It distinguishes twelve main domains relative to contemporary Spanish society, eight of which are associated with social status (income, health,

educational qualification, employment, housing, civic involvement, public safety, and climate and geography), while the other four are societal response components (medical services, culture and recreation, social protection, and accessibility).

Using DP2 to Build an Objective Index of Quality of Life

Constructing an OQLI involves combining the different kinds of data available from different statistical sources. The DP2 method or Pena's distance indicator is a method for constructing synthetic global indicators from partial indicators and is an alternative to the principal components method. It consists basically in an iterative procedure that weights partial indicators according to their correlation with a global index. In this process, any redundant information that partial indicators might contain will be eliminated thereby avoiding multicollinearity problems. The weights used are not subjective but depend on the degree of correlation between each partial indicator and the global index. Moreover, DP2 is a cardinal measure, allowing comparisons between units across space and/or time (Montero, Chasco, & Larrraz, 2010; Pena, 1977; Somarriba & Pena, 2008; Zarzosa, 1996).

The DP2 indicator takes as its point of departure a matrix V of order (k,m) where k is the number of partial indicators and m the number of spatial units. Each element of this matrix vkj represents the state of the partial indicator k in the spatial unit j. In this matrix, there would be both positive elements (those positively correlated with the variable under study) and negative elements (those with negative correlation).

We compute a distance matrix D where each factor d_{kj} is defined as $d_{kj} = |v_{kj} - v^*_{kj}|$ where v^*_{kj} is the k^{th} component of the reference base vector $v^*_j = \{v^*_{1j}, \ldots, v^*_{kj}\}$ in the j^{th} spatial unit. d_{kj} measures the distance between the partial indicator k at the spatial unit j and its reference value. The most common practice is to consider the minimal value as the reference one. As a result, a higher DP2 value means a better level of social welfare, since it implies a greater distance from the minimum.

In order to express every indicator in comparable abstract units, we use the *Frechet distance*:

$$DF(j) = \sum_{k-1}^{K} \frac{d_{kj}}{\sigma_k} = \sum_{k-1}^{K} \frac{|v_{kj} - v_{kj}^*|}{\sigma_k}; \quad j = 1, 2, \ldots m$$

where σ_k is the standard deviation of partial indicator k. The Frechet distance will be valid only if every partial indicator is uncorrelated, but in practice, this is not the case. Therefore, a DF correction is used, that is, the *Pena distance* or DP2, which is defined as:

$$DP2(j) = \sum_{k-1}^{K} \frac{d_{kj}}{\sigma_k} (1 - R^2_{k,k-1,k-2,\ldots,1}); \; j = 1, 2, \ldots, m$$

where $R^2_{k.k\text{-}1,\ k\text{-}2,\ldots,1}$ is the determination coefficient of regression for each partial indicator k on the others (k-1, k-2,. . .).

DP2 implies the decision about the partial indicator's order of entry into the computational process. That is important because the value of DP2 will be different depending on which indicator comes first, which second, and so on. Consequently, the partial indicator most closely correlated with DF must be the leader, so it is the most informative. From there, a ranking with partial indicators is established according to their degree of correlation with DF.

Once the first value for DP2, DP-1, is obtained, we compute each partial indicator correlation with DP-1 and we obtain a new value for the DP2 index, DP-2. This process must be repeated until convergence is reached. Numerical values for DP2 are meaningless, but they do allow us to rank the spatial units and to make cardinal comparisons. They can be used to compare changes and to detect their causes too.

An Objective Quality of Life Index (OQLI) for the Spanish Regions

Next, we show the results of the estimation of an OQLI for Spain's NUTS-2 and NUTS-3 regions. Following the guidelines of institutions like UNDP, OECD, and INE, we selected an initial set of 121 partial indicators, which were

Objective Index of Quality of Life in Spain, Table 1 Ranking of the leading and trailing Spanish regions in the OQLI and in its components (Spanish average = 100)

	Top CCAA					Bottom CCAA				
Components	Navarre	Madrid	Balearic Islands	Basque Country	Catalonia	Murcia	Castile-Mancha	Extremadura	Galicia	Andalusia
Social welfare	139	135	130	127	127	89	88	80	79	73
Income	125	117	115	124	120	84	87	76	87	82
Health	110	106	89	105	96	85	113	105	84	99
Medical services	150	129	113	133	109	83	82	94	96	83
Educational qualif	152	141	99	149	125	80	67	73	83	80
Culture and recreat	101	96	155	106	143	71	90	88	74	72
Employment	171	116	130	142	137	117	91	62	94	62
Social protection	100	143	98	86	101	138	82	130	106	99
Housing	143	136	106	139	127	116	91	92	60	97
Accessibility	116	184	112	127	113	154	88	75	93	105
Civic involvement	82	82	79	57	82	100	124	116	95	99
Public safety	75	88	84	28	92	97	115	107	115	101
Climate and geography	97	80	156	121	104	77	83	96	122	95

unambiguously interpreted as "good" or "bad" for social welfare. These indicators were aggregated by the DP2 method into 12 main welfare domains: (1) income, (2) health, (3) medical services, (4) educational qualification, (5) culture and recreation, (6) employment, (7) social protection, (8) housing, (9) accessibility, (10) civic involvement, (11) public safety, and (12) climate and geography. A subsequent combination of these 12 components with DP2 led to the final OQLI. Since this index is a cardinal measure, it is possible to rescale it as a new variable, giving a value of 100 for the "Spanish average."

As can be seen from the Table 1, there is not always a positive correlation between some "a priori" complementary indexes, such as health and medical services or employment and social protection. This is the case of regions like the Balearic Islands where, in spite of having a good score in "medical services," which is a societal response domain, it has a below-average position in the social status component of "health." Likewise, Extremadura is a region with a low score for a social context component such as "employment" but a better position in "social protection," which could be characterized as a societal response welfare domain. These results prove how important it is to consider social status and societal response components separately in order to ensure a better representation of social welfare in regional (intra-country) indicators.

Cross-References

- ▶ Canadian Index of Well-Being
- ▶ Economic Well-Being
- ▶ Human Development Index (HDI)
- ▶ Index of Quality of Regional Development
- ▶ Internet and Quality of Life
- ▶ Objective Index of Quality of Life Developed for the Municipalities of the Barcelona Province
- ▶ OECD List of Social Indicators

- ▶ Quality of Life Index
- ▶ Regional Quality of Life
- ▶ Spain
- ▶ Spanish Geography and the Quality of Life

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Objective Quality of Life

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Definition

"Quality of life" is a normative conceptualization of the good life and society which – depending on its different notions – covers objective and/or subjective components. The objective quality of life is restricted to the objective components or dimensions and measured by objective indicators, which are statistics on social or societal reality unfiltered by perceptions and independent from personal evaluations.

Description

Broadly speaking, there are two types of social indicators to be used to measure and monitor the quality of life, objective social indicators and subjective social indicators, which are referring to objective and subjective quality of life components. Though it can be debated where the borderline between the two actually is exactly located, objective indicators are measures informing about a factual situation (e.g., the size of the house someone lives in), whereas subjective indicators are about an evaluation of that situation (e.g., how satisfied one is with the housing space available). Though objective indicators can be collected through registries (registered number of visitors of a museum), they can also be collected by asking people themselves (self-reported attendance of museums). Objective indicators may be measured at the individual level as well as at the aggregated level.

The objective dimensions of quality of life can cover a great variety of topics and are not necessarily limited to social circumstances, but may rather include, for instance, environmental and economic conditions too.

In the 1970s the objective indicator approach within what is called the "social indicator movement" was particularly strong in the Scandinavian countries. Here the focus was clearly on objective welfare or quality of life defined as "the individual's command over resources in the form of money, possessions, knowledge, mental and physical energy, social relations, security and so on, through which the individual can control and consciously direct his living conditions" (Johansson in Erikson, 1993: p. 72). This approach builds on the work of the economists Jan Drewnowski (1974) and Richard Titmuss (see Erikson, 1993) and is strongly related to

policy-making purposes (Vogel, 2002). Drewnowski's central argument was that well-being refers to the fulfillment of objectively identifiable needs, and Titmuss developed the idea that the standard of living relates to the availability of resources. What matters, then, are objective conditions, or life opportunities and their determinants, not the evaluation of them (Erikson, 1993). The Scandinavian "level of living" approach thus makes almost exclusively use of objective indicators with a view to measure the resources available to people and the conditions they are living in.

The distinction between "resources" and "conditions" as two aspects of the objective quality of life corresponds to some degree with the distinction between individual and societal quality of life, the latter covering, e.g., "societal characteristics and qualities such as equality, equity, freedom, or solidarity – which affect the welfare situation of individuals at least indirectly" (Noll, 2002: 52). Issues of societal quality of life have been addressed by some of the more recent concepts of well-being, such as social cohesion or sustainability. Currently the association between the level of inequality as a major societal quality and individual quality of life is much debated (Wilkinson & Pickett, 2010).

Indicators of objective quality of life overcome some of the "problems" of indicators of subjective well-being. The latter are (at least partially) determined by people's aspirations and the degree to which people adapt to situations (Allardt, 1993; Erikson, 1993). Moreover, doubts have been expressed about the reliability (e.g., stability of observations) and validity (e.g., cultural bias) of subjective indicators. On the other hand, in the view of critics of objective indicators – or supporters of the subjective approach – "ultimately, the quality of life must be in the eye of the beholder, and it is there that we seek to evaluate it" (Campbell, 1972). In contrast to subjective indicators, the usage of objective indicators starts from the assumption that living conditions can be judged as being favorable or unfavorable by comparing real conditions with external normative criteria like values or goals. An important precondition of the possibility of making such judgments, however, is that there is political consensus first about the dimensions that are relevant for welfare, second a consensus about good and bad conditions, and third about the direction in which society should move. This is of course sometimes, but not always the case (Noll, 2000).

For a more detailed discussion on the differences between objective and subjective indicators, see, for instance, Rapley (2003), Noll (2004), and Boelhouwer (2010).

Some approaches of measuring quality of life, or well-being, only include objective measure, whereas others include only subjective measures. Particularly in the early days of quality of life research, measurement approaches had a stronger or even exclusive focus on the objective components. Nowadays it is more or less common practice to use both objective and subjective indicators for quality of life measurement. Early approaches which considered quality of life as a combination of objective living conditions and subjective well-being and thus making use of objective and subjective measures were those developed by Erik Allardt and Wolfgang Zapf. Allardt (1993) famously distinguished three dimensions of welfare or quality of life – "having," "loving," and "being" – and suggested objective and subjective measures for each of them. Zapf (1984) proposed a typology of the relationship between subjective and objective indicators distinguishing four different types of quality of life (Table 1).

While the most desirable situation is the combination of good objective living conditions and a high level of subjective well-being, the situations where bad-living conditions go together with a high level of subjective well-being and good living conditions with a low level of subjective well-being point to the so-called

Objective Quality of Life, Table 1 Four types of quality of life

	Subjective well-being	
Objective living conditions	High	Low
Good	Well-being	Dissonance
Bad	Adaptation	Deprivation

Source: Zapf, 1984, p. 25

satisfaction paradox and the satisfaction dilemma, respectively.

Cummins (1997) suggests that the separate measurement of objective and subjective components of quality of life is essential: "the contemporary literature is quite consistent in its determination that, while both of these axes form a part of the QOL construct, they generally have a very poor relationship to one another."

Overall, the current state of research suggests that neither an exclusive focus at the objective components nor a view limited to subjective components allows to assess the quality of life adequately and comprehensively. Rather it seems to be the state of the art to include both – objective and subjective dimensions – in quality of life assessments and to relate the two to each other as an important part of the analysis.

Cross-References

- ▶ Social Indicators
- ▶ Subjective Indicators
- ▶ Swedish Surveys of Living Conditions

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Objective Versus Subjective Value Theories

- ▶ Value Theories

Objective/Subjective Distinction

- ▶ Objectivity/Subjectivity of Values

Objectivity/Subjectivity of Values

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Synonyms

Objective/subjective distinction

Definition

In general, evaluative facts (e.g., the fact that knowledge is good, the fact that stealing is wrong) are called *objective* if they obtain independently of the beliefs and other attitudes (e.g., desires, approvals, hopes, wishes, fears, likings) of subjects. By contrast, evaluative facts are *subjective* if they depend for their existence on the beliefs or attitudes of subjects.

Description

The objective/subjective distinction is deployed in several related ways within the philosophical and psychological literature on welfare, ▶ well-being, ▶ happiness, prudential value, and ▶ quality of life (hereafter, "welfare"). There is controversy about whether the welfare of human beings and other sentient creatures is itself objectively or subjectively good. More prominently, there is a debate about whether the true theory of welfare treats welfare as objective or subjective. There is also considerable controversy concerning what makes theories objective and subjective in the first place.

Objectivity and Subjectivity in Value Theory

In general, evaluative facts (e.g., the fact that knowledge is good, the fact that stealing is wrong) are called *objective* if they obtain independently of the beliefs and other attitudes (e.g., desires, approvals, hopes, wishes, fears, likings) of subjects. By contrast, evaluative facts are *subjective* if they depend for their existence on the beliefs or attitudes of subjects. For example, if knowledge is good simply in and of itself, irrespective of whether people actually do or would desire it, then the fact that knowledge is good is objective – or equivalently, knowledge is an objective good or value. By contrast, if what makes stealing wrong is that certain people do or would disapprove of it, then the relevant evaluative fact is subjective – or equivalently, stealing is subjectively bad.

Historically important ethicists can be classified as objectivists or subjectivists depending on whether they hold that the most important and fundamental evaluative facts are objective or subjective. Plato, Aristotle, Henry Sidgwick, G. E. Moore, and W. D. Ross are usually classified as objectivists. Moore in particular appears to hold a very strong form of objectivism according to which evaluative facts obtain independently of the very existence of creatures with minds or psychologies (Moore, 1903). On the other hand, Hume, James, Nietzsche, and Dewey are normally classed as subjectivists. For such theorists, value and normative reasons get into the world through the sentiments, reactive attitudes, valuing activities, or purposes of human beings. Other famous ethicists, such as Hobbes, Kant, J. S. Mill, and Rawls, are more difficult to classify, in part because there is controversy about the interpretation of their views and in part because their views combine objective and subjective elements.

Objective and Subjective Theories of Welfare

Theories of welfare can also be classified as objective or subjective or as hybrids. There is more agreement among welfare theorists about *which* theories are objective and subjective than about precisely *why* they count as such.

Versions of the Objective List Theory, perfectionism, Amartya Sen and Martha Nussbaum's capabilities approach, Richard Kraut's developmentalism, and Daniel Haybron's self-fulfillment theory are all *objective* theories of welfare (see Murphy, 2001, Hurka, 1993, Nussbaum & Sen, 1993, Kraut 2007, Haybron, 2008). This is because they allow that at least some conditions and activities are directly good for one, whether or not one desires them, enjoys them, takes satisfaction in them, or believes that they are good. Conditions and activities thought to have this status include knowledge, friendship, love, moral virtue, the appreciation of beauty, sensory awareness, mobility, and emotional health.

By contrast, desire satisfactionism, preferentism, L. W. Sumner's life satisfactionism, Valerie Tiberius's values-based theory, and Dale Dorsey's judgment subjectivism are *subjective* theories of welfare (see Feinberg, 1984,

Sumner, 1996, Tiberius, 2008, Dorsey, 2012). This is because they say that in order for something to be directly good for one, one must desire or prefer or enjoy it, or else derive satisfaction from it, or else believe that it is good.

► Hedonism is a more controversial case. Fred Feldman's *attitudinal hedonism* construes the building blocks of welfare as episodes of enjoyment taken in propositional objects (Feldman, 2004). This form of hedonism resembles other forms of subjectivism because it is based on personal attitudes; additionally, these attitudes may be conceptually linked with desire (Heathwood, 2006). However, other forms of hedonism construe pleasure as an experiential state or a family-resemblance class of such states (Crisp, 2006). These resemble the Objective List Theory, insofar as they claim that a particular experience is good for one, no matter whether one desires it, enjoys it, takes satisfaction in it, or believes it is good. For this and other reasons, some theorists have doubted hedonism's subjectivist credentials (Dorsey, 2011, Fletcher, forthcoming).

Other theories of welfare count as *hybrids* insofar as they combine objective and subjective elements. Of course, looked at in one way, most of the objective theories already mentioned are hybrids: for most of them allow that desire satisfaction, ► pleasure, or aim achievement is welfare-enhancing, but insist that other things like knowledge and friendship are also welfare-enhancing. Still, these are usually classed as objective theories. Paradigmatic hybrid theories, by contrast, require that the individual building blocks of welfare each have subjective and objective elements. For example, Robert Adams proposes that welfare consists in the enjoyment of things that are objectively excellent or worthwhile (Adams, 1999; cf. also Parfit, 1984; Griffin, 1986; Scanlon, 1998; Arneson, 1999; Feldman, 2004; Appiah, 2005). Other approaches, while largely subjectivist, count as hybrids insofar as they claim that the preservation of the systems that make conation and goal-directed action possible is good for one (Raibley, 2012).

Before examining the reasons for thinking that welfare must be either objective or subjective, let us further consider the nature of this distinction. Formulating it precisely has proven somewhat difficult.

David Brink writes that "Subjective theories of value claim that the components of a valuable life consist in or depend importantly on certain of the individual's psychological states. . . . By contrast . . . objective theories of value claim that what is intrinsically valuable neither consists in nor depends importantly on such psychological states" (1989, pp. 220–1). One worry with this proposal is that "psychological states" form a broad category. A theory that says that the only welfare goods are knowledge and the appreciation of beauty would effectively say that the valuable life consists in psychological states. But this would not be a characteristically subjective theory.

L. W. Sumner has written that, according to subjective theories, having a favorable attitude towards one's life or some of its ingredients is a *necessary condition* for one's life to be going well for one (Sumner, 1996, p. 38). By contrast, he says, objective theories allow that one could be well-off without favorably regarding one's own life or any of its ingredients (p. 38). Sumner does not provide both necessary and sufficient conditions for subjective theories, so this analysis is at best incomplete. This necessary condition for subjective theories may be approximately correct. However, it is not entirely clear that one must have favorable attitudes towards the ingredients of one's life to be faring well on some forms of desire satisfactionism and aim achievementism: if one is satisfying one's desires (or getting what one aimed for), it may not matter that one does not enjoy (or is not satisfied with) what one gets. Furthermore, most objective theories that have actually been defended *do* require, at least for high levels of welfare, that one favorably regard aspects of one's life.

Sobel (2009) recommends a different way of distinguishing between objective and subjective theories. He writes: "Subjective accounts of well-being maintain that one's rationally contingent non-truth-assessable pro-attitudes ground true claims about what is good for one" (p. 336).

A problem is that this criterion may not correctly classify versions of life satisfactionism and judgment subjectivism. This is because judgments that one's life is satisfactory or that one is faring well *do* seem to be truth-apt. Some forms of subjectivism base welfare on *truth-assessable* pro-attitudes.

Dorsey proposes that subjectivism requires that "prudentially valuable states be endorsed by the person for whom these states are valuable" (2011); he also writes that "subjectivism [states that] a person's evaluative perspective, under the right conditions, determines that which is good for her, and how good it is for her" (2013, p. 1). While these formulations are suggestive and plausible, it is a little unclear what endorsement and a person's evaluative perspective amount to.

On account of the difficulties noted in this section, there may be no neat and precise way to distinguish between objective and subjective theories of welfare. Perhaps this is to be expected: as Fletcher notes, our taxonomies of welfare theories are interest relative, and so they are not likely to reflect perfect joints in nature (Fletcher, 2012). Perhaps if some of the building blocks or main determinants of welfare are partly constituted by pro-attitudes (desires, attitudinal pleasures, likings, values – perhaps also aims and intentions) or by judgments of satisfaction or beliefs that things are good for one, this is sufficient for a theory to be partially subjective. Of course, there are hybrid theories that are partially but not wholly subjective, insofar as they say that the contribution made by the building blocks of welfare to the value of one's life depends on the objects of one's pro-attitudes. Roughly speaking, the more a theory says that one's welfare level depends on the objects of one's pro-attitudes – or on things besides one's pro-attitudes, judgments, and beliefs – the more objective the theory is.

Is Welfare Objective or Subjective?

Arguments for welfare's objectivity aim to show that subjective theories have unacceptable implications about the welfare of individuals who pursue trivial, worthless, masochistic, or immoral ends. A person who simply desires – and enjoys – scratching an itch, counting blades of grass, or knocking down icicles is surely not faring well (Plato's *Philebus*; Rawls, 1971, Kraut, 1994). Those who aim for, achieve, and enjoy great fame and wealth – or revenge upon their enemies – do not seem to benefit proportionally (Kraut, 2007). A person who desires and enjoys pain, bodily mutilation, and humiliation – and gets all these things – is not normally thought to be faring well (Carson, 2000; Raibley, 2012). Finally, a person who desires and enjoys inflicting harm on others does not appear to be faring especially well.

But on the other hand, if a person does not like or enjoy his life – and if he does not get anything that he wanted or set out to achieve – it does not seem that it can plausibly be called a good life *for him* (cf. Adams, 1999, p. 95). And so it seems that there is also some kernel of truth in the neighborhood of subjectivism.

Sumner famously argues that objective theories of welfare such as the Objective List Theory and perfectionism fail to capture welfare's "characteristically positional or perspectival character" (Sumner, 1996, p. 43). He concludes that "subjectivity turns out to be a necessary condition of success in a theory of welfare" (Sumner, 1996, p. 27).

Sumner has several arguments for this conclusion. One, which we can call the weak argument, claims that any plausible theory of welfare must "make your well-being depend on your own concerns: the things you care about, attach importance to, regard as mattering, and so on" (Sumner, 1996, p. 42). It is then claimed that objective theories that accord no importance to a subject's hedonic and emotional states, conative attitudes, or judgments of satisfaction cannot tie welfare to one's own concerns in this way. Therefore, such objective theories are unacceptable. This argument is persuasive, but it merely establishes that pro-attitudes or beliefs of the right sort be included among the direct determinants of welfare. But some objective and hybrid theories *do* include these states (Arneson, 1999; Adams, 1999; Appiah, 2005; Fletcher, forthcoming).

A second argument can also be found in Sumner. The first premise of what we can call the strong argument states the subject relativity of welfare: "the prudential value of my life is its value *for me* …" (p. 42). That is, welfare value is a form of value *for* a subject, as opposed to for the world or for mankind or for no one in particular; it has a "characteristically positional or perspectival character" (p. 37, p. 43). Since subjective theories of welfare say that welfare is largely or wholly constituted by perspectival attitudes – i.e., attitudes anchored in a subject's perspective – they afford the best explanation of this fact: "welfare is subject-relative because it is subjective" (p. 43). Accordingly, some subjective theory of welfare must be true: we could not have an account of welfare's nature that made no reference to the subjective experiences of the particular subject. This argument seems inconclusive. It might establish that welfare does not turn entirely on non-experiential properties of the subject. But whoever held that it did? Sumner seems to be claiming that the positional or perspectival character of welfare value (the fact that it is value *for* a subject) requires that welfare be given a *strictly* subjective treatment. But it is not explained why this is so (Sobel, 1997).

Another popular argument for subjectivism about welfare turns on the internalism requirement (Rosati, 1996). This requirement states that, if something, x, is good for a subject, S, then S must be capable of being motivated to pursue or promote x. Peter Railton explains the main idea behind this requirement as follows: "[W]hat is intrinsically valuable for a person must have a connection with what he would find in some degree compelling or attractive, at least if he were rational and aware" (Railton, 2002, p. 47). Some reason that if this requirement is true, then some version of subjectivism is true. However, the requirement itself is difficult to interpret. What precisely is it to "be capable of being motivated to pursue or promote" something? Additionally, there is a worry that this use of the internalism requirement is question-begging, because the requirement itself is just subjectivism stated in another way. For further discussion of these and related issues, see Sarch, 2011.

Cross-References

- ▶ Ethics
- ▶ Eudaimonia
- ▶ Good Life, Theories of
- ▶ Happiness
- ▶ Preference Satisfaction Theories
- ▶ Well-Being, Philosophical Theories of

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Obligations

► Personal and Institutional Accountability

Observation Error

► Measurement Error

Occupation Influence on Satisfaction/Happiness

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Synonyms

Job satisfaction; Occupational well-being

Definition

Occupation is defined as any activity, work, job, line of work, or business in which a person is engaged.

Satisfaction is defined as a subjective feeling of well-being and fulfillment of needs, interests, or expectations.

Happiness is a complex and subjective concept referring to a general mental state of well-being.

Description

Work and workplaces are important components of people's life and play a crucial role in the way people perceive their overall ► well-being. There is increased evidence linking work to satisfaction and (Diener, Emmons, Larson, & Griffin, 1985). Work, personal life, and family are strongly interconnected to the extent that experiences in one environment will inherently influence the other environment. According to Kendall and Muenchberger (2009), "workers are unlikely to leave work pressures at work and, the pressures of ► family and community life are likely to impact on perceptions of, or ► attitudes towards the job" (p. 29).

Happiness is a multidimensional construct with a complex definition. The most important components of happiness refer to affective well-being (i.e., positive affects vs. negative affects), ► competence, meaning, satisfaction, and social connectedness (Reho, Souto, & Pina e Cunha, 2009). Happy individuals report positive experiences and emotions that make them be more proactive and understanding, resilient to stressors, and inclined to establish social ties, further translating into good ► health and well-being. Conversely, individuals that report frequent experience of negative affects tend to have general negative views of themselves, other people, and the world in general and are less equipped to cope with stressors and less willing to socialize and interact with others; therefore, these individuals may be more prone to experience ill mental health and chronic distress.

When translated into the work context, occupational satisfaction is defined as positive emotion and attitude towards one's job. Increased levels of occupational satisfaction are positively associated with well-being and good mental health (Faragher, Cass, & Cooper, 2005). The core dimensions that contribute to high levels of

occupational satisfaction are the nature of the job, support at work, income, job control, and possibilities for advancement. As such, individuals that report low levels of occupational satisfaction are more likely to feel unhappy, frustrated, and unfulfilled. Such negative emotions, over long periods of time, can cause depression, anxiety, or emotional exhaustion and spill over into family or social life.

In the context of work-family conflict, ▶ marital satisfaction plays an important role. Marital satisfaction refers to the perceived overall quality of the marital relationship (Sternberg & Hojjat, 1997). The happier and more supportive the marriage, the greater one's feelings of competency leading to more confident and positive attitudes about job and life. Judge, Ilies, and Scott (2006) demonstrated that when family issues prevent an individual from fulfilling work expectations or effectively completing work tasks, the individual will experience high levels of frustration and hostility at work.

Numerous theories have been developed explaining the link between occupation and well-being. Herzberg (1966) developed a two-factor theory of occupational satisfaction, taking into consideration intrinsic and extrinsic factors that influence satisfaction or dissatisfaction with work. Intrinsic factors, such as feelings of achievement, responsibility within the job, recognition for the job performed, or possibility of advancement, refer to what a person does in their job, while extrinsic factors, such as working conditions, remuneration, work relationship, and support, refer to the work environment related to that particular job. According to Herzberg, these factors have a separate influence on perception of satisfaction or dissatisfaction within the job. Intrinsic factors are suggested to play a more important role regarding influence on job satisfaction, whereas extrinsic factors are suggested to have greater effect on job dissatisfaction. The workplace-based effort-reward imbalance model, proposed by Siegrist (1996), postulates that imbalance occurring between workplace efforts and occupational rewards leads to dissatisfaction, unhappiness, and adverse health effects (Van Vegchel, De Jonge, & Landsbergis, 2005). Siegrist's model emphasizes that work role has the potential to provide opportunities of positive self-experience, increased self-efficacy, and recurrent positive experience of ▶ self-esteem if one is adequately rewarded. Conversely, failure of employers to recognize or reward efforts can be detrimental to an employee's health and well-being. Another theoretical framework largely employed in the research is Caplan's model (Caplan, 1987; Caplan & Harrisson, 1993) that looks at how well the person fits within his/her environment (P-E). In the workplace context, the term "fit" refers to the relationship existent between the work personality of an individual and the work environment. (Edwards & Rothbard, 1999) stated that the "P-E fit theory predicts that a perceived match between the person and environment is beneficial to mental and physical well-being, whereas a perceived mismatch signifies stress, produces mental and physical strain (i.e., damage to well-being), and stimulates efforts to resolve P-E misfit" (p. 87).

Most of the theoretical frameworks draw attention to the fact that work and nonwork aspects of an employee's life and the possible conflicts between work and nonwork can be influenced by the level of occupational dissatisfaction and unhappiness perceived by the individual (Caplan & Harrisson, 1993). As such, problematic work relationships (e.g., interpersonal conflict with coworkers/supervisors, inability to positively adjust to the requirements of the job, lack of social support at work) are likely to have a detrimental effect on the individual's perceived satisfaction with respect to job content, personal life, and marital relationship.

There is growing scientific evidence illustrating the fact that workplaces are becoming increasingly demanding (Loretto et al., 2005). An important factor when considering one's satisfaction with his/her occupation and life is the quality of ▶ social interactions within and outside of the workplace. Social support and social ties prove to be reliable indicators of happiness and satisfaction. For example, support from coworkers and supervisors is associated with high level of job and life satisfaction, enhanced meaning from work, happiness, and well-being

(Beehr, Bowling, & Bennett, 2010; Rego & Pina e Cunha, 2009). Conversely, lack of contact and interaction with coworkers, hostility, harassment, or injustice in the workplace are normally associated with negative health outcomes, increased level of ▶ stress, and low levels of job and life satisfaction. Kelloway and Day (2005) emphasize the fact that social support may reduce the negative effects of workplace stressors by acting as a buffer. These authors argue that social support in the workplace represent an important component of the "new" model of work environments.

Healthy work environments encourage positive interpersonal relationships at work, promote forgiveness in the workplace, and discourage workplace mistreatment (e.g., verbal abuse, work obstruction, emotional neglect), which subsequently may positively impact psychological health and mediate the conflict between work and health.

Conclusion

Satisfaction and happiness are subjective feelings of well-being and refer to an individual's perceived ▶ quality of life in relationship with their personal standards (Kendall & Muenchberger, 2009). These experiences depend on an individual's ability to perceive fulfillment and positive emotions in any situation. In the context of work, levels of satisfaction and happiness with one's occupation are influenced by a myriad of factors, some related to the work environment – the nature of work, job demand and job control, job clarity, income, and advancement opportunities – and others related to individual's characteristics, personality traits, coping skills, and the quality of social interactions. As such, individuals with an optimistic view who experience more positive emotions may not perceive work and life conditions as deleterious, while individuals with a more pessimistic view who experience greater negative affectivity may tend to exaggerate the stressful aspects of their work and life conditions. In addition, when there is a match between the characteristics and demands of the occupation and the individual's personality and ability to fulfill these demands, individuals are happy and motivated by their jobs, and a lower level of occupational dissatisfaction will be perceived. That is, workers holding "good" jobs, which "fit" with their needs, interests, desires, backgrounds, and personality, are more likely to believe that their work has a positive effect on their health (Ettner & Grzywacz, 2001).

Cross-References

- ▶ Anxiety
- ▶ Competence
- ▶ Health
- ▶ Job Satisfaction
- ▶ Motivation
- ▶ Negative Affect
- ▶ Occupational Health
- ▶ Person-Environment Fit Theory
- ▶ Positive Affect
- ▶ Quality of Life
- ▶ Resilience
- ▶ Self-esteem
- ▶ Well-Being

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Occupation: Job, Profession, Work, Vocation

► Occupational Health

Occupational Attitudes

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Synonyms

Work attitudes

Definition

An "attitude" consists in a predisposition to respond in a favorable or unfavorable way to persons or objects in one's environment (Steers & Porter, 1991). Occupational attitudes can generally be described as one's evaluations, opinions, and beliefs about certain facets of one's job or about the job as a whole.

An attitude includes three components:

1. Cognitive: The opinion or belief segment of an attitude (what the worker thinks about. . .)
2. Affective: The emotional or feeling component of an attitude (how the worker feels about. . .)
3. Behavioral component: An intention to behave in a certain way toward someone or something (How the worker intends to behave)

In the research literature, the three most extensively studied attitudes are job satisfaction, job involvement, and organizational commitment.

Description

Since the beginning of the twentieth century, industrial psychologists have been seriously concerned with the measurement, interpretation, and implications of job attitudes (Roethlisberger & Dickson, 1939). The Hawthorne studies raised the issue of linking productivity and workplace attitudes, and since then, it is generally assumed that the way people behave at work is dependent on how they feel about it.

An "attitude" consists in a predisposition to respond in a favorable or unfavorable way to persons or objects in one's environment (Steers & Porter, 1991). The three most frequently studied occupational attitudes are job satisfaction, job involvement, and organizational commitment.

Job satisfaction is ". . .a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" (Locke, 1976, p. 1304). According to Spector (1997), job satisfaction is the degree to which people like their jobs. The measures of job satisfaction can be faceted, whereby they measure various

dimensions of the job – while others are global – or measure a single, overall feeling toward the job.

Two of the most widely validated measures of facet satisfaction are the ▶ Job Descriptive Index (JDI; Smith, Kendall, & Hulin, 1969) and the Minnesota Satisfaction Questionnaire (MSQ; Weiss, Dawis, England, & Lofquist, 1967).

Job involvement is "an individual's psychological identification with a particular job" (Kanungo, 1982, p. 342). It refers to the degree to which a person identifies with a job, actively participates in it, and considers performance important to self-worth (Kanungo, 1982). Kanungo (1982) explains that work and job involvement are distinct constructs and states that work involvement is a normative belief about the value of work in one's life, and it is more a function of one's past cultural conditioning or socialization, whereas job involvement is a belief descriptive of the present job and tends to be a function of how much the job can satisfy one's present needs (p. 324).

Kanungo (1982) has developed an instrument to measure job involvement (JIQ). The questionnaire comprises 10 items measure in a 7-point Likert scale.

Organizational commitment is the degree to which an employee identifies with a particular organization and its goals and wishes to maintain membership in the organization. Although there are several models to conceptualize organizational commitment, the most widely adopted is the three-factor model proposed by Mayer and Allen (1997).

Affective commitment is employees' emotional attachment to, identification with, and involvement in the organization.

Continuance commitment is the perceived economic value of remaining with an organization compared to leaving it. This type of commitment is based on the costs that employees associate with leaving the organization.

Normative commitment is an obligation to remain with the organization for moral or ethical reasons.

Allen and Meyer (1990) developed an instrument including 18 items based on three dimensions of organizational commitment – affective, continuance, and normative commitment.

Several studies have established fairly high correlations between the three job attitudes and also similar patterns of relations between measures of these three attitudinal variables and other job-related variables, raising serious concerns about the distinctiveness of the three constructs. In response to these doubts, Brooke, Russell, and Price (1988) and Mathieu and Farr (1991) developed empirical studies with the three variables and *provided evidence for the discriminant validity* of organizational commitment, job satisfaction, and job involvement measures.

Work Attitudes' Predictive Utility

Despite its intuitiveness, the "happy-productive worker" thesis has generated a long debate in organizational behavior literature. The potential linkage between employee attitudes and performance was first considered as a result of the Hawthorne studies (and the ensuing human relations movement) in the 1930s. Since then, it has been extensively studied (Harrison, Newman, & Roth, 2006; Judge, Thoresen, Bono, & Patton, 2001). Numerous meta-analyses (e.g., Harrison et al., 2006; Judge et al., 2001) have demonstrated that positive job attitudes are accompanied by better work outcomes. Although the existence of positive correlations has been well established, the causal relationship between job attitudes and performance was yet to be demonstrated. More recently, Riketta (2008) conducted meta-analytic regression analyses on 16 studies that had repeatedly measured performance and job attitudes. The results provide some support for the common assumption that job attitudes (both job satisfaction and commitment) influence in and extra-role performance. Nevertheless, these effects were generally weak, leading the author to advise "...researchers should be cautious with practical recommendations such as increase job satisfaction or commitment to increase productivity" (Riketta, 2008, 479).

Cross-References

- ▶ Attitude Measurement
- ▶ Job Descriptive Index
- ▶ Job Satisfaction
- ▶ Motivation

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Occupational Gender-Based Segregation

- ▶ Occupational Sex Segregation

Occupational Health

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Synonyms

Health: well-being, fitness, stamina, strength; Occupation: job, profession, work, vocation; Occupational: related to work or profession

Definition

Occupational health is a cross-disciplinary area that refers to prevention, promotion, and maintenance of health, safety, and well-being of individuals engaged in the workplace. Being an interdisciplinary field, occupational health draws upon and synthesizes knowledge from many disciplines, such as public health, occupational hygiene, occupational psychology, ergonomics, chemistry, medicine, and disability management.

Description

The concept of occupational health was first defined in 1950 as a result of a joint collaboration between the International Labour Organization (ILO) and ▶ World Health Organization (WHO). These two organizations agreed that "▶ occupational health should aim at: the promotion and maintenance of the highest degree of physical, mental and social ▶ well-being of workers in all occupations; the prevention amongst workers of departures from health caused by their working conditions; the protection of workers in

their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his physiological and psychological capabilities; and, to summarize, the adaptation of work to man and of each man to his job" (International Labour Organization [ILO] /World Health Organization [WHO] 1995).

However, the concept of ▶ occupational health has its roots very early in history (Reese, 2003). Ancient Egyptians, aware of the negative impact on ▶ health associated with fumes resulting from the manufacturing of gold and silver, were the first ones to develop a first aid manual for workers. Around 1750 B.C., Hammurabi, a king of Babylon famous for the first written codes of law, created a compensation system by placing a monetary value on permanent injuries. Subsequently, the father of medicine, Hippocrates, noted the presence of respiratory health issues in stone cutters, while Romans, who also observed risks associated with working conditions, appealed to a goddess, Salus, to protect the health and safety of laborers and slaves. However, it was only around the time of the Industrial Revolution in the 1800s, when technological innovations and industrial machineries were introduced to replace most of the manual labor, that an increased awareness about work environmental hazards and job-related injuries and illnesses started to be firmly entrenched in society. Mining was the first industry to consider regulations regarding health and safety procedures in the workplace; soon after, other industries followed by enacting safety acts and regulations (Reese, 2003). In 1884, Germany was the first country in the world to adopt a legislation supporting workers' compensation and also to endorse occupational health and safety regulations within the workplace.

The Canadian Context

In Canada, the advent of workers' compensation legislation and regulations started appearing early in the 1900s (Hansen, 1991). Ontario led the way by introducing workplace safety legislation in 1915, followed shortly thereafter by Manitoba and British Columbia. Despite the fact that each province has its own regulation system, the provincial ▶ Workers' Compensation Acts comply with Canada Labour Code and represent the standard legal framework that must be followed by both employers and workers (Gunderson & Hyatt, 2000). Due to the "historic compromise," workers that become injured in the course of employment are to be compensated for lost wages and cost of medical care, in exchange releasing the employer from liability. The workers' compensation system is an insurance-based system in which the right of an injured employee to sue for the tort of negligence is exchanged by the wage replacement and medical benefits covered by the insured employer. However, the employer has the responsibility to ensure that the workplace standards comply with the Occupational Health and Safety Regulations. These regulations are adopted under each province ▶ Workers' Compensation Act and contain mandatory regulations and standards that must be met by all workplaces. These standards have the authority of law (Reese, 2003).

Emerging Issues

Following the recommendations of the Occupational Health and Safety regulations, the overall goal of ▶ occupational health is to recognize and prevent work-related diseases and injuries in the workplace. The main areas covered by these regulations relate to the identification and analysis of workplace hazards, identification of occupational illnesses or injuries, intervention, control, and prevention of workplace injury and illness, as well as safety and health training interventions in the workplace (Reese, 2003). However, the scope of occupational health goes beyond protecting just individuals engaged in the workplace, such as workers and coworkers, to also protecting all other parties that may be affected by the work environment, such as family members, customers, ▶ public health, and ▶ community. As such, in the recent years, due to increase awareness about the negative impact of the industry on the environment, as well as about the link between the environmental factors

and human health, industrial hygiene has emerged as a new area of interest in the occupational health and safety domain (Sullivan, 2000). Industrial hygiene has become very instrumental in analyzing and determining prevention measures in regard to minimizing the impact of workplace environment on human health.

However, as the labor force has changed, due to the technological innovation, globalization, and the swing from the manufacturing, forestry, and mining industries to the resource service sector, occupational health perspectives have changed as well (Sullivan, 2000). Under the recent economic development and design of work environments, the scope of occupational health expands from more traditional occupational health and safety issues to a new and more holistic approach taking into consideration not only the physical, psychological, and social well-being of the participants in the workplace but also the overall organizational health (Levy & Wegman, 1988; Naumanen & Liesivuori, 2009). Thus, workplace security, respect of ▶ equality, and diversity in the workplace, clear organizational goals, transparency, and good communication are new and emerging topics within the occupational health and safety field. In a study regarding healthy workplaces, Kelloway and Day (2005) noted that "holistic workplace health includes physical, social, personal, and developmental organizational support to improve overall employee quality of life both within and outside the workplace." (p. 224)

In concert with the occupational health and safety regulations, workplace health promotion recognizes the importance of fostering positive attitudes and improving employees' ▶ satisfaction and engagement in the workplace. The combined efforts and ▶ motivation of employers, employees, and communities to promote health and well-being within the workplace are more likely to further translate in organizational success and community well-being (Arandjelovic, 2011; Puchalski, Korzeniowska, Pyzalski, & Wojtaszczyk, 2005). Therefore, the modern understanding of the concept of workplace health promotion advocates for a profound change at all levels of interaction, employees, organization, employers, family, and community in order to improve and facilitate positive changes on health and well-being (Health Canada, 2004).

Conclusion

Despite the fact that the history of the occurrence of work-related illness and injuries has its roots in ancient times, only in recent history has this awareness been channeled into a more considerate approach for workers' ▶ health and ▶ well-being (Hansen, 1991). ▶ Occupational health has come a long way from its beginnings when it was very much focused on the health of individuals working preponderantly in the manufacturing and heavy industry sector. Today, occupational health has broadened its mandate and has taken a permanent place of high priority within the workplace environment. Occupational health and safety has become an integral component of the way workplaces are managed, organized, and regulated in order to provide a safe and healthy work environment to all participants in the work process. It represents an important component of any organization and has a significant impact on every worker irrespective of the workplace, size of the company, or field of activity.

Cross-References

- ▶ Health
- ▶ Job Satisfaction
- ▶ Meaningfulness of Work
- ▶ Motivation
- ▶ Occupational Health
- ▶ Public Health
- ▶ Quality of Life
- ▶ Well-Being
- ▶ Workers' Compensation

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Occupational Illness

► Workers' Compensation

Occupational Mobility

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Synonyms

Class mobility; Downward and upward mobility; Social mobility; Upward mobility

Definition

Transition from one occupation to another, either during one's own life course ("intragenerational mobility") or compared to one's parents ("intergenerational mobility"). A distinction is made between transitions between occupations of different hierarchical levels ("vertical mobility") and changes between occupations of the same level ("horizontal mobility"). The scholarly literature overwhelmingly focuses on the former type of occupational mobility, using better working conditions, and increases in occupational prestige, remuneration, and authority as indicators of upward mobility.

Description

Occupational Mobility

A large number of studies in the social sciences have been devoted to the issue of social mobility. Many of these focus on the extent to which social mobility takes place and on the question of how it relates to industrial and postindustrial development; various scholars consider the level of social mobility to be an indicator of societal "openness" (Matras, 1980). Social mobility generally refers to a transition from one socioeconomic position to another: someone is socially mobile if she/he transcends the boundaries of the class structure of a society. Social mobility hence boils down to class mobility, and notwithstanding the various class definitions used in the social sciences at large, which are rooted in distinct theoretical traditions (Wright, 2005), the most widely used class categorizations in recent decades build on the occupational ladder (cf. Van der Waal, Achterberg, & Houtman, 2007). Class position, then, simply reflects ones occupation, and in most studies social mobility or class mobility hence indicates occupational mobility. Scholars agree that almost all western countries experienced rising levels of upward mobility in recent decades, while the exact extent to which remains contested (Breen, 2004).

Studies on occupational mobility typically deal with changes in objective class positions

instead of transformations in subjective class identifications. Commonly, an analytical distinction is made between "*inter*generational mobility," in which case people's class positions differ from those of their parents, and "*intra*generational mobility," which denotes mobility from one class to another within one's life span. Occupational mobility can both be upward and downward. In a simplified two-class model, in which a "working class" is positioned below a "middle class," the upwardly mobile moves from the working class to the middle class, while it is the other way around for the downwardly mobile.

The empirical literature devoted to the consequences of occupation mobility is vast – ranging from ▶ voting behavior (Nieuwbeerta, 1996) to ▶ quality of life. The latter literature is primarily inspired by sociologists Durkheim and Sorokin (see for a recent overview: Houle, 2011), who stressed the potential detrimental effects of "personal or societal disequilibrium, because of the ▶ stress it supposedly induces" (Marshall & Firth, 1999, p. 31). The underlying idea is that the occupationally mobile – be it upwardly or downwardly – is uprooted from his/her familiar social surroundings and has a hard time getting accustomed to the patterns of thinking, feeling, and acting that are characteristic of their new situation. As a result, feelings of ▶ anxiety, insecurity, and confusion about their identity put strain upon their ▶ subjective well-being (idem).

Such "pessimistic" accounts are often counterposed to ones that build on research that has shown time and again that more privileged economic positions are accompanied by higher levels of self-reported ▶ quality of life: level of ▶ education, income, and employment all correlate positively with ▶ subjective well-being (Argyle, 1999). From these findings, it follows that upward occupational mobility entails an increase in ▶ subjective well-being: such mobility is, after all, often accompanied by a higher level of ▶ education and an increase in income, and for some it will mean becoming employed. Those who experience downward occupational mobility, in contrast, often see their level of income decrease, and they may even become unemployed. Hence, it is to be expected that their ▶ subjective well-being declines. Furthermore, besides these "hard" economic corollaries of occupational class position, three other factors underlie higher levels of subjective well-being: a rich social life and more active ▶ leisure activities, high status, and greater ▶ job satisfaction (Argyle, 1999).

While both accounts suggest that downward occupational mobility induces a lower ▶ quality of life, two contrasting expectations can be discerned if upward occupational mobility is concerned. Whereas the literature on social uprooting predicts a decrease in ▶ subjective well-being due to upward mobility, studies on the corollaries of privileged economic positions suggest that upward mobility results in an increase in well-being. Thus far, the empirical literature remains inconclusive about the empirical tenability of both expectations. It is reported that occupational mobility is not "associated with ▶ psychological distress and self-acceptance" (Houle, 2011, p. 757). And if occupational mobility is related to indicators of ▶ subjective well-being of a similar kind, it is found that "the estimated effects – even if accepted as real – are very small" (Marshall & Firth, 1999, p. 44; see for a recent overview Veenhoven, 2011), and it is argued that these "do not merit further investigation" (idem).

Yet, the latter conclusion might well be invalid if upward occupational mobility is concerned. This is because empirical research has not simultaneously modeled both expectations outlined above. It might, after all, well be that the absence of a relationship between upward occupational mobility – even if found in a multivariate analysis including various control variables – is the result of a cross-pressure effect (Lazarsfeld, Berelson, & Gaudet, 1972 [1944], p. 53) because both expectations are empirically valid. In that case, a net effect of upward occupational mobility on ▶ subjective well-being that is close to zero might in fact represent the sum of a negative effect due to a process of social uprooting and a positive effect of acquiring a more privileged economic position, a richer social life, a higher status, and/or a higher level of ▶ job satisfaction. Future research should, therefore, explicitly

model both mechanisms in order to uncover whether upward occupational mobility is really virtually unrelated to changes in subjective ▶ quality of life.

Cross-References

- ▶ Anxiety
- ▶ Class Identification
- ▶ Education
- ▶ Job Satisfaction
- ▶ Leisure
- ▶ Psychological Distress
- ▶ Quality of Life
- ▶ Stress
- ▶ Subjective Well-Being
- ▶ Voting Behavior

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Occupational Segregation by Gender

▶ Occupational Sex Segregation

Occupational Segregation by Sex

▶ Occupational Sex Segregation

Occupational Sex Segregation

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Synonyms

Occupational gender-based segregation; Occupational segregation by gender; Occupational segregation by sex; Sex segregation of occupations

Definition

Following (Reardon & O'Sullivan, 2004), "▶ segregation can be thought of as the extent to which individuals of different groups occupy and experience different social environments." To put it more sharply, "segregation is a social mechanism that preserves inequality across groups" (Reskin, 1999). Although different dimensions of the problem have been described in the literature (Massey & Denton, 1988), evenness is the most frequently discussed. According to this conception, segregation exists if the population subgroups into which the economy is divided (women/men, blacks/whites) are not similarly distributed among organizational units (occupations, schools, neighborhoods). In particular, occupational sex segregation occurs when women are underrepresented (or overrepresented) in some occupations as compared to men. The most extended view of occupational segregation—that of horizontal

segregation—does not consider occupations as being ordered by any criterion. As opposed to that, vertical segregation arises when women are underrepresented in high-status occupations, especially those related to decision making.

Description

As documented by (Anker, 1998), there is ▶ gendered work all over the world. In most countries, some occupations are strongly masculinized (architects, engineers, and related technicians; legislative officials and government administrators; managers; sales supervisors; protective service workers; production supervisors and general foremen; blacksmiths; bricklayers, carpenters, and other construction workers), while others, most of them low paid, tend to be female dominated (nursing; stenographers, and typists; housekeepers, bookkeepers/cashiers, building caretakers/cleaners, and tailors/sewers).

Sociologists and economists have devoted a great deal of attention to measuring occupational sex segregation. Most of these measures are based on comparisons between the distribution of women across occupations and that of men (for a survey, see Flückiger & Silber, 1999), though a few measures contrast instead the former against the occupational structure of the economy (Del Río & Alonso-Villar, 2010; Moir & Selby Smith, 1979). Among occupational segregation measures, the index of dissimilarity (ID) proposed by (Duncan & Duncan, 1955) has been one of the most widely used to quantify horizontal segregation, including trends in a large number of countries, in some cases combining sex with race and ethnicity (for recent studies, see Anker, Malkas, & Korten, 2003; European Commission & Employment, Social Affairs and Inclusion, 2009; Kaufman, 2010; for earlier studies, see Albelda, 1986; Blau, Simpson, & Anderson, 1998; King, 1992; Reskin, 1999). The value of this index, which can range between 0 and 100, can be interpreted as the percentage of workers who would have to change their occupations to bring about a similar occupational distribution for women and men.

It is worth noting that, on the one hand, the segregation measurement does depend on the level of aggregation of occupations, so that the finer the classification of occupations being used, the higher the extent of segregation. On the other hand, as pointed out by (Baron, 1994), official classifications may include asymmetries in the treatment of occupations of female- and male-dominated occupations, the classification of the latter being usually finer than that of the former, which affects the segregation measurement as well.

In order to offer empirical evidence of the ID index, we include here some figures for the European Union and the United States. In the EU, the ID index in 2007 was around 51 % (European Commission & Employment, Social Affairs and Inclusion, 2009), which means that, to obtain similar distributions for women and men, more than half of workers would have to change occupations. By using a different classification that considers a list of 104 occupations rather than 130, the ID index in the USA in 2000 was lower: around 46 % (Anker et al., 2003) (although, as mentioned above, one must be careful in deriving conclusions from cross-country comparisons when different classifications are involved).

Discussion

▶ Gender inequalities in the labor market may arise from several sources, including individual characteristics, market opportunities, and environmental conditions. From an economic perspective (see Altonji & Blank, 1999 for a survey of neoclassical theories), discrepancies between the jobs filled by women and men may be the result of differences in education and experience, as explained by ▶ human capital theory. Disparities may also occur as a consequence of gender differences in job attribute preferences, although these differences are certainly not independent of social conditions to the extent that women assume most of the domestic responsibilities (including child and elderly care), which explains why some women prefer occupations with flexible work hours. Empirical evidence shows, however, that the overrepresentation of women in some types of

jobs can be explained not only by supply-side factors (such as differences in preferences or productivity) but also by demand-side factors, including ▶ gender discrimination (Kaufman, 2010; Petrongolo, 2004). In explaining sex segregation, neoclassical discrimination theories focus on the assumption of a taste for discrimination on the part of employers, coworkers, and consumers, as well as on stereotyping, considering that employers often assess workers according to the average characteristics of the group they belong to rather than to their actual characteristics (statistical discrimination), which in practice results in ▶ negative stereotypes against women. All this can be reinforced by workers' actions when achieving the characteristics of the job they are offered.

The above neoclassical theories have been criticized from a feminist perspective, mainly because they do not provide meaningful explanations for the origin of discrimination while assuming that individuals make free, rational choices. For these reasons, feminist scholars have considered alternative economic traditions together with approaches from other fields (Burnell, 1999). Thus, according to segmented labor market theories, the preponderance of women in some kinds of occupations may arise from the separation of the whole labor market into primary and secondary markets which differ in their rewards, status/authority, unionization, physical exertion/dexterity, and employment opportunities. Queuing labor processes also fuels segregation because applicants to a job are ranked not only by their skills but also by sex, which leads to different labor queues for women and men, the former being relegated to less desirable jobs.

From recent approaches, segregation may be also viewed as a way to deal with the difficulties that occur when women and men work side by side in the same workplace. As pointed out by (Goldin, 2002), men lose status when women are hired for the same jobs they hold since integration can be seen as a sign that those occupations have low requirements. Consequently, discrimination against women may emerge as a form of protection of men's occupational status. Akerlof and Kranton (2000) adds further psychological considerations to the analysis: When a woman works in what has traditionally been a *male* occupation, she suffers a direct cost due to the loss of her female identity and an indirect (but not necessarily lower) cost if the identities of her male coworkers are affected by her presence and they act to strengthen and maintain their own identities. This results in separation between women and men at work.

There are many reasons why researchers and policy makers care about occupational segregation by sex (Anker, 1998; Cohen & Huffman, 2003; European Commission, Employment, Social Affairs and Inclusion, 2009; Kaufman, 2010):

1. Approximately one-third of the salary differences between women and men at the international level are a consequence of occupational segregation by sex. Furthermore, occupational segregation often involves worse working conditions in female-dominated occupations.
2. The tendency of women to concentrate in low-pay/status jobs has a negative impact on how men see women and also on how women see themselves. This reinforces gender stereotypes and fosters female poverty, which has important consequences for female-headed households (see ▶ Gender and Poverty).
3. Occupational segregation also favors gender devaluation (according to which the sex of an individual is an important factor in her/his work's worth) because it puts women in weaker positions for resisting devaluation.
4. In addition, it has a negative effect on the education of future generations, particularly regarding the fields of study that boys and girls opt to enter.
5. Following another line of reasoning, the exclusion of women from certain occupations implies a waste of human resources, which leads to extremely inefficient results when women are highly skilled people.
6. Moreover, sex segregation imposes important rigidities, reducing the ability of the market to respond to labor changes, which is a problem in a global economy concerned with efficiency and competitiveness.

Cross-References

- ▶ Gender and Poverty
- ▶ Gender Discrimination
- ▶ Gender Inequalities
- ▶ Gendered Work
- ▶ Human Capital
- ▶ Negative Stereotypes
- ▶ Segregation

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Occupational Stress in a Multicultural Workplace

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Synonyms

Demand-control-social support model of work stress; Diverse cultural differences effects at work; Effort-reward imbalance model of work stress; Person-environment fit model of work stress; Pressure/tension due to work; Social ecological model of work stress; Workplace culture effects

Definition

▶ Stress is defined as the natural adaptive response of the human body to external stimuli,

such as events, demands, challenges, or physical stressors that can place special demands on the individual's ability to positively cope with the situation. Stress can be positive and negative according to its outcome on health and well-being (Lazarus, 1999).

Positive stress, or eustress, is the good stress that occurs as a result of situations that challenge the individual's abilities in a positive way (i.e., challenging an exam or taking up an exciting project at work). The individual is able to appraise the stressor and, therefore, engage their entire set of coping abilities in successfully dealing with the situation. Eustress is positively correlated to satisfaction, ► health, and well-being.

Negative stress, or ► distress, develops as a result of prolonged pressure and inability to cope with the stressors or return to a relaxed state even in the absence of the stressor.

Occupational stress refers to pressures resulting from work activities.

Multicultural workplace brings together a variety of individuals having diverse ethnic, religious, and cultural backgrounds.

Description

Occupational stress is defined as tension and strain resulting from work. The topic of occupational stress has been well researched and has stimulated interest and controversy among occupational theorists. As a result, many theoretical frameworks were developed in the attempt to explain the factors that influence and trigger the development of ► stress, the ways individuals may perceive stress, and the coping mechanisms employed when dealing with stress (Ettner & Grzywacz, 2001). There has been strong consensus demonstrating that stress generated by work activities has the potential to negatively affect the health and well-being of individuals' participating in the work process (Baba, Jamal, & Tourigny, 1998; Elovainio, Kivimäki, Steen, & Kalliomäki-Levanto, 2000). However, increasing workplace diversity and ► multiculturalism bring into discussion the relevance of the existing theoretical models of stress and their applicability to the current workforce.

Multicultural workplaces represent a new reality defining businesses and organizations. Due to globalization trends and increased migration of the workforce across borders, businesses and workplaces have started to recognize the importance of adjusting and accommodating to the needs of a diverse workforce. As such, modern and inclusive workplaces have the responsibility to contemplate multicultural approaches that take into consideration workers' individual characteristics as well as their interests, needs, and ethnic and cultural background.

Discussion

The perception of occupational stress is influenced not only by work characteristics and workplace environment but also by the individual differences, familial, cultural, and social context (Baba, Jamal, & Tourigny, 1998; Amason et al., 1999). Every individual experiences stress in a distinctive and unique way. Personality, along with components of social environments, family relationships, and ethnic, religious, and cultural backgrounds, has a strong influence in shaping the way each individual responds to and interprets events in the workplace. However, certain individuals are better equipped to appraise and respond positively to stressors at work, while others lack these resources and abilities to deal with the work pressure and demands.

Stressors Emerging from Multicultural Workplaces

The most common sources of occupational stress are unanimously considered to be: workload and work pace, conflict and ambiguity in the workplace, career concerns, work scheduling, interpersonal relationships, and job content and control (Sauter, Murphy, & Hurrell, 1990). Most of the research has analyzed occupational stress on the population, looked at as a homogenous majority. However, the relationships between ethnic minorities and job stressors/health outcomes have been pointing to additional

stressors. These factors relate to discrimination in the workplace, ▶ social interactions, reestablishing professional status, and family characteristics.

Discrimination in the Workplace

A multicultural workforce consists of employees with a wide range of backgrounds. On the positive side, diversity can bring about a broader range of perspectives on issues or challenges. People from different backgrounds bring their own unique cultural experiences to the situations they face in their workplaces. However, adverse workforce presents increased potential for discrimination. Immigrants and visible minorities are often exposed to discriminatory attitudes in the workplace, being subject to stereotyping and ▶ prejudice (Pasca & Wagner, 2011; Xie, 1996). These negative attitudes can trigger feelings of low ▶ self-esteem, fear, ▶ anxiety, inability to cope, and psychological distress.

Lack of Social Support and Social Interactions

From a workplace perspective, there is considerable evidence demonstrating that ▶ social support at work represents an important ▶ mediator in mitigating the relationship between health and occupational stress. Supportive and caring organizations, involving management and supervisory structures in assuring good intra-organizational communication and support, are more likely to have satisfied employees and reduced uncertainty, dissatisfaction with job, and occupational strain. However, diverse individuals having diverse cultural and ethnic backgrounds may perceive social support in the workplace differently. In order to better understand the need of support in a multicultural workplace, training in cultural awareness and communication skills plays a very important role (Pasca & Wagner, 2011).

The quality of social interactions within the multicultural workplace is another important factor that has the potential to act as a buffer in attenuating stress in the workplace. For immigrant workers, this aspect is paramount. Being recognized, appreciated, and liked by coworkers and supervisors play an important role in the way individual's ▶ health and ▶ well-being is affected. However, developing ▶ social support for immigrant workers can be a daunting task when considering the barriers and challenges they have to face in the workplace.

Reestablishing Professional Status

One of the most important barriers to adjusting and settling into a new country consists in finding employment in the field of expertise. Obtaining a position at a commensurate level with their education and acquired skills set is most of the time impossible. While previous credentials obtained in the country of origin are not recognized for employment purposes, the opportunities to obtain work experience in the field of expertise in the host country are very limited. This situation puts immigrant workers at greater risk for occupational stress and related health effects.

Family Characteristics

Immigrants are exposed to additional stressors regarding family, social, and relationship issues. The challenges faced by immigrants in the complex process of integration and adaptation to the new country may debilitate the family dynamics and pose huge strain on family cohesion (Yost & Lucas, 2002). As such, in addition to considering how workplace conditions affect their health, there is need to examine the family and social interactions beyond the workplace.

In an attempt to explain the mechanisms and interrelationships behind these various responses and interpretations to work-related stress, occupational theorists have developed several theoretical models. The most researched theories of occupational stress are demand-control model, effort-reward imbalance model, social ecological model, and person-environment fit model.

Demand-Control-Social Support Model

One of the most influential theories of job stress was developed by Karasek (1979) that proposes a model which postulates that control over one's job acts as a protective factor in mediating the relationship between work and health outcome (Karasek, 1979). In other words, high control within workplace provides the individual

with autonomy, ability to make decisions, and fulfill job tasks in a more creative way. Conversely, low control in combination with high demands in the workplace can result in high job strain and negative health outcomes. However, social support at work and in private life has been proven to have a positive role in mitigating the influence of stress on health. As such, the model was expanded by considering social support into the mix. The new model suggested that low control and high demands, in combination with low social support, had a deleterious effect on the health of the individual. Although the main concept behind this new framework emphasizes the important role played by the social and interpersonal relationships among the participants in the work process, Karasek's theory has its limitations. The model was developed taking into consideration subjects and issues specific to developed, highly industrialized countries. As such, the model does not take into consideration the context of a multicultural workplace. As such, the social aspect and personal interactions at work, which are assumed to be paramount for maintenance of health and well-being and have significant implications in the way individuals perceive work experiences, are not analyzed from a multicultural perspective. For example, immigrant population is considered to be more vulnerable to high levels of stress due to a series of circumstances relating to work, social, and familial issues than their native counterparts. Empirical research has demonstrated that these individuals tend to be more socially isolated due to lack of connections within the mainstream community, marginal socioeconomic status, lack of language proficiency, and lack of knowledge of workplace culture and ▶ norms in the host country.

Effort-Reward Imbalance Model

This model addresses the imbalance that may exist between the efforts and energies spent fulfilling work demands and the reward or appreciation following these efforts in the workplace. High efforts and poor rewards are associated with high levels of dissatisfaction with one's job and high levels of occupational stress. Conversely, high efforts recompensed with high rewards or recognition are more likely to stimulate positive feelings, improve morale and ▶ self-esteem, as well as lower the occupational stress and contribute to well-being and satisfaction. When looking at this model from a multicultural perspective, some issues need to be pointed out. For example, in their process of adjusting to the new host country, immigrants are often seen as lacking appropriate skills, being unqualified or inadequately trained for the workplace, and lacking in workplace initiative. As such, their efforts to actively participate in the workplace are rather shy, misunderstood, unappreciated, or not rewarded by their coworkers or supervisors. The additional stressors immigrants are exposed to by simply trying to adapt and fit in the workplace, as well as learning the technical language of the workplace, the norms, and workplace culture in order to successfully fulfill the requirements of the job, are not captured in the model. Therefore, additional research is required in order to determine the effort-reward imbalance theoretical framework applicability to multicultural workplaces.

Social Ecology Theory

This model focuses on both the person and the environment. Stokols (1992) hypothesized that individual characteristics, abilities, and attitudes have a great deal of influence on how work experiences are perceived, as well as on what responses are associated with the work stressor. In other words, people have the ability to appraise the stressors in their environment and assess their ability to manage and respond to the challenge. As such, workers reporting a high level of perceived constraints and neuroticism, pessimist or hostile individuals, and working unusual shifts or overtime will be more likely to report higher level of occupational stress and ill-health. From the perspective of the multicultural workplaces, hosting a diverse workforce, the issue of evaluating work-related stressors becomes multifaceted by having to take into consideration not only the dynamic interplay among workers and coworkers, groups and teams, and their individual characteristics but also their socio-physical

environments, values, and cultural and ethnic backgrounds. For example, group-oriented cultures, such as Asian, Eastern European, or Middle Eastern countries, are seen as very dedicated to their work and work groups, very loyal and bound by strict rules of intra-group relationships. They value work ethic and hierarchy, professional status, and social prestige. As such, a lack of understanding of the individual characteristics, values, and cultural background and work environment will create strain and negatively impact the individual's health and well-being. One question that may arise is whether the outcome measured following this theoretical framework is capturing the true health effects of a particular job or rather, simply capturing individual workers' perceptions at that particular time (e.g., the fact that immigrants are more likely to see themselves as unadjusted/unable to cope with workplace/society demands, even when they are not).

► Person-Environment Fit

This model was developed by Caplan (1983) and refers to the relationship existent between the person and the work environment. In the context of the new global economic trend, which influences the nature of work and work arrangements and its impact on individuals' well-being, the concept of person environment (PE) fit has continued to be widely analyzed within the organizational and vocational behavior literature (Holland, 1985; Caplan & van Harrison, 1993; Tak, 2011). The term "fit" refers to the interaction existent between the work personality of an individual and the work environment. If the interaction between the person and the environment is congruent, the outcomes of this interaction, that is, job satisfaction, commitment, and well-being, are positive. In the case of incompatibility between the two, the outcomes of the interaction will be negative, translating in job dissatisfaction, low commitment, and high level of stress. However, the current PE fit research considers this correspondence between the characteristics of the person and the work environment as having a dynamic and reciprocal nature: in order to obtain fit, the individuals have to actively respond and adapt to the changing requirements of the work environment, while the components of the work environment have to adjust and transform in order to provide the reward and satisfaction for the individual needs (Tak, 2011; Yu, 2009). Individuals having diverse cultural and ethnic backgrounds may appraise differently the correspondence between their skills and abilities and the work environment. Immigrant workers, in their attempt to adjust and adapt to the host country and to regain their professional status lost through the relocation process in the new country, may experience feelings of uselessness, frustration, low ► self-efficacy and self-esteem. These workers may consider as very important to work towards regaining their professional status; however, despite their desire to work in their field of expertise, they will take on any type of entry level jobs that can provide them with financial independence and help build their work experience. This constrained misfit may have deleterious effects on health, well-being, and overall satisfaction. Therefore, the PE fit model may be limited in properly capturing these relevant aspects contributing to the experience of occupational stress.

Conclusion

Occupational stress in the multicultural workplace represents a pressing issue facing modern organizations. Increased diversity in the workplace highlights the fact that a multicultural approach to workplace stressors and related health outcomes is required. Raising awareness regarding the specific characteristics a multicultural workplace environment might entail can play an important role in alleviating ill-health and increasing the level of well-being of the participants in the work process. The theoretical models of stress discussed so far presented limitations when assessed against the new reality of the multicultural workplaces.

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Occupational Stress, Health, and Well-Being

▶ Psychological Stress and Employee Engagement

Occupational Well-Being

▶ Occupation Influence on Satisfaction/ Happiness

Occupational Well-Being and Motivation of Those in the Helping Professions

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Synonyms

Motivation and Engagement Wheel (MEW)

Definition

Occupational well-being consists of two constructs on a continuum with ▶ burnout at one end and engagement at the other (Maslach, Schaufeli, & Leiter, 2001). It is of particular relevance to research on helping professions such as teaching, nursing, social workers and the clergy (Schaufeli & Enzmann, 1998).

Description

This continuum perspective of occupational ▶ well-being emerged from recent moves toward ▶ positive psychology in the workplace (see Martin, 2004a, 2004b) and a dual focus within applied psychology on both workplace ▶ distress and engagement (e.g., Schaufeli, Taris, & Rhenen, 2008). On one end of this continuum is ▶ burnout, defined as a prolonged and occupational specific form of strain consisting of emotional exhaustion, depersonalization focused on recipients under the individual's care, and feelings of a lack of personal accomplishment (Byrne, 1991). Engagement is also considered as a multidimensional construct where the components are defined in an opposite way to burnout, namely, vigor or high levels of energy related to work, dedication and a sense of significance of the work being conducted, and absorption and ▶ happiness in one's work (Schaufeli, Salanova, González-Romá, & Bakker, 2002). This continuum perspective has now received extensive empirical validation (Schaufeli et al., 2002, 2008) and is becoming one of the most referenced theoretical models of strain and well-being in the literature, particularly in relation to the helping professions such as teaching, nursing, the clergy, and social work (Schaufeli & Enzmann, 1998).

The Helping Professions: The helping professions are a subset of the service or direct person-related professions that are categorized by emotional labor in ongoing interactions with clients (e.g., retail staff, flight attendants, teachers, and nurses; see Dollard, Dormann, Boyd, Winefield, & Winefield, 2003; Zapf, 2002). Helping professions or human service professions share a number of features that may explain why employees in the helping professions report some of the highest levels of ▶ stress and burnout of any professions (Schaufeli & Enzmann, 1998; Smith, Brice, Collins, Matthews, & McNamara, 2000). Hasenfeld (1985) defines helping professions distinctly from other professions in that the products of the job involve the maintenance, modification, and/or enhancement behaviorally, physically, or psychologically of recipients (or clients; see Zapf, 2002) under their care. The workplace roles of helping professions also differ from other service professions where interactions with recipients (e.g., students, patients, and clients) are often extended and can include exchanges that are highly stressful, emotional, and potentially verbally and/or physically dangerous. Compounding these difficulties is the fact that successful outcomes in the helping profession depend on the quality of relationships between the recipient and the employee (Dollard et al., 2003). One common feature of research on the helping professions is the focus on burnout and workplace engagement (Schaufeli & Enzmann, 1998). Burnout was first researched and once thought solely the domain of the helping professions (Byrne, 1991). Even now, research on burnout is overwhelmingly focused on nurses, teachers, social workers, and clergy/missionaries (Schaufeli & Enzmann, 1998). Recent research on burnout, engagement, and retention has highlighted self-beliefs, such as self-concepts, as critical predictors of these outcomes particularly in the helping professions (Cowin, Johnson, Craven, & Marsh, 2008; Friedman, 2000; Friedman & Farber, 1992; Parker, Martin, Colmar, Liem, 2012; Skaalvik & Skaalvik, 2007). In particular, positive self-perceptions and adaptive motivation are seen as protective – against burnout – and enabling, of workplace engagement (Parker & Martin, 2009; Parker et al., 2012).

Motivation, Self-Beliefs, and Occupational Well-Being in the Helping Professions: Early research on workplace well-being focused primarily on the role of ▶ motivation (e.g., Vogel, Baker, & Lazarus, 1958; Vogel, Raymond, & Lazarus, 1959). This focus on motivation has declined over time, possibly because the literature appeared disjointed, theory-specific, and difficult to integrate into applied settings (Martin, 2007). As a result, much motivational research remained theory-centric and did not include a range of key motivational constructs that were likely to be relevant to occupational well-being. Working in other applied settings, Martin (2008) drew together key motivational constructs providing a robust and differentiated exploration of motivation that has been seen as critical to occupational well-being. The Motivation and

Engagement Wheel (MEW) brings together diverse aspects of motivational theorizing, providing a use-inspired, multidimensional approach to motivation (Martin, 2007). The model harnesses need achievement, ▶ self-worth, goal attribution, expectancy-value, and ▶ self-efficacy theories (Martin, 2007) and emphasizes eleven motivation constructs typically represented by four higher-order factors: adaptive cognition (mastery, self-efficacy, valuing), adaptive behavior (planning, persistence, task management), impeding cognition (failure avoidance, ▶ anxiety, uncertain control), and maladaptive behavior (disengagement, self-handicapping). Research has indicated important yields for understanding occupational well-being in the helping professions using all (Parker & Martin, 2011), or a subset of the motivation factors (Parker & Martin, 2009; Parker et al., 2012).

Self-beliefs are also critical elements in understanding the occupational well-being in the helping professions. In particular, Friedman (2000) notes that burnout develops when helping professionals' initial positive perceptions of self are confronted by the realities and difficulties of the workplace. Similarly, Parker et al. (2012; see also Parker & Martin, 2011), utilizing self-worth theory as a basis, suggested that the occupational well-being of helping professionals is partially a function of the self-belief enhancing or lowering messages they receive from the workplace. Self-worth motivation theory suggests that a primary motivating drive in individuals is the need to maintain and promote self-worth (Covington & Beery, 1976). It further suggests that ▶ achievement domains such as work provide a basis upon which self-worth is evaluated and maintained, enhanced, or threatened via its association with achievement-relevant personal attributes (Covington & Beery, 1976). From a person-orientated perspective, individuals with positive occupational well-being are most likely to be those who are success-orientated (Parker & Martin, 2011). This is because such individuals are characterized by an incremental theory of personal attributes where they see success as dependent on factors under their control and obstacles as indicative of a need to apply more effort (Covington, 1992, 1998, 2000). Those who are at most risk of burnout are those who perceive their personal attributes as the sole determinate of their self-worth, and thus the workplace is seen as a constantly and personally evaluative (Covington & Beery, 1976). This can be expressed in the form of either over-striving (persistent doubts about competence leading to extensive and disproportional effort) or self-protection (efforts are focused on protecting sense of self-worth often at the cost of doing the job effectively). Surprisingly, failure acceptors, who no longer aim to derive a sense of self-worth from their occupation, experience relatively little burnout (see Parker & Martin, 2011 for a review).

Discussion

Occupational well-being in the helping professions represents a positive psychology approach to human functioning. Namely, the focus of research and practice is to not only reduce incidents of workplace burnout but also promote engagement and ▶ job satisfaction. Typical research and intervention in this area has focused on the characteristics of the helping profession workplace (i.e., the environment); however, research is beginning to note the importance of an individual difference perspective such as the focus on multidimensional motivation and self-belief (see Parker et al., 2012).

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Occupational: Related to Work or Profession

► Occupational Health

Occupation-Based Mental Health Programs

► Day Centers

Odds Ratio

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Synonyms

Cross product ratio; Prevalence odds ratio; Relative odds

Definition

The *odds ratio* is a measure of the magnitude of an association (statistical effect, nonindependence) between two binary (or dichotomous) variables. The odds ratio is a ratio of two odds: the odds of event of interest occurring within the sample of interest to the odds of the event of interest occurring within a reference sample. The odds ratio is asymmetrical and can range from 0 to infinity; the odds ratio cannot be negative. Odds ratios between 0 and 0.99 indicate a lower risk, between 1 and infinity indicate a higher risk, and equal to 1 indicate no relationship between two variables. The following equation can be used to calculate the odds ratio from the table below:

$$\mathrm{OR} = {}^{(a/c)}/_{(b/d)} = {}^{(a \cdot d)}/_{(b \cdot c)}$$

$$95\ \%\ \mathrm{CI}_{\mathrm{OR}} = \exp\left[\ln\ \mathrm{OR} \pm 1.96\mathrm{SE}_{(\ln \mathrm{OR})}\right]$$

where a represents the count of individuals with the event of interest in the sample of interest, b represents the count of individuals with the event of interest in the reference sample, c represents the count of individuals without the event of interest in the sample of interest, and d represents the count of individuals without the event of interest in the reference sample.

	High function	Low function	Total
Met exercise guideline	30	5	35
Did not meet	70	95	165
Total	100	100	200

Description

Odds are a way to represent probabilities (ρ). Odds can be calculated using either probabilities or counts (frequencies) of an event (Bland & Altman, 2000). The odds of an event is the ratio of probability of the event of interest occurring to the probability of the event not occurring [$odds = {}^{\rho}/_{(1-\rho)}$].

The table presents data for a hypothetical cross-sectional study of older adults with high and low physical functioning and meeting physical activity guidelines or not. Suppose the probability of a group of 100 high-functioning older adults meeting national physical activity recommendations was 30.0 % (30/100) or an odds of 42.86 [odds = .30/(1 −.30)]. Further suppose that the probability of 100 low functioning adults meeting recommendation was 5.0 % (odds = 5.26).

The ratio of the two odds is useful if a relative comparison between the groups is warranted, for example, if we wanted to compare those with high and low physical function on meeting physical activity recommendations. In this case, the odds ratio would be 8.15 (42.86/5.26), and the interpretation of this result would be "the odds of meeting physical activity guidelines among high-functioning older adults was 8.15 times the odds among low functioning older adults."

The odds ratio is unique in that we can flip the question and ask, "For those who meet physical activity guidelines, what is the odds of being in the high compared to low functioning group?" The odds ratio would again be 8.15.

When the relative risk is inappropriate to calculate, such as case–control study designs, the odds ratio can be used to approximate relative risk. Thus, the odds ratio can be used for either retrospective or prospective study designs (Kline, 2004). For prospective studies, relative risk is generally preferred to the odds ratio, but odds ratios are commonly reported in these designs. A caveat is that odds ratio does not approximate relative risk when the event of interest is relatively common (e.g., incidence > 10 % in the population) (Zhang & Yu, 1998).

Taking the natural logarithm of the odds (i.e., log-odds or logit) has several advantages for more sophisticated statistical modeling (Rothman, Greenland, & Lash, 2008). The logit has an approximately normal distribution that ranges from negative to positive infinity. The logit's mathematical properties make it more convenient for statistical modeling (e.g., logistic regression) because a 1-unit change in a predictor variable results in 1-unit change in a dependent variable.

Cross-References

- ▶ Effect Size
- ▶ Logistic Regression
- ▶ Log-Logistic Models

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OECD List of Social Indicators

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Definition

The Organisation for Economic Co-Operation has been compiling sets of social indicators since the 1970s and before. This article outlines that history.

Description

In the 1960s–1970s. . .

Social indicators were developed at the OECD even before member countries had established comprehensive programs of their own. Calls for developing system of "social accounting" began in the 1960s–1970s, based on the view that, by drawing on countries' practices and approaches, it would be possible to develop more comprehensive reporting of social conditions and to adopt common statistical definitions making international comparisons possible. The OECD *Social Indicators Programme* was thus launched in 1970 with the objective of generating a comprehensive body of evidence on social conditions in member countries. The first major achievement of the program was the publication in 1973 of a "List of Social Concerns Common to Most OECD Countries." Following this, several years of developmental work ensued aimed at designing indicators to measure these concerns.

In the 1980s. . .

OECD List of Social Indicators (1982)

The OECD *List of Social Indicators* was designed to describe the main social characteristics that were common to all OECD countries at that time. The OECD report argued that the selection of an international list of social indicators should be viewed by member countries as providing a general framework for measurement as well as guidelines for building indicators in specific fields. The report presented a set of indicators designed to evaluate some fundamental aspects of people's social conditions in OECD countries. For each indicator, the report provided a specification, statistical guidelines, and the disaggregation criteria necessary for determining the situations of various population groups.

In terms of selection criteria, the report argued that social indicators should be output-oriented, relevant to policy, available over a long period of time, relevant to describe individual well-being independently of the specific institutional arrangements of each country. Further, the report argued that the indicators should be reasonably comparable, comprehensive, closely corresponding to major social concerns, and providing an integrated framework. Overall, 33 indicators were included in the OECD list. A number of member countries carried out

specific surveys based on the OECD Comprehensive Survey Questionnaire. After having reached agreement on the list, the next phase of OECD work was to compile national data sets for each social concern, depending on the ability of member countries to provide the relevant data. Suggested disaggregations for the indicators were age, gender, household type, etc. An inventory of data sources was established at the OECD for each of its member countries.

Living Conditions in OECD Countries: A Compendium of Social Indicators (1986)

The purpose of this compendium was to present the information obtained from the indicators included the 1982 *OECD List*, giving a general idea of living conditions in OECD countries. The compendium described similarities and differences between OECD countries as revealed by the data. Social indicators pertained to 15 areas, i.e., length of life, healthfulness of life, use of educational facilities, learning, availability of employment, quality of working life, use of time, income, wealth, housing conditions, accessibility to services, environmental nuisances, social attachment, exposure to risk, and perceived threats. While the OECD continued to collect indicators on the different dimensions of social conditions in later years, no comprehensive compilation of these indicators was released by the OECD until the early 2000s.

Since 2000...

Society at a Glance: OECD Social Indicators (2001–2013)

Since 2001, the OECD has published *Society at a Glance*, a biennial overview of the social situation in OECD countries. *Society at a Glance* aims to address the growing demand for quantitative evidence on social well-being and its trends across OECD countries. It informs responses to two questions: What progress have countries made in their social development? and How effective have been the actions of societies in furthering social development? The first issue of *Society at a Glance* in 2001 contained 45 indicators, which were reduced to 25 in the sixth edition in 2011. The indicators included in *Society at a Glance* are organized based on a variant of the "Pressure-State-Response" framework used for environmental indicators, which groups indicators into three areas: "social context," "social status," and "societal response." The second dimension of the framework used in *Society at a Glance* groups indicators according to the broad policy fields that they cover, with four broad objectives of social policy used to classify indicators of social status and societal response: "self-sufficiency," "equity," "health status," and "social cohesion." Beginning in 2006, *Society at a Glance* has also included special chapters on selected topics, most recently on unpaid work. The next edition will be published early 2014. More information and latest data are available at www.oecd.org/social/indicators.

How's Life? Measuring Well-Being (2011–2013)

Following the release of the report by the *Commission on the Measurement of Economic Performance and Social Progress* (better known as Stiglitz-Sen-Fitoussi Commission) in 2009, the OECD started releasing a biannual report on people's well-being. This report, which is part of the activities undertaken by the OECD Statistics Committee on measuring performance "beyond GDP," includes a list of indicators pertaining to human well-being, a broad concept encompassing both "material living conditions" and "quality of life"; these two domains are further declined in terms of 11 dimensions ("income and wealth," "jobs and earnings," and "housing" with respect to material living conditions; "health status," "work and life balance," "education and skills," "social connections," "civic engagement and governance," "environmental quality," "personal security," and "subjective well-being" with respect to quality of life). *How's Life 2011*includes 22 headline indicators of human well-being, which are meant to be used for benchmarking and monitoring purposes. Relative to the framework used for *Society at a Glance*, the *How's Life?* indicators are limited to outcome measures (i.e., excluding

indicators of policy responses) but include a broader range of domains. The *How's Life?* framework encompasses measures of both average achievements and inequalities for all the 11 dimensions and includes "sustainability of well-being over time" as a separate domain. The *Your Better Life Index* (www.betterlifeindex.org), developed by the OECD, is a Web application that enables users to build customized indices of overall well-being based on their own views about the importance of the different dimensions of people's life and on comparative measures of countries' average achievements (normalized and aggregated within each domain) in each of the 11 dimensions of *How's Life?* The next edition of *How's Life?* will be published at the end of 2013.

Cross-References

- ▶ Progress of Societies: OECD Projects
- ▶ Social Indicators
- ▶ Social Indicators Research

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OECD Main Economic Indicators

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Definition

The OECD's Main Economic Indicators (MEI) database provides – as of January 2013 – a picture of the most recent short-term economic statistics through almost 30,000 series covering the 34 OECD member countries, six major nonmember economies (Brazil, China, India, Indonesia, the Russian Federation, and South Africa), and a selection of area aggregations and zones (e.g., OECD area, Euro area, European Union, Major Seven). It provides, where available, monthly, quarterly, and annual data for each country and aggregate. The MEI is fundamentally a collection of disparate subject areas whose common glue is their timely nature.

MEI data are made available via OECD.Stat, an online platform where users can search for and extract data from across OECD's many databases including the MEI. OECD has gradually started to release data subsets updated on a daily basis. These updates reflect information collected from various sources, such as National Statistical Offices.

Description

MEI Database and Printed Publication

MEI data are traditionally made available on a monthly basis in print, PDF, CD-ROM, CSV, and as interactive database online via OECD's iLibrary. This monthly release process follows a regular calendar, published a year in advance.

In recent years, changes have been made to the structure and content of the Main Economic Indicators publication. In summary, these reflect an increased emphasis on cross-country comparability with a greater use of composite indicators, notably more derived series

(e.g., activities as a share of GDP), and more series being presented in growth rates. There are a number of factors driving these changes. Key among them is the desire for the database to retain its relevance as a key source of comparable short-term economic statistics and to ensure that the content remains as accessible as possible, from a user perspective. Other factors play a role, however.

When the MEI started many years ago, the range of short-term indicators for OECD member countries was a lot more diverse and sparse than it is today, necessitating the development of a publication and database that acted as a medium (a storage facility as such) to provide users with these diverse indicators. Over time, however, as countries have increased and harmonized their range of short-term indicators, cross-country diversity has diminished, and most of the key variables within the MEI database are now available for most countries. Given that the primary competitive advantage of the MEI is in the provision of cross-country comparable data, it is here that the database will continue to focus.

Publication Footnotes

For simplicity, only a limited number of types of generic footnotes are used in the MEI paper publication:

1. Coverage: This refers to statistics that align with the target concept being measured but whose coverage of activities, products, and services only partially (but still significantly) or more than covers the activities, products, and services specified in the target concept. For example, measures of industry including construction may be used instead of estimates of industry excluding construction.
2. Proxy: Closely related to the "coverage" footnote will be the "proxy" footnote. This refers to statistics whose underlying concept does not align with the target concept; for example, producer prices might be used as a consumer prices. The footnote also refers to cases where the secretariat makes its own estimates, for example, by deriving estimates of retail trade volume using current price figures deflated by a consumer price index.
3. Point in time: Some series are measured on the basis of a specific point in time, for example, the end of the month, or they are measured by taking the average of daily observations over the month, year, etc. However, it is not always possible to collect statistics that fully subscribe to these conventions; for example, data may only be available on say every Wednesday. These types of divergences from the standard-targeted measure are flagged-up under this heading.
4. Information item: This footnote mainly reflects information items worthy of mention but that do not significantly affect the usability of the data. For example, the footnote might be used to refer to the specific source information used in collecting the statistics which might, from an international perspective, differ from more traditional sources. For example, a household budget survey might be used instead of a labor force survey to gain information on employment.

MEI Topics

The MEI brings together short-term economic statistics from a number of different subject areas: Labor Statistics, Unit Labor Costs (ULCs), Composite Leading Indicators (CLIs), International Trade and Balance of Payments, Quarterly National Accounts, Production Indicators, and Financial Indicators and Prices. It is important to note that there are some additional factors that require consideration. Chief among these is the role of the CLI and its relation to other short-term indicators. Other subject areas in the MEI family add value by allowing users to find internationally comparable indicators in the same place. In this sense, the indicators are not in and of themselves market sensitive because they are already in the public domain when they are released by the OECD. The CLI is different, however, in that it is genuinely new information that relies on the timely updating of a number of other subject areas.

At present, the following indicators have associated press releases: harmonized unemployment rate, ULCs, consumer prices, and CLIs.

The *Financial Statistics* topic contains predominantly monthly statistics and contains financial statistics on five separate subjects:

Monetary Aggregates, Interest Rates, Exchange Rates, Reserve Assets, and Share Prices. Data are available either as an index or as a level depending on which measure is seen as the most appropriate and/or useful in the economic analysis context.

The *Production and Sales* topic contains industrial statistics on four separate subjects: Production, Sales, Orders, and Work started. Most data are available monthly and are presented as an index or as a level depending on which measure is seen as the most appropriate and/or useful in the economic analysis context. Due to differences in statistical or economic environment at country level, however, availability of data varies from one country to another.

The *Balance of Payments* is a statistical statement that provides a systematic summary of economic transactions of an economy with the rest of the world, for a specific time period. The transactions are for the most part between residents and nonresidents of the economy. A core group of approximately 30 components are provided, including the main balances and financial flows.

Business and Consumer Opinion (Tendency) Surveys provide qualitative information that has proved useful for monitoring the current economic situation. Typically, they are based on a sample of enterprises or households, and respondents are asked about their assessments of the current situation and expectations for the immediate future. For enterprise surveys, this concerns topics such as production, orders, and stocks, and in the case of consumer surveys, their intentions concern major purposes, economic situation now compared with the recent past, and expectations for the immediate future. Many survey series provide advance warning of turning points in aggregate economic activity as measured by GDP or industrial production. Virtually all business tendency and consumer opinion survey data are presented as time series of balances, either in raw or seasonally adjusted form.

The monthly *International Trade* topic contains international trade statistics for exports, imports, trade balance, and world trade statistics.

The *Short-Term Labor Market Statistics* topic contains predominantly quarterly labor statistics that compiled from sample household surveys on a monthly or quarterly basis. It is widely accepted that household surveys are the best source for labor market key statistics. Subjects available cover the following: working age population by age; active and inactive labor force by age; employment by economic activity, by working time, and by status; and unemployment (including monthly harmonized unemployment) by age and by duration. Data is expressed in levels (thousands of persons) or rates (e.g., employment rate) where applicable.

The *Registered Unemployment and Job Vacancies* topic contains predominantly monthly statistics from administrative data which are therefore subject to national legislation which evolve through time. Consequently registered unemployment data are not comparable across countries. The number of registered unemployed persons and registered unemployment rates are presented because they are monthly and quickly available after their reference period. Job vacancies data provides estimates of the number of unfilled job vacancies across national economies.

The *Hourly Earnings* topic provides monthly and quarterly data on employees' earnings series. It includes earnings series in manufacturing and for the private economic sector. Mostly, the sources of the data are business surveys covering different economic sectors, but in some cases, administrative data are also used.

Unit Labor Costs measure the average cost of labor per unit of output. They are calculated as the ratio of total labor costs to real output. The OECD System of Unit Labor Cost and Related Indicators, which is part of the MEI database, produces annual and quarterly unit labor cost measures (productivity, labor compensation per unit labor input) according to a specific methodology to ensure data are comparable across OECD member countries.

The *Prices* topic contains predominantly monthly statistics covering consumer price and producer price indices. The data available are chosen as the most relevant prices statistics for which comparable data across countries is

available. In all cases, effort has been made to ensure that the data are internationally comparable across all countries presented and that all the subjects have good historical time-series' data to aid with analysis.

The *OECD Composite Leading Indicators (CLI)* topic includes CLIs calculated for 33 OECD countries (Iceland is not included), 6 nonmember economies, and 8 zone aggregates. A country CLI comprises a set of component series selected from a wide range of key short-term economic indicators mainly covered in the MEI database. CLIs, reference series data, and standardized business and consumer confidence indicators are presented in various forms.

The *Quarterly National Accounts* topic provides comparable macroeconomic data for countries on a quarterly basis. Quarterly national accounts feed directly into OECD's modelling, forecasting and analytical work and are widely used by outside researchers for the same purpose. Subjects included in the MEI database include GDP by type of expenditure and the GDP Price Deflator.

The *MEI Original Release Data and Revisions* database provides access to time series data for 21 key economic variables as originally published in each monthly edition of the MEI from February 1999 onwards. This real-time database enables economists to perform real-time data analysis of econometric models and statisticians to study the magnitude and direction of subsequent revisions to published statistics. Subjects included are the following: GDP, Total and Expenditure Components; Index of Industrial Production; Production in Construction; Composite Leading Indicators; Retail Trade Volume; Consumer Price Index; Harmonized Unemployment Rates; Employment; Hourly Earnings in Manufacturing; Monetary Aggregates – Broad Money; International Trade in Goods; Balance of Payments – Current Account Balance.

Cross-References

- ▶ Consumer Price Index
- ▶ Economic and Social Indicators
- ▶ Economic Development
- ▶ Economic Growth
- ▶ Gross Hourly Earnings of Skilled Workers
- ▶ Gross National Product (GNP)
- ▶ Inflation, Public Concern with
- ▶ Unemployment

References

MEI Sources and Definitions – http://stats.oecd.org/mei/default.asp?lang=e
OECD Data Dissemination Tool, *OECD.Stat Extracts* – http://stats.oecd.org/Index.aspx
OECD iLibrary, MEI Publication – http://www.oecd-ilibrary.org/
OECD Statistics Directorate, Home Page – http://www.oecd.org/std/

OES

- ▶ Oxford Elbow Score

Offense Definitions' Impact on Criminal Justice Data Quality

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Definition

Data recorded in official crime and criminal justice statistics strongly depend on the legal system. This makes interpretation of official crime and criminal justice data a very complex task, especially when it comes to international comparisons. Offense definitions have an especially strong impact on the international comparability of criminal justice data. In national statistics they will necessarily depend on offenses defined in criminal law. Thus, comparing categories from national statistics bearing the same, yet

translated, offense names is like comparing apples with oranges disguised as apples: *Theft* is not *vol* is not *Diebstahl* is not *kradziez* is not *hurto*, and if you compare different legal systems that all use the English language, *theft* is not even always *theft*. This makes it necessary to base any international comparisons on data from international criminal justice surveys. But it can be shown that even if relying on these surveys, many differences remain which make comparisons still very problematic. International ▶ victimization and self-reported delinquency surveys are therefore the best sources for international comparison of actual crime levels.

Description

Obviously, crime-related issues (like ▶ victimization and ▶ fear of crime) influence ▶ quality of life, even if these effects are in general rather weak and should not be overestimated (Michalos & Zumbo, 2000). The intensity of effects depends on the type of crime in question (Hanson, Sawyer, Begle & Hubel, 2010).

One way to ▶ estimate actual crime levels for different offenses is by looking into the official crime and criminal justice statistics. These statistics do not come close to the "true picture" of crime in a country: Even police statistics are mainly statistics on police work and workload and do not mirror the "reality" of crime in a given area (Harrendorf, 2011, pp. 126–128). Problems even multiply if we want to compare criminal justice data between countries.

International Comparability of Crime and Criminal Justice Data

We always need to keep in mind that results presented in crime and criminal justice statistics are influenced by substantial, legal, and statistical factors (Aebi, 2008; von Hofer, 2000):

1. *Substantial factors*: Recorded crimes are just a small fraction of all crimes occurring in a country, and there is no fixed relation between the dark figure of crime and those crimes that have been recorded by the police (see ▶ Crime Estimates). The relation depends on the number of victims or witnesses who, after realizing that a crime happened, decide to report it to the police. It also depends on the efficiency of police work, especially for those offenses which are victimless or for which the victim is not interested in making a report.
2. *Legal factors*: The work of the police, the prosecuting authority, and the criminal courts is ruled by criminal law. Statistical categories will therefore necessarily depend on the legal definitions of the different crimes. They will also depend on criminal procedure law and the practical functioning of the criminal justice system.
3. *Statistical factors*: The data recorded in crime and criminal justice statistics are also influenced by rules of statistical recording. For example, in some countries police statistics are input statistics, that is, recording a crime the moment it comes to the attention of the police. In other countries crimes are recorded when the investigation is completed (output statistics). It has been shown that the use of input vs. output statistics can explain a great deal of variance in criminal justice statistics (Aebi, 2008).

Therefore, it is not possible to simply look into the different national statistics and compare categories which bear the same, yet translated, name (Harrendorf, 2012). It is instead necessary to rely on international survey data (cf. Lewis, 2012). International criminal justice surveys like the United Nations Crime Trends Survey (UN CTS) or the European Sourcebook of Crime and Criminal Justice Statistics (ESB) try to foster comparability as far as possible and make the remaining differences visible. Ideally, they collect their data via a standardized questionnaire sent out to a network of correspondents (i.e., experts for national crime and criminal justice data) in the different responding countries, followed by a thorough data validation process (detailed on ESB methodology Harrendorf, 2012; Jehle & Harrendorf, 2010).

But even ambitious endeavors cannot lead to full comparability of crime and criminal justice data across the world, since the influence of the three factors discussed above cannot be fully

eliminated in secondary data analysis. According to the fourth edition of the ESB (Aebi et al., 2010), for example, the European rates per 100,000 population for theft in 2006 range from 87 in Albania to 6,323 in Sweden (mean: 2,008; median: 1,697). Though these differences can be explained at least partially with the metadata collected in the survey, there is no obvious connection between the rates and the "reality" of crime in a given country. Users of international crime and criminal justice statistics are therefore advised rather to compare trends over years than rates per 100,000 population (Aebi et al., 2010, p. 24; Tavares, Thomas, & Bulut, 2012, p. 15), with one possible exception for intentional homicide (Geneva Declaration Secretariat, 2011; Malby, 2010; UNODC 2011; also see below).

Offense Definitions in International Crime and Criminal Justice Surveys

The most important way to enhance comparability is by using a standard definition for each offense, that is, a definition for this offense as it is understood for the purpose of the survey. In the following, the way standard definitions are used in the ESB will be described. However, the data collection undertaken at EuroStat follows the ESB concept (Tavares et al., 2012, p. 15), and the UN CTS also uses standard definitions. In the ESB the standard definition is accompanied by a list of items that should, if possible, be included in the data and a list of items to be excluded. These include and exclude lists are meant to address cases of doubt for which it might not be clear whether the described forms of behavior can still be seen to fulfill the standard definition. Instead of sticking to their own national concepts, experts are required to provide data that are in accordance with the standard definitions and to follow all the include and exclude rules. If a rule cannot be followed, correspondents will note this in the questionnaire. How far each country was able to follow the given rules is documented in detail in the ESB (Aebi et al., 2010, pp. 341–375).

For example, for intentional homicide, the ESB standard definition is *intentional killing of a person*, and correspondents were required to include *assault leading to death*, *euthanasia*, *infanticide*, and *attempts*, but to exclude *assistance with suicide*; for robbery, it is *stealing from a person with force or threat of force*, including *muggings* (*bag-snatchings*), *theft immediately followed by force or threat of force used to keep hold of the stolen goods*, and *attempts*, but excluding *pickpocketing*, *extortion*, and *blackmailing*. In total, the fourth edition of the ESB featured 27 offense groups and subgroups on police level and 21 on the other levels of the criminal justice process, of which 18 had a separate standard definition. For a full list of definitions, see Harrendorf (2012, pp. 29–33), Aebi et al. (2010, pp. 347–375).

Quality of the Definitions Used and Data Comparability Achieved

Users of international crime statistics must be especially cautious when comparing total crime rates: A term like "total criminal offenses recorded by the police" is a black box with respect to the offenses covered therein (Harrendorf, 2011). This is due to the fact that the borderline between criminal and noncriminal behavior is drawn somewhat differently in each country. And even for the offenses considered criminal, it is not necessarily clear that all of these are included in police statistics, especially for petty offenses. Therefore, the total number of offenses recorded by the police is (if put into relation to the number of police officers in a given country) perhaps a measure of its workload and performance (see Harrendorf & Smit, 2010), but it is not at all a measure of crime.

Theoretically, it can be expected that comparability is best for severe offenses with a very simple and convergent definition. The most prominent and perhaps only offense to fulfill both prerequisites is intentional homicide. Although differences remain, they do not seem to affect the "core" of the offense, making homicide the offense that is by far the easiest to be compared worldwide (see, inter alia, Geneva Declaration Secretariat, 2011; Malby, 2010;

UNODC 2011). Other severe offenses are typically much less convergent in definition (take, e.g., rape or robbery), while less severe and especially petty offenses will not always be handled fully inside criminal justice but be diverted out of the system at the very beginning of the criminal justice process or at any time later. The extent to which and the way this happens differ significantly from country to country (cf. Elsner, Smit, & Zila, 2008; Wade et al., 2008) and do affect not only the quantity of recorded offenses but also the quality (e.g., if theft offenses under a certain minimum value are not considered criminal, as in some Central and Eastern European jurisdictions, like in Poland).

Harrendorf (2012) tested the quality of the offense definitions used in the fourth edition ESB (Aebi et al., 2010). In order to do so, he used three different measures:

1. **Overall conformity** with the definitions, that is, the rate (in %) of countries which were able to follow a definition fully *and* provide data for it. A definition was considered to have been followed fully if a correspondent included in the data all the items on the include list and excluded all items on the exclude list. This was done differentiated for the police and convictions level.
2. **Item conformity**, that is, the rate (in %) of countries that were able to follow a single include or exclude rule among those countries that provided data for the respective offense. Mean and median item conformity rates were also calculated for each definition. *Example*: A mean item conformity rate of 82 % for homicide on police level means that on average 82 % of all countries that provided data were able to follow a single rule of the homicide definition.
3. **Variation** of data across countries: As already explained, there is huge variation in the rates per 100,000 population produced in any endeavor to measure crime in international comparison. Therefore, it is impossible to assess the quality of a definition just by the diversity of results produced. Harrendorf (2012, p. 45f.) was now able to show that for a given group of countries in a given year, the relation between the standard deviation and the mean of rates per 100,000 population for different offense groups can be approximated by a proportional function. Thus, the variation coefficient (i.e., the standard deviation divided by the mean) can be expected to be approximately constant across all offense groups. If the variation coefficient for a certain offense group differs significantly from the median variation coefficient for all offense groups together, this may therefore also indicate a problem with the definition.

The most important results are summarized in Table 1. For more detailed information, please refer to Harrendorf (2012). Overall results show that the best standardization could be achieved for robbery, theft total, and drug offenses total. These offenses show very good conformity rates and a variation coefficient below or not too far above the median (offenses, 1.090; suspects, 1.101; convictions, 1.073). While two of these offenses are "traditional" ones, drug offenses have been subject to several international, often worldwide, harmonization initiatives (especially via the UN drug conventions; see Harrendorf, 2012 with additional references).

The variation coefficients generally show what could already be expected: There is very strong variance in the data. But there are three offenses that show a variation coefficient that is clearly higher than that of the other offenses: traffic offenses, computer offenses, and money laundering.

For traffic offenses, it is known that in some countries even minor traffic offenses (like parking offenses) are (formally) considered criminal. While the ESB intends to collect data only on the more severe traffic offenses (like driving under the influence), this could obviously not be achieved until so far. More striking are the results for computer offenses and money laundering, both of which have been subject to EU-wide harmonization activities (see Harrendorf, 2012 with additional references). However, it has got to be noted for computer offenses that this is a very broad category (for the definition, see Harrendorf, 2012, p. 31f.). The offenses included will not

Offense Definitions' Impact on Criminal Justice Data Quality, Table 1 Quality of offense definitions used in the fourth Ed. ESB, based on three indicators (Aebi et al., 2010; Harrendorf, 2012)

	Overall conformity		Item conformity		Variation coefficient		
Offense group	Police-recorded offenses	Convictions	Median	Mean	Police-recorded offenses	Police-recorded suspects	Convictions
Total crime	38.9 %	44.4 %	89.9 %	87.0 %	0.730	0.884	1.126
Traffic offenses	. . .	. . .	. . .	. . .	2.015	1.979	2.470
Homicide total	36.1 %	33.3 %	82.1 %	82.4 %	0.803	0.644	1.102
Homicide completed	. . .	. . .	. . .	. . .	0.900	0.839	1.161
Assault	19.4 %	19.4 %	88.2 %	85.0 %	1.390	1.160	0.755
Aggravated assault	36.1 %	44.4 %	93.8 %	90.1 %	1.383	1.602	1.073
Rape	41.7 %	47.2 %	89.9 %	89.4 %	1.079	0.991	0.722
Sexual assault	16.7 %	22.2 %	84.2 %	84.2 %	1.446	1.096	1.341
Sexual abuse of minors	36.1 %	25.0 %	92.6 %	90.0 %	1.143	1.101	0.800
Robbery	77.8 %	63.9 %	94.3 %	95.1 %	0.835	1.533	0.703
Theft total	63.9 %	50.0 %	94.2 %	93.1 %	0.762	0.691	0.698
Theft of motor vehicles	38.9 %	13.9 %	86.0 %	80.5 %	0.878	1.264	0.869
Burglary	30.6 %	16.7 %	71.1 %	77.0 %	0.809	0.768	0.556
Domestic burglary	41.7 %	5.6 %	84.9 %	86.4 %	0.797	0.553	0.820
Fraud	27.8 %	22.2 %	85.3 %	81.0 %	1.173	1.227	1.064
Computer offenses	30.6 %	30.6 %	100.0 %	92.2 %	2.198	2.859	2.752
Money laundering	52.8 %	44.4 %	89.7 %	90.0 %	2.431	3.198	1.627
Corruption	25.0 %	36.1 %	89.8 %	89.4 %	1.602	1.243	1.598
Drug offenses	50.0 %	47.2 %	100.0 %	93.5 %	1.090	1.087	0.988
Drug trafficking	. . .	. . .	. . .	. . .	1.007	0.783	1.204
Aggravated drug trafficking	. . .	. . .	. . .	. . .	1.517	1.114	1.110

necessarily only be the ones that have been subject to harmonization. For money laundering on the other hand, only the variation coefficients (especially on police level) look problematic, while the conformity rates are good. For an explanation, one should consider that money laundering is an offense with a relatively wide definition which on the other hand due to its connection to organized crime in many countries offers the police and prosecution service relatively wide competences, like access to special investigative measures. Therefore, money laundering in some countries may function as some kind of "proxy offense" on police level, which will usually be replaced by a charge for a more severe offense later on (Harrendorf, 2012, p. 49).

If we now turn our attention to the conformity rates, the first obvious result is that the item conformity rates are much higher than the overall conformity rates, but that is trivial (see the definition of these rates). Apart from that, low conformity rates do not necessarily mean that a definition is weak and needs improvement (Harrendorf, 2012). It may also indicate that there is a great diversity of legal concepts for an offense. This is, for example, known for assault/bodily injury, for which in some jurisdictions actual injury is necessary, while in other countries slapping and other forms of behavior that only cause ▶ pain are sufficient, and in a third group of countries even threats of ▶ violence are included in the legal concept. These differences cannot be overcome just by the use of a standard definition.

A relatively low overall conformity rate does also not necessarily mean that comparability is low. One has also got to look at the items that posed the problem: Some items on the include and exclude lists clearly affect the "core" of an offense (i.e., not following them will lead to

clearly different results), but some items also refer to types of behavior that occur quite seldom in practice and are therefore situated at the fringes of a definition. For example, bearing in mind what has been said above about the very good international comparability of homicide data, the low overall conformity and item conformity rates need explanation. As already mentioned above, the offense is defined as *intentional killing of a person* with the rules to include *assault leading to death*, *euthanasia*, *infanticide*, and *attempts*, but to exclude *assistance with suicide*. All these rules, except for the rule to include attempts, do not affect the core of the offense, and the item conformity rate for the inclusion of attempts on police level is 94 % (Harrendorf, 2012).

For sexual assault, on the other hand, the low conformity rates are to a large extent due to noncompliance with two important rules which affect the "core" of the offense (*exclude acts committed without violence and acts committed against persons under the age of consent*): Sexual assault in the ESB is defined as a violent sexual offense, close to rape, but without penetration. Sexual abuse of minors is a separate, third category of sexual offenses in the ESB. Less intense sexual offenses are not collected at all. The results show now that many countries are not able to follow such a restrictive definition with respect to sexual assault but report data on a broader concept instead.

Finally, the low overall conformity rates for burglary, domestic burglary, and theft of a motor vehicle on convictions level are due to the fact that these offenses in many countries do not constitute separate legal concepts: Conviction statistics are even more dependent on criminal law than police statistics and data on these concepts are therefore often simply unavailable.

Conclusion

Standard offense definitions are important for any approach to compare official crime and criminal justice statistics. The evaluation of data and metadata recorded for the fourth edition ESB shows that this concept works well in general, but there are areas that pose problems, often due to very diverse legal concepts to be found across Europe. The problems even intensify when changing to a worldwide view (cf. Harrendorf, Heiskanen & Malby, 2010). The differences cannot be fully eliminated in secondary data analysis. Therefore, international ▶ victimization and self-reported delinquency surveys should rather be used for international comparison of actual crime levels than criminal justice data. If one relies to official crime and criminal justice data for international comparison, users are advised not to compare total crime rates but to select individual offenses. They should rely on the most comparable ones, like homicide, robbery, theft, or drug offenses.

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OHS

▶ Oxford Hip Score

OISS

▶ Oxford Shoulder Instability Score

OKS

▶ Oxford Knee Score

Old Age, Quality of Life

▶ Measuring Quality of Life of Older Adults

Older Adults in Rural Areas

▶ Rural Seniors

Older Chileans, Quality of Life

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Definition

A good ▶ quality of life is defined in terms of two interrelated dimensions: satisfactory living conditions and high degree of ▶ subjective well-being (Palomba, 2003).

Satisfactory living conditions include the basic dimensions of ▶ health and physical functioning and of economic conditions. This concept refers to adequate objective circumstances and to perceptions regarding these circumstances (Lawton, 1991).

Well-being is the subjective perception of feeling well, of feeling satisfied. It includes two basic dimensions of well-being: ▶ satisfaction with life and psychosocial well-being. The first is a quite simple cognitive judgment, regarding the individual perceptions of life satisfaction. The other dimension consists in a balance between positive and negative effects; it refers to the emotional response of adapting to the environment (Bradburn, 1969). The negative feelings have been seen by previous authors as indicators of emotional ▶ distress (Dowell & Newell, 1996).

Description

According to the literature, there are certain factors that are related to the quality of life of older people. The social conditions of life – health and functional capacity and economic circumstances – are key predictors of the quality of life of older people. However, there are other social and individual factors that are also important. Among the factors directly related to functional capacity are nutrition and carrying out physical activities (Rowe & Kahn, 1997).

Numerous studies have shown that well-being is associated to the quality of living conditions, economic status, and health. Income has a positive effect on well-being (Diener & Ryan, 2009), but the strength of this association decreases as income rises. The perception of having sufficient income is more important than the amount (Herrera et al., 2011). There is also vast research that accounts for the positive relationship between health and well-being (Diener, 1994). Fernández Ballesteros et al. (2011), in a study conducted in several Latin American countries (Brazil, Chile, Colombia, Cuba, Ecuador, Mexico, and Uruguay) and Europe (Greece, Spain, and Portugal), conclude that good health, being able to take care of yourself, and having good social relationships are key to the elderly themselves associated with a successful old age and good living standards.

The regular practice of moderate physical activity, such as daily regimen of walks, is a habit that is associated to satisfactory aging. Continued physical activity affects multiple physical capabilities and offsets physical losses due to aging (Hogan, 2005). Other factors mentioned as protecting the capacity for physical functioning, as well for increasing subjective well-being, are what Rowe and Kahn (1997) call "engagement with life." These are carrying out selective activities, the existence of quality social relations, and having a ▶ support network (Wilhelmson et al., 2005). A number of studies have demonstrated positive associations between high levels of social relations (▶ social cohesion or ▶ solidarity) and improved conditions of health.

As Rowe and Kahn (1997) state, the successful aging is also associated with carrying out selective activities, as hobbies, vacations, going out if home, and so on. Empirical studies in Chile have shown that not going outside the home daily and not reading newspapers, magazines, or books are meaningful predictors for losing the functional capacity and for having lower well-being (Barros et al., 2004, 2006; Herrera, 2008).

The availability of ▶ social support fulfills expressive, affective, and instrumental functions. The affective and expressive functions stem from the fact that feeling attached to others through affective links increases ▶ self-esteem, provides a feeling of accomplishment, and makes it possible to express negative feelings. "Instrumental functions" refer to the fact that support is a resource that facilitates the carrying out daily activities and is useful in the face of whatever may occur to the individual (Grundy, 2005). Considering social relations solely from the perspective of the availability of support seems insufficient for explaining the impact of these social relations on well-being. One should also assess subjective perceptions of the quality of relations – especially family relations, looking at the way that family climate is perceived, in terms of unity and ▶ trust in mutual aid, or in negative terms of being abused, left aside, and misunderstood (Lowenstein & Ogg, 2003). The importance of such negative conflicting or disturbing relations lies in fact that they can have an even greater impact over psychosocial well-being than positive supportive relations (Newsom et al., 2005).

Among the individual characteristics, education is mentioned as one of the most important protective factor of good physical and cognitive functioning, and it has been indirectly shown to have an effect on the quality of life of individuals (Fernández Ballesteros, 2001). Education influences the access to knowledge, life habits, and better income opportunities. The acquisition of high level of education provides a cumulative advantage that increases with the passage of time. Educational levels are also related to what Baltes (1993) calls the "pragmatic knowledge of life" or the way individuals deal with the

situations of daily life, in which persons with higher levels of education will be more able to adapt themselves to changing situations (Bandura, 1997; Lawton, 1991). To the above is added the fact that a higher level of education of adults offers them more tools to be mentors, advisors, to offer emotional and financial support to younger generations, and thus favors the linkage and quality of those relations. Other protective factors noted by Rowe and Kahn are the perception of self- efficacy and the ability to face situations. Lawton (1991) states that it is the ability to adapt oneself to changing circumstances that permits individuals to experience well-being. The perception of ▶ self-efficacy reflects belief in the ability to control the changing demands of the environment through adaptive actions (Bandura, 1997). This sense is a valuable personal resource in human ▶ adaptation, since those who possess it perceive changes that affect them as challenges which result in actions. On the other hand, those who have low self-efficacy perceive changes as threats, thus creating apprehension, apathy, or despair.

Evidence About the Predictors of Quality of Life of Older Chileans

Here are some results of a study conducted in Chile in 2007, analyzed with multivariate regression models showing how the predictors of quality of life mentioned above behaved. These results are published in Herrera et al. (2011). The data source is the First National Survey of the Quality of Life in Old Age carried out in 2007 by the Department of Sociology of the Pontificia Universidad Católica de Chile and Caja de Compensación Los Andes. The study is representative of 75 % of the population 60 years of age and older residing in private homes.

We developed and contrasted a hypothetical conceptual model in regard to protective factors associated with good quality of life during old age.

The quality of life was operationalized as perception of well-being, which was studied by inquiring about subjective judgments of general satisfaction with life in the last 6 months (1 = very satisfied or satisfied; 0 = not very satisfied or not satisfied) and by means of a ▶ distress index. The latter combines five self-referred questions: "During the last 6 months have you felt: tranquil, depressed, lonely, energetic, nervously?" The response are from 1 (quite often), 2 (sometimes), to 3 (almost never). A principal components analysis confirmed unidimensionality with similar weights, so, after inverting the two positive items, a simple average is calculated.

Almost all of the variables hypothesized as predictive factors effectively had direct associations with the subjective measures of well-being, except education. Education is correlated with various other predictive factors such as income, physical functioning, self-efficacy, and carrying out selective activities. So, having higher education will be related to quality of life in an indirect way.

As expected, life conditions (perception of income and physical functioning) were strongly associated to the perception of well-being of elderly persons, but by themselves explain little. It is also important to emphasize that when we controlled the other predictive variables by income and physical functioning, almost all the variables maintained their importance.

The weights of the other predictive factors were distinct, depending upon how well-being was measured, as satisfaction with life or as distress. As predicted, having good social relations and having an active aging were associated with better well-being. Having good family relations was significant both to satisfaction and distress, but especially for the latter. Not having unsatisfactory social relations was significant only to satisfaction with life. Having social support was related to lower distress, but not with greater satisfaction. People with more social support were not necessary happier, in part because this could threaten their sense of independence. However, the distress reduced if the individual felt that he or she could obtain support in case of difficulties.

The selected activity of reading newspapers, books, or magazines more than once a week was associated to satisfaction and low distress, even when it was controlled by income and physical functioning.

In regard to the control variables, one should note the following: there was no direct relation between gender and satisfaction; but women experienced more distress. At the bivariate level, we have not found associations between age and well-being, but we did find it when we added other variables to the model. Older people had a higher probability of reporting satisfaction with life and less distress. We could not observe this association at the bivariate level, because age was negatively associated with several variables that were positively associated to well-being, as physical activity, going outside home, self-efficacy, and physical functioning.

In summary,

- The study confirmed that life conditions are indeed related to the level of well-being in old age, but the variations in this measure are better explained by incorporating other factors such as self-efficacy and the quality of family relations.
- The study evidenced the importance of physical activity for maintaining good functional capacity, reiterating what has been found in almost all other studies of this type.
- Carrying out activities such as going out of the home and reading are more associated to maintaining good physical functioning than for feeling satisfied or for possessing low distress – although one should note that the direction of the relation may be in the sense that individuals who have greater functional capacity are those who can maintain a more active lifestyle.
- The quality of social relations has disparate associations, depending upon how this is measured and what quality of life dimension one is measuring. In this study we used three indicators: potential availability of social support, a subjective assessment of the quality of family functioning, and the existence of unsatisfactory relations with the children and persons with whom elderly adults live. The latter is one of the most important variable associated both to physical functioning as well as the perception of satisfaction in the study of Newsom et al. (2005). Variations in distress are, however, better explained by the quality of family relations and by the availability of social support. The perception that one could have support in case of difficulties is more important to reduce the sense of distress, especially when there is more probability to experience functional dependence.
- Another of the most notable outcomes of the study was to show the importance of self-efficacy – especially on life satisfaction. Self-efficacy is an individual characteristic that is accumulated throughout life, which is very much related to the educational level of individuals.

Cross-References

- ▶ Affect Balance Scale
- ▶ Affective Component of Happiness
- ▶ Elderly Activity and Engagement with Life
- ▶ Emotional Well-Being
- ▶ Family Conflicts
- ▶ Family Life Quality, Measures of
- ▶ Family Support
- ▶ Happiness of Older People in Italy and Cuba
- ▶ Health and Well-Being of Older Europeans
- ▶ Negative Affect and Daily Stressors in Older Adults
- ▶ Quality of Life for Older Adults, an Integrated Conceptual Model
- ▶ Subjective Health and Subjective Well-Being

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Older Couples

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Synonyms

Elderly couples; Late-life marriage

Definition

In terms of research on older couples and well-being, most studies have focused on traditional heterosexual marriages of around 40 years duration. Consensus over what constitutes a marriage relationship and whether the key factors relating to older couples apply to people in nontraditional but long-lasting relationships (i.e., de facto or consensual unions) or in non-heterosexual relationships are important considerations for future research.

Description

The complex nature of late-life husband and wife relationships is increasingly recognized as an important factor contributing to healthy aging and quality of life (Walker & Luszcz, 2010). The long-term marriage relationship is highly relevant in terms of the ▶ health and social, emotional, financial, and practical needs of older people, yet the dynamics of this relationship remain poorly understood (Ray, 2000). Marriage provides spouses their primary source of ▶ social support and economic stability, which in turn have been shown to be associated with physical ▶ health (Stimpson & Peek, 2005). Research on older couples has traditionally depicted a positive view of late-life marriage, whereby older couples have been found to be better at managing conflict and demonstrate more positive interactions

compared to younger couples (Carstensen, Graff, Levenson, & Gottman, 1996; Gottman & Notarius, 2000). The literature on older couples also tends to be dominated by research which emphasizes the caregiving dimension of one spouse, particularly in terms of dementia ▶ caregiver burden [e.g., Torti, Gwyther, Reed, Friedman, & Schulman, 2004].

Research on older couples is increasingly focusing on the notion that individual development and well-being influences and is influenced by "close others" (notably the spouse) and that individual outcomes might be shaped by sociocontextual factors such as the marital relationship [for review, see (Hoppmann & Gerstorf, 2009)]. That is, spousal interrelations have the potential to "coproduce important aging outcomes concerning cognitive functioning, well-being and health" (Hoppmann & Gerstorf, 2009, p. 449). Socioemotional selectivity theory (Carstensen, 1993) offers a potential rationale for the role that spousal interrelations may have on quality of life. This theory suggests that the marriage relationship becomes the most salient in late life, a time which is characterized by a conscious narrowing of social networks, with close interpersonal relationships such as those with a spouse becoming most relevant in terms of support and satisfaction (Lang, 2001). It thus follows that the socioemotional tone within the marriage may therefore be important in affecting ▶ health and quality of life.

Until recently, the considerable body of research on late-life spousal interrelations and their implications for well-being has been cross-sectional. This research has found strong evidence for similarities among couples in levels of well-being and depression even after controlling for ▶ health and sociodemographic covariates (Bookwala & Schulz, 1996; Tower & Kasl, 1995). In terms of an explanation for the concordance of depression among older spouses, several studies have posited the theory of "emotional or ▶ affective contagion." Such contagion may arise when people interact in a close relationship, such as marriage, are interdependent, and, to a certain extent, control each other's outcomes, thus leading at times to a convergence in emotional patterns such as negative ▶ mood (Bookwala & Schulz, 1996; Dufouil & Alperovitch, 2000; Goodman & Shippy, 2002; Kivela, Luukinen, Viramo, & Koski, 1998; Stimpson, Peek, & Markides, 2006; Tower & Kasl, 1995, 1996a). Evidence from studies of midlife spouses has shown transmission of ▶ mood in terms of the day-to-day flow of affect between spouses, and this shows a gender-specific pattern (Holahan et al., 2007). In particular, wives are often more responsive to their husbands' negative emotional states than vice versa (Bolger, Delongis, Kessler, & Wethington, 1989; Larson & Almeida, 1999). Husbands have thus been described as "senders" of negative emotion and wives as "receivers" (Larson & Almeida, 1999). Some authors have suggested that the mechanism underpinning these gender differences may reflect a greater focus on autonomy for men and on interpersonal relationships for women (Quirouette & Gold, 1992). That is, wives may be particularly vulnerable to the harmful effects of marital disharmony or husbands' poor mental health status, unlike husbands where independence from wives (or self-sufficiency) might be protective. When the husband does draw on his wife for emotional support, however, there is evidence that he may be particularly susceptible to poor mental health (Tower & Kasl, 1996b).

Empirical research among late-life couples seeks to more fully determine how well-being of the marital partner influences and is influenced by the other partner. Such studies are applying a dyadic approach using longitudinal data from both members of a couple and take into account the interdependence of spouses' experiences in terms of data collection and analysis by examining both individual-level and couple-level variables. Recent use of dynamic dual change score models (McArdle & Hamagami, 2001) can reveal the dynamics (changes) for both the partners *and* the couple, within or across domains of health over time. Such research has found spousal interrelations across several domains, including changes in social activities (Hoppmann, Gerstorf, & Luszcz, 2008), cognition (Gruber-Baldini, Schaie, & Willis, 1995; Gerstorf, Hoppmann, Anstey &

Luszcz, 2009), and subjective well-being (including negative as well as positive emotional states) (Tower & Kasl, 1996b; Walker, Luszcz, Gerstorf, & Hoppmann, 2010; Gerstorf, Hoppmann, Kadlec & McArdle, 2009). For example, Walker et al. (2010) examined spousal interrelations in late-life subjective well-being (SWB), as indexed by morale. This study examined whether transmission in ▶ mood, as has been described in midlife couples, can also be found in long-term longitudinal data from older couples, taking into account possible confounds including differences in age, ▶ education, health, and marital characteristics (number of children and length of marriage). This study found that time-lagged spousal dynamics did indeed exist in that while SWB generally declined over time, husbands whose wives reported higher initial SWB showed relatively shallower decline over time relative to husbands whose wives reported lower initial SWB levels. The reverse pattern of influence was not apparent for husbands' levels of SWB influencing wives. These findings illustrate empirically that close relationships shape individual developmental outcomes and suggest that spouses play an important role in determining well-being. The directionality of findings is interesting in that unlike for research with midlife couples (where husbands are senders, and wives receivers), in terms of positive subjective well-being (in this case morale), wives levels dictate subsequent levels in husbands. One possible reason for different spousal dynamics in old age compared to midlife may be that husbands are particularly affected by the kin-keeping and socially active roles of their wives in times when their own work-related social networks and roles may be diminished because of retirement. Another factor may be that, in line with theories of emotion regulation in late life (Carstensen, 1993), husbands may feel closer to their wives post-retirement and thereby be more susceptible to the often emotionally more expressive behaviors of wives (Carstensen, Graff, Levenson, & Gottman, 1996). It may also be that the directionality of spousal interrelations in SWB transmission (i.e., husbands to wives or vice versa) might be different for negative (i.e., depression) versus positive (i.e., morale) markers. It is for future research to examine these and other possible factors in greater detail.

Finally, it is important to note that the majority of research on older couples is limited in its generalizability being conducted predominantly among heterosexual, Anglo samples in first-time traditional marriages. The extent to which the dynamics described above apply to different types of older couples (culturally and linguistically diverse, same-sex relationships, second marriages) requires further study.

Cross-References

- ▶ Affective Contagion
- ▶ Caregiver Burden
- ▶ Education
- ▶ Health
- ▶ Mood
- ▶ Social Support
- ▶ Subjective Well-Being (SWB)

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Older People in Rural Areas

▶ Rural Seniors

Oldest Old, Life Satisfaction, and Health

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Synonyms

Fourth age and well-being; Survey of Health Ageing and Retirement in Europe (SHARE)

Definition

Several definitions already exist for the "oldest old" or "fourth age," which comprises the most elderly of the older generation. One population-based possibility is to define the transition between the third and fourth age as the chronological age at which 50 % of the birth cohort is no longer alive, which in developed countries, takes place at around 75 years of age (Baltes & Smith, 2003). Being older than 85 years of age is also often used as a delineation.

Description

In the industrialized world, the oldest old are gaining increasing attention merely because of this population group's rapid growth. In fact, the progressive demographic aging of the older population may in itself be one of the most remarkable demographic developments, one that, because of falling fertility rates and lengthening life expectancies, is expected to continue indefinitely (United Nations, 2004). About 4.1 % of the European population is currently aged 80 and above – with annual growth rates worldwide averaging 3.4 % (United Nations, 2004) – and this number is projected to rise to 10.1 % by 2050. Based on these projections, by 2050, there will be 113 million oldest old in more developed countries and 265 million in less developed countries.

The well-being of this population group has received considerable attention in gerontological and medical research; however, the findings on the relationship between ▶ life satisfaction and age across the life cycle are inconsistent (see Table 1 for an overview). Whereas some studies observe a U-shaped relation (e.g., Clark, 2007; Easterlin, 2006; Frey & Stutzer, 2002),

Oldest Old, Life Satisfaction, and Health, Table 1 Recent research on life satisfaction and aging

Study	Data	Age groups	Results
Blanchflower and Oswald (2008)	US GSS (1972–2006)/ Eurobarometers (1976–2002)	All	U-shaped relation between life satisfaction and age
Chen (2001)	Survey of health and living status of the elderly in Taiwan (1989, 1993)	60+	Life satisfaction decreases with old age
Clark (2007)	BHPS (1991–2004)	16–64	U-shaped relation between life satisfaction and age
Deaton (2007)	World gallup poll (2006)	All	Age has an inconsistent relation with happiness (analysis does not, however, include covariates)
Easterlin (2006)			
Fischer (2009)	World value survey (1997–2001)	All	Hyperbolic relation between life satisfaction and age; decline after 83 years
Frey and Stutzer (2002)			
Gwozdz and Sousa-Poza (2010)	GSOEP (1994–2006)	All	Lowest absolute levels of life satisfaction for oldest old, including cohort effects that lead to stable life satisfaction across the life span
Mroczek and Spiro (2005)	Veterans affairs normative Ageing study (1978–1999)	40–85	SWB rises in the early 60s and then declines
Schilling (2005)	GSOEP (1984–1999)	45–90	Decline in life satisfaction from 60 onwards
Van Landeghem (2012)	GSOEP (1984–2007)	All	Decrease in life satisfaction after midlife

Oldest Old, Life Satisfaction, and Health, Table 2 Recent research on life satisfaction and health among the oldest old

Study	Data	Age groups	Results
Berg et al. (2006)	OCTO-twin study (1991)	80+	Objective health measures, unlike subjective health measures, do not affect life satisfaction
Borg et al. (2006)	European study of ageing well (2001/2002)	65–89	Negative effect of subjective health on life satisfaction
Bourne et al. (2010)	Stratified random sample of 2,000 elderly men in Jamaica (2007)	60+	Life satisfaction was not correlated with the self-rated health status of elderly men in Jamaica nor was health status associated with life satisfaction
Bowling and Farquhar (1996)	Three samples of elderly people in London and Essex (1987–1990)	85+	Subjective health is a strong predictor of life satisfaction
Chen and Short (2008)	Determinants of healthy longevity in China (DHLC) survey (1998/2000)	80+	Positive effect of subjective health on life satisfaction
Gwozdz and Sousa-Poza (2010)	GSOEP (1994–2006) and share (2004)	75+	Perceived health is a strong predictor for life satisfaction but objective health is not
Inal et al. (2007)	Sample of 133 institutionalized Turkish individuals	65+	Activities that enhance health are significantly related to life satisfaction
Li (2005)	Chinese longitudinal healthy longevity survey (2000/2002)	80+	Perceived health is a strong predictor of life satisfaction
Smith et al. (2002)	Berlin aging study (1993–2000)	70+	Subjective health is a more powerful predictor of well-being than objective measures

other studies find no relationship or a hyperbolic function (Deaton, 2007; Fischer, 2009; Gwozdz & Sousa-Poza, 2010). These latter studies, as well as those that focus only on the older population group, show more consistent results: they agree that the oldest old tend to be at risk of decreased life satisfaction but set the turning point at various ages from 60 to 83 years (e.g., Chen, 2001; Mroczek & Spiro, 2005; Schilling, 2005). Older gerontological studies, on the other hand, were unable to confirm any relationship between age and life satisfaction; however, result comparability is also often hampered by differences in research design and data sets.

The body of gerontological and medical research investigating the effect of ▶ health on life satisfaction is relatively large and includes older studies and newer studies by Berg, Hassing, MCClearn and Johansson (2006); Borg, Hallberg and Blomquist (2006); Bourne, Morris and Eldemire-Shearer (2010); Bowling and Farquhar (1996); Chen and Short (2008); Inal, Subasi, Ay, and Hayran (2007); Li (2005); and Smith, Borchelt, Maier, and Jopp (2002). The most recent studies and their primary results are listed in Table 2. Overall, the findings suggest that health does affect life satisfaction, although a distinction must be made between self-rated (subjective) and measured (objective) health.

The prevalence of objective health problems is high among old people. For example, the ▶ Survey of Health, Ageing and Retirement in Europe (SHARE), which collected data on the 50+ age group in 12 countries, shows that about 40 % of the older population group experiences activity limitations because of health problems (Alcser & Borsch-Supran, 2005). Almost 50 % experience long-term health problems including ▶ arthritis, diabetes, heart diseases, hypertension, and high cholesterol, and 40 % reported two or more chronic diseases. Comparing the prevalence of health problems among the youngest old (aged 50–74 years) with those of the oldest old in ▶ Germany (SHARE), Gwozdz and Sousa-Poza (2010) find that serious health problems like heart attacks, strokes,

diabetes, arthritis, Parkinson's, and cataracts are much more likely among the oldest old: over 20 % experienced a heart attack, 20 % had cataracts, 18 % had diabetes, and 18 % suffered from arthritis.

According to the SHARE data, 40 % of the oldest old evaluate their own health subjectively as less than good, and 10 % of this population group even rates it poor (Alcser & Borsch-Supran, 2005). A comparison of self-rated health between the youngest and the oldest old again reveals statistically significant differences (Gwozdz & Sousa-Poza, 2010).

All studies except one (Bourne et al., 2010) show a strong positive association between life satisfaction and subjective health. Interestingly, however, in line with the majority of gerontological studies (e.g., Berg et al., 2006; Smith et al., 2002), objective health does not appear to play an important role. Gwozdz and Sousa-Poza (2010) identify only one noteworthy exception, that is, suffering from Parkinson's disease, an illness that often leads to severe loss of independence and decreases life satisfaction.

Discussion

In old age, health does affect life satisfaction; however, according to the majority of studies, this association is primarily attributable to subjective health and barely linked to objective health. Several explanations have been suggested for this finding:

1. Measurement of objective health: Most data sets do not account for the severity of an illness, that is, they only record the existence of a health problem, making it difficult to draw conclusions on the effects of objective health on life satisfaction.
2. ▶ Social participation: Life satisfaction is strongly influenced by social participation so objective health may only affect functional health (e.g., hearing, physical mobility) indirectly and with a time lag, which in turn influences social participation. Subjective health, in contrast, influences social participation directly.
3. Discrepancy theory: Life satisfaction is maximized when expectations and aspirations are adjusted to actual achievements (Michalos, 1979), implying a lower life satisfaction when achievements are below expectations. Moreover, "as morbidity and disability are common in late life, with health-related impairments, prospects on health and functioning are lower. A plausible life satisfaction in old age may become more dependent on other factors including changing preferences about what really matters in old age" (Berg et al., 2006, p. 262). In fact, some studies indicate that older age groups show lower discrepancies between aspirations and achievements, which goes hand in hand with the "stability despite loss paradox" (Kunzmann, Little, & Smith, 2000) that describes old people's ability to adapt to worsening (health) conditions.
4. ▶ Social comparison: Individuals compare themselves to others; for example, peers evaluate their own life satisfaction. Because the peers of older people are more likely to be other older people, the oldest old are more likely to compare themselves to other oldest old than to younger generations. Hence, a rather fit and healthy person for this age group might perceive her/his health as excellent, a phenomenon also called the "satisfaction paradox" (Walker, 2005). Indeed, research does indicate that older people tend to use downward social comparison, that is, to peers or other groups that are worse off than themselves.
5. ▶ Life expectancy: There is also evidence that happy people might live longer (e.g., Danner, Snowdown, & Friesen, 2001), which would imply that the oldest old analyzed in research might per se be happier.

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Old-Time Music

► Folk Music

Olson, Mancur

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Birth, Education, Work History, and Main Contributions

Mancur Olson (1932–1998) was a pioneer in studies of ► social indicators of well-being or ► quality of life research. He was born in Grand Forks, North Dakota, earned a BS from North Dakota Agricultural College (1954), an MA from Oxford University (1956), and a PhD from Harvard University (1963). From 1960 to 1967 he taught at Princeton University and from 1969

to 1998 at the University of Maryland in College Park.

From 1967 to 1969 he served as Deputy Assistant Secretary, US State Department of Health, Education and Welfare. These were the last 2 years that Lyndon B. Johnson was President of the United States, with his notion of a Great Society very much alive. In support of Johnson's idea, among other things, the US Department of Health, Education and Welfare produced *Toward a Social Report* in 1969 (US Department of Health, Education and Welfare,1969), largely authored by Olson. In broad strokes it defined social indicators, sketched a framework for assembling social indicators into a social report, and distinguished such reports from social accounts. Although it was a relatively small monograph, it became a workman's handbook for North American researchers in the field for several years after its appearance.

Olson was one of the Charter Members of the Public Choice Society, as was the author of this essay. Later he served a term as its President. I met him at some conference at the University of Maryland in 1972 and we became friends. At the time I was working on my *Foundations of Decision-Making* (Michalos, 1978). I had read and admired Olson's classic book (which was also his PhD dissertation) on the *Logic of Collective Action* (Olson, 1965). Because he was an active member of the steering committee of the US Social Science Research Council's Center for Coordination of Research on Social Indicators, besides our interest in formal issues of public choice, we shared an interest in the social indicators movement. As explained in Michalos, 2005, out of our shared interests and friendship, the journal ▶ *Social Indicators Research* emerged.

Among his many accomplishments, he served as President of the Eastern Economic Association and of the Southern Economic Association and as Vice-President of the American Economic Association. He held a Distinguished Fellowship at the US Institute of Peace and was an Honorary Fellow of University College, Oxford. The American Political Science Association honored him by establishing the Olson Award for the best PhD dissertation in political economy. Near the end of his obituary in *The Independent*, its author described Olson as a "most humble, personally self-effacing, anglophile, delightful, modest economist." To all those accurate descriptors, I would only add (as the evidence presented here shows) that he was a first-rate scholar and an important promoter of ▶ quality of life research.

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Omoiyari

▶ Japan, Quality of Life

Oncology

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Definition

Oncology is a branch of internal medicine that deals with etiology and therapy of tumors (neoplasms). A tumor is an abnormal swelling – an abnormal mass of cells resulting from excessive cellular multiplication – which can be benign, premalignant, or malignant. More specifically, oncology is concerned with the development, diagnosis, and treatment

(curative treatment, rehabilitation, aftercare, palliative treatment) of malignant tumors (cancer) and their prevention. One major health-care objective is to maintain and to promote the health-related ▶ quality of life in people confronted with a life-threatening disease.

Description

Oncology is the science that deals with cancer diseases. Cancer represents a heterogeneous subcategory of tumors with malignant growth. "Cancer is not just one disease, but a large group of almost 100 diseases. Its two main characteristics are uncontrolled growth of the cells in the human body and the ability of these cells to migrate from the original site and spread to distant sites. If the spread is not controlled, cancer can result in death" (Medical Dictionary, 2011). In other words, cancer is a life-threatening disease growing uncontrollably, directly invading and destroying adjacent tissue, and metastasizing to regional lymph nodes or distant body sites.

Estimations of incidence and mortality data for 25 cancers in 40 European countries in 2008 (Ferlay, Parkin, & Steliarova-Foucher, 2010) result in 3.2 million new cases and 1.7 million deaths. Worldwide, estimated data reveal about 12.7 million new cancer cases and 7.6 million deaths in 2008 (Jemal et al., 2011). Overall, cancer is a preventable disease, only 5–10 % of cancer cases proved to be genetically determined, whereas the majority (90–95 %) are supposed to be determined by environmental and life style factors (Anand et al., 2008).

Cancer has a fundamentally negative impact on the lives of patients in terms of their health-related ▶ quality of life (Boini, Briançon, Guillemin, Galan, & Hercberg, 2004). In order to better understand the severe psychological situation they are in, five phases of cancer disease or prognostic stage can be distinguished (Fawzy, 1999; McCormick & Conley, 1995): diagnosis, initial treatment, rehabilitation/recovery, recurrence and retreatment, and palliative/terminal phase. However, not every patient goes through all stages, depending on the respective severity/progression of the disease. Before actively seeking medical care, many patients are confronted with early warning signs.

Early Warning Signs

Before entering the medical system, first illness symptoms can already impair people's ▶ quality of life harshly. The American Cancer Society (2011) has identified five general signs and symptoms that might indicate a cancer disease. It is strongly recommended to see a doctor if these symptoms prevail over a long period of time and get worse. These are:

- Unexplained weight loss
- Fever
- ▶ Fatigue
- ▶ Pain
- Skin changes

Additionally eight signs and symptoms persons are suffering from might be indicants of certain cancers:

- Change in bowel habits or bladder function
- Sores that do not heal
- White patches inside the mouth or white spots on the tongue
- Unusual bleeding or discharge
- Thickening or lump in the breast or other parts of the body
- Indigestion or trouble swallowing
- Nagging cough or hoarseness

Patients differ with respect to their attitudes toward these signs and symptoms. Some people repress their physical complaints (i.e., the threat is ejected from consciousness) as long as possible, so that they do not perceive the symptoms anymore and are thus no longer aware of the danger. Others might be demoralized, fearing "the beginning of the end" and emphasizing the hopelessness of the situation, while others may break down psychologically, worrying about not to be able to cope with the horrible situation. Finally, patients may follow a realistic orientation and realize that a cancer disease may be the cause, making use of medical advice and care.

Before consulting a medical doctor, individuals often seek advice from their lay referral system, that is, they ask their family or members of their community what to do about their symptoms, or they contact paramedical suppliers. On the contrary, many cancer diseases in their early stage are symptom free. Undergoing a medical examination, blood tests might reveal telltale signs. Subsequent radiological imaging (e.g., X-ray) or biopsy may yield a positive result. The patient then enters the diagnosis phase.

Diagnosis

In the diagnosis stage, the patient is confronted with a life-threatening diagnosis which changes his or her life profoundly. From medical doctors' perspective, breaking serious news feels like dropping a bomb and is emotionally challenging. Cancer specialists are not well trained to have a look at the psychological issues; they focus on treating the cancer. Oncologists can benefit from communication guidelines that teach to adequately communicate with patients, addressing both biological and psychosocial issues in a patient-centered way (Back, Arnold, & Tulsky, 2009; Baile et al., 2000). More than 90 % of patients want to hear the diagnosis. Discussing prognostic concerns is also emotionally demanding, about 60 % of patients ask such questions. Depending on the cancer type and progression, the disease may be expected to take a:

- Curative course, which means that the patient will be definitely a cancer survivor
- Chronic course, which means that the patient will oscillate between hope (to get the disease under control) and frustration (having to cope with relapses or metastasis), trying to lead a "normal" life, if possible
- Rapid progredient/infaust/palliative course, which means that healing is no more possible

From patients' perspective, a cancer diagnosis is a life-altering diagnosis. Life will never be the same again. In many cases, this stressful life event causes a severe *shock* for patients and their relatives and often precipitates an *existential crisis*, feeling completely helpless in the face of loss, suffering, dying, and death. The patient's involvement with existential topics becomes especially more apparent in the later phases (see below). Furthermore, the sense of physical integrity, which is so self-evident for healthy people, is fundamentally shattered; the body does not function as it used to do. Cancer is a psychologically annihilating disease (Block, 1997). At the outset, the patient has no coping strategies at his or her disposal to adequately respond to this peril. A very important coping strategy proved to be problem analysis and information seeking with respect to all aspects of a given cancer disease.

Being told that one suffers from cancer creates tremendous emotional distress and has detrimental effects on the patient's ▶ emotional well-being. The threat is real, and a normal human response is **anxiety**. ▶ Anxiety is a persistent psychophysiological state characterized by a number of symptoms such as autonomic overactivity (e.g., palpitation, tremor, and other physiological responses such as nausea, diarrhea, **pain**), intrusive thoughts (e.g., worrying, thoughts of recurrence of disease, ▶ disability, sudden death) and concentration problems (feeling empty in the head, difficulties in memorizing things), emotional responses (e.g., fear of dying, tension, panic, restlessness, irritability), and excessive behaviors (e.g., withdrawal, agitation, reassurance seeking).

In principle, ▶ anxiety is adaptive because it motivates the individual to take actions and cope with the threat. Conversely, showing only little signs of ▶ anxiety can be problematic for managing the situation, and high levels of anxiety are maladaptive because the individual is disrupted from everyday functioning. In the case of excessive anxiety, cancer patients can develop an ▶ anxiety disorder. These are circumstances in which the condition of anxiety is disproportionate to the actual threat, which means that anxiety is irrational or neurotic. However, those criteria defining anxiety disorders such as phobic anxiety disorder, generalized anxiety disorder, or panic disorder are difficult to apply to cancer patients because the threat of the stressor "cancer" is

realistic. Another category, anxious adjustment disorder, also does not fully apply because the time criteria do not fit (onset within the first month after the stressful event and duration no more than 6 months).

Anxiety is common among cancer patients (Stark & House, 2000; Stark et al., 2002). When screening instruments are used, about every second, patient reported a high level suggesting an anxiety disorder. However, the prevalence rate proved to be smaller, yielding 18 % (Stark et al., 2002). Especially intrusive thoughts prevail in cancer patients which can be labeled as fear of ▶ health (Stark et al., 2004) or fear of cancer progression (Lee-Jones, Humphris, Dixon, & Hatcher, 1997; Mehnert, Berg, Henrich, & Herschbach, 2009). Recently, cancer or cancer treatment (see below) has been identified as a life-threatening stressor. In psychotherapeutic screenings, patients also manifest symptoms defining the posttraumatic stress disorder (PTSD), namely, intrusions, hyperarousal, and/or cognitive avoidance. However, the majority does not manifest all defining criteria (Mehnert et al., 2009; Mehnert & Koch, 2007).

In addition to anxiety, depression can be a response to a life-threatening diagnosis. Depression is a mood disorder, typically represented by three key symptoms (following ICD-10 criteria): depressed mood (persistent sadness), anhedonia (loss of interests or pleasure), and reduced energy (▶ fatigue). Further symptoms can be disturbed sleep, poor concentration or indecisiveness, low ▶ self-confidence, poor or increased appetite, suicidal thoughts or acts, agitation or slowing of movements, and self-blame. Similar to ▶ anxiety disorders, it is also problematic to diagnose a depressive episode because somatic symptoms can be largely the outcome of disease processes (e.g., loss of appetite and weight loss, ▶ fatigue, anhedonia). This means that depression as a mental disorder cannot be readily applied to cancer patients. Empirical studies suggest that the prevalence of depression among cancer patients and the normal population does not differ (McDaniel, Musselman, Porter, & Reed, 1995; Sellick & Crooks, 1999), which largely means that cancer does not cause depression. However, people living with cancer do suffer from depressive symptoms that negatively affect their ability to comply with the complex and stressing treatment regimes. Most importantly, a recent review revealed that cancer patients hold an elevated risk for suicide ideation and committed suicide (Robson, Scrutton, Wilkinson, & MacLeod, 2010).

With respect to the treatment plan, medical doctors should involve their patients in decision-making, if they wish to (Back et al., 2009).

Initial Treatment

Shortly after having received the serious diagnosis, the patient undergoes a series of initial stressful medical treatments which are experienced as a fundamental crisis, because he or she is completely at the mercy of these treatments and their possibly severe side effects. The most frequent treatment types are chemotherapy, radiation therapy, and surgery, which are often applied in combination.

Cancer cells normally grow and divide more rapidly than normal cells. *Chemotherapy* aims at killing these malignantly growing cells. However, healthy cells also multiply quickly, and chemotherapy might kill these cells, too. This damage to healthy cells determines the quality and intensity of side effects. Typically, hair follicles are affected, but also blood cells forming in the bone marrow as well as cells in the digestive and reproductive systems or even cells of vital organs are damaged. The list of side effects which affect ▶ quality of life negatively is long. Many patients experience physical problems such as loss of their hair, nausea and vomiting, ▶ fatigue, diarrhea and constipation, urination problems, ▶ Pain, infections, anemia and bleeding problems, or hurting of mouth and throat. But also psychological problems can be overwhelming such as distress, worries, intrusive thoughts, fear of ▶ health and death, despair, sadness, ▶ anxiety, depression, PTSD, sexual problems, confusion, or memory problems. In many cases, patients feel emotionally imbalanced, like riding on a rollercoaster.

Radiation therapy is also used to destroy cancer cells. As in chemotherapy, the radiation that destroys cancer cells also damages healthy cells. This damage to healthy cells determines the quality and intensity of side effects. Side effects of radiation therapy are similar and cause similar emotional problems.

On a psychological level, some types of *surgery* fundamentally shatter a person's body image and ▶ self-concept. Patients might feel disfigured. For example, women having undergone mastectomy (removal of the entire breast) suffer from a loss of attractiveness/sexual identity, or persons having undergone colon surgery with colostomy have problems in leading a normal sexual life.

In this initial treatment phase, the physically and emotionally weakened patient is spending his or her time in an oncology clinic, missing work days and being separated from his or her family and friends for months. Being thrown out of his or her normal life can lead to uncertainties with respect to social roles and tasks. Within the clinic, he or she has to adapt to the new situation, getting acquainted with the loss of privacy, entering new relationships with medical professionals, or getting accustomed to daily hospital routines.

Rehabilitation/Recovery

If things work out well, the patient enters the rehabilitation/recovery phase, having accomplished the arduous medical treatment. Exhausting surgery, chemotherapy, and radiation therapies are terminated. As follow-up examinations do not reveal any metastasis, the patient may hope that the cancer disease has been cured. The "normalization" of life begins, although such "normality" does not exist anymore. Thus, the patient has to rearrange his or her life and personal relationships, reintegrating the stressful experiences in his or her autobiography, redefining one's social position, and setting priorities for the future. In this phase, the patient is hoping to be a survivor, although doubts and fears remain. It is important to learn to sustain such uncertainties.

The US National Cancer Institute (2011) defines a cancer survivor "as anyone who has been diagnosed with cancer, from the time of diagnosis through the balance of his or her life." Bloom (2002) differentiates between three stages of survivorship on an individual's life trajectory. The first stage is called *acute survival* and encompasses the time period from the diagnosis through the first year, which generally includes treatment (see above). The second stage is called *extended survival* and comprises the time period from 1 year after diagnosis until 3 years later, representing a time frame in which the probability of cancer relapse is supposed to be highest. The third stage is called *permanent survivor* and starts after 4 years after first diagnosis. As Bloom (p. 90) summarizes for the last stage, "general problems that continue to be reported are permanent loss in energy and relationship issues. Issues such as reintegration into society, resuming prior activities including jobs and recreational activity and the late effects of therapy become prominent concerns."

Recent research has focused on the existential problems of cancer survivors, recognizing human beings as spiritual beings (see below). Mehnert and Vehling (2011) point out that loss of meaning, demoralization, and embitterment are central psychological issues of cancer survivors. Frankl (1997) postulates an inner will to meaning as a strong human motive, which is central for successful coping with stressful situations. Many cancer survivors are incapable of integrating their liminal experiences in their autobiography and in telling a coherent life story. Thus, the traumatic experience of a cancer disease may shatter an individual's purpose in life, devastating premorbid representations of the self, life attitudes, and values. On the other hand, cancer patients also report positive changes after going through traumatic experiences, testifying ▶ personal growth. Those positive changes referred to personal relationships, personal strengths, self-understanding, ▶ spirituality, new possibilities, or appreciation of life. Refinding meaning in one's life seems to be helpful to overcome these stressful experiences

(Barskova & Oesterreich, 2009; Morris, Campbell, Dwyer, Dunn, & Chambers, 2011; Park, Chmielewski, & Blank, 2010).

Demoralization represents a syndrome of existential distress and despair, which should be differentiated from depression (Clarke & Kissane, 2002). It is characterized by subjectively "unique" feelings of helplessness/hopelessness, feelings of being unable to cope, loss of sense of purpose, feelings of pointlessness, loneliness, and feeling completely alienated. Embitterment represents another reaction as a consequence of a life-threatening disease, which is experienced as unjust, as an insult, or as a humiliation (Linden, Baumann, Rotter, & Schippan, 2008). The *posttraumatic embitterment disorder* is characterized by feelings of embitterment and resignation, helplessness, heightened arousal, rage, restlessness, repeated intrusive thoughts, negative mood, and irritability.

Recurrence and Retreatment

If the initial treatment could not defeat the cancer completely, or if after initial successful treatment the cancer comes back, the patient enters the recurrence and retreatment phase. It becomes obvious that the cancer disease is taking a chronic course. Especially recurrence of the disease is psychologically the maximum disaster, attacking patients' autonomy and dignity. On an emotional level, patients frequently experience hopelessness, depression and anhedonia, **anxiety** and panic, and/or guilt.

In essence, the ultimate therapy goal remains: cure of the cancer disease (anticancer therapy). The patient reenters the taxing treatment phase. In principal, this is a re-traumatizing experience to undergo chemotherapy or radiation therapy with all their possible side effects again. In most cases, patients have to learn living with long-term side effects such as ▶ fatigue, nausea and vomiting, and ▶ Pain. Recurrence of cancer causes and enforces depression and suicidality, ▶ anxiety, loss of meaning, demoralization, posttraumatic stress and embitterment disorder (see above) (Mehnert & Vehling, 2011).

Palliative/Terminal Phase

When medical doctors together with patients and their family members realize that they have no further anticancer options, which would not be able to prolong the patient's life but would have unacceptable effects on his or her **quality of life**, the goals of medical care should be changed. This transition from a curative to a palliative treatment is a very incriminating for both medical doctors and persons concerned. The World Health Organization (WHO) proposes the following definition of palliative care:

> Palliative care is an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual. (WHO, 2011)

It is important not to equate palliative care with the terminal phase (death, dying, and hospice). Cancer patients may live in a palliative phase for years without being in an end-of-life situation. However, depending on the cancer progression, the palliative and terminal phase can overlap to a large degree.

According to this definition of palliative care, success of therapeutic interventions is given if the patient's idiosyncratic **quality of life** is improved or stabilized and the patient is able to live as autonomously as possible. In contrast to the traditional biomedical thinking, which emphasizes objective criteria such as decrease in morbidity or mortality, the palliative paradigm emphasizes the patient's subjective perspective, his or her reality. As the cancer cannot be cured anymore, the main objective is *symptom control* prevention and alleviation of suffering. The WHO concept of palliative care understands the patient as a "holistic" being and proposes a "biopsychosocial-spiritual model of man" (Sulmasy, 2002).

Spirituality refers to an individual's relationship with the transcendent; it is "about the search for transcendent meaning" (Sulmasy, 2002, p. 25),

which must not be equated with religion. While some find meaning in a superior being such as God, others express their **spirituality** in their relationships with nature, music, art, philosophy, or in their relationships with their family and friends. The idea of the human being as a spiritual being implies the notion that the human being is a being in relationship. Sulmasy differentiates between intrapersonal and extrapersonal relationships. Whereas the former imply physical (intrasomatic) relationships and mind-body (psychosomatic) relationships, the latter denote relationships with the physical environment, social environment, and the transcendent. Cancer as a life-threatening disease disturbs relationships on all these levels of human existence, not only on the biological, somatic level. Palliative care sensu the WHO definition follows a holistic approach to healing, which "means the restoration of right relationships. (. . .) [It] is a system of health care that attends to all of the disturbed relationships of the ill person as a whole, restoring those that can be restored, even if the person is not thereby completely restored to perfect wholeness" (Sulmasy, p. 26).

Especially in the end-of-life situation, spiritual questions concerning the worth of one's life, meaning of one's life, and the meaning of interpersonal relationships arise. Such questions prompt answers concerning one's **dignity**, hope, and forgiveness, respectively. "To die believing that one's life and death have been of no value is the ultimate indignity. To die believing that there is no meaning to life, suffering, or death is abject hopelessness. To die alone and unforgiven is utter alienation" (Sulmasy, 2002, p. 26).

Cross-References

- Anxiety
- Cancer Survivor(s)
- Disability
- Emotional Well-Being
- Fatigue
- Health
- Meaning in Life
- Pain
- Patient-Physician Communication
- Personal Growth
- Self-Concept
- Self-Confidence
- Sleep, an Overview
- Social Integration
- Spirituality

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One-Night Stands

► Casual Sex and the Quality of Life

One-Parent Families (UK)

► Single-Parent Families

One-Time Sexual Encounters

► Casual Sex and the Quality of Life

Online Panels

► Web-Based Questionnaire

Online Polling

► Web-Based Questionnaire

Online Survey

► Web-Based Questionnaire

Open Government

► Community Participation

Open Question Argument

► Fact/Value Dichotomy

Operationalization

► Questionnaire Design

Opinion of European Citizens on Public Services

► Europeans' Opinions on Services

Opportunity Cost

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Synonyms

Economic opportunity loss; Implicit cost

Definition

Generally speaking, the opportunity cost of doing something is the cost of doing it measured in terms of an alternative thing or action, the best alternative forgone, that is to say, what man could have gained when making another choice. Put it into economic terms, it is the risk of achieving greater benefits had you taken a different option. But it should not be restricted to a monetary or financial cost, for it refers to any real cost in terms of things forgone (time, output, money...) and everything that can provide us with a certain level of utility (Frank, 2005; Gold et al., 1996). The concept of utility is crucial to fully understand the meaning of opportunity costs (Buchanan, 2008; Henderson, 2008; Pearce, 1992).

We can put it in this way: "there's no such thing as a free lunch."

Description

The concept of opportunity cost was first developed by Professor Friedrich von Wieser (1914), a member of the Austrian School of Economics who exercised a strong influence on economists such as von Mises, Hayeck, or Schumpeter, the next generation of Austrian economists. The concept appeared in his book "Theory of social Economics," published in 1914 with the intention to apply his ideas to the real world. In this line, he became Austrian finance minister in 1917.

The opportunity cost could be interpreted as the true cost of something, if we consider that cost as what we give up in order to get the thing we want. In fact, when saying the cost of something, we include not only the money spent buying (or doing) something but also the utility it provides with respect to the alternative; that's the benefits (economic or other) we will not be able to get with another thing (option) we did not buy (made). For example, the opportunity cost of being an engineer (Stigler, 1955) is not merely the money spent on tuition fees, books, and so on but also the fact that you are no longer able to spend time carrying out a job or becoming a pop-star. These alternatives could highly contribute to increase your utility, and you might be getting less utility because of your choice. But you are not able to know it beforehand. In any case, when we are considering the opportunity costs of decisions we make, we must use the highest-valued alternative that has had to be sacrificed for the option we have chosen (McConnell et al., 2012).

It is sometimes known also as the economic opportunity loss. In this sense, it is a way of

measuring the cost of a decision in terms of the likely decision's alternative. Therefore, it is a way of working out the cost of not taking the next best alternative (Baye, 2007; Dawson, 1994). Consequently, it is not simply a number, but it goes further: it measures the benefits of the next best alternative to the action you did (Posnett & Jan, 1996; Tucker, 2006). But other factors, not just financial, can also be taken into account. We could include the pleasure of making one decision against the other, business ethics or other various social factors.

The crucial point is the existence of a choice, which has to be made between different options without knowing the final result. In fact, people's decision and choices about the goods and services they are to consume determine how economic resources will be used. This introduces the concept of "risk" associated to any decision we take. The opportunity cost of going for a walk could be measured, for instance, as the opportunity forgone to read a book and having a part-time job. In any case, everything we do has an associated opportunity cost, either in monetary terms or in terms of time. And since both money and time are scarce resources, this translates into the fact that the notion of opportunity cost has to do mainly with the efficient use of scarce resources. If we were to live in an economy with no scarce resources, then no things or actions would be bought or undertaken at the expense of any other; thus, in this case, the opportunity cost would be clearly zero. But we live in a world where all available resources are limited, and by minimizing the opportunity costs of doing or buying something, we are somehow ensuring an efficient use of resources (using them for a certain purpose prevents their use for any other). In economics, it is crucial to describe the relationship between scarcity and choice. This is one of the main reasons why opportunity cost is a key concept in economics since it implies the choice between mutually exclusive results. Furthermore, the choices have both present and future consequences for the whole economy. Thus, the concept of opportunity cost allows economists to examine the relative monetary values of goods and services in the whole economy.

In terms of investing, the opportunity cost is the difference in return between two investments, the one you made, and another one you could have made, but did not. In this case, the opportunity cost is the money you gave up due to your choice in favor of an investment that resulted in lower profits. For instance, if you have 20.000 m.u. and doubt between investing in the stock market and putting it in a savings account, when choosing the second option because you are highly risk-averse, the opportunity cost would be the potential of making more money from buying shares than the regular bank interest rate. Hence, opportunity cost is an important economic principle that affects the value of our financial decisions.

How to Calculate Opportunity Cost in Economics

The easiest and more intuitive way to calculate the opportunity cost would be the next one. First you need to outline the monetary value of all of your options. Second, you must determine the value of the option you decide to choose. Third, determine the value of the next best alternative. Finally, subtract the value of the next best alternative from the value of the option you select to find the opportunity costs. You must be aware that you only subtract the cost of the next best alternative, not all alternatives not taken. A useful rule of thumb for including opportunity cost in our financial life could be the next one. Imagine you face the following trade-off, either pay off your debt or invest some money you have. If you decide to pay off your debt instead of investing the money, subtract the money you could have earned on the investment to calculate the net savings. On the contrary, if you decide to invest, subtract the interest you could have paid off on the debt.

However in order to be strict and accurate, we have to be attentive to how costs are measured since this is another choice influencing the results. Ideally, a certain use should be compared with all relevant uses, including doing nothing. Failure to choose a correct comparison may lead to incorrect results with respect to the amount of estimated costs and the effectiveness of each

option involved. In this sense, a correct measure of opportunity costs would require methods to derive what economists call "shadow prices" – the true social value of an action or object. Moreover there are some difficulties in applying the concept of opportunity costs (Russell, 1992), which arises from the fact that the calculations are not always accurate. This is because the costs are often based on estimates. Consequently, despite the importance of this concept, complexities of its application translate into the fact that few studies are completely explicit about their estimates of opportunity costs.

Things vary when thinking in terms of accountancy. Opportunity costs are not written on any financial statements or accounts, like we do with, for example, depreciation. Since every business choice has an opportunity cost, all the alternatives should be considered before taking a crucial business decision, which is absolutely impossible (Torgerson & Spencer, 1996; Baye, 2007). That might be the reason why, in fact, accounting practices do not aim to measure opportunity costs. In fact, accountancy and economics do not agree on their definitions of cost. Accountancy focuses on the money outlays on the various resources required to produce a product, whereas economists may consider prices as inaccurate to fully reflect the opportunity costs of resources. This is so because they take into account the possibility that markets might fail when considering the value of those resources in their highest value alternative use (Stiglitz, 1986). In short, economists are concerned not only about the private opportunity cost but also about the social opportunity cost, hence about all the benefits sacrificed by taking an action.

Needless to say that the perspective of the analysis is also crucial since it will determine which costs should be included in the analysis. For example, from a social perspective, we should include all the costs and benefits regardless of who incurs or obtains them, whereas from an individual perspective (firm, people. . .), the analysis can be more restrictive, including only the costs and benefits concerning each part (Wittcoff et al., 2004). Going into more depth, opportunity cost can also be calculated through cost-effectiveness or cost utility studies. This analysis makes the opportunity cost of the alternative uses of resources explicit and thus comparable, when two or more alternatives are analyzed. Recent studies seem to indicate that for a correct estimation, the incremental cost-effectiveness ratio should also be estimated in order not to mislead the decision makers.

Finally, since economic concepts can be better understood when posing examples containing the concept we want to explain, the article "Baseball Players and Opportunity Costs" provides you a good example illustrating how opportunity costs can be used in practice.

Cross-References

▶ Cost-Benefit Analysis

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Oppressed Populations

► Marginalized Communities

Optimal Choice Theory

► Rational Choice Theory

Optimal Experience

► Flow, the Experience of

Optimal Functioning

► Eudaimonic and Hedonic Happiness

Optimal Sexual Intimacy

► Components of Optimal Sexual Experiences
► Lessons About Optimal Sexual Experiences from Remarkable Lovers
► Personal Contributions to Optimal Sexual Experiences
► Relational Contributions to Optimal Sexual Experiences

Optimal Sleep

► Sleep and Well-Being

Optimism

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Definition

Optimism (vs. pessimism) is a dimension of personality defined by the expectation that good (vs. bad) things will happen to oneself. Generalized optimism pertains to the person's entire life, rather than to just one domain or another.

Description

Optimists expect good things to happen to them; pessimists expect bad things to happen to them. Optimists and pessimists differ in how they approach problems and the success with which they cope with adversity. These differences have important implications for their psychological and physical quality of life.

Defining optimism and pessimism in terms of expectancies creates a link to broad expectancy-incentive theories of motivation. Such theories assume that behavior occurs in order to attain desired goals. Engagement of effort depends on having a goal that matters enough to try to reach it, but it also depends on expectancy: confidence versus doubt that the goal can be obtained. If people lack confidence, there is no action. If the person loses confidence along the way, action will stop. Only when confidence is high enough do people undertake and remain engaged in goal-directed efforts (Carver & Scheier, 2009; Scheier & Carver, 2009).

Expectancies exist at many levels of generality. An elderly person can have an expectancy about

being able to move her fingers enough to button her coat, an expectancy about being able to drive to get her hair cut, and an expectancy about living a fulfilling life for several more years. Optimism and pessimism are the most general kinds of expectancies. They are broad versions of confidence or doubt, pertaining to most situations in life rather than just one or two. The principles in expectancy-incentive theories should pertain equally well to specific expectancies and generalized expectancies.

Measuring Optimism

Research on optimism has flourished over nearly three decades. Several routes have been taken to assessing optimism, yielding distinct literatures. The simplest and most direct approach is to ask people whether they think their outcomes in life will be good or bad, for example, by having them respond to statements such as *I'm optimistic about my future*. Another approach relies on the idea that people's expectancies for the future stem from their interpretations of the past. Explaining bad outcomes by causes that persist into the future and affect many kinds of events implies pessimism. Such explanations imply that bad outcomes will continue in the future. An attributional style that explains negative events by causes that are more time limited and narrower in their effects implies more optimism.

Researchers on optimism often refer to optimists and pessimists as though they were categories, but all measurements of optimism actually vary continuously across large numbers of people. People range from very optimistic to very pessimistic, with most falling somewhere between.

Psychological Quality of Life

Many studies have examined relationships between optimism and quality of life among people undergoing adversity. The kinds of adversity have been extremely varied. They include caregiving for patients suffering from Alzheimer's disease and having medical procedures such as coronary artery bypass surgery, attempts at in vitro fertilization, and heart and bone marrow transplantation. Yet other studies have looked at how people deal with a diagnosis of cancer, the pain of arthritis, and the progression of acquired immune deficiency syndrome.

The studies consistently find that optimists experience less distress during times of adversity than do pessimists (Carver & Scheier, 2009; Carver, Scheier, & Segerstrom, 2010; Segerstorm, 2006). This holds for cross-sectional studies and for prospective studies – that is, in which optimism and distress were assessed at some baseline with distress reassessed later. The results of the prospective studies are particularly important, as they suggest that optimism predicts better trajectories of quality of life over time.

Optimism and Coping

If optimists experience less distress than pessimists under adversity, is it just because optimists are cheerful? No. If so, optimism would not predict differential *change* in distress over time, shown by prospective studies. There must be other explanations. One answer is that optimists and pessimists differ in the manner in which they address adversity. In many ways, this difference reflects the behavioral tendencies discussed earlier. That is, people who are confident continue trying, even when it is hard. People who are doubtful try to escape by wishful thinking and temporary distractions that do not solve the problem. They sometimes even stop trying.

Such differences in coping have emerged in many studies. These studies typically examine patient populations or people undergoing medical procedures. These projects find that optimists differ from pessimists in terms of their situational coping reactions and their general, more stable coping styles.

Optimists tend to seek information about the problem they are facing and take problem-focused action when possible. They use humor and reframe the situation as best they can while accepting the reality that the stressor is a challenge to them. Pessimists tend to try to push the problem away rather than accepting and dealing with it, become mired in their distress, and use cognitive and behavioral avoidance as much as possible.

A number of prospective studies have contained measures of coping reactions in addition to measures of well-being. This allows researchers to test whether differences in well-being were mediated by differences in coping. This research has consistently shown that psychological well-being and coping responses are linked. Thus, optimists have better psychological outcomes than pessimists partly because of differences in how they cope.

Physical Quality of Life

Much more is known about effects of optimism on psychological well-being than on physical well-being, but there is some evidence of links to physical health and physiological functioning. The findings from this research mirror those just described: optimists typically experience better outcomes – signs of better physical health or signs of more adaptive physiological responses when under adversity.

Compared to pessimists, optimists report fewer physical symptoms during times of duress and have higher health status across their lives. Optimists are less likely to suffer negative side effects from major surgery or to be rehospitalized shortly after major surgery. They are also more likely to benefit longer from their surgery. Less pessimistic persons have been found to outlive more pessimistic persons when diagnosed with life-threatening illness. They also exhibit less extreme cardiovascular reactivity during their daily lives. Optimists tend to show signs of more adaptive immune functioning than do pessimists, but the evidence on this point is a good deal more mixed than other physical health outcomes.

Health-Promoting and Health-Damaging Behavior

As described, research documents that optimists and pessimists cope differently with stress and that these differences partly cause differences in psychological outcomes. Coping differences may also be partly responsible for physical health differences as well. Studies show that optimists face health threats head on and do whatever they can to improve the situation. This seems to reflect problem-focused coping, an attempt to engage in proactive processes that promote good health and well-being.

For example, following coronary artery bypass graft surgery, optimistic patients were more likely than pessimists to enroll in cardiac rehabilitation programs and to take vitamins and eat low-fat foods. Optimistic patients are also more likely to benefit from cardiac rehabilitation than are pessimistic patients. Optimists are also more likely than pessimists to seek out information about risk factors for major diseases.

Optimists take action to minimize health risks. They do not simply stick their heads in the sand and ignore threats to well-being. They attend to risks but do so selectively. They focus on risks that apply to them and relate to potentially serious health problems. If the health problem is minor or if it is unlikely to bear on them, they show no special vigilance. Optimists appear to scan their surroundings for threats to well-being but save their behavioral responses for threats that are truly meaningful.

If optimists face health threats head on and do as much as they can to make themselves less vulnerable, pessimists do the opposite. Pessimists tend to give up when confronting problems in life. Giving up can become manifest in ways with negative health consequences. Giving up may underlie various forms of substance abuse, which is often seen as an escape from problems. Pessimists are more vulnerable than optimists to such maladaptive behavior.

Is Optimism Always Better than Pessimism?

Much evidence suggests optimists are better off than pessimists. They are less distressed when times are tough, they cope in ways that foster better outcomes, and they are better at taking the steps necessary to ensure that their futures are bright. Although there are probably situations in which optimists have no advantage, there is remarkably little evidence that optimists are ever worse off than pessimists.

Some have suggested that such situations do exist, that optimism may be potentially damaging. The logic is this: too much optimism might lead people to ignore a threat until it is too late or might lead people to overestimate

their ability to deal with it, resulting in poorer outcomes. This appears to be generally not the case. However, occasional studies do suggest adverse effects of optimism. For example, there is some evidence that optimism predicts poorer immune response under relatively high challenge and that the buffering effect of optimism reverses when life stress accumulates over time. Findings such as these suggest that some caution is warranted in concluding that optimism is invariably beneficial.

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Optimism-Pessimism, Dispositional

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Definition

Dispositional optimism vs. pessimism have been defined as a generalized tendency to expect positive vs. negative outcomes in a person's life (Scheier & Carver, 1985).

Description

The theoretical principles that underlie the concepts of dispositional optimism and pessimism are taken from expectancy-value models of motivation, in which the initial assumption is that behavior is organized around the pursuit of goals (Carver & Scheier, 2002). In this approach, goals provide the value element – the more important the goals are to people, the greater the motivation is to move towards them. Expectancy, "a sense of confidence or doubt about goal's attainability (or the anti-goal's avoidability)" (Carver & Scheier, 2002, p. 32), is another element in this approach. Since optimists tend to expect their actions will lead to a positive outcome, they persist in those actions and achieve their goals more often than pessimists who tend to expect they will fail and often withdraw their efforts and disengage from goals they have set.

Assessing Dispositional Optimism and Pessimism

Scheier and Carver (1985) developed a measure called the Life Orientation Test (LOT) to assess differences between people in dispositional optimism and pessimism. This way of measuring involves asking people directly whether they expect outcomes in their lives to be good or bad. A briefer form, the Life Orientation Test-Revised (LOT-R; Scheier, Carver, & Bridges, 1994) containing six coded items and four filler items, is used most often. Three of the six coded items are positively worded (e.g., I am always optimistic about my future), and three are negatively worded (e.g., I hardly ever expect things to go my way). According to the authors of the scale, both the LOT and LOT-R provide a continuous distribution of scores. For verbal convenience, people are often called optimists or pessimists; however, the majority of them cannot be identified as optimists or pessimists in an absolute sense and rather they tend to fall on a range from being very optimistic to very pessimistic, with most people somewhere in-between.

The LOT-R scale is sometimes separated into two factors: an optimism factor, containing positively worded items, and a pessimism factor, containing negatively worded items. However, results and discussions are inconsistent regarding whether the optimism construct should be seen as a bipolar dimension or whether

there are two separate factors. Some studies (e.g., Robinson-Whelen, Kim, MacCallum, & Kiecolt-Glaser, 1997) have found that one subscale is more important than the other in the prediction of relevant outcomes; however, which subscale is more important varies from study to study. Carver, Scheier, and Segerstrom (2010) pointed out that this issue is still questionable, and some important clinical and theoretical questions – such as, in what cases do the separation into two factors lead to better predictions and should interventions be targeted to separately address optimistic and pessimistic cognition in clinical settings – remain to be answered. Carver and Scheier recommend examining the factors separately and reporting results separately for the subscales only when the two subsets of items behave differently.

The LOT-R has good internal reliability with an average Cronbach's alpha around 0.80 for the total scale. Test-retest correlations are relatively high, ranging from 0.58 to 0.79 for periods of a few weeks to 3 years (Lucas, Diener, & Suh, 1996; Scheier & Carver, 1985; Scheier et al., 1994). Long-term test-retest correlations have varied from 0.35 (Segerstrom, 2007) to 0.71 (Matthews, Räikkönen, Sutton-Tyrrell, & Kuller, 2004) across 10-year period.

Dispositional Optimism and Pessimism and Mental Health

Much research has been conducted to investigate the importance of optimism for mental health. It has been shown that optimism is highly important for subjective well-being (e.g., Marshall, Wortman, Kusulas, Hervig, & Vickers, 1992; Scheier et al., 1994; Daukantaite & Bergman, 2005). Findings indicate that more optimistic people tend to report a higher level of life satisfaction and positive affect and a lower level of negative affect. The strong direct relationships between adult optimism and positive affect or negative affect found in many studies are consistent with the Carver and Scheier's (2002) proposition that high expectations for future outcomes coincide with positive feelings and doubtful expectations for future outcomes coincide with negative feelings. Although optimists tend to experience more positive emotions and less negative emotions, this is only to a lesser extent responsible for the strong relationship between optimism and global life satisfaction (Chang & Sanna, 2001; Daukantaite & Bergman, 2005). The results are consistent with the proposition that a person who has a generalized expectancy of good outcomes in life also tends to have "chronic" positive expectancies which, to a large extent, are used when evaluating life as a whole (Schimmack, Diener, & Oishi, 2002).

Optimism also appears to be an important resource for good social relationships. Optimistic people have more friends and larger social networks, report more satisfaction with relationships and better relationship quality, and are more supportive partners as compared to pessimistic people (for a review, see Carver et al., 2010). Some possible explanations for these findings are that optimists in general seem to be more liked than pessimists because of their positive expectations for the future, their ability to see things in the best light, and their commitment to work hard or more effectively at their relationships (Carver et al., 2010).

Much research has been done studying the importance of optimism in the context of medical settings. Findings show that more optimistic people tend to report less distress in adverse medical situations, including coronary artery bypass surgery, cancer, bone marrow transplantation, and failed attempts with in-vitro fertilization (for review, see Carver et al., 2010). Findings also indicate that optimism appears to help patients and their caregivers be more resistant to depressive symptoms as well as adjust to difficult life circumstances in a more constructive way.

Optimism, Pessimism, and Coping

Differences in coping have been suggested as one of the essential factors explaining differences between optimists and pessimists. Optimism was found to be related to approach- and problem-oriented coping, while pessimism was found to be related to avoidance- and emotion-focused

coping (Solberg Nes & Segerstrom, 2006). Solberg Nes and Segerstrom (2006) reviewed findings showing that, in addition to problem-focused coping strategies (e.g., planning, seeking instrumental support), optimists, in certain situations, use even emotion-focused coping (e.g., cognitive restructuring, seeking emotional support), which might be more powerful. That is, when confronting controllable stressors (e.g., health stressor), optimists tend to use more problem-oriented coping and show attempts to change their efforts, while when confronting uncontrollable stressors (e.g., traumatic event), they tend to use more emotion-oriented coping and show attempts to accommodate to stressful circumstances (Solberg Nes & Segerstrom, 2006). Furthermore, coping appears to be a significant and important mediator/moderator in the relationship between optimism and mental health. Findings have indicated that the positive effect of optimism on mental health occurs through an indirect effect of differences in coping (for a review, see Carver et al., 2010). Moreover, optimists are likely to report that they benefit from adverse experiences by, for example, becoming closer to their spouse (Litt, Tennen, Affleck, & Klock, 1992) – a domain that has been identified in posttraumatic growth. Furthermore, optimists appear to use coping strategies that not only help them react in a more helpful way in adverse situations but also prevent a stressor from arising – called proactive coping (Aspinwall & Taylor, 1997). Carver et al. (2010) reviewed studies showing that more optimistic people sought heart-attack-related knowledge pertaining to areas of potential risk, increased physical exercising to prevent risks for coronary diseases, avoided certain sexual practices to decrease HIV risk, etc. Optimists, as Carver et al. (2010) expressed, not only expect that good things are going to happen, but they also take active steps to make sure good things do happen.

Changes in Optimism

Two questions regarding changes in optimism are of interest. The first involves the stability of optimism; that is, do optimists/pessimists remain optimists/pessimists over the life course? Optimism is trait-like and therefore tends to be rather stable over time (Carver & Scheier, 2002). However, some periods (e.g., times of life transitions) appear to be more critical with possible dips in optimism. Segerstrom (2007) reported a stability coefficient of 0.35 over a 10-year period. The coefficient is much lower than what has been reported by other researchers (e.g., 0.71 by Matthews et al., 2004); however, it is likely due to the studied sample – young people that went across a period of time of considerable changes in their life circumstances (from studies at law school to engagement in their law practices).

The second question involves the cultivation of optimism; that is, is it possible for a pessimistic person to move on the optimism-pessimism continuum and become more optimistic? Some studies have shown promising results that this kind of change is possible (Segerstrom, 2007), using different techniques from cognitive behavioral therapies. However, most often the techniques in cognitive therapy aim to reduce negative thoughts and therefore change negative cognitive schemas about a person's sense of self and the world. Recently researchers have started focusing on interventions that directly target positive cognitions. Findings by, for example, Fosnaugh, Geers, and Wellman (2009) and Meevissen, Peters, and Alberts (2011) show that such interventions were successful increasing people's positive expectations about their future. Carver et al. (2010), however, question how large a change can reasonably be expected from a person and how permanent the change will be. Thus, more research is needed to evaluate the benefits and durability of induced optimism.

Cross-References

- ▶ Positive and Negative Affect Schedule (PANAS)
- ▶ Subjective Well-Being

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Optimization Theory

► Rational Choice Theory

Oral Health Impact Profile

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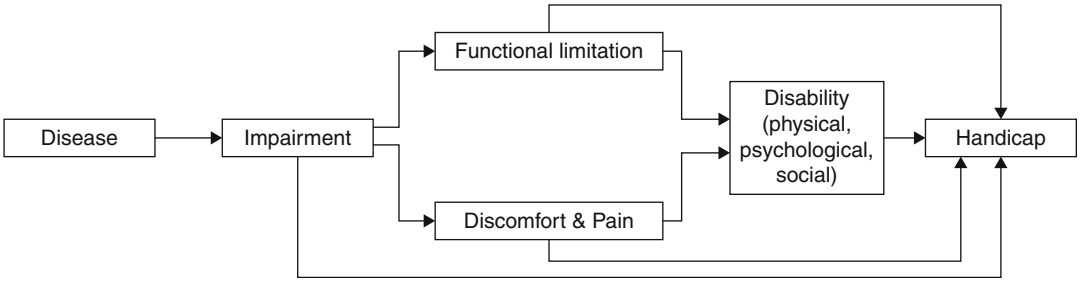
Definition

This is a 49-item measure of oral health-related quality of life, which measures people's perception of the impact of oral disorders on their well-being, that is, the dysfunction, discomfort, disability, and handicap caused by oral conditions.

Description

The Oral Health Impact Profile (OHIP) was developed by Slade and Spencer (1994) as a self-rating patient-centered instrument designed to assess the priorities of care by documenting social impact among individuals and groups, understand oral health behaviors, evaluate dental treatment, and provide information for planning for oral health.

Seven dimensions are captured by the OHIP-49: Functional Limitation (9 items,



Oral Health Impact Profile, Fig. 1 Locker's conceptual model of oral health

e.g., "Have you had trouble pronouncing any words because of problems with your teeth, mouth, dentures, or jaw?" "Have you had food catching in your teeth because of problems with your teeth, mouth, or dentures?"), Physical Pain (9 items, e.g., "Have you had painful aching in your mouth because of problems with your teeth, mouth, or dentures?" "Have you had sensitive teeth with hot or cold food or drinks because of problems with your teeth, mouth, or dentures?"), Psychological Discomfort (5 items, e.g., "Have you felt tense because of problems with your teeth, mouth, or dentures?" "Have you been worried by dental problems?"), Physical Disability (9 items, e.g., "Have you had to interrupt meals because of problems with your teeth, mouth, or dentures?" "Have you had to avoid eating some foods because of problems with your teeth, mouth, or dentures?"), Psychological Disability (6 items, e.g., "Have you found it difficult to relax because of problems with your teeth, mouth, or dentures?" "Have you been embarrassed because of problems with your teeth, mouth, or dentures?"), Social Disability (5 items, e.g., "Have you had difficulty doing your usual jobs because of problems with your teeth, mouth, or dentures?" "Have you avoided going out because of problems with your teeth, mouth, or dentures?"), and Handicap (6 items, e.g., "Have you felt that life in general was less satisfying because of problems with your teeth, mouth, or dentures?"). Instructions for the OHIP ask respondents how frequently they had experienced each problem in the preceding 12 months. Responses are made on a 5-point Likert-type scale ranging from "never" (0) to "very often" (4). The OHIP-49 has been translated from English into many languages including German (John, Patrick, & Slade, 2002), Japanese (Yamazaki, Inukai, Baba, & John, 2007), Swedish (Larsson, List, Lundström, Marcusson, & Ohrbach, 2004), Dutch (van der Meulen, John, Naeije, & Lobbezoo, 2008), and Arabic (Al-Jundi, Szentpétery, & John, 2007).

One of the strengths of OHIP is that the seven dimensions described above are based on Locker's conceptual model of oral health (Adulyanon, & Sheiham, 1997; Allen, 2003; Baker, 2007; Locker, 1988; Nuttall, Steele, Pine, White, & Pitts, 2001). This model, in turn, uses the World Health Organization's International Classification of Impairments, Disabilities, and Handicaps (ICIDH) definitions of disease states (World Health Organisation, 1980). Locker's model proposes that impacts of disease are sorted into a hierarchy that there are five consequences of oral disease (impairment, functional limitation, pain and discomfort, disability, and handicap) and that these are sequentially related (Fig. 1).

Disease states (e.g., a detectable dental disease) may lead to impairments (e.g., anatomical loss, structural abnormality, or disturbance, such as edentulousness, or missing teeth), which can result in functional limitation (e.g., restricted jaw mobility and difficulty chewing, trouble pronouncing words, worsened sense of taste) or discomfort and pain (e.g., painful gums), which will in turn result in physical, psychological, or social disability (limitation in or lack of ability to

perform daily activities such as unsatisfactory diet, concentration problems, avoiding smiling, embarrassment, problems in social contacts, and social intimacy), which may lead to the subsequent handicap for the individuals (social disadvantage experienced by impaired and disabled people because they do not conform to the expectations of society to which they belong, such as loss of employment opportunities due to an inability to communicate effectively, being unable to enjoy other people's company due to the embarrassment of complete denture wearing, life dissatisfaction), ultimately impacting on their quality of life. Impairment, discomfort, and functional limitation may also lead directly to handicap.

To provide an empirical test of the ▶ construct validity of the OHIP-49 as a measure of Locker's conceptual model of oral health, Baker, Gibson, and Locker (2008) carried out an analysis of data drawn from a nonclinical sample of Canadian adult population (N = 541) using structural equation modeling. The findings indicated that the OHIP-49 does not have adequate within-construct validity, since scale items did not always measure the construct/dimension they were supposed to measure, some items within a construct were redundant, many measured more than one constructs, and the instrument did not represent seven separate constructs of oral health as originally devised (e.g., discomfort and psychological disability showed poor ▶ discriminant validity and were overlapping). Although a revised six-factor 22-item version had a better fit to the data, it did not have adequate between-construct validity since many of the relationships between the constructs/dimensions, as hypothesized within Locker's conceptual model, were not supported (e.g., functional limitations and pain were not predictive of physical or social disability, physical disability was not linked to handicap, while functional limitations were linked indirectly to handicap via pain and psychological impacts). Thus, the authors concluded that further conceptual development of the instrument, and Locker's model, is needed in order to understand the complexity of oral health from a patient-centered perspective.

Reliability

▶ Internal consistency was assessed by computing Cronbach's alpha coefficients derived from the original Australian data set of persons. These alpha coefficients were satisfactory for six subscales ($\alpha = 0.70$–0.83) but only 0.37 for handicap. ▶ Test-retest reliability was evaluated by computing intraclass correlation coefficients, which ranged from 0.42 to 0.77 for six of the subscales but only 0.08 for social disability (Slade, & Spencer, 1994).

Validity

The OHIP-49 has been shown to detect an association between subscale scores and perceived need for a dental visit, which provided evidence of its ▶ construct validity (Slade, & Spencer, 1994).

The OHIP-14

To compensate for some of the limitations encountered with the original OHIP-49 instrument, shorten it, and eliminate items that apply only to those who wear dentures, as well as items which have a nonresponse rate (left blank or marked "don't know") of 5 % or more, the short-form OHIP-14 was developed by Gary Slade (1997) using a controlled stepwise regression procedure. In the subset of 14 questions from the full 49 questions, two items from each of the seven dimensions were retained. Responses are made on a 5-point scale, coded 0 (never), 1 (hardly ever), 2 (occasionally), 3 (fairly often), and 4 (very often). The reference period is the previous year. Weights are computed that represent the proportion of people who judge the impact within each dimension as more unpleasant than the other impact in that dimension. For example, within the social disability dimension, the weight for the item "Have you had difficulty doing your usual jobs because of problems with your teeth, mouth, or dentures?" is equal to 0.38, while the weight for the item "Have you been a bit irritable with other people because of problems with your teeth, mouth, or dentures?" is equal to 0.62. Weights are then multiplied by coded responses to each question, and the products are added to yield seven subscale scores

that are standardized and summed. Three summary measures can also be computed: prevalence, severity, and extent (Slade et al., 2005). Prevalence scores are derived by using a threshold of "fairly often" or "very often" to one or more items to dichotomize responses, thereby indicating the percentage of people who report chronic oral health impacts. Severity scores are derived by summing ordinal responses for all 14 items and additionally taking into account impacts experienced "occasionally" or "hardly ever." Extent is summarized for each survey participant by the number of items reported "fairly often" or "very often." The OHIP-14 accounts for 94 % of the variation in total OHIP-49 scores, while it has an internal reliability coefficient alpha equal to 0.88 (Slade, 1997). The OHIP-14 has been translated and adapted into different languages including Brazilian (de Oliveira, & Nadanovsky, 2005), Greek (Papagiannopoulou, Oulis, Papaioannou, Antonogeorgos, & Yfantopoulos, 2012), Hebrew (Kushnir, Zusman, & Robinson, 2004), and Persian (Ravaghi, Farrahi-Avval, Locker, & Underwood, 2010).

Discussion

OHIP remains one of the most robust tools for assessing the impact of oral health on an individual's life. Epidemiological studies have shown that researchers can expect higher OHIP scores in patients with poorer clinical oral status, that is, patients with more missing teeth, more retained root fragments, more untreated decay, deeper periodontal pockets, and more periodontal recession. OHIP scores are also higher in socially and economically disadvantaged groups and among those who are irregular dental attenders (Slade et al., 1996). There is some evidence that the events captured by the OHIP may be of broader significance than oral health since OHIP scores may be associated with ▶ life satisfaction, general ▶ well-being, and ▶ quality of life. However, other investigators argue that this may not be the case (Locker, & Allen, 2007).

Cross-References

- ▶ Construct Validity
- ▶ Discriminant Validity
- ▶ Internal Consistency Reliability
- ▶ Intraclass Correlation Coefficient (ICC)
- ▶ Life Satisfaction
- ▶ Quality of Life
- ▶ Test-Retest Reliability
- ▶ Well-Being

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Order, Sibling

▶ Birth Order

Ordered Logit Model

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Synonyms

Cumulative logistic regression; Cumulative logit model; Ordinal logistic regression; Proportional odds model

Definition

The ordered logit model is a regression model for an ordinal response variable. The model is based on the cumulative probabilities of the response variable: in particular, the logit of each cumulative probability is assumed to be a linear function of the covariates with ▶ Regression Coefficients constant across Response Categories.

Description

Questions relating to satisfaction with life assessment and expectations are usually ordinal in nature. For example, the answer to the question on how satisfied a person is with her quality of life can range from 1 to 10, with one being very dissatisfied and ten being very satisfied (e.g., Anderson, Mikuliç, Vermeylen, Lyly-Yrjanainen, & Zigante, 2009; Schaafsma & Osoba, 1994). It is tempting to analyze ordinal outcomes with the linear regression model, assuming equal distances between categories. However, this approach has several drawbacks which are well known in literature (see, e.g., Lu, 1999; McKelvey & Zavoina, 1975; Winship & Mare, 1984). When the response variable of interest is ordinal, it is advisable to use a specific model such as the ordered logit model.

Let Y_i be an ordinal response variable with C categories for the i-th subject, alongside with a vector of covariates $\mathbf{x}_i$. A regression model establishes a relationship between the covariates and the set of probabilities of the categories $p_{ci} = \Pr(Y_i = y_c|x_i), c = 1, \ldots, C$. Usually, regression models for ordinal responses are not expressed in terms of probabilities of the categories, but they refer to convenient one-to-one transformations, such as the cumulative probabilities $g_{ci} = \Pr(Y_i \leq y_c|x_i),\ c = 1, \ldots, C$. Note that the last cumulative probability is necessarily equal to 1, so the model specifies only $C-1$ cumulative probabilities.

An ordered logit model for an ordinal response Y_i with C categories is defined by a set of $C-1$ equations where the cumulative probabilities $g_{ci} = \Pr(Y_i \leq y_c|x_i)$ are related to a linear

predictor $\boldsymbol{\beta}' x_i = \beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \ldots$ through the logit function:

$$\begin{aligned} logit(g_{ci}) &= \log(g_{ci}/(1-g_{ci})) \\ &= \alpha_c - \boldsymbol{\beta}' x_i, c = 1, 2, \ldots, C-1 \end{aligned} \quad (1)$$

The parameters α_c, called *thresholds* or *cutpoints*, are in increasing order $(\alpha_1 < \alpha_2 < \ldots < \alpha_{C-1})$. It is not possible to simultaneously estimate the overall intercept β_0 and all the $C-1$ thresholds: in fact, adding an arbitrary constant to the overall intercept β_0 can be counteracted by adding the same constant to each threshold α_c. This identification problem is usually solved by either omitting the overall constant from the linear predictor (i.e., $\beta_0 = 0$) or fixing the first threshold to zero (i.e., $\alpha_1 = 0$).

The vector of the slopes $\boldsymbol{\beta}$ is not indexed by the category index c; thus, the effects of the covariates are constant across response categories. This feature is called the *parallel regression assumption*; indeed, plotting *logit* (g_{ci}) against a covariate yields $C-1$ parallel lines (or parallel curves in case of a nonlinear specification, e.g., polynomial regression). In model (1), the minus before $\boldsymbol{\beta}$ implies that increasing a covariate with a positive slope is associated with a shift towards the right end of the response scale, namely, a rise of the probabilities of the higher categories. Some authors write the model with a plus before $\boldsymbol{\beta}$; in that case, the interpretation of the effects of the covariates is reversed.

From Equ. (1), the cumulative probability for category c is

$$\begin{aligned} g_{ci} &= \exp(\alpha_c - \boldsymbol{\beta}' x_i)/(1 + \exp(\alpha_c - \boldsymbol{\beta}' x_i)) \\ &= 1/(1 + \exp(-\alpha_c + \boldsymbol{\beta}' x_i)) \end{aligned} \quad (2)$$

The ordered logit model is also known as the *proportional odds model* because the parallel regression assumption implies the proportionality of the odds of not exceeding the c-th category $odds_{ci} = g_{ci}/(1-g_{ci})$: in fact, the ratio of these odds for two units, say i and j, is $odds_{ci}/odds_{cj} = \exp\left[\boldsymbol{\beta}'(\mathbf{x}_j - \mathbf{x}_i)\right]$, which does not depend on c and thus it is constant across response categories.

The ordered logit model is a member of the wider class of *cumulative ordinal models*, where the logit function is replaced by a general link function. The most common link functions are logit, probit, and complementary log-log. These models are known in psychometrics as *graded response models* (Samejima, 1969) or *difference models* (Thissen & Steinberg, 1986). The last name indicates that the probabilities of the categories are obtained by difference $p_{ci} = g_{ci} - g_{(c-1),i}$.

Early papers on regression models for ordinal data include McKelvey and Zavoina (1975), McCullagh (1980), and Winship and Mare (1984). The paper of Fullerton (2009) reviews ordered logistic regression models and their use in sociology. The textbook of Agresti (2010) gives a thorough treatment of ordinal data, while O'Connell (2006) provides applied researchers in the social sciences with accessible and comprehensive coverage of analyses for ordinal outcomes. Other valuable books fully devoted to ordinal outcomes are Johnson and Albert (1999) in a Bayesian perspective and Greene and Hensher (2010) in the setting of choice theory. Books on statistical modeling often have a chapter on ordinal regression models, for example, Long (1997), Skrondal and Rabe-Hesketh (2004), and Hilbe (2009).

Representation as an Underlying Linear Model with Thresholds

An ordinal response Y_i with C categories can be represented as an underlying continuous response Y_i^* with a set of $C-1$ thresholds α_c^* such that $Y_i = y_c$ if and only if $\alpha_{c-1}^* < Y_i^* \leq \alpha_c^*$. It follows that a cumulative model for an ordinal response, such as the ordered logit model (1), is equivalent to a system composed of a set of thresholds α_c^* and a linear regression model for an underlying continuous response:

$$Y_i^* = (\boldsymbol{\beta}^*)' x_i + e_i^* \quad (3)$$

where e_i^* is an error with mean zero and standard deviation σ_e^*. The relationship $\Pr(Y_i \leq y_c) = \Pr(Y_i^* \leq \alpha_c^*)$ implies that the

linear model (3) is equivalent to the cumulative model $l(g_{ci}) = \alpha_c - \boldsymbol{\beta}' x_i$, where the link function $l(\times)$ is the inverse of the distribution function of the error e_i*.

The relationship between a parameter of the cumulative model θ and the corresponding parameter of the underlying model θ^* is $\theta = \theta^* \sigma_l / \sigma_{e^*}$, where s_l is the standard deviation of the distribution associated to the link function (e.g., $\sigma_l = 1$ for probit and $\sigma_l = \pi/\sqrt{3} \approx 1.81$ for logit). Therefore, specifying the link function of the cumulative model amounts to specifying the distribution of the error of the underlying model and thus fixing its standard deviation to a conventional value: the probit corresponds to a standard normal error so the standard deviation is fixed to 1, whereas the logit link corresponds to a standard logistic distribution so the standard deviation is fixed to $\pi/\sqrt{3} \approx 1.81$). Indeed, the measurement unit of the underlying model is undefined since $\Pr(Y_i^* \leq \alpha_c^*) = \Pr(kY_i^* \leq k\alpha_c^*)$ for any constant k; thus, the standard deviation σ_{e*} is not identifiable. This indeterminacy is solved in the cumulative model (1) since its parameters are measured on a conventional scale defined by the link (the standard deviation of the error does not appear as a parameter). The change of scale is the reason why the estimated regression coefficients from an ordered logit model are about 1.81 times the values from an ordered probit model.

The representation through an underlying linear model also makes clear that the estimated slopes from a cumulative model are approximately invariant to merging of the categories.

Relaxing the Parallel Regression Assumption

The parallel regression assumption of the cumulative models may be too restrictive (for a test, see Brant, 1990). Such an assumption can be relaxed by allowing the thresholds to depend on covariates or, alternatively, by allowing covariates to have category-specific slopes. These models are called *partial proportional odds* after Peterson and Harrell (1990). Another way to relax the parallel regression assumption is to let the variance of the disturbance e_i* in the underlying linear model (3) to depend on covariates (McCullagh, 1980) or, alternatively, to use a scaled link such as the *scaled probit link* of Skrondal and Rabe-Hesketh (2004). A further approach is to introduce latent classes (Breen & Luijkx, 2010). Models violating the parallel regression assumption should be used with care since they raise identification and interpretation issues (Agresti, 2010).

Multilevel Extension

Multilevel (random effects) ordered logit models are suitable for the analysis of correlated ordinal responses; see the reviews of Agresti and Natarajan (2001), Hedeker (2008), and Grilli and Rampichini (2011). Multilevel ordered logit or probit models may be useful in several kinds of applications in quality of life, for example, (1) analysis of a single response from individuals clustered into households, schools (e.g., Fielding, Yang & Goldstein, 2003), or geographical regions (e.g., Rampichini & Schifini, 1998); (2) joint analysis of a set of items of a survey questionnaire on individuals (e.g., Grilli & Rampichini, 2003); and (3) analysis of repeated responses to a given question in a longitudinal survey (e.g., Ribaudo et al., 1999).

Cross-References

- ▶ Hierarchical Linear Modeling
- ▶ Linear Regression Model
- ▶ Multilevel Analysis
- ▶ Odds Ratio

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Order-Preserving Mapping

► Multiple Scaling

Ordinal Alpha

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Synonyms

Internal consistency; Reliability coefficient

Definition

Ordinal coefficient alpha estimates the internal consistency for scales involving ordinal data, using the polychoric correlation matrix for its estimation.

Description

► Reliability and validity are fundamental properties of measurement scales and tests. ► Cronbach's alpha (Cronbach, 1951), a method to estimate ► internal consistency, is the most widely and frequently used reliability index (Zumbo & Rupp, 2004). Reliability coefficients, such as Cronbach's alpha, are typically calculated using a Pearson covariance matrix (e.g., as a default in statistical software programs, such as SPSS). One assumption when using the Pearson correlation (or more generally, covariance) matrix is that the data are continuous; if this is not the case, the Pearson correlation matrix may be significantly distorted (e.g., Flora & Curran, 2004).

In quality of life measurement, it is very common to use ordinal item response data, e.g., based

on the Likert-type item response format with 5 or 7 response options. For example, for the ▶ Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985), respondents are asked to indicate their level of agreement to five items, such as "I am satisfied with my life," by choosing one out of seven ordered response options ranging between "strongly agree" and "strongly disagree." Data from such items are ordinal and not continuous but are often treated as if they were continuous. This is problematic because the Pearson correlation coefficient may significantly underestimate the strength of association between two continuous variables when the two variables manifest themselves in a skewed distribution of observed responses. In contrast, the polychoric correlation is more accurate in estimating the strength of association of the underlying variables (Carroll, 1961). Given these findings, the polychoric correlation matrix is considered more appropriate for ordinal data.

In line with this, Cronbach's alpha may significantly underestimate the reliability of a scale when its assumptions are violated (e.g., Gelin, Beasley, & Zumbo, 2003; Maydeu-Olivares, Coffman, & Hartmann, 2007; Osburn, 2000). This is important insofar, as underestimating the reliability of a scale my lead to inferences that are not warranted; for example, based on a low Cronbach's alpha, researchers may consider a scale too unreliable, even though the scale's actual reliability may be sufficient for the scale's given purpose or use.

In order to address this issue, Zumbo, Gadermann, and Zeisser (2007) introduced ordinal coefficient alpha, which is conceptually equivalent to Cronbach's alpha, but is estimated using the polychoric rather than the Pearson correlation matrix. In a simulation study, Zumbo, Gadermann, and Zeisser (2007) showed that ordinal alpha estimates reliability more accurately than Cronbach's alpha for binary and ordinal response scales. (KR-20, a special case of coefficient alpha, is computed from binary data.) The study demonstrated that ordinal alpha is a consistently suitable estimate of the (simulated) theoretical reliability, irrespective of the magnitude of the theoretical reliability, the number of response options, and the skewness of the scale point distributions. Cronbach's alpha, however, was shown to be a negatively biased estimate of reliability. This underestimation increased with increasing skewness, fewer response options, and lower theoretical reliability. With a real data example using data from a subscale of the ▶ Early Development Instrument (Janus & Offord, 2007) with binary items that were highly skewed, Gadermann, Guhn, and Zumbo (2012) demonstrated that Cronbach's alpha and ordinal alpha can be as different as .46 versus .85, respectively.

The approach of using the polychoric correlation matrix to account for the ordinal nature of the data can be generalized to any reliability estimate that is calculated from a correlation matrix, such as coefficient omega or beta. These ordinal reliability coefficients can be easily calculated using software programs that provide the polychoric correlation matrix. For example, a tutorial by Gadermann, Guhn, and Zumbo (2012) illustrates how to calculate ordinal alpha and other ordinal reliability coefficients, such as omega or beta, in the freely available software R, and a paper by Elosua Oliden and Zumbo (2008) provides syntax for calculating ordinal alpha in Mplus or PRELIS/LISREL.

Cross-References

- ▶ Cronbach's Alpha
- ▶ Early Development Instrument
- ▶ Internal Consistency
- ▶ Reliability
- ▶ Satisfaction with Life Scale (SWLS), an Overview

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Ordinal Logistic Regression

► Ordered Logit Model

Ordinal Measurement

► Multiple Scaling

Ordinary Least-Squares (OLS) Model

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Synonyms

General linear model; Multiple regression; Regression

Definition

Ordinary least-squares (OLS) models assume that the analysis is fitting a model of a relationship between one or more explanatory variables and a continuous or at least interval outcome variable that minimizes the sum of square errors, where an error is the difference between the actual and the predicted value of the outcome variable. The most common analytical method that utilizes OLS models is linear regression (with a single or multiple predictor variables).

Description

Ordinary least-squares (OLS) models assume that the analyst is fitting a model of a relationship between one or more explanatory variables and a continuous or at least interval outcome variable that minimizes the sum of square errors, where an error is the difference between the actual and the predicted value of the outcome variable. The most common analytical method that utilizes OLS models is linear regression (with a single or multiple predictor variables).

Ordinary least squares regression has been widely used in numerous scientific disciplines like physics, economics, and psychology, and a multitude of text books have been written explaining this method and its application in different fields of research (Cohen, Cohen,

West, & Aiken, 2003; Kleinbaum, Kupper, & Muller, 1988; Montgomery, Peck, & Vining, 2012). In its simplest form, OLS regression assumes linear relationship between the x predictor and the y outcome variable and provides solution to $y = a + bx + e$ model where a is an intercept (value of y at $x = 0$), b is a regression coefficient expressing the amount of change in y associated with one-unit change in x, and e is a residual error – a difference between the predicted and actual score at any given value of x. The regression coefficient b is of most interest because it determines the extent, direction, and strength of the association between y and x (Kleinbaum et al., 1988). It can be tested for statistical significance and, if found to be significant at a preselected p value, provides evidence of relationship between x and y and its magnitude. In multiple OLS regression, models with several continuous or categorical predictors (x1, x2, …, xk) are tested and regression coefficient for each predictor is estimated while keeping other predictors constant. Multiple OLS regression is used to assess which of multiple predictors are more or less important in predicting outcome variable or how one or more predictors relate to the outcome when controlling for some variables known to correlate with the outcome variable.

OLS regression is based on several assumptions which, if violated, may render the results unreliable. The most important assumptions are independence, homoscedasticity, and normality of residuals. Independence of residuals assumes that residual of one observation is independent from residual of another observation. Violation of independence occurs when some unmeasured variables are systematically similar between some groups of observations. Durbin-Watson test can be used to detect correlated residuals. Homoscedasticity assumes that residual variance is the same across all predictor values. If the assumption of homoscedasticity is violated, we are dealing with heteroscedasticity, which can be detected by plotting the residuals against the predicted values or performing one of the available tests (White's test; Breusch-Pagan test). Normality of residuals assumes that residuals are normally distributed. This assumption can be evaluated by plotting the residuals or applying Shapiro-Wilk W test. In addition to satisfying the assumptions, an important practical concern in regression is presence of outliers which exert undue influence on regression results. Outliers can be univariate (a score very different from other scores in that variable) or multivariate (a combination of scores on several variables very different from the same combinations for the rest of the cases) and can be detected with graphical methods (Tabachnick & Fidell, 2001). In the case of multiple regressions, the model also requires no multicollinearity between the predictors. Multicollinearity is present if two or more predictors are highly correlated and it results in huge inflation of standard errors of the coefficients. Multicollinearity can be diagnosed by computing and examining variance inflation factor (VIF).

OLS regression is widely used in quality of life research where the quality of life measures (usually interval) are the outcome or predictor (e.g., Hung, Liu, Yang, & Wang, 2012; Lavallee, Hatch, Michalos, & McKinley, 2007; Michalos & Kahlke, 2010).

ANOVA/ANCOVA models can also be fitted using OLS method. ANOVA compares the means of continuous outcome variable across the categories of one or more categorical predictors, whereas ANCOVA does the same while controlling for a continuous covariate. ANOVA/ANCOVA models can be considered special cases of OLS regression.

It is crucial to remember that regression analysis does not establish causation. The results may indicate significant relationship between the predictor and the outcome but do not justify any causal inferences about that relationship. Regression-based research, however, can be an important tool for gathering evidence leading to establishing causal links, assuming a number of other conditions are satisfied. An example of a formalized list of such conditions

is known as Hill's criteria for causation and is used widely in epidemiology research (Hill, 1971).

Cross-References

- ▶ Analysis of Variance
- ▶ Data Analysis
- ▶ Linear Regression Model
- ▶ Regression Coefficients

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Organic Democracy

▶ Conceptualizing Democracy and Nondemocracy

Organization Environment and Performance

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Definition

Organizational environments can be crudely characterized as "everything else" outside an organization that may influence its behavior. Theories of organizational environments emphasize that the resources available within the environment, the multiplicity of stakeholder demands to be addressed, and the rates of change in these each have serious implications for organizational performance. The performance referred to here differs in content between private, public, and nonprofit organizations but is similar in kind across these organizations in terms of generic concepts of organizational effectiveness, efficiency, and equity (Quinn & Rohrbaugh, 1981). Moreover, the performance of organizations indirectly affects the ▶ quality of life of those within the organization and in the organizational environment. Organizations provide goods and services that can improve or hinder one's quality of life but also provide employment opportunities and a variety of benefits such as health insurance and financial security.

Description

The relationship between organizational environments and ▶ performance is a key topic in organization studies (see Boyd & Gove, 2006). In particular, contingency theory suggests that the external circumstances that organizations confront are likely to have important effects on

organizational outcomes (Donaldson, 2001). In fact, concern with the environment has also been a central feature of other important theoretical perspectives within organization studies. For example, resource-dependency theorists (e.g., Pfeffer & Salancik, 1978) emphasize that the impact of external sources of financial and political support on organizations serves as a useful supplement to the focus on managerial perceptions of complexity and change found in contingency theory. Likewise, although institutional theory is not necessarily well suited to generating testable hypotheses about the relationship between organizational environments and performance, it offers the potential for a more nuanced evaluation of the complex regulative, normative, and cognitive forces shaping the choices managers make (Scott, 2001).

Among organization scientists, a strong consensus has emerged around the validity and applicability of Dess and Beard's (1984) framework for analyzing organizational environments (see Boyd & Gove, 2006). Dess and Beard (1984) identify three key dimensions of the organizational environment: munificence, complexity, and dynamism. Each of these dimensions is arguably a powerful influence upon managerial decision-making and thus in turn organizational performance.

Environmental munificence (or exogenous resource capacity) is thought to be associated with better organizational performance, while complexity (client homogeneity-heterogeneity and concentration-dispersion) and dynamism (environmental instability and turbulence) are assumed to increase the degree of task difficulty and so lead to worse performance (Dess & Beard, 1984). These relationships are arguably likely to hold for both "objective" archival measures of the environment drawn from secondary administrative sources and "subjective" perceptual measures of the environment drawn from surveys of practicing managers. Moreover, it is conceivable that the effects of different dimensions of the environment are not straightforwardly positive or negative. The benefits of environmental munificence may turn negative as organizations become complacent or overconfident in their capacity to keep on doing what they did well in the past. Likewise, at low-medium levels, complexity and dynamism may actually sharpen managerial awareness of the challenges to be confronted, at least until the environment becomes too complicated or unpredictable to manage effectively.

The basic ideas in studying the effects of munificence, complexity, and dynamism on organizational performance are therefore as follows:

A high degree of munificence is typically thought to buffer organizations from environmental pressures because it generates financial and organizational slack that can, if used effectively, facilitate both organizational stability and growth (Cyert & March, 1963). However, it is conceivable that organizations can have "too much of a good thing." Organizational slack may be bad for performance, on the one hand, because it leads managers to become complacent about the need to monitor performance improvement effectively. This lends itself to the broken window theory – relatively minor problems left unattended can lead to more serious problems in the organization and its environment that can negatively impact quality of life. Or, on the other hand, because it leads them to become overconfident in their ability to deliver more and better services, thus:

H1: Environmental munificence exhibits either a positive linear relationship with organizational performance or an inverted u-shaped one.

Environmental complexity comprises the heterogeneity and the dispersion of an organization's markets and services. In a heterogeneous environment, the organization grapples with a wide range of customers, service users, and suppliers. In a dispersed environment, the organization operates across a wide spread of geographical areas. Both types of complexity generate additional costs that need to be factored into the production process (Aldrich, 1979). Moreover, this complexity affects ▶ job satisfaction (Hackman & Oldham, 1976) – an

important component to quality of work life (Warr, Cook, & Wall, 1979) – and also overall human well-being. This is because complexity may mean greater competition between groups, which creates tension within the community that affects feelings of safety and social belonging. Even so, it is possible that a diverse and dispersed client base may prompt organizations to more effectively tailor the services that they provide to clients' requirements. Hence:

H2: Environmental complexity exhibits either a negative linear relationship with performance or an inverted u-shaped one.

Environmental dynamism is a product of the rate of change in external circumstances (instability) and the unpredictability (or turbulence) of that change. Organizations typically require greater human and financial resources to cope effectively with turbulence and instability in the environment (Dutton, Fahey, & Narayanan, 1983). Dynamism also affects overall human well-being through the mental and physical stress it can create for individuals both in and outside the organization and also the larger ▶ community. It is nevertheless possible that the need to demonstrate a heightened sensitivity to the external constraints surrounding an organization may sharpen managerial reflexes and prompt increased innovation and thereby generate better organizational outcomes – at least until environmental dynamism becomes so great as to preclude any kind of effective managerial response. This leads to:

H3: Environmental dynamism exhibits either a linear negative relationship with performance or an inverted u-shaped relationship one.

Discussion

The available evidence suggests that variations in performance are, as expected, influenced by measures of the environmental munificence, complexity, and dynamism confronted by organizations (Boyd & Gove, 2006). Organizations operating in a munificent, simple, stable, and predictable context appear to perform better than their counterparts in less favorable circumstances. Indeed, each of the dimensions of the environment identified by Dess and Beard (1984) appears to have an important impact on the prospects of positive organizational and social outcomes. Even so, to date few studies have provided a systematic analysis of the effects of each of those dimensions within the same study using both archival and perceptual measures of the environment and testing for nonlinearity in the environment-performance relationship.

The following three lessons emerge from the most comprehensive tests of the Dess and Beard model to date (Andrews, 2009; Andrews & Boyne, 2008; Andrews & Johansen, 2012): (a) environmental munificence has an especially strong effect on performance, (b) environmental performance effects hold equally as strongly for objective and subjective measures of the environment, and (c) rather than exhibiting a complicated nonlinear influence on performance, organizational environments seem to matter in a relatively predictable, straightforward, and linear way.

Although the independent effects of organizational environment on performance are important, managerial activities are likely to influence those effects at varying levels of environmental munificence, complexity, and dynamism. For example, it is quite conceivable that facets of managerial activity will be more or less successful at very high or very low levels of environmental challenge. Thus, much more work is required to analyze the full scope of nonlinearity in the organizational environment-performance relationship.

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Organizational Change

► Development

Organizational Commitment

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Synonyms

Involvement in organizations; Organizational engagement; Motivation

Definition

Organizational commitment is defined as "a psychological state that (a) characterizes the employee's relationship with the organization, and (b) has implications for the decision to continue or discontinue membership in the organization" (Meyer & Allen, 1991, p. 67). This popular definition is an attempt to create consensus between different research traditions and definitions in the literature on organizational commitment. For example, Porter, Steers, Mowday, and Boulian (1974) strongly focused on the affective aspect by defining organizational commitment as "the relative strength of an individual's identification with and involvement in a particular organization" (p. 604). Mowday, Porter, and Steers (1982) differentiate Porter, Steers, Mowday and Boulian's (1974) definition further by specifying "identification" and "involvement" in three factors: "1. a strong belief in and acceptance of the organization's goals and ► values; 2. a willingness to exert considerable effort on behalf of the organization and 3. a strong desire to maintain membership in the organization" (p. 27). These three components reflect two research traditions in the literature of the 1970s and 1980s, that is, attitudinal (or affective) commitment describing an emotional attachment to the organization (Mowday, Porter, & Steers, 1982), and behavioral approaches, focusing on the behavioral intention to remain in the organization (Allen & Meyer, 1990).

Description

Organizational commitment has a long history of research interest within the industrial and organizational psychology and the study of organizational behavior (Mathieu & Zajac, 1990; Meyer, Stanley, Herscovitch, & Topolnytsky, 2002; Morrow, 1993; Mowday et al., 1982). This is not surprising given the frequently reported consistent relationship of organizational commitment with other relevant attitudinal and behavioral constructs such as ► job satisfaction, ► well-being, withdrawal intention and behavior,

organizational citizenship behavior, and organizational ▶ productivity (Abbott, White, & Charles, 2005; Currivan, 1999; Farkas & Tetrick, 1989; Mathieu & Zajac, 1990; Meyer & Allen, 1997; Meyer & Maltin, 2010; Meyer et al., 2002; Porter et al., 1974). While some scholars have discussed potential negative effects of extreme organizational commitment or overcommitment (e.g., Siegrist, 1996), research in most cases has shown commitment to have positive consequences for the organization and the individual (e.g., Mathieu & Zajac, 1990; Meyer & Maltin, 2010; Meyer et al., 2002).

The popularity of organizational commitment resulted in a variety of different definitions and conceptualizations of this construct. Due to these different concepts, critique on organizational commitment often rested on overlaps with other constructs or unprecise definitions. Especially, the early behavioral definitions focusing on remaining in the organization have been criticized for mixing defining elements and consequences of organizational commitment (Swailes, 2002). In response to the critique, there is an increasing consensus that unidimensional models focusing on the binding of an individual to the organization tend to oversimplify a complex variable. Therefore, multidimensional models are suggested that integrate different aspects of organizational commitment into the construct. For example, Meyer and Allen (1991) differentiate between affective, continuance, and normative commitment.

The conceptualization of affective commitment was strongly influenced by the work of Porter and colleagues (Mowday, Steers, & Porter, 1979; Porter, Crampon, & Smith, 1976; Porter et al., 1974). These authors described affective commitment in terms of strong identification with and high affective involvement in an organization (Porter et al., 1974). The emphasis of affective commitment is on the emotional attachment to the goals and ▶ values of the organization, reflecting an attitudinal component of organizational commitment.

Continuance commitment also referred to as calculative commitment conceptualizes commitment as perceived earnings and costs, which are related to the membership in an organization. This approach is mainly based on Becker's work (1960) on side bets, referring to rational evaluations on the gains and losses of the individual associated with leaving the organization. In this perspective, individuals are committed to an organization because the costs of leaving outweigh the gains.

The third common type of commitment identified by Meyer and Allen (1991) among earlier research is referred to as normative commitment, which is seen as "the totality of normative pressures to act in a way which meets organizational goals and interests" (Wiener, 1982, p. 421). In this sense, organizational commitment is seen as an obligation felt toward the organization given by internalized ▶ norms.

The core differences between the described dimensions of commitment are reflected by different motives underlying the attachment of employees to the organization: "Employees with strong affective commitment remain because they *want* to, those with strong continuance commitment because they *need* to, and those with strong normative commitment because they feel they *ought* to do so" (Allen & Meyer, 1990, p. 3).

Allen and Meyer (1990) suggest viewing affective, continuance, and normative commitment as components of a multidimensional construct rather than as separated types of commitment. Put together, the different dimensions of commitment picture the "commitment profile" (Meyer & Herscovitch, 2001, p. 308) of an employee. Furthermore, the magnitude of the association of organizational commitment with various outcomes is dependent on the dimension of commitment examined (Meyer et al., 2002).

The three-component model (TCM; Allen & Meyer, 1990; Meyer & Allen, 1984, 1991) was an attempt to unify research on attitudinal and behavioral approaches as well as research on three general themes in the commitment literature.

There have been several other proposals for a multidimensional modeling of organizational commitment. Some models include two components (e.g., value commitment and commitment to stay (Angle & Perry, 1981)); other models

consist of three components (e.g., compliance, identification, and internalization (O'Reilly & Chatman, 1986); affective, continuance, and moral commitment (Jaros, Jermier, Koehler, & Sinich, 1993)). Other conceptualizations propose other types of commitment expanding the commitment construct to different foci (Cooper-Hakim & Viswesvaran, 2005; Reichers, 1985). Although there is disagreement regarding the number of constituting components of organizational commitment, there is consensus that commitment is best represented by a multidimensional conceptualization with varying correlates, antecedents, and consequences depending on the considered dimension (Meyer et al., 2002). Since the TCM introduced by Meyer and Allen (Allen & Meyer, 1990; Meyer & Allen, 1984, 1991) has been the prevalent subject of organizational commitment research (e.g., Felfe, Schmook, Six, & Wieland, 2005; Herscovitch & Meyer, 2002; Organ & Ryan, 1995), it does not surprise that their terminology of affective, continuance, and normative commitment prevails in commitment literature (Meyer & Herscovitch, 2001).

In terms of antecedents of organizational commitment, Meyer et al. (2002) found in their ▶ meta-analysis generally low correlations of organizational commitment with demographic variables, although age and tenure showed weak positive relationships with the three components of commitment. Especially in the case of affective commitment, the antecedents identified in research (e.g., job characteristics, work experiences, and structural characteristics) are under the control of the organization through changes in work environment features. The main antecedents of affective commitment can be summarized as providing employees with conditions that "contribute to employees' 'comfort' in the organization [. . .] as well as their sense of '▶ competence' and self-worth" (Meyer, Allen, & Topolnytsky, 1998, p. 83). For example, management can enhance employees' affective commitment by providing them with meaningful tasks, teamwork (wherever applicable), decent pay, and promotion opportunities and by granting role clarity, especially avoiding role conflicts and ambiguity (Swailes, 2002; Welsch & LaVan, 1981). Moreover, work environment features and actions expressing ▶ organizational values related to courtesy, consideration, cooperation, and moral integrity tend to be important for affective commitment (Finegan, 2000).

Discussion

While there seems to be an emerging consensus about the multidimensionality, main antecedents, and important consequences of organizational commitment, recently there is an increased interest in connecting organizational commitment research to established theories of social psychology.

The social exchange theory, for instance, interprets organizational commitment as an outcome of reciprocity and exchange mechanisms between employer and employee (e.g., Eisenberger, Armeli, Rexwinkel, Lynch, & Rhoades, 2001; Settoon, Bennett, & Liden, 1996). More specifically, organizational commitment results from the employees' tendency "to exchange their commitment for an employer's support" (Cropanzano & Mitchell, 2005; Eisenberger, Fasolo, & Davis-LaMastro, 1990; Eisenberger, Huntington, Hutchison, & Sowa, 1986). Accordingly, perceived organizational support has been proved as a main antecedent of organizational commitment (e.g., Meyer et al., 2002; Rhoades & Eisenberger, 2002). Whitener (2001) elaborates on the exchange relationship by demonstrating that in fact "perceived organizational support has direct and indirect relationships, through ▶ trust-in-management, with organizational commitment" (p. 530).

Other scholars discuss organizational commitment in the light of the social identification theory (Ellemers, De Gilder, & Haslam, 2004; Haslam et al., 2006) and describe affective commitment as an emotional aspect of identification with the group (Ellemers, Kortekaas & Ouwerkerk, 1999).

However, while the social exchange theory and the social identification theory are discussed, the specific relationship between organizational commitment and identification still remains unclear (Herrbach, 2006).

According to Herrbach (2006), some authors conceptualize organizational identification as a component of organizational commitment (Meyer & Allen, 1991; O'Reilly & Chatman, 1986). These authors define identification either as "the affective dimension of commitment, or as part of this affective dimension" (Herrbach, 2006, p. 631). Other authors emphasize a conceptual difference between organizational identification and organizational commitment (Herrbach, 2006). Following van Knippenberg and Sleebos (2006, p. 571), organizational identification reflects "the self-definitional aspect of organizational membership," whereas organizational commitment reflects a relationship between two separate entities, the organization and the employee. Accordingly, van Knippenberg and Sleebos (2006) demonstrate differential relationships of organizational commitment and organizational identification with perceived organizational support, ▶ job satisfaction, and turnover intentions. Herrbach (2006) provides additional support for the distinctiveness of both concepts by showing a relationship of positive and negative affect with identification, while affective commitment correlates merely with ▶ positive affect. Other authors again conceptualize identification as an antecedent of affective commitment (Meyer & Herscovitch, 2001).

Yet another point of view on organizational commitment is taken by Solinger, van Olffen, and Roe (2008), who propose a reconceptualization of organizational commitment by integrating actual findings into Eagly and Chaiken's (1993) attitude-behavior model. In this vein, affective commitment is seen as attitude toward the target (organization), continuance commitment is an attitude toward a behavior (leaving or staying), and normative commitment represents an attitude toward normative outcomes.

Overall, the application of validated theories in social psychology on commitment research can be seen as a strengthening of the theoretical background and as a new impetus for research on organizational commitment. In addition, the increasing interest in cross-cultural aspects of organizational commitment is a promising avenue for research and practice (Hausmann, Mueller, Hattrup, & Spiess, in press).

Cross-References

- ▶ Attachment
- ▶ Competence
- ▶ Conceptual Framework for Quality of Life
- ▶ Correlation Coefficient
- ▶ Decision Making
- ▶ Demographics
- ▶ Exchange Theory
- ▶ Group Dynamics
- ▶ Job Satisfaction
- ▶ Meta-analysis
- ▶ Motivation
- ▶ Norms
- ▶ Organizational Values
- ▶ Positive Affect
- ▶ Productivity
- ▶ Rational Choice Theory
- ▶ Reciprocity in Exchange
- ▶ Role Theory
- ▶ Trust
- ▶ Well-Being at Work

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Organizational Culture

► Organizational Values

Organizational Engagement

► Organizational Commitment

Organizational Values

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Synonyms

Organizational culture

Definition

Organizational values can be defined as beliefs about socially or personally desirable end states or actions that are explicitly or implicitly shared by members of an organization (e.g., Schwartz, 1992). Hence, organizational values function as guides to what is seen as good and important in the organization (VandenBos, 2007; Williams, 1970). Moreover, they are influencing the selection and evaluation of decisions and actions in an organization (Kluckhohn, 1951; Rokeach, 1973; Schwartz, 1992).

In line with the general conceptualization of values, organizational values transcend single situations and are relatively stable over time (Schwartz, 1999). While the sharedness or agreement in the organization is a key defining characteristic of organizational values (Rousseau, 1990), the existence of subcultures in an organization is also possible (e.g., van den Berg & Wilderom, 2004).

Description

The conceptualization of organizational values differs to some degree among researchers (Wiener, 1988). According to Wiener (1988), one source of these inconsistencies is a certain confusion of organizational values with other constructs like ► norms, goals, or attitudes. However, many scholars suppose that values are more global and abstract in nature and become manifest in ► norms, goals, attitudes, decisions, and actions (e.g., Beyer, 1981; Kluckhohn, 1951; Rokeach, 1973; Schmidt & Posner, 1986; van der Wal & Huberts, 2008).

In addition, organizational values are seen as the core element of an organizational culture (e.g., Hofstede, 2001; Wiener, 1988). Consequently, research on organizational culture is often based on the assessment of organizational values (e.g., van den Berg & Wilderom, 2004). The reference to established organizational value frameworks in research on organizational culture allows for a detailed specification of research questions (Child, 1981;

House, Wright, & Aditya, 1997). The reference to specific values avoids treating organizational culture as an omnibus construct explaining any differences found between organizations as being of cultural nature. Otherwise, a cultural explanation turns out to be an "empty statement" (van de Vijver & Leung, 2000, p. 36) because it only paraphrases the existence of found differences without any additional explanation (Georgas, van de Vijver, & Berry, 2004).

Organizational Values and Their Consequences and Antecedents

Organizational culture and its related values are thought of as the "glue" which holds the organization together and stimulates commitment and ▶ performance of the employees (van den Berg & Wilderom, 2004, p. 571). Likewise, organizational culture is suggested to be a key factor in influencing organizational effectiveness (Denison & Mishra, 1995; Wilkins & Ouchi, 1983) and thus can be a main source of competitive advantage for organizations (Barney, 1986). In the same vein, literature and research concerning organizational values and person-organization fit have been linked to many important work-related constructs, such as ▶ motivation (e.g., Locke, 1991), ▶ satisfaction (e.g., Ashforth & Mael, 1989), commitment (Meyer, Irving, & Allen, 1998), ▶ performance (e.g., Hartnell, Ou, & Kinicki, 2011), or turnover (O'Reilly, Chatman, & Caldwell, 1991). Specifically, Hartnell et al.'s (2011) ▶ meta-analysis on the effect of organizational culture using the competing values framework (CVF; Quinn & Rohrbaugh, 1983) showed significant relationships of organizational values with important ▶ indices of organizational ▶ performance. Their results indicate that variations in value profiles of an organization demonstrate a differential relationship to employee attitudes (e.g., ▶ Job Satisfaction, ▶ Organizational Commitment), organizational effectiveness (e.g., innovation, quality of products and services), and financial performance (e.g., subjective and objective profit or growth).

According to Schein, cultural elements like values are based on "basic assumptions that a given group has invented, discovered, or developed in learning to cope with its problems of external ▶ adaptation and internal integration, and that have worked well enough to be considered valid" (Schein, 1984, p. 3). Thus, a prerequisite for the development of organizational values is a shared history of problem solving among a definable group of people in the organization (Schein, 1984).

Initially, the specific organizational values are formed as a result of the actions and decisions of the organization's leaders during the development of the organization. Especially the founders of an organization are very influential in forming organizational values (e.g., Schein, 1984; Schneider, 1987; Siehl, 1985). Yet, the formation of organizational values will ultimately be a result of shared experiences and interaction in the organization (Schein, 1984). Specifically, leadership in an organization will always play an important role in the development and management of organizational values.

Organizational Values and Organizational Dynamics

Organizational cultures and specifically organizational values are built around functional and successful problem solving in the specific organization. The successful organizational values that form the organizational culture are carried on and are reflected in and by organizational strategies, regulations, ▶ norms, and goals (e.g., Wiener, 1988, p. 536). Moreover, organizational values become manifested in organizational artifacts like organizational rituals (e.g., Deal & Kennedy, 1982), symbols (e.g., Turner, 1990), and stories (e.g., Mitroff & Kilmann, 1976). Thus, organizational values influence employees' everyday behavior as they are directly and indirectly reflected in the customs, systems, ▶ norms, and practices of the organization (Bourdieu, 1972; Markus & Kitayama, 1994; Schwartz, 1999, p. 25).

These institutionalized and crystallized organizational values are what make changing an organizational culture a true challenge (Hofstede, 1980), as the systems and processes often transport the old values and also have to be changed to support the aspired new organizational values.

With reference to Schein's (1984) theory, Hatch (1993) developed a process model of organizational cultures. In order to incorporate the dynamic of organizational cultures, her cultural dynamics model brings together ideas from functionalistic and symbolic perspectives to explain the processes of manifestation, realization, symbolization, and interpretation of organizational culture (Hatch, 1993). According to the model's basic assumption, values, artifacts, and symbols are all connected in dynamic relationships continuously producing and reproducing the organizational culture.

From a practical perspective, one major process of the culture production and reproduction based on organizational values is the organizational selection and socialization (Hofstede, 1980; Schneider, 1987; Schneider, Goldstein, & Smith, 1995; Wiener, 1988). While the selection mainly refers to the recruitment and promotion of employees based on organizational values, the socialization covers all aspects and processes of transmitting the organizational values to the employees (Etzioni, 1961). Yet, both selection and socialization are in many cases not systematically planned and intentionally performed acts but strongly influenced by organizational values. The awareness of these processes was heightened by Schneider's seminal work on the attraction-selection-attrition (ASA) model (Schneider, 1987; Schneider et al., 1995). The ASA model (Schneider, 1987; Schneider et al., 1995) proposes a multiple-step perspective on how new members are brought in line with the organizational values. Schneider's first assumption is that people are more likely to apply for a position in the specific organization when their value structure fits the organizational values. In a second step, the organization will likewise select and promote people who seem to fit better to the organizational values. Thus, employees with a better person-organization fit will be retained in the organization.

While the ASA model has been very influential in research and literature, one major point of criticism is that applicants often do not know the organizational values of the respective company (Billsberry, 2004). Today, however, many companies actively engage in employer branding and explicitly promote their organizational values and benefits.

Measurement of Organizational Values

In terms of measuring organizational values, different approaches and methods have been developed. At a very basic level, a qualitative approach and a quantitative approach can be distinguished. The qualitative approach tries to extract the organizational values from organizational documents, interviews, and observations (Schein, 1984). Analyzing the content of organizational documents is supposed to have a great potential for research on organizational values (Martin & Siehl, 1983; Rousseau, 1990; Daly, Pouder, & Kabanoff, 2004). When applying interviews, the interview partners (e.g., founders, upper management, instructors, supervisors, mentors) are often chosen because of their prominent role in the development and transmission of organizational culture (Schein, 1984).

The same is true for the quantitative approach, in which organizational leaders or socialization agents are often chosen as participants of organizational value surveys. However, due to the specific advantages of surveys, it is easy to extend the surveys to a high number of organizational members. Thus, surveying employees delivers a broad picture of organizational values and may even uncover certain subcultures or levels of culture formation in the organization (Schein, 1984).

As importance is a key characteristic of the value conceptualization (VandenBos, 2007), research is concerned about how to operationalize value importance. Direct ratings of value importance represent the most common approach in research on values (Hattrup, Mueller, & Aguirre, 2007). However, it has been suggested that indirect approaches (e.g., inferring the importance from the strength of the relationship with criterion variables) may be less susceptible to biases such as social desirability and may be more adequate to assess values that exist at a subconscious level (e.g., Hattrup et al., 2007; Hofstede, 2001; Mumford, Scott, Gaddis, & Strange, 2002).

Overall, many scholars suggest to derive organizational value profiles by aggregating

individual ratings (e.g., Hofstede, 1980; Inkeles & Smith, 1974; Schwartz, 1999). This suggestion is based on the idea that individual ratings are influenced by shared cultural experiences and their enculturation, as well as by underlying organizational values (Schwartz, 1999).

While Likert-scaled items are recommended for the practical value assessment (Billsberry, 2004), research disagrees with regard to the content of the value ▶ survey. Today, there are many different value dimensions proposed for research in organizations (see Ashkanasy, Broadfoot, & Falkus, 2000). The number of scales assessing organizational values increases even more, as many organizational culture scales primarily focus on the measurement of values (van den Berg & Wilderom, 2004). Among the most established scales measuring organizational values are Rokeach's List of Values (1973), Schwartz's Value Survey (1992), the Competing Values Framework by Quinn and Rohrbaugh (1983), Denison's Organizational Culture Survey (Denison & Neale, 1996), and the Organizational Culture Profile developed by O'Reilly et al. (1991) and revised by Sarros, Gray, Densten, and Cooper (2005). Based on the multitude of measured dimensions, there are some efforts to integrate the existing concepts and identify basic universal dimensions (e.g., Detert, Schroeder, & Mauriel, 2000; van den Berg & Wilderom, 2004). For example, van den Berg and Wilderom (2004) identified five basic dimensions of organizational culture (namely, autonomy, external orientation, interdepartmental coordination, human resource orientation, and improvement orientation) after a thorough review of the existing literature on organizational value dimensions and their own research. However, many of the current scales and frameworks are missing a sound theoretical foundation (see, e.g., Allaire & Firsirotu, 1984; Hartnell et al., 2011). Accordingly, critiques point out that the existing lists of values often only partly apply to a specific organization (van Rekom, van Riel, & Wierenga, 2006). As a result, some scholars suggest that the dimensions and items should be developed to suit the organizational context (Schwartz, 1994). Others propose a two-step approach: using qualitative interviews in a first step and surveying the employees based on these findings. Yet, due to the ad hoc development, this will lead to results that are hardly comparable between different organizations (van Rekom et al., 2006). Thus, there is still an urgent need for a theoretically based integration and convergence of the organizational culture dimensions to be generalizable across different organizations (e.g., van den Berg & Wilderom, 2004).

Discussion

According to the early value theorists and researchers, values offer a powerful perspective in studying organizations, decisions, and actions (e.g., Rokeach, 1973; Schein, 1984). Therefore, organizational values are seen as promising and influential management instruments (Pruzan, 1998). Moreover, organizational values have been found to influence organizational ▶ performance and employee attitudes (e.g., Ashforth & Mael, 1989; Hartnell et al., 2011; Meyer et al., 1998). Furthermore, they are supposed to affect organizational processes like selection, socialization, and retention (Schneider, 1987; Schneider et al., 1995). Hence, more and more organizations are concerned with the management of their organizational values in terms of a value-based management perspective (e.g., Anderson, 1997). Especially in times of ambiguity and uncertainty, scholars suggest to employ management by values instead of bureaucratic mechanisms because they allow for a more flexible and adaptive management of the organization (Ouchi, 1979).

Overall, it is thus obvious that the understanding of organizational values will be highly relevant for practitioners and may "become integral to the process of management itself" (Schein, 1984, p. 14). However, concerning the understanding of organizational values and organizational culture, there is still a general need for more theoretically driven and interdisciplinary research approaches (Allaire & Firsirotu, 1984) combining the ▶ knowledge and perspectives of ▶ anthropology, sociology (e.g., Parsons, 1951), psychology (e.g., Schwartz, 1992), and management (e.g., Schein, 1984). Such an interdisciplinary perspective and integration has the potential to give new impetus to the research on

the development, functions, and dynamics of organizational values in order to improve organizational effectiveness as well as individual and organizational ▶ well-being.

Cross-References

- ▶ Adaptation
- ▶ Aggregation Problem
- ▶ Anthropology
- ▶ Competitiveness
- ▶ Conceptual Framework for Quality of Life
- ▶ Criterion Validity
- ▶ Decision Making
- ▶ Generalizability Theory
- ▶ Group Dynamics
- ▶ Human Capital
- ▶ Importance Rating(s)
- ▶ Indices
- ▶ Inference, Statistical
- ▶ Job Satisfaction
- ▶ Knowledge Transfer and Exchange
- ▶ Levels of Measurement
- ▶ Likert Scale
- ▶ Measurement Methods
- ▶ Meta-analysis
- ▶ Motivation
- ▶ Norms
- ▶ Organizational Commitment
- ▶ Performance Indicators
- ▶ Qualitative Methods
- ▶ Social Desirability Bias
- ▶ Storytelling
- ▶ Survey Administration
- ▶ Survey Research
- ▶ Symbolic Capital
- ▶ Validity, Logical
- ▶ Well-Being at Work

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Organizations, Quality of Life in

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Synonyms

Quality of working life

Definition

Employee well-being in organizations.

Description

Research on quality of life in organizations saw its early development take place in North America and Europe in the 1970s and 1980s. Known as quality of working life (QWL), it refers to employee well-being at work. Work programs of QWL aimed at humanization at work and improvement of ▶ employee well-being through job and organizational redesign (Jenkins, 1983). Although QWL is associated with a broad range of theories, such as job enrichment theory and theory of socio-technical systems, satisfaction of employee needs at various levels is central to the construct of QWL and its measurement (Sirgy, Efraty, Siegel, & Lee, 2001).

As researchers gradually recognize the complex and multifaceted nature of QWL, multiple areas of research, previously considered dimensions of QWL, have grown into more specialized programs of studies. These areas include, although not limited to, ▶ work stress, work-family balance, and organizational support.

Work stress, understood as job demand experienced by employees, has been linked to several serious health problems, such as significant weight gain (Block, He, Zaslavsky, Ding, & Ayanian, 2009) and coronary heart disease (Aboa-Eboulé et al., 2007). Role ambiguity, role conflict, and role overload are three significant and commonly recognized job stressors (Kahn, Wolfe, Quinn, & Snoek, 1964). Drawing upon role dynamic theory, role stressors emerge as organizational members perceive certain psychological forces when interpreting role-related information in the form of influence attempts by others (Kahn et al., 1964). In particular, research found that leader behaviors and leader-employee relationships were associated with employee stress and affective well-being (Skakon, Nielsen, Borg, & Guzman, 2010). Role stressors have been found to be negatively related to job performance (Gilboa, Shirom, Fried, & Cooper, 2008). Prolonged exposure to stressors could result in burnout, which takes multiple forms, such as emotional exhaustion and feeling a lack of personal accomplishment (Maslach, Schaufeli, & Leiter, 2001). The outcome of ▶ burnout could be both attitudinal and physiological. For example, evidence has linked burnout to lowered ▶ job satisfaction (Miller, Ellis, Zook, & Lyles, 1990) and increased risk of cardiovascular disease (Shirom, Toker, Berliner, & Shapira, 2006).

Originally conceptualized within the literature of work stress, work-family balance has seen tremendous growth in itself in recent years (Brough & Kalliath, 2009). This stream of research recognizes that understanding quality of life in organizations cannot be separated from an understanding of quality of life in nonwork domains. Work-family imbalance refers to stress resulted from work-family conflict and stress spilled over from work to nonwork domains and vice versa. Work-life imbalance takes place not only at the individual level across domains but also at the dyadic and group level, for instance, between spouses at home, which is referred to as

a crossover effect due to transmission of emotions (Westman, Brough & Kalliath, 2009). More specifically, two types of ▶ work-family conflict exist: work-to-family conflict (WFC) and family-to-work conflict (FWC). WFC refers to the extent to which family life is made difficult as a result of work roles, and the reverse is FWC (Michel, Kotrba, Mitchelson, Clark, & Baltes, 2011). Role stressors at work and at home contribute to WFC and FWC, respectively. In general, work-family conflict is not only associated with adverse self-reported health outcomes but also objective health indictors including cholesterol level, body mass index, and physical stamina (van Steenbergen & Ellemers, 2009). By contrast, employees in organizations that facilitate work-family balance achieve better health outcomes. Recent development in communication technologies affords more flexible work arrangement in many industries with the aim of facilitating work-family balance. An increasing number of organizations implement telework, also known as telecommuting, programs as part of their flexible work arrangements, allowing employees to work from home on a part-time or full-time basis. Recent meta-analysis confirms the beneficial effects of telework on lowering work-family conflict and increasing job satisfaction (Gajendran & Harrison, 2007).

To compete for qualified employees and improve performance, organizations invest resources to help employees relieve work stress and facilitate work-family balance. Perceived organizational support (POS) as a construct refers to employees' perception with regard to the extent to which an organization cares about their well-being (Eisenberger, Huntington, Hutchinson, & Sowa, 1986). Specifically, three categories of treatment are significant predictors of POS, including fairness of treatment, supervisor support, and organizational rewards and favorable job conditions (Rhoades & Eisenberger, 2002). Two decades of research has demonstrated that POS have a strong, positive association with organizational commitment and job satisfaction and negative association with employees' intent to leave (Riggle, Edmondson, & Hansen, 2009).

In summary, research on quality of life in organizations in the past few decades has produced rather conclusive results regarding the damaging effects of unfavorable work conditions and stress on ▶ employee well-being and the beneficial effects of organizational support on employee attitudinal and psychological outcomes.

Cross-References

▶ Organizational Commitment
▶ Organizational Values

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Orgasm

► Sexual Functioning

Orientations to Happiness

► Pleasure, Engagement, Meaning, and Happiness

OSIQ

► Oxford Shoulder Instability Score

OSIS

► Oxford Shoulder Instability Score

OSS

► Oxford Shoulder Score

Ostracism

► Disadvantaged Populations

Oswestry Disability Index

► Oswestry Disability Questionnaire

Oswestry Disability Questionnaire

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Synonyms

Oswestry disability index; Oswestry low back disability questionnaire

Definition

The Oswestry Low Back Pain Disability Questionnaire is a 10-section, self-report questionnaire to evaluate the impact of back pain on activities.

Description

The Oswestry Low Back Pain Disability Questionnaire (Fairbank, Couper, Davies & O'Brien, 1980) was developed in the late 1970s and has been widely used. It is now often called the Oswestry Disability Index (ODI). Ten sections cover Pain, Personal Care, Lifting, Walking, Sitting, Standing, Sleeping, Sex Life, Social Life, and Traveling. Each section has six statements reflecting an increasing level of disability. Respondents choose the statement that most applies to them in each section. The first statement is scored 0; the second is scored 1 and so on to 5 for the last statement. The sum of the section scores is divided by 50 if all sections are completed and multiplied by 100 for the final percentage score. The denominator is adjusted for missed sections (e.g., the sum of the section scores is divided by 45 if one section is not completed). It takes 5 min for the patient to complete the Oswestry and less than 1 min to score. The total possible score ranges from 0 to 100, and a higher score indicates worse function. Scores from 0 % to 20 % are categorized as "minimal disability," 20–40 % "moderate disability," 40–60 % "severe disability," 60–80 % "crippled," and from 80 % to 100 % "bedbound or exaggerating" (Fairbank et al., 1980). The term "housebound" is a more appropriate contemporary descriptor for the 60–80 % score range.

A number of modified versions of the Oswestry have been published. Baker, Pynsent, and Fairbank (1989) removed the references to analgesic medication in the Pain section and to tablets in the Sleeping section. Version 2.0 (Fairbank & Pynsent, 2000) retained the Baker et al. (1989) modifications, and changed the instruction to answer the questions in relation to how their back problem is affecting them "today," rather than the original instructions which do not specify a time frame. A version adapted by the American Academy of Orthopaedic Surgeons (AAOS) omits the Pain, Sex Life, and Social Life sections and uses time rather than distance in the Walking section (Deyo et al., 1998). It is also differently scored and asks respondents about how pain has affected their activities "in the past week" (Fairbank & Pynsent, 2000).

Three modified Oswestry versions have been published that replace the "Sex Life" section, which is frequently not completed by respondents, with an alternative section. Hudson-Cook, Tomes-Nicholson, and Breen (1989) replaced the "Sex Life" section with one called "Changing Degree of Pain." As a transition question (i.e., how much has pain intensity changed over time), this is structured differently to the other sections and has been confirmed as not fitting with the other items (Davidson, 2008). This version is also called the Chiropractic revised version. A comparison of the wording of version 1.0, 2.0, AAOS, and Chiropractic versions can be found in Fairbank and Pynsent (2000).

Fritz and Irrgang (2001) in the USA replaced "Sex Life" with "Employment/Homemaking," and Davidson (2008) retained this section but changed the wording to "Work/Housework" for the Australian setting. Davidson and Keating (2002) also changed the imperial units (yards/miles) in the Walking section to metric distances (meters/kilometers) and modified the final statement in the section from "I am in bed most of the time and have to crawl to the toilet" to "I am unable to walk at all."

Versions of the Oswestry have been reported in Brazilian-Portuguese (Vigatto, Alexandre & Filho, 2007), Chinese (Lue, Hsieh, Huang, Lin & Lu, 2008), Danish (Lauridsen, Hartvigsen, Manniche, Korsholm & Grunnet-Nilsson, 2006a, 2006b), Finnish (Pekkanen, Kautiainen, Ylinen, Salo & Häkkinen, 2011), German (Mannion, Junge, Fairbank, Dvorak & Grob, 2006; Osthus, Cziske & Jacobi, 2006), Greek (Boscainos, Sapkas, Stilianessi & Prouskas, 2003), Italian (Monticone et al., 2009), Iranian (Mousavi, Parnianpour, Mehdian, Montazeri & Mobini, 2006), Korean (Kim et al., 2005), Norwegian (Grotle, Brox & Vøllestad, 2003), and Turkish (Yakut et al., 2004).

The previously free-domain use of the Oswestry has recently been curtailed, with a licensing agreement and royalty payments now required for funded research but free use

for unfunded research and clinical practice. Details can be found at the MAPI Research Trust website www.mapi-trust.org.

Reliability and Measurement Error

Test-retest reliability coefficients of r = 0.94 and 0.89 for same day retest have been reported by Triano, McGregor, Cramer, and Emde (1993) and Baker et al. (1989), respectively. Longer retest periods have used subgroups of participants who self-rated their condition as unchanged and coefficients (ICC) reported of 0.83 (Gronblad et al., 1993), 0.84 (95 % CI 0.73, 0.91) (Davidson & Keating, 2002), 0.90 (95 % CI 0.78, 0.96) (Fritz & Irrgang, 2001), and 0.94 (Kopec et al., 1995). Davidson and Keating (2002) reported a standard error of measurement of 6 points, with error around repeated measures of 9, and a minimum detectable change at 90 % confidence (MDC_{90}) of 10–15 points for a version with metric distances in the Walking section. Fritz and Irrgang (2001) reported SEM of 5.4 and MDC_{90} of 12.68 for the version with "Employment/Homemaking" replacing "Sex Life." Mannion et al. (2006) reported the MDC_{95} as around 9 points for the German version. The MDC is the magnitude of change score for a stated level of confidence that the change is greater than measurement error.

Validity and Minimum Clinically Important Difference

There is considerable evidence to support the construct validity of the Oswestry Disability with most of the evidence from studies of convergent validity that demonstrate an expected relationship between measures of the same or related constructs (e.g., Gronblad et al., 1993; Gronblad, Jarvinen, Hurri, Hupli & Karaharju, 1994; Kopec et al., 1995). Evidence of validity has also been provided by studies of groups with expected differences (▶ known-groups validity) (e.g., Bolton & Christensen, 1994; Leclaire, Blier, Fortin & Proulx, 1997).

Page, Shawaryn, Cernich, and Linacre (2002) analyzed data for 95 respondents using Rasch analysis and proposed that item 1 (Pain section with reference to analgesic medication) measured a different dimension to the other items and that there were disordered response thresholds (i.e., the 6-level responses not being used as expected). A 9-section Oswestry, with response options collapsed to 4 levels, was required to achieve adequate fit of the data to the Rasch model. Personal care was the easiest activity, and lifting was the most difficult.

Davidson (2008) used Rasch analysis to analyze data from 100 respondents who completed a 12-section Oswestry to allow comparison of three versions: the standard 10-section Oswestry, the version with Work/Housework replacing Sex Life, and the version with Change in Pain replacing Sex Life. The Walking section used metric rather than imperial distances. In all three versions, sleeping and personal care were the easiest activities, and lifting was the most difficult. The only misfitting item was the Changing Degree of Pain item. The Walking section showed uniform differential item functioning by age, with respondents in the older age category returning a higher score than predicted. Some disordered thresholds were observed in the Social Life, Standing, Personal Care, and Sex Life sections.

Using the best trade-off between sensitivity and specificity on the ROC curve for change score that correctly identifies changed and stable persons, the minimum clinically important difference (MCID) has been reported as 6 points for the version with "Employment/Homemaking" (Fritz & Irrgang, 2001), 4.45 points for the Brazilian-Portuguese version (Coelho et al., 2008), 5 points for the Norwegian version (Grotle et al., 2004), and 9 points for the Danish version (Lauridsen, Hartvigsen, Manniche, Korsholm & Grunnet-Nilsson, 2006b). The MCID is the smallest amount of change that would be considered clinically important.

Head to Head Comparisons with Other Scales

A Canadian study reported similar reliability and responsiveness of the Oswestry, the Quebec, and the Roland-Morris scales, with all these superior to the SF-36 Physical Functioning scale (Kopec et al., 1995). An Australian study reported the Oswestry (with modified Walking

section), Quebec, and SF-36 Physical Functioning scales had superior reliability compared to the Roland-Morris and Waddell scales, but all scales had similar responsiveness (Davidson & Keating, 2002). A UK study found the Oswestry (v2.1) was overall more responsive than the Roland-Morris or a patient-specific questionnaire (Frost et al., 2008). Grotle et al. (2004) reported similar responsiveness of the Norwegian version of the Oswestry compared to the Roland-Morris, Disability Rating Index, and SF-36 Physical Functioning scale.

Summary

The Oswestry is easy for both patients and clinicians to use, and its psychometric properties are well established. A change in total score of around 10 points allows one to be 90 % confident that the observed change is beyond measurement error. Change of less than 10 points should not be entirely discounted; however, the smaller the change in score, the greater the likelihood that variation in scores is due to measurement error. When the initial score is less than 10 points, there is insufficient range remaining to detect improvement in scores beyond measurement error (at 90 % confidence), and another instrument should be selected for patient assessment. A change of between 5 and 9 points is considered clinically important. For individual patients, the change in section scores as well as total scores should be inspected to determine which activities are improving. A very high score (>80 %) in ambulatory patients is rare, and clinicians should explore personal and environmental factors that may distort a person's self-reporting of disability.

Strengths

- Well-established psychometric properties.
- Translations in many languages are available.

Limitations

- Version 2.1a uses imperial distance units (yards/miles) in the Walking section, limiting the usefulness of this English-language version to countries that retain an imperial measurement system.
- The need to register to use the currently approved version creates a barrier to use.
- High nonresponse rates to the "Sex Life" section.
- The pain-focused language may be counterproductive in chronic pain management when redirecting patient attention away from pain is an important treatment goal.

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Oswestry Low Back Disability Questionnaire

► Oswestry Disability Questionnaire

Out of Work

► Unemployment

Outcome Assessment, Quality of Life

► Changes in Quality of Life

Outcomes and Indicators: Dayton-Montgomery County

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Synonyms

Community indicators; Montgomery county indicators

Definition

"Outcomes and indicators" is the term used in Montgomery County, Ohio, to describe its use of Results-Based Accountability™ (RBA™). RBA™ is "a common sense approach that … can be used to improve the quality of life in communities, cities, counties, states and nations, including everything from the well-being of children to the creation of a sustainable environment" (Friedman, 2005). The evolution of Montgomery County's use of RBA™ is described in a series of annual reports published by the Montgomery County Family and Children First Council. The outcomes are conditions of well-being to which the community aspires; the Family and Children First Council (FCFC) has articulated six outcomes: Healthy People, Young People Succeeding, Stable Families, Positive Living for Special Populations, Safe and Supportive Neighborhoods, and Economic Self-Sufficiency. Indicators are quantifiable measures that can be attached to the outcomes. The FCFC is currently tracking 27 indicators distributed among the six outcomes.

Description

Over the past few decades, many communities around the world have adopted approaches to data gathering, dissemination, and utilization that have come to be called "community indicator projects" (Besleme & Mullin, 1997; Dluhy & Swartz, 2006). In general the goal of these efforts is to improve the quality of life, though the connection between the assembled data and the resulting actions remains to be fully realized and evaluated (Zachary, Brutschy, West, Keenan, & Stevens, 2010). One pathway worth exploring is a model developed by Mark Friedman, Director of the Fiscal Policy Studies Institute, called "Results-Based Accountability™," (Friedman, 2005).

Dayton (population 141,527) is the largest city in Montgomery County (Ohio's 5th largest county, population 535,153). The area was introduced to Results-Based Accountability™ when Friedman was invited to speak to some community leaders in 1996. Members of the Family and Children First Council (FCFC), the county's lead collaborative for health and human services, were in attendance. The Council had just been formed, and at its next meeting in March 1996, it quickly adopted Results-Based Accountability™ (RBA™) as a guiding principle.

In *Turning the Curve*, published in 1998, the FCFC introduced its use of outcomes and indicators as tools to organize its work. Outcomes were defined "(c)ollectively … as a vision of the future" which because they "… are of a general nature … do not immediately lend themselves to measurement" (Montgomery County Family and Children First Council, 1998). Six outcomes were identified: Healthy People, Young People Succeeding, Stable Families, Positive Living for Special Populations, Safe and Supportive Neighborhoods, and Economic Self-Sufficiency. Following the principles of RBA™, the FCFC felt that it wasn't enough just to say that they want county residents to be healthy or the county's neighborhoods to be safe and supportive. They had to describe how these conditions would be recognized in the day-to-day life of the community. What would people see, hear, feel, observe?

Outcomes and Indicators: Dayton-Montgomery County, Table 1 The Montgomery County (OH) Family and Children First Council has chosen six outcomes to define its work. Each outcome has an associated vision statement

Healthy People
Everyone makes choices–for themselves of for those entrusted to their care–which promote better health. Everyone gets the information and support they need to avoid preventable health problems. Both physical and mental wellness are valued. Everyone has access to an adequate level of healthcare, including prenatal care, from birth through death.
Young People Succeeding
Children are well prepared for learning when they start school and receive support outside of the classroom for their efforts inside the classroom. Intellectual curiosity, skill development and achievement are valued. Young people receive mentoring, guidance and support as they develop the capacity to differentiate between positive and negative risk behaviors. Positive role models are plentiful, and others in the community talk to teenagers with candor and respect about the difficult choices they face. Students finish high school ready to compete successfully in the labor market and/or in continuing education and skills development.
Stable Families
The community respects and supports families, recognizing that family composition in a diverse society is varied. Family members have healthy relationships with each other. Families nurture their members and provide a sense of well-being and safety. Family members work together and feel that they also belong to something larger than themselves.
Positive Living for Special Populations
With support from the community, special populations have the opportunity to participate in every aspect of community living that they desire. People with significant disabilities live, learn, work and participate in typical accessible community settings. The community respects and protects their rights and includes them as contributing members. *[Note: "Special Populations" are people of any age with significant disabilities who need assistance with basic daily living skills to live in the most appropriate, least restrictive community setting possible and avoid inappropriate institutionalization. This group includes people who are frail and elderly; adults with severe and persistent mental illness; children with severe emotional disabilities; persons with alcohol and other drug dependency; persons with mental retardation and developmental disabilities; and others who cannot perform basic life functions without assistance.]*.
Safe and Supportive Neighborhoods
People live in safe, affordable housing. They have access to positive educational and cultural experiences. Recreational centers are conveniently located and staff serve as positive role models, especially for the children. All aspects of the environment – e.g., air, water, soil – are safe and healthy. The community values the unique attributes of each neighborhood, whether rural or urban.
Economic Self-Sufficiency
Residents must have access to employment that provides a living wage and benefits. Barriers to employment, including transportation and day care issues, are minimized. Adequate opportunities for lifelong learning help prepare the workforce for the realities of 21st-century jobs. Educational, vocational training, and worker retraining services are readily available to support the needs of residents and employers.

To answer these questions, the FCFC wrote vision statements for each of the outcomes describing what would be observed if each outcome were fully achieved. Table 1 lists the outcomes and their accompanying vision statements.

Because they are general statements about desired conditions of well-being, the outcomes themselves are not measurable. Therefore, for each of the outcomes, the FCFC has chosen a small number of measurable indicators which are intended to serve as a proxy for that outcome. Table 2 lists the indicators associated with each outcome.

In choosing indicators, Montgomery County gave priority to those for which local data are available, preferably for a number of years so that a trend line can be established. If possible, data for the other large counties in Ohio, for the state as a whole, and for the nation are also available for comparisons.

The data are updated every year and published as part of each year's annual report. The annual reports have been cited as an example of exemplary reporting on results (outcomes) and indicators. In addition, the data have been published for several years on a Web site which also provides,

Outcomes and Indicators: Dayton-Montgomery County, Table 2 Since 1998, the indicators associated with each outcome have been revised periodically As of February 2013, there were 27 indicators being tracked

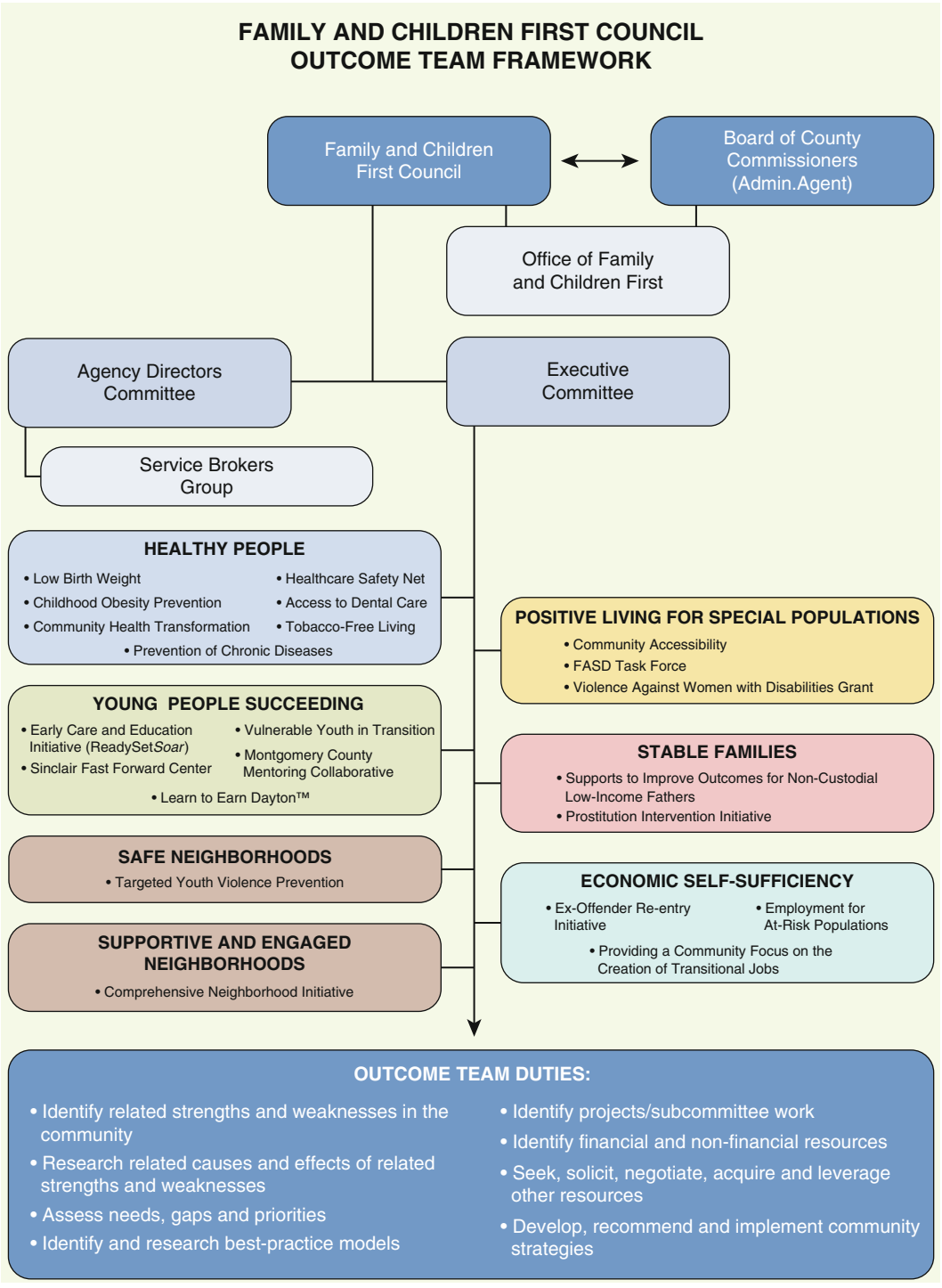
Healthy people
Low birthweight
Childhood obesity
Tobacco use
Access to health care
Young people succeeding
Kindergarten readiness
Student achievement – 3rd grade reading
Student achievement – 4th grade math
Ohio graduation test – 10th grade
High school graduation rate
Public school attendance
Teen pregnancy
College enrollment
College graduation rate
College persistence
Stable families
Avoiding poverty
Substantiated child abuse
Preventable child deaths
Domestic violence deaths
Positive living for special populations
Nursing home population
Employment rate for persons with a disability
Poverty rate for persons with a disability
Safe and supportive neighborhoods
Violent crime
Property crime
Voter participation
Economic self-sufficiency
Unemployment
People receiving public assistance
Median household income

when available, the indicator data for geographic areas contained within Montgomery County. The Web site also affords the opportunity to present other measures in addition to the indicators associated with each outcome. Montgomery County is one of a growing number of communities who publish subcounty data on the internet (Howell, Pettit, Ormond, & Kingsley, 2003; Kingsley, 2011; Stoecker, 2006).

Initially, the FCFC set targets for each indicator, i.e., values to be attained within 5 years of the release of *Turning the Curve* in 1998. Twelve of the indicators being tracked in those first years reached their targets at some point during that time, but most of them slipped back and only two were still "on target" when the 2003 report was published. About half of the indicators which slipped back still showed a net improvement when compared to the data in the first report. The FCFC concluded that attaining a target is not necessarily permanent and that a more meaningful measure of long-term success might be whether the overall trend – the "net improvement" – is in the desired direction (Montgomery County Family and Children First Council, 2004). Each annual report includes an update on the short-term trends (i.e., changes since the previous report) and the historical trends.

The reason for adopting an RBA™ approach is "to improve the quality of life in communities, cities, counties, states and nations, including everything from the well-being of children to the creation of a sustainable environment" (Friedman, 2005). The structure of the FCFC and its various subcommittees "allows (it) to align (its) energy with (its) purpose: better results for children and families" (Montgomery County Family and Children First Council, 2006). The six outcomes provide the core of this Outcome Team structure, as can be seen in Fig. 1. Five of the outcomes each have one team, and in order to recognize the dynamics of neighborhoods, the outcome called "Safe and Supportive Neighborhoods" has two teams. Figure 1 also gives examples of the initiatives and projects with which each outcome team is engaged. The Family and Children First Council is staffed by a department of the county government and has access, for its initiatives and projects, to funds allocated by the Board of County Commissioners, as well as some state and federal funds.

As an example of "Where Results Accountability Thinking Has Worked," Friedman (2005) cited public school attendance in Montgomery County, one of the indicators under the outcome called "Young People Succeeding." After dropping sharply in the early 1990s, the



Outcomes and Indicators: Dayton-Montgomery County, Fig. 1 Each outcome team is led by a pair of community leaders serving as cochampions. The rest of the members are community volunteers with a special interest in the team's focus area. The framework above reflects the structure and activities for 2012

attendance rate rose over the next decade, reaching a plateau for the latter half of the 2000s. Being aware of the data in the first place, and then taking the time to disaggregate the data by looking at subpopulations, led to some general, community-wide responses as well as to some specific, targeted responses.

Around the world community indicator projects are in a fertile period of development and analysis, with much attention focused on such issues as policy, governance, and what it means for an indicator system to achieve success (Hezri & Dovers, 2006; Holden, 2009). In the coming years, the ability of community indicator projects, including the one in Montgomery County, to connect "knowledge and policy" (Dluhy & Swartz, 2006) – and to connect "data to action" (Zachary et al., 2010) – will become increasingly important.

Cross-References

- ▶ Community Indicator Projects
- ▶ Community Indicators Consortium
- ▶ Community QOL Measures
- ▶ Healthy Communities
- ▶ Indicators, Quality of Life
- ▶ Quality of Community Life Measures
- ▶ Quality of Life
- ▶ Social Indicators Movement
- ▶ Social Indicators Research

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Outdoor Environment

- ▶ Landscape and Quality of Life

Outliers

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Synonyms

Outlying data points

Definition

Outliers are data points that deviate markedly from (i) the sample in which they occur or (ii) the assumed model, be it a probability distribution or a statistical model such as the least-squares regression model.

Description

The concern about outliers dates back to, at least, 1,777, when Bernoulli first discussed the practice of discarding outlying observations (Beckman & Cook, 1983). Since then, numerous studies of outliers have been published promoting various methods to detect outliers or deal with outliers. A substantial review can be found in Barnett and Lewis (1994).

A variety of definitions of outliers have been provided in the literature, but the most widely cited is Grubbs (1969) definition: "an outlying observation, or outlier, is one that appears to deviate markedly from the other members of the sample in which it occurs" (p. 1). It is noteworthy that Grubbs' definition is sample-based and a model or population, per se, is not involved in the definition. Hence, it leaves some ambiguities, such as "what is the criterion for this?" and "how does one define outliers when using different statistical models?" Building on Grubbs' definition, Liu and Zumbo (2012) and Liu, Wu, and Zumbo (2012) suggest a broader definition: Outliers are data points that deviate markedly from (i) the sample in which they occur or (ii) the assumed model, be it a probability distribution or a statistical model such as the least-squares regression model.

Although this definition still does not give a criterion or operational definition, this broad definition allows one to operationalize various strategies for investigating outliers by defining "markedly deviate" from "the model." Furthermore, this broad definition is a reminder that an outlier is defined relative to a model or assumed distribution. For example, when studying income, a data point may be regarded as an outlier if income is believed to be normally distributed, but not an outlier if income is believed to be distributed as a skewed random variable such as a member of the exponential, gamma, or chi-square families of distributions. Another commonly seen example is that an observation may not be an outlier in terms of a univariate distribution but becomes an outlier when put into a multiple regression model. For example, when regressing height onto age, a score of six feet tall is not an outlier, but a six-foot-tall 10-year-old may well be an outlier.

Effects of Outliers

A single outlier can seriously bias descriptive and inferential statistics (Cohen, Cohen, West, & Aiken, 2003; Huber, 1981). For instance, Cohen et al. (2003, p. 392) showed that in a sample with even one outlier, the regression coefficient became not statistically significant and R-square dropped from .43 in the original data (without outliers) to zero in the presence of the outlier. In a correlation study, Devlin, Gnanadesikan, and Kettenring (1981) demonstrated that, using a sample of 29 observations, the correlation coefficient can change from .99 to zero due to a single outlier.

Outliers can result in means shifted further either to the right or left of a distribution, variances can be inflated or deflated, regression coefficients can be biased, estimates of reliability can be inflated, and the inferences made from t-tests and F-tests may be biased (e.g., Lind & Zumbo, 1993; Wilcox, 2005). For example, Liu and Zumbo (2007) and Liu, Wu, and Zumbo (2010) showed that estimates of Cronbach's coefficient alpha can be severely inflated for continuous as well as ordinal scale item responses, which can be inflated from .40 to .90 in some cases.

Causes of Outliers

Outliers are often only discussed as errors, but this is both limiting and problematic. Outliers can arise from different sources. In the outlier literature, different causes have been discussed (Barnett & Lewis, 1994; Beckman & Cook, 1983; Liu & Zumbo, 2007; Liu & Zumbo, 2012; Liu, Zumbo, & Wu, 2012). In general, these outlier sources can be summarized to two general

categories. The first category usually refers to "errors" that occur during data collection and errors in preparing data for analysis (e.g., data recording or entry errors). This category also includes the unpredictable measurement-related errors from participants, such as participants' guessing, inattentiveness, misresponding due to fatigue, or lack of interest in participation. The outliers generated from such sources are illegitimate observations and should, where possible, be corrected.

The second category occurs when researchers unknowingly recruit some individuals who are not members of the target population. For example, a researcher planned to target English as second language (ESL) students and study their language proficiency but unknowingly includes a subgroup of individuals whose first language is English. Another example of a subpopulation can be people who are prone to be inattentive, and hence respondents' misunderstanding of instructions reflects their propensities of inattentiveness.

Outlier Simulation

Outliers arising from different sources have different characteristics. Outliers arise from errors and are hence specific to a particular data set so that they are a property of a sample rather than of a population. For example, typically it does not make sense to talk about the number of typographical errors in a population but makes sense to talk about such errors in a sample. Outliers arise from a subpopulation(s) when the measure operates differently for a subpopulation/populations, and this category of outliers correspondingly has a population characteristic with probably different distribution (e.g., mean or standard deviation).

Different statistical models should be used for studying these two categories of outliers according to their characteristics. Deterministic and slippage models can be used for simulating outliers arising from errors because this type of outliers is usually sample specific and thus the number of outliers is fixed for a sample (Barnett & Lewis, 1994). Although both models were used for simulating error-type outliers and shared some commonality, there are some differences between them. In deterministic model, outliers can be generated from simply multiplying or adding/subtracting a constant to the raw scores, which resulted in only one possible outcome, in this case only one manipulated data set for each outlier condition, and thus the process is deterministic. In a slippage model, the data are simulated based on the parameter estimates obtained from the real data with replications for each outlier condition, which is a typical Monte Carlo simulation. In a slippage model, a fixed number of aberrant observations arise independently from a modification of the original distribution; the two distributions (i.e., the original distribution and the modified distribution) are regarded as random variables. Therefore, although the number of outliers was fixed for a sample in both models, the deterministic model deals with one possible outcome whereas the slippage model involves a stochastic process with random outcomes with a central tendency across replications.

Mixture models are usually used for simulating outliers arising from a subpopulation or subpopulations. In this case of outliers, two populations are mixed together, and the subpopulation (outliers) usually has a different probability distribution from the target population. Unlike outliers arising from errors, these outliers are legitimate observations and should not be treated as errors. In addition, rejection of these outliers is not as easy as error-type outliers because it might be hard to identify these outliers in some situations, such as high-dimensional data. A particular mixture model, mixture contamination model, is usually used to mix two normal distributions (Barnett & Lewis, 1994).

Outliers and Data Analysis

Knowing what caused outliers is very important because outliers from different sources have different characteristics and statistical behaviors and hence may have different impact on statistical methods. For typographical errors and other random measurement errors, one should correct or remove them. One can identify this type of outliers by the following widely used strategies:

(a) the observations beyond either 2 or 3 standard deviations (i.e., z-scores $> \pm 2/3$); (b) Tukey's Outlier Filter (observations either less than or larger than the criterion) (i.e., $Y <$ Q1-1.5*InterQ or $Y >$ Q3 + 1.5*InterQ), which is analogous to the boxplot; (c) median absolute deviation, X-Med $>$ (Med |X-Med|)*1.28/.6745 (Wilcox, 2010); (d) Cook's distance; and (e) Mahalanobis distance for multivariate outliers.

Many researchers assume all outliers are errors and hence illegitimate observations that can be easily identified using histograms or boxplots and feel safe whenever no obvious outlying data points are found in the data. It is worth noting that not all outliers are errors. If arising from subpopulations, outliers are legitimate observations and should not be treated as errors. The standard outlier identification and analytical tools are usually not very helpful for this type of outliers – unintended and unknowingly included subpopulations. These subpopulations may be characterized by a complex profile and interaction of several variables, not just a single variable such as male/female gender, and are mixed with the target population. The commonly recommended robust estimators in the literature for treating outliers (e.g., Winsorized estimator used for replacing outlying data points and R-estimator used for downweighting the extreme values) can be used for this type of outliers but intend to ignore the sources of outliers.

Outliers from subpopulations sometimes provide one with valuable information that will be missed if one uses robust statistics. In his presidential address to the American Statistical Association, Kruskal (1988) pointed out that outliers lead to the discovery of penicillin and will also lead to new discoveries. A growing research has shown that latent class analysis or latent mixture models may be a useful tool to model a heterogeneous population/sample when subpopulations or subgroups are unidentified or unobserved (e.g., Lubke & Muthén, 2005; Sawatzky, Ratner, Johnson, Kopec, & Zumbo, 2009). There is still a great need for more research on this potential method for modeling outliers.

Cross-References

- ▶ Data Analysis
- ▶ Linear Regression Model
- ▶ Residuals, Analysis of
- ▶ Robust Statistical Tests

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Outlying Data Points

► Outliers

Overarching Theory

► Metatheory

Overeducated Employed People

► Labor Markets and Underemployment

Overnutrition

► Malnutrition

Overuse Injuries

► Musculoskeletal Diseases

Oxford 12-Item Elbow Score

► Oxford Elbow Score

Oxford 12-Item Hip Score

► Oxford Hip Score

Oxford 12-Item Knee Score

► Oxford Knee Score

Oxford 12-Item Shoulder Instability Score

► Oxford Shoulder Instability Score

Oxford 12-Item Shoulder Score

► Oxford Shoulder Score

Oxford Elbow Score

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Synonyms

OES; Oxford 12-item elbow score

Definition

A 12-item patient-reported measure (questionnaire) of elbow pain and function dimensions/domains comprises three subscales: "elbow function" (four items), "pain" (four items), and "social-psychological" (four items). This was devised in 2008 (Dawson et al., 2008a, b) for assessing outcomes of elbow surgery.

Description

The Oxford Elbow Score (OES) consists of 12 questionnaire items with five ordinal response options each. Recall period is "During the past 4 weeks." Each item response is scored 0–4, with 0 representing greater severity. Underlying the 12 items are three domains (subscales): elbow pain, elbow function, and social-psychological domain. Scores for each domain are calculated as the sum of each individual item score within that domain, which is then converted to a metric of 0–100 (lower score representing greater severity).

This was devised using in-depth interviews with 18 patients undergoing elbow surgery, including six patients who had already received surgery, until saturation reached, i.e., no new themes, based on patients' reports in interviews, partly with reference to other questionnaires, plus logic, followed by repeated piloting/amending on new sets of patients until high response rates/few negative comments received.

Measurement properties of 17 candidate items were assessed within a longitudinal study of 104 consecutive patients (59, 57 % male) undergoing elbow surgery, who had pre- and 6 months post-operative assessments. Item reduction occurred following assessments of item completion rates and response distribution, exploratory ▶ factor analysis to assess scale structure, then Rasch analysis (Rasch Unidimensional Measurement Models, 1998); (Prieto, Alonso, & Lamarca, 2003) to assess dimensionality of subscales.

Reliability

▶ Internal Consistency: ▶ Cronbach's alpha (Cronbach, 1951) coefficients for the three OES domains were pain 0.89, elbow function 0.90, and social-psychological 0.84, and the alphas following deletion of each item revealed that no one item had a particularly large effect on the reliability of each domain.

▶ Test-Retest Reliability: This was assessed on n = 52 patients with 48 h between assessments. The intraclass correlation coefficients for the OES scales were pain 0.98, elbow function 0.89, and social-psychological 0.87 (all statistically significant $p < 0.001$).

Validity

Application of Rasch models confirmed that each of the three subscales (or domains) identified by the factor analysis was unidimensional with no item significantly misfitting at the 5 % level (highest residual = 1.4). In addition, the item thresholds were all properly ordered. Evidence of convergent validity included correlations (Spearman rho) between the OES domains and scores obtained on the Mayo Elbow Performance Score (MEPS) clinical scale (Morrey & An, 1993), the Disabilities of the Arm, Shoulder and Hand (DASH) Outcome Measure disability/symptom scale (Hudak, Amadio, & Bombardier, 1996), and ▶ SF-36 general health questionnaire version II (Ware & Sherbourne, 1992); (Jenkinson, Stewart-Brown, Petersen, & Paice, 1999). The convergent validity of the OES was demonstrated by high correlations (i.e., $r > 0.5$) between the MEPS clinical scale, the DASH, and three OES domains. The OES elbow function domain was strongly associated with the SF-36 physical functioning, role physical, social functioning, pain, and energy/vitality domains and with the SF-36 PCS score. The OES pain domain was most strongly related to the SF-36 pain and role physical domains and to the PCS score. The OES social-psychological domain was most strongly related to the SF-36 role physical and social functioning domains and to the PCS score.

Responsiveness/Sensitivity to Change: Effect sizes for the pain and social-psychological scales of the OES and the MEPS clinical scale were both >1.0, indicating that both condition-specific measures detected a very large degree of improvement. The three OES scales produced generally larger effect sizes (0.79, 1.14, and 1.18, respectively) than the upper-limb specific DASH scale (0.76). Clear associations were observed between "elbow pain" and elbow problems' transition items and all OES and DASH scores (all $r > 0.35$). The SF-36 was much less responsive to changes following surgery.

Discussion

As a relatively short instrument designed to assess the outcomes of elbow surgery, the OES is a useful method to assess the outcome of elbow

surgery from the patients' perspective. Although quite new, use of the OES is steadily increasing, with translated and validated versions already available in Danish and Dutch.

Cross-References

- ▶ Cronbach's Alpha
- ▶ Effect Size
- ▶ Factor Analysis
- ▶ Intraclass Correlation Coefficient (ICC)
- ▶ Sensitivity to Change
- ▶ SF-36
- ▶ Test-Retest Reliability

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Oxford Happiness Inventory

▶ Oxford Happiness Questionnaire

Oxford Happiness Measure

▶ Oxford Happiness Questionnaire

Oxford Happiness Questionnaire

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Synonyms

Extraversion, stable; Oxford Happiness Inventory; Oxford Happiness Measure

Description

Introduction

The Oxford family of psychometric instruments designed to assess individual differences in ▶ happiness has its roots in the broader field of social psychology shaped by Michael Argyle and his associates. The parent instrument in the family is the Oxford Happiness Inventory (OHI) that subsequently gave rise to the Oxford Happiness Questionnaire (OHQ) and the Oxford Happiness Measure (OHM). This entry proposes to give detailed attention to the conceptualization and operationalization of happiness expressed through the OHI, to explore the connection between the OHI and a broader theory of personality, and to illustrate the contexts in which the OHI has been employed. Against this background attention will be drawn to the distinctive contribution made by the OHQ and the OHM.

Oxford Happiness Inventory

The Oxford Happiness Inventory was developed by Argyle, Martin, and Crossland (1989) to

reflect a well-thought through understanding of the social-psychological nature of happiness. They conceptualize happiness as comprising three main psychological components which they define as follows: the frequency and degree of ▶ positive affect or joy, the average level of ▶ satisfaction over a period, and the absence of negative feelings, such as ▶ anxiety and depression.

The Oxford Happiness Inventory operationalizes this definition by designing 29 items in which each item offers the participants the choice between four statements. Within each set, the four statements are intended to reflect incremental steps of happiness defined as unhappy or mildly depressed (0), a low level of happiness (1), a high level of happiness (2), and mania (3). The happiness score is computed as the sum of the values of the 29 items checked, ranging from 0 for individuals who check all 29 unhappy or mildly depressed options to 87 for individuals who check all 29 mania items. An example item from the Oxford Happiness Inventory offers the following four incremental steps: I do not feel happy (indicative of being unhappy or mildly depressed), I feel fairly happy (indicative of a low level of happiness), I am very happy (indicative of a high level of happiness), and I am incredibly happy (indicative of mania).

The 29 items employed in the OHI were developed and selected in the following way. Argyle began by reversing the 21 items of the ▶ Beck Depression Inventory (Beck, Ward, Mendelson, Hock, & Erbaugh, 1961) and by adding 11 further items to cover aspects of his definition of happiness not covered by those initial 21 items. Three of these 32 items were subsequently dropped during the process of scale development.

In his foundation paper, Argyle reported an internal consistency reliability alpha coefficient of .90 and a 7-week ▶ test-retest reliability coefficient of .78. ▶ Concurrent validity was established against happiness ratings made by friends at .43. ▶ Construct validity was established against recognized measure of the three hypothesized components of happiness: positive affect, satisfaction, and absence of negative affect. For example, the OHI correlated +.32 with the positive affect scale of the Bradburn Balanced Affect measure (Bradburn, 1969), +.57 with Argyle's life satisfaction index, and −.52 with the Beck Depression Inventory.

OHI and Personality

One fruitful body of research has explored the construct validity of the OHI in terms of testing and establishing its location within the context of the established three dimensional model of personality proposed by Hans Eysenck through the Eysenck Personality Questionnaire and the Eysenck Personality Questionnaire Revised (see Eysenck & Eysenck, 1991). Eysenck's model proposes that individual differences in personality can be most adequately and economically summarized in terms of three orthogonal higher-order factors. Eysenck's model also maintains a strong continuity between individual differences in normal personality and abnormal personality or psychological disorders. The three dimensions of Eysenck's model are known by the characterizing of the high-scoring poles as indices of extraversion (E), neuroticism (N), and psychoticism (P). According to Eysenck's test manuals, high scorers on the extraversion scale are seen as being sociable individuals who like parties, have many friends, and need to have people to talk to. They crave excitement, take chances, and are carefree, easygoing, and optimistic. High scorers on the neuroticism scale are seen as being anxious, worrying, moody, and frequently depressed individuals who are likely to sleep badly and to suffer from various psychosomatic disorders. They find it difficult to get back on an even keel after emotionally arousing experiences. High scorers on the psychoticism scale are seen as tending to be troublesome, cruel, inhumane, lacking in feeling and empathy, and altogether insensitive. They tend to be solitary individuals who do not fit in well anywhere. They may be hostile to others and aggressive. They have a liking for odd and unusual things and a disregard for danger. They like to make fools of other people and to upset them.

According to Eysenck's theory, the two personality dimensions of extraversion and neuroticism are fundamental to individual differences in happiness. In one of his more popular writings, Eysenck (1983) stated his hypothesized connection between personality and happiness in the following way:

> Happiness is a thing called stable extraversion... the positive affect in happiness seemed to be related to easy sociability, with a natural, pleasant interaction with other people, ... then it only makes sense that happiness can be associated with extraversion. Similarly, if worries and anxieties make up negative affect in happiness, it can easily be seen that instability and neuroticism are also connected with happiness. (Eysenck, 1983, p. 2)

This basic thesis that happiness is a thing called stable extraversion has now been tested in a series of studies designed to explore the location of the OHI within Eysenck's dimensional model of personality among a range of different samples. The consensus of these studies, demonstrating positive correlations between OHI scores and extraversion and negative correlations between OHI scores and neuroticism, has been interpreted as supporting the construct validity of the OHI (see Francis, 1999; Robbins, Francis, & Edwards 2010).

Employing the OHI

The OHI became quickly established during the 1990s in a series of studies that began to map the correlates of individual differences in happiness. These studies, reviewed by Francis (1999) and updated by Francis (2010), link happiness positively with social competence, self-esteem, social skills, cooperation, personal relationships, social support, religion, engagement with serious leisure activities, intensity of ► music experiences, ► self-actualization, self-rated attractiveness, affiliative tendencies, and creative ideation. At the same time, other studies link happiness negatively with depression, time spent watching television, embarrassability, loneliness, shyness, and social anxiety.

Basic research employing the Oxford Happiness Inventory has been extended beyond the English-speaking community by a series of studies developing forms of the instrument in Arabic, Chinese, German, Hebrew, Japanese, Persian, and Portuguese (see Francis, 2010).

Oxford Happiness Questionnaire

Although the Oxford Happiness Inventory has demonstrated good psychometric properties, there remains one significant disadvantage with this instrument. Since each of the 29 items has been designed with four fixed-response options, the instrument requires quite a lengthy questionnaire. In order to address this problem, Hills and Argyle (2002) proposed the development of the Oxford Happiness Questionnaire, an instrument which retained the same 29 basic issues of the parent instrument but re-expressed each issue in terms of the conventional Likert-type response format (with 12 of the 29 items reverse coded). Employing the two instruments side by side in the same study, Hills and Argyle reported a correlation of .80 between scores recorded on the OHI and scores recorded on the OHQ. In their original formulation of the OHQ, Hills and Argyle proposed a six-point scale defined as strongly disagree, moderately disagree, slightly disagree, slightly agree, moderately agree, and strongly agree.

Some subsequent use of the OHQ has preferred a five-point scale defined as agree strongly, agree, not certain, disagree, and disagree strongly. For example, using this modified form of the OHQ, with a range of scores between 29 and 145, Robbins et al. (2010) reported an internal reliability alpha coefficient of .90 and confirmed the construct validity of the instrument in terms of a positive correlation with extraversion, a negative correlation with neuroticism, and no correlation with psychoticism.

As well as developing the full 29-item form of the OHQ, Hills and Argyle also proposed a short 8-item form. The results for the full and for the short versions were correlated .93, suggesting that little additional advantage may be gained by employing the longer version. The short version comprised three negatively phrased items (I do not feel particularly pleased with the way I am; I do not think I look attractive; I do not have

particularly happy memories of the past) and five positively phrased items (I feel that life is very rewarding; I am well satisfied about everything in my life; I find beauty in some things; I can fit in everything I want to do; I feel fully mentally alert).

Oxford Happiness Measure

A second adaptation of the Oxford Happiness Inventory has been offered for online completion at www.coachingtohappiness.com. This instrument was named by Elken, Francis, and Robbins (2010) the Oxford Happiness Measure. In its online form, the Oxford Happiness Measure has basically taken the 29 items within the OHI originally intended to characterize the "manic" response (with five of these items somewhat modified) and arranged these items for scoring on a five-point scale from less time to more time. The test developers of the online form have not yet published the psychometric properties of their instrument.

In their modification of the online instrument for use as a paper-and-pencil test, Elken, Francis, and Robbins proposed a five-point scale: agree strongly, agree, not certain, disagree, and disagree strongly, providing a range of scores between 29 and 145. In their Estonian translation, this instrument recorded an internal consistency alpha reliability coefficient of .89.

Conclusion

While all three instruments (OHI, OHQ, and OHM) clearly belong to the same family, there remain three significant advantages with the original form, the OHI. The carefully calibrated incremental steps of the four items within each of the 29 themes provide a more carefully nuanced account of individual differences in happiness. A much larger literature exists on the application of the OHI than on the application of the other two variants. In this sense new work employing the OHI can be nested within a fuller set of related data. The translations into other languages allow a broader range of application and contextualization using the OHI.

When space is short and the length of the OHI presents a problem, there remain advantages with the OHQ in preference to the OHM. Greater professionalism has been shown in the development of the OHQ in terms of item selection, the inclusion of reverse-coded items, and the proper publication of psychometric properties. When time is short as well as space, the short 7-item form of the OHQ provides a reasonable approximation of the larger 29-item form.

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Oxford Hip Score

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Synonyms

OHS; Oxford 12-item hip score

Definition

A 12-item patient-reported measure (questionnaire) of hip pain and function dimensions/domains combined in one composite scale. Devised in 1996 (Dawson, Fitzpatrick, Carr, & Murray, 1996a) for assessing outcomes of hip replacement surgery.

Description

The Oxford Hip Score (OHS) consists of 12 questionnaire items with 5 ordinal response options each. Recall period "during the past 4 weeks." Scoring: each item 0–4 (4 = best/least problems). All item scores summed to produce scale 0–48 (48 = best/least problems).

Scoring: each item 0–4 (4 = best/least problems). All item scores summed to produce scale 0–48 (48 = best/least problems). Note that the recommended scoring system has changed since the original developmental paper was published (Murray et al., 2007).

Devised using in-depth interviews with patients undergoing hip replacement surgery until saturation reached, i.e., no new themes. Based on patients' reports in interviews, partly with reference to other questionnaires, plus logic, followed by repeated piloting/amending on new sets of patients until high response rates/few negative comments received.

Measurement properties assessed within a longitudinal study of consecutive patients (131 women and 89 men) undergoing hip replacement, who had pre- and 6 months postoperative assessments.

Reliability

Internal Consistency: ▶ Cronbach's alpha (Cronbach, 1951) was 0.84 at the preoperative assessment ($n = 219$) and 0.89 at the 6-month follow-up ($n = 185$). Cronbach's alpha was not markedly improved by removal of any item from the score.

Test-retest Reliability: Assessed on n = 68 with 24 h between assessments. The estimated mean (−0.73) of score differences was not significantly different from 0. The coefficient of reliability was calculated as 7.27 using Bland and Altman's (Bland & Altman, 1986) method, and 95 % of score differences fell between 0 ± 7.27. Overall, 81 % of score differences lay between 0 and ±4.

The intraclass correlation was subsequently calculated as 0.90 (Delaunay et al., 2009; Naal et al., 2009).

Validity

Evidence of convergent validity included moderate correlations ($r = 0.4$, $p < 0.01$) between the OHS and pain and walking components of the clinically assessed Charnley Hip score (Charnley, 1972) before operation. There was also moderate to high correlations ($r > 0.45$ to $r = 0.68$, $p < 0.01$) between the preoperative OHS questionnaire and relevant domains of the ▶ Arthritis Impact Measurement Scales (AIMS) (Meenan, Gertman, & Mason, 1980) and the SF-36 (Brazier et al., 1992; Ware, Kosinski, & Keller, 1996) (particularly physical function and pain domains).

Responsiveness/▶ Sensitivity to Change: Patients reported substantial improvement at the 6-month follow-up assessment. The ▶ effect size (2.75) was larger for the OHS questionnaire than for any of the individual subscales of the AIMS or

SF-36 questionnaires. The change scores for the OHS were significantly greater ($p < 0.0001$) for patients who reported the most improvement in their condition using transition items and for patients undergoing primary, compared with revision surgery (Dawson, Fitzpatrick, Murray, & Carr, 1996b).

Discussion

As a relatively short instrument, it is particularly appropriate for use by older people who most often receive total hip replacement. Its measurement properties have been assessed in a number of studies (Dawson et al., 2001; Fitzpatrick et al., 2000; Hajat et al., 2002). The use of the OHS has steadily increased, and it is now widely employed in many different types of studies including cohort studies and audits and in national joint replacement registries. It is used worldwide with translated and validated versions available, and in use, in several countries.

Cross-References

- ▶ Arthritis Impact Measurement Scales (AIMS)
- ▶ Cronbach's Alpha
- ▶ Effect Size
- ▶ Intraclass Correlation Coefficient (ICC)
- ▶ Sensitivity to Change
- ▶ SF-36

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Oxford Instability Score

- ▶ Oxford Shoulder Instability Score

Oxford Instability Shoulder Score

- ▶ Oxford Shoulder Instability Score

Oxford Knee Score

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Synonyms

OKS; Oxford 12-item knee score

Definition

A 12-item patient-reported measure (questionnaire) of knee pain and function dimensions/domains or aspects of life combined in one composite scale. Devised in 1998 for assessing outcomes of knee replacement surgery.

License/questionnaire available via http://www.isis-innovation.com/licensing/healthoutcomes/index.html or innovation@isis.ox.ac.uk

Description

The Oxford Knee Score (OKS) consists of 12 questionnaire items with 5 ordinal response options each. Recall period "during the last 4 weeks." Scoring: Originally, each item was scored 1–5 (5 = worst/most severe problems), with all item scores summed to produce scale 12–60. However, this has now changed (Murray et al., 2007).

The recommended method of scoring is now: each item 0–4 (4 = best/least problems), with all item scores summed to produce scale 0–48 (48 = best/least problems).

The OKS was devised using in-depth interviews with patients about to undergo knee replacement surgery until saturation reached, i.e., no new themes emerged. Item and response category wording based on patients' reports in interviews, partly with reference to other questionnaires, followed by repeated piloting/amending on new sets of patients until high response rates/few negative comments received.

Measurement properties assessed within a longitudinal study of 117 consecutive patients (66 women and 51 men) undergoing knee replacement, who had pre- and 6 months postoperative assessments.

Reliability

Internal Consistency: ▶ Cronbach's alpha (Cronbach, 1951) was 0.87 before surgery ($n = 117$) and 0.93 at the 6-month follow-up ($n = 85$).

▶ Test-retest Reliability: Assessed on $n = 66$ with 24 h between assessments. The coefficient of reliability was 6.45 using the Bland and Altman method (Bland & Altman, 1986); 95 % of score differences fell between 0 and ±6.45. Overall, 89 % of score differences lay between 0 and ±4 points. The intraclass correlation was subsequently calculated as 0.94 for the preoperative data (Dawson, Fitzpatrick, Churchman, Verjee-Lorenz, & Clayson, 2010).

Validity

Evidence of ▶ convergent validity included moderate correlations between the OKS and both components of the clinically assessed American Knee Society score before operation. There was also significant correlation ($r > 0.5$ to $r = 0.71$, $p < 0.01$) between the OKS questionnaire and relevant domains of the ▶ SF-36 (physical function, role physical, pain, and social function) and with both components of the Health Assessment Questionnaire (pain VAS and the disability index).

Responsiveness/▶ Sensitivity to Change: Patients reported substantial improvement at the 6-month follow-up assessment. The ▶ effect size (2.19) was larger for the OKS questionnaire than for any of the individual subscales of the SF-36 questionnaire. The change scores for the OKS were significantly greater ($p < 0.0001$) for patients who reported the most improvement in their condition using transition items.

Discussion

As a relatively short instrument, it is particularly appropriate for use by older people who most often receive total knee replacement. Its measurement properties have been assessed in a number of studies (Davies, 2002; Dunbar, Robertsson, Ryd, & Lidgren, 2000; Naal et al., 2009) including one demonstrating that the OKS scale meets the expectations of the Rasch measurement model. This confirmed it as a unidimensional scale that appears to measure both pain and function as a higher order construct combining both attributes (Conaghan, Emerton, & Tennant, 2007). The use of the OKS has steadily increased, and it is now widely employed in many different types of studies including cohort studies and audits and in national joint replacement registries. It is used worldwide with translated and validated versions available, and in use, in several countries.

In a systematic review of patient-assessed health instruments for the knee (Garratt, Brealey, Gillespie, & DAMASK Trial Team, 2004), of the 16 instruments identified and assessed, the OKS was one of only two instruments to demonstrate good evidence for reliability, content validity, construct validity, and sensitivity to change.

Cross-References

- ▶ Convergent Validity
- ▶ Cronbach's Alpha
- ▶ Effect Size
- ▶ Intraclass Correlation Coefficient (ICC)
- ▶ Sensitivity to Change
- ▶ SF-36
- ▶ Test-Retest Reliability

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Oxford Shoulder Instability Questionnaire

- ▶ Oxford Shoulder Instability Score

Oxford Shoulder Instability Score

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Synonyms

OISS; OSIQ; OSIS; Oxford 12-item shoulder instability score; Oxford instability score; Oxford instability shoulder score; Oxford shoulder instability questionnaire

Definition

A 12-item patient-reported measure (questionnaire) of shoulder dislocation/subluxation events, pain, and function dimensions/domains combined in one composite scale. (Devised in 1999 (Dawson, Fitzpatrick, & Carr, 1999) and for assessing outcomes of shoulder surgery for conditions associated with shoulder instability, including recurrent dislocation/subluxation. Oxford Shoulder Instability Score © Isis Innovation Limited, Oxford University, Oxford UK 1999. All rights reserved.)

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Description

The Oxford shoulder instability score (OSIS) consists of 12 questionnaire items with 5 ordinal response options each. Recall period "during the last 6 months" for 1 item; "during the last 3 months" for six items, and "during the last 4 weeks" for five items. Scoring of each item is 0–4 (4 = best/least problems). All item scores summed to produce a single composite scale of 0–48 (48 = best/least problems). Note that, as with the Oxford shoulder score (OSS), the recommended scoring system has changed since the original developmental paper was published (Dawson et al., 1999; Dawson, Rogers, Fitzpatrick, & Carr, 2009). Also, because one of the items has a recall period of 6 months, 6 months is the earliest point/date following an intervention at which the OSIS may be used for any follow-up to assess outcomes. Devised using in-depth interviews with 20 patients attending surgical out-patient clinics for treatment of shoulder instability, until saturation reached, i.e., no new themes, based on patients' reports in interviews, partly with reference to other questionnaires, items developed, then repeatedly piloted/reduced/amended with new sets of patients until high response rates/few negative comments received. Measurement properties assessed within a longitudinal study of 92 consecutive patients (53 men and 35 women; median age of 25 years), about to receive either a course of physiotherapy or shoulder surgery to treat/correct their shoulder instability problem, who completed pre-intervention and 6-month post-intervention assessments.

Reliability

Internal consistency: ▶ Cronbach's alpha (Cronbach, 1951) was 0.91 at the pre-intervention assessment ($n = 92$) and 0.92 at the 6-month follow-up ($n = 64$). All items correlated with the total score of >0.5. ▶ Test-retest reliability is assessed in the developmental study (Dawson et al., 1999) on $n = 43$ with 24 h between assessments. The estimated mean (0.26) of score differences was not significantly different from 0. The coefficient of reliability was calculated as 5.7 using the Bland and Altman (1986) method, and 95 % of score differences fell between 0 and 5.7. Overall, 88 % of score differences lay between 0 and 4 points. The ▶ intraclass correlation coefficient (ICC) has since been calculated as 0.90 (95 % C.I. 0.74, 0.96) (Moser et al., 2008).

Validity

Evidence of convergent validity included large correlations between the OSIS and the clinically assessed Rowe standard rating scale (Rowe, Patel, & Southmayd, 1978) (pre-op, $r = 0.51$, $p < 0.01$; post-op, $r = 0.84$, $p < 0.01$) and the Constant shoulder score (Constant & Murley, 1987) (pre-op, $r = 0.56$, $p < 0.01$; post-op, $r = 0.76$, $p < 0.01$). There were also moderate to high correlations ($r > 0.69$ to $r = 0.71$, $p < 0.01$) between the preoperative OSIS questionnaire and relevant domains of the ▶ SF-36 Health Survey (Brazier et al., 1992) (particularly physical function, role physical, and pain domains).

Responsiveness/Sensitivity to Change

Patients reported substantial improvement at the 6-month follow-up assessment. The ▶ effect size (0.8) was large for the OSIS questionnaire, although the effect size for the clinically assessed, shoulder instability-specific Rowe was

even larger at 1.2. The constant clinical score attained only a small effect size: 0.2. The OSIS effect size was much larger than any attained by individual subscales of the SF-36 questionnaire, where the largest effect size was 0.5 (for the role physical domain). The change scores for the OSIS were significantly greater ($p < 0.01$) for patients who rated their treatment as "very successful" compared with all other patient responses to that item. Change scores on all other measures (either patient or clinician assessed) did not detect this difference. The change scores for the OSIS were also significantly greater ($p < 0.001$) for patients who reported the most improvement in their shoulder problem using a ▶ Transition questions or items compared with lesser ratings. Here, neither clinical assessment distinguished these differences, while the SF-36 health perceptions and role physical domains did produce significant differences ($p < 0.05$) in their change scores when comparing these groups.

Additional measurement details regarding interpretability (e.g., ▶ standard error of measurement and minimal clinically important difference) have also been reported (Moser et al., 2008).

Discussion

The assessment of health status/health-related quality of life and outcomes in people with shoulder instability problems is problematic, as symptoms are often intermittent so that at other times the problem is perceived as being mainly about apprehension in relation to particular activities, due to the anticipation of problems, rather than about the constant presence of symptoms, such as pain. This means that assessments such as patient-reported outcome measures (PROMs) used to assess a range of shoulder problems may be inadequate (and inappropriate) for assessing the particular problem of shoulder instability. The use of the OSIS addresses apprehension as well as overt symptoms. The rather long recall period(s) addressed by some items (6 months, 3 months) reflects the fact that treatment may frequently include restricting shoulder movement, through the use of a sling and/or instruction, for at least 4 weeks. This, together with apprehension, means that individuals may not attempt to test a full range of arm movements and activities that might reasonably provoke a recurrence of the problem (Robinson, Howes, Murdoch, Will, & Graham, 2006) until quite a long period following treatment. Use of the OSIS is gradually increasing and it has now been employed in many studies, including cohort studies and randomized controlled trials (RCTs). It has also been used in a number of countries.

Cross-References

- ▶ Convergent Validity
- ▶ Cronbach's Alpha
- ▶ Effect Size
- ▶ Intraclass Correlation Coefficient (ICC)
- ▶ Minimal Clinically Important Difference (MCID)
- ▶ Sensitivity to Change
- ▶ SF-36 Health Survey
- ▶ Standard Error of Measurement
- ▶ Test-Retest Reliability
- ▶ Transition Questions or Items

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Oxford Shoulder Score

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Synonyms

OSS; Oxford 12-item shoulder score

Definition

A 12-item patient-reported measure (questionnaire) of shoulder pain and function dimensions/domains combined in one composite scale. Devised in 1996 (Dawson, Fitzpatrick, & Carr, 1996) and for assessing outcomes of shoulder surgery for degenerative conditions (excluding conditions of shoulder instability, for which the Oxford Shoulder Instability Score (Dawson, Fitzpatrick, & Carr, 1999) was developed).

Description

The Oxford Shoulder Score (OSS) consists of 12 questionnaire items with 5 ordinal response options each. Recall period "during the last 4 weeks" (Dawson et al., 1996).

Scoring: each item 0–4 (4 = best/least problems). All item scores summed to produce scale 0–48 (48 = best/least problems). Note that the recommended scoring system has changed since the original developmental paper was published (Dawson, Rogers, Fitzpatrick, & Carr, 2009).

Devised using in-depth interviews with 20 patients undergoing shoulder surgery until saturation reached, i.e., no new themes, based on patients' reports in interviews, partly with reference to other questionnaires, plus logic, followed by repeated piloting/amending on new sets of patients until high response rates/few negative comments received.

Measurement properties assessed within a longitudinal study of 111 consecutive patients (51 women and 60 men) undergoing shoulder surgery, who had pre- and 6 months postoperative assessments.

Reliability

Internal Consistency: *Cronbach's alpha* (Cronbach, 1951) was 0.89 at the preoperative assessment (n = 111) and 0.92 at the 6-month follow-up (n = 56). All items correlated with the total score at >0.4. *Test-Retest Reliability*: assessed on n = 68 with 24 h between assessments. The estimated mean (−0.12) of score differences was not significantly different from 0. The coefficient of reliability was calculated as 6.8 using the Bland and Altman (Bland & Altman, 1986) method and 95 % of score differences fell between 0 and ±6.8. Overall, 83 % of score differences lay between 0 and ±4 points. The *intraclass correlation* was subsequently calculated as 0.83 (Ekeberg et al., 2008).

Validity

Evidence of convergent validity included large correlations (pre-op: $r = 0.74$ $p < 0.01$, post-op: $r = 0.75$ $p < 0.01$) between the OSS and the clinically assessed Constant Shoulder score (Constant & Murley, 1987). There was also moderate to high correlations ($r > 0.49$ to $r = 0.86$, $p < 0.01$) between the preoperative OSS questionnaire and relevant domains of the

Health Assessment Questionnaire (HAQ) (Fries, Spitz, & Young, 1982) and the *SF-36* (Brazier et al., 1992) (particularly physical function and pain domains).

Responsiveness/Sensitivity to Change: Patients reported substantial improvement at the 6-month follow-up assessment. The *effect size* (1.2) was slightly larger for the OSS questionnaire than for any of the individual subscales of the HAQ or SF-36 questionnaires. The change scores for the OSS were significantly greater ($p < 0.001$) for patients who reported the most improvement in their condition using *transition items*.

Discussion

As a relatively short instrument, it is particularly appropriate for use by older people who frequently receive shoulder surgery (including shoulder replacement). Its measurement properties have been assessed in a number of studies (Kirkley, Griffin, & Dainty, 2003). The use of the OSS has steadily increased, and it is now employed in many different types of studies including cohort studies and randomized controlled trials (RCTs) and in national joint replacement registries. It is used worldwide with translated and validated versions available, and in use, in a number of countries.

Cross-References

- ▶ Cronbach's Alpha
- ▶ Effect Size
- ▶ Intraclass Correlation Coefficient (ICC)
- ▶ Sensitivity to Change
- ▶ SF-36
- ▶ Test-Retest Reliability

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Oz

- ▶ Australia, Quality of Life

Ozone

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Synonyms

Ground-level ozone; Ozone, surface; Stratospheric ozone; Trioxygen (O_3); Tropospheric ozone

Definition

Gaseous ozone is a reactive triatomic allotrope of oxygen with half-life ranging from approximately 3 months at −50 °C to 3 days at 20 °C before it breaks down to dioxygen. Ozone is therefore more stable in the stratospheric ozone layer, where it is naturally formed by photochemical reactions between ultraviolet (UV) radiation from the Sun and oxygen, a process that also protects life on Earth from the damaging effects of UV radiation. While 90 % of atmospheric ozone can be found in the ozone layer, ground-level or tropospheric ozone is primarily formed by photochemical reactions with the precursors nitrogen oxides (NOx) and volatile organic compounds (VOCs) from anthropogenic sources. Natural sources of ground-level ozone include biomass burning and lightning as well as the stratosphere.

Description

Tropospheric and stratospheric ozone have very different effects on ▶ quality of life. In general, the effects of ozone are good in the troposphere and bad in the stratosphere and at ground level. Although researchers were already studying the health effects of ozone in the 1960s, the topic gained significant interest during the 1980s with the growing awareness of hydrofluorocarbons (HFCs), chlorine and bromine gases, and their ability to destroy the ozone layer (Lippman, 1989; Weatherhead & Andersen, 2006). The discovery of ozone loss over Antarctica in 1985 (see Solomon, Garcia, Rowland, & Wuebbles, 1986) led to an international effort to halt the production and use of ozone-depleting substances, which culminated in the ratification of the Montreal Protocol in 1989. This led to a significant reduction in stratospheric chlorine loading to levels observed before 1980. Globally averaged depletion of stratospheric ozone peaked at approximately 5 % in 1990 and is currently at about 3.5 % of the 1964–1980 average (Fahey & Hegglin, 2011). It is not known when or if the ozone layer will return to previous levels as it is also influenced by environmental factors such as climate change and solar flares.

Levels of ground-level ozone, or bad ozone, are highly variable and depend on the proximity and concentration of local anthropogenic sources. The National Air Pollution Surveillance Network in Canada has recorded concentrations ranging from below 5 to above 200 ppb in Vancouver. The US Environmental Protection Agency (EPA) estimates that motor vehicles contribute about 50 % of the ozone precursors, while other major sources include industrial and commercial processing, utilities, residential fuel combustion, and consumer solvents. Background concentrations are defined as the fraction of ozone in a given area that is not attributed to anthropogenic sources of local origin, and though the rate of increase is currently lower than during the 1970s and 1980s, these levels continue to rise. In 2004, annual median levels of background ozone around the world ranged from 23 to 34 parts per billion (ppb) (Vingarzan, 2004). Projections of future levels depend on emission scenarios, but current trends suggest that background levels of surface ozone may rise to levels that exceed accepted criteria for human health and the environment. The additional contribution of local sources to background levels means that areas with human activities have higher levels of ground-level ozone.

Due to ▶ health impacts and common occurrence of ozone, many countries have adopted ▶ air quality standards that set guidelines for exposure. The US EPA 8-h average national standard is 75 ppb, above which higher levels put different populations at risk. Ground-level ozone at levels exceeding the national standard may be unhealthy for sensitive groups; levels above 96 ppb are considered unhealthy, levels above 116 ppb very unhealthy, and above 405 ppb hazardous. Air quality indices in other countries are by and large similar and focus on the impacts on vulnerable groups such as those with preexisting cardiovascular and respiratory conditions at lower concentrations, though the guides differ in their reference to healthy populations. Ozone is usually included along with sulfur oxides, nitrogen oxides, and

particulate matter in composite air quality indices used to advise the public on air quality and is an important contributor to photochemical smog.

As suggested by the various air quality indices, the effects of ground-level ozone on quality of life are most significant in people with impairments of the respiratory, cardiovascular, and immune systems (Dockery & Pope, 1994; Jerret et al., 2009). A study of ▶ mortality in 95 US cities over a 14-year period found that a 10-ppb increase in the previous week's ozone was associated with 0.5 % increase in daily mortality and 0.6 % increase in cardiovascular and respiratory mortality (Bell, McDermott, Zeger, Samet, & Dominici, 2004). However, decreased lung function in healthy subjects exposed to transient doses of ozone is also well established (Lippman, 1989), and a study of children found that ozone exacerbated the development of ▶ asthma among those who exercised (McConnell et al., 2002). Quality of life impacts of stratospheric ozone depletion are much more ubiquitous and due to increased solar UV-B radiation at the surface of the Earth. Although UV-B radiation is crucial for vitamin D production, harmful effects include eye and skin diseases such as cancer (Norval et al., 2011). Awareness of these risks has led to ▶ public health initiatives aimed at decreasing the duration and intensity of Sun exposure.

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Ozone, Surface

▶ Ozone