Quality & Quantity (2007) 41:303–318
DOI 10.1007/s11135-007-9093-3

Evaluating the Validity of Self-Reported Deviant Behavior Using Vignette Analyses

STEFANIE EIFLER
Faculty for Sociology, University of Bielefeld, P.O. Box 100131, D-33501 Bielefeld, Germany; Tel:+49-0-521-1064643; Fax: +49-0-521-1066479; E-mail: stefanie.eifler@uni-bielefeld.de

Abstract. In this paper, the validity of vignette analyses of various forms of deviant behavior in the presence of opportunities is analyzed on the basis of ideas derived from cognitive psychology. Abelson's Script Theory together with insights into human memory of visual and verbal information, allow the assumption that vignette analyses using visual stimuli are valid measures of deviant behavior in particular. The study includes an empirical examination of these ideas ($n = 450$). Nonparticipant observations and vignette analyses with visual and verbal material were carried out with regard to three forms of deviant behavior occurring in the presence of opportunities presenting themselves in everyday life. Observed and self-reported frequencies of deviant behavior or deviant intentions were counted and cross-tabulated. Log-linear analyses with dummy coding using observation data as reference category were run. Data analyses yielded the result that frequencies of deviant behavior were related to the techniques of data collection under consideration. Especially vignette analyses of the return of 'lost letters' that use both visual and verbal stimuli overestimate 'actual' (i.e. observed) return rates. This result is discussed with regard to the underlying methodological assumptions as well as its implications.

Key words: vignette analysis, factorial survey approach, self-report, lost-letter-technique, validity, criminal behavior.

1. Introduction

Sociological theories of crime and deviance have turned their attention increasingly to the concept of opportunity in recent decades. These theories are designed to analyze the influences of opportunity structures on crime rates (cf. Cloward and Ohlin, 1959, 1960) or victimization rates (Cohen and Felson, 1979) on the one hand and influences of situational features on criminal decision making (Cornish and Clarke, 1986) on the other. Both approaches – the routine activity approach and the rational choice approach to offending – have been used to develop crime prevention strategies whose guiding principle is to reduce the opportunities for criminal decisions to be made (Clarke, 1992, 1995). While these crime prevention strategies were implemented on the basis of implicit assumptions

on rational offenders in the main, some researchers have started to show an interest in the study of the situational features of criminal behavior (cf. Cornish and Clarke, 1986; Clarke, 1992). By relating the concepts of the routine activity approach and the idea of a reasoning criminal, this perspective focuses on actors who are frequently tempted to commit minor norm violations in everyday life (Felson, 1998).

Various studies have already been carried out to analyze influences of situational features on criminal choices. Some studies have used unobtrusive measures to assess criminal decision making *in vivo* (Webb et al., 1981). In particular, they employed the lost-letter-technique and examined effects of the amount of money on stealing putative lost letters (Farrington and Knight, 1979, 1980a, b; Simon and Gillen, 1971; Farrington and Kidd, 1977). Goldstone and Chin (1993) conducted non-invasive observations. Other studies have used scenario techniques in order to relate features of actors (e.g. their social position, their normative beliefs) to their criminal decision making in the face of an opportunity presenting itself (e.g. Kamat and Kanekar, 1990). Scenario techniques or vignette analyses are usually part of such surveys. They consist of short descriptions of hypothetical situations. Respondents are asked to state their suspected behavior in a situation like the one described. Behavior is assessed by taking the subject's self-reported behavioral intentions *in vitro* as an equivalent.

While unobtrusive measures like the lost-letter technique allow researchers to assess behavior that is close to that displayed in the actor's 'real' life, it fails to take into account features of actors which might be relevant from a sociological point of view. For this reason, vignette analyses of criminal behavior are regarded as a suitable alternative to field studies. Sociological studies of social norms employ this tool frequently (Rossi and Anderson, 1982; Jasso and Opp, 1997). If vignette analyses are used to measure the probability and/or frequency of behavior in the face of opportunities, however, serious methodological doubts arise. As has been stated above, vignette analyses assess behavioral intentions only. While social psychological theories propose strong relationships between intentions and various forms of behavior (Fishbein and Ajzen, 1975; Ajzen and Madden, 1986; Manstead and Parker, 1995; Sutton, 1998), the degree of correspondence between self-reported probable behavior and actual behavior remains unknown in vignette analyses in fact (cf. Finch, 1987). As a consequence, the validity of this technique has to be questioned. Accordingly, the task of this study will be to carry out a first analysis of the validity of vignette analyses of various minor norm violations in the presence of opportunities.

2. Vignette Analyses of Deviant Behavior in the Presence of Opportunities

The starting point of this study is the concept of opportunity as established within the framework of the routine activity approach (Cohen and Felson, 1979). An opportunity is defined as an event in which three essential conditions coincide, viz., "(1) motivated offenders, (2) suitable targets, and (3) the absence of capable guardians" (Cohen and Felson, 1979: 589).

A first criterion for the validity of vignette analyses of criminal decision making is surely that they include these three minimal elements of opportunities. A second criterion for the validity of vignette analyses consists in bringing the opportunity presented in line with everyday experience. It has been argued recently that video presentations of opportunities are superior to verbal presentations in this regard (Eifler, 2002). However, this idea has not been analyzed empirically yet. For this reason, the following study is designed to examine the validity of vignette analyses in general and to address the question of the manner of presentation in particular. To clarify the idea, the methodological foundations of vignette analyses will be depicted.

2.1. METHODOLOGICAL FOUNDATIONS OF VIGNETTE ANALYSES

Vignette analyses are based on Abelson's script theory (Abelson, 1976; Schank and Abelson, 1977). The starting point of this cognitive psychological theory is the idea that human beings organize their knowledge of everyday life experience in the form of *scripts*. A script is defined as "a coherent sequence of events experienced by the individual, involving him either as a participant or as the observer" (Abelson, 1976: 33). Scripts consist of *vignettes*, where a vignette is "an encoding of an event of short duration, in general including both an image (often visual) of the perceived event and conceptual representation of the event" (Abelson, 1976: 34). According to Abelson, vignettes are the "raw constituents of remembered episodes in the individual's experience (Abelson, 1976: 34).

Taking up this concept of script, vignette analyses have been carried out using verbal and visual stimuli. It has been argued that video presentations provide more accurate representations of situations and thus evoke more valid responses. To explain this idea, theories that address differences between verbal and visual information processing can be brought into play here.

The dual coding approach (Paivio, 1971, 1986) proposes the existence of two different systems in human memory. One is a visual system which contains analogies of visual stimuli and is located in the non-dominant hemisphere of the cortex, the other is a verbal system which is located in the dominant hemisphere of the cortex (Roland and Friberg, 1985).

Neurophysiological studies have shown that visual stimuli are remembered and recalled more easily than verbal stimuli (e.g. Shepard, 1967; Bower, 1970; Tootell, Silverman, Switkes and DeValois, 1982; Crick and Asanuma, 1986).

Following this train of thought then, in terms of the theory of dual coding it can be assumed that visual stimuli used in vignette analyses lead to more realistic responses than verbal stimuli. Against this background it can be concluded that the external validity of self-reported intentions is superior when video presentations of situations rather than descriptions of hypothetical situations are employed.

2.2. RESEARCH QUESTIONS

Against the background of theoretical ideas, the study makes a systematic comparison of unobtrusive observations of deviant behavior and vignette analyses of comparable deviant behavior, or rather, deviant behavioral intentions. If vignette analyses provide valid measures of deviant behavior, the results of all methods should be equivalent or at least nearly equivalent, i.e. the frequencies of observed deviant behavior and self-reported deviant behavioral intentions should be the same or nearly the same. If it proves otherwise, however, the external validity of vignette analyses using visual stimuli should be less limited than that of vignette analyses using verbal material. In other words, the frequencies measured using video presentations of deviant opportunities should be closer to frequencies coded on the basis of nonparticipant observations. At this point it is crucial to consider the idea that the assumptions of this study are only logical and consistent if the identity of observed, filmed, and described situations is ensured. The following questions arise from these assumptions: Firstly, how many deviant behavioral choices are measured with each of the procedures under consideration. Secondly, to what extent do these frequencies vary depending on the method used. Thirdly, if deviations by method are assessed, do the frequencies vary in the direction expected. And fourthly, whether or to what extent do these results vary with subjects' sex.

2.3. STUDYING THE VALIDITY OF VIGNETTE ANALYSES

The study was carried out at the University of Bielefeld in September 2003. In accordance with the research question, one part of the study was a nonparticipant observation of deviant behavior in the presence of opportunities which frequently occur in everyday life. The first opportunity was the situation of a cyclist going through or stopping at a red traffic light. The number of cyclists going through or stopping was counted ($n = 150$). The second opportunity was the situation of a pedestrian crossing or waiting at a

red traffic light. The number of pedestrians crossing or waiting was counted ($n = 150$). The third opportunity was the situation of finding a 'lost letter'. The number of people ignoring this letter was counted ($n = 150$). In addition, verbal and visual vignettes of these situations were produced.

Experts rated the degree of correspondence between opportunities *in vivo* and opportunities *in vitro* to guarantee the identity of observed, filmed, and described situations as well as possible. Verbal and visual vignettes were each presented to a total of 150 subjects. This means that 150 subjects were asked to answer verbal vignettes included in a standardized questionnaire, and another 150 subjects were asked to answer a short standardized questionnaire subsequent to watching video presentations of opportunities. Verbal descriptions and video presentations deal with a person who is confronted with the decision of cycling through a red traffic light, crossing at a red traffic light or ignoring a 'lost letter'. The subjects were asked to take the role of the person described or shown and to report how they would behave in such a situation. With regard to the opportunities, these behavioral intentions were (1) going through or stopping at the traffic light, (2) crossing or waiting at the traffic light, (3) ignoring or returning the 'lost letter'. It goes without saying that riding through or crossing at the traffic light and ignoring the 'lost letter' were interpreted as 'deviant' responses within the present framework.

3. Results

In a first step, the question of how many people choose the deviant option in each of the three opportunities was analyzed according to data collection techniques. Data were cross-tabulated in order to examine the conditional odds of choosing or reporting a deviant option. Conditional odds indicate the relative probability of choosing or reporting a deviant option or intention compared with a conform one in the face of an opportunity (cf. Kerlinger and Pedhazur, 1973; Knoke and Burke, 1980; Agresti, 1990; Hagenaars, 1990). Table I(a–c) shows the results of these cross-tabulations for each opportunity (variable A: behavior or intention, variable B: data collection method).

It follows from Table Ia that the majority of people choose to violate traffic rules in 'real' life ($\text{odds}_{\text{dev}} = 2.85$, i.e. the probability of choosing a deviant option is 2.85 times higher compared to choosing a conform option). 74% of all observed cyclists went through the traffic light though they should have stopped. As Table Ib shows, a similar result is attained for the opportunity to cross a street without obeying the traffic lights ($\text{odds}_{\text{dev}} = 1.83$). 64.7% of all observed pedestrians crossed the street when the lights required them to wait. Table Ic suggests that the majority of 'lost' letters is ignored by pedestrians passing ($\text{odds}_{\text{dev}} = 2.06$). Only 32.7%

Table I. Frequencies of deviant behavior or deviant behavioral intentions by method

	B: Behavior/Intention				
A: Method	no	yes		% deviant	$odds_{dev}$[b]
a. Traffic light, cyclist					
Observation	39	111	150	74.0	2.8462
	(3.6636)[a]	(4.7096)			
Vignette Analysis (verbal)	48	102	150	68.0	2.1250
	(3.8712)	(4.6250)			
Vignette Analysis (visual)	68	82	150	54.7	1.2059
	(4.2195)	(4.4067)			
b. Traffic light, pedestrian					
Observation	53	97	150	64.7	1.8302
	(3.9703)[a]	(4.5747)			
Vignette Analysis (verbal)	34	116	150	77.3	3.4118
	(3.5264)	(4.7536)			
Vignette Analysis (visual)	59	91	150	60.7	1.5424
	(4.0775)	(4.5109)			
c. 'lost letter'					
Observation	49	101	150	67.3	2.0612
	(3.8918)[a]	(4.6151)			
Vignette Analysis (verbal)	138	12	150	8.0	0.0870
	(4.9273)	(2.4849)			
Vignette Analysis (visual)	129	21	150	14.0	0.1628
	(4.8598)	(3.0445)			

[a]logarithms of cell frequencies in parentheses.
[b]$odds_{dev}$ means: the ratio of deviant behavior yes/no.

of all people observed took the letter and returned it to the sender or the addressee. A first look at these tables shows that there might be considerable variation in frequencies of deviant behavior or rather deviant behavioral intentions according to data collection method.

Against the theoretical background, observation data might be judged as providing valid information by representing the 'actual' amount of deviant behavioral choices in everyday life. Consequently, when using vignette analyses, it would make good sense to use them as a point of reference and to note to what extent the number of deviant behavioral choices deviates from the number obtained when using vignette analyses. To this end, the cross-tabulated data were subjected to log-linear analyses using dummy coding in a second step (cf. Kerlinger and Pedhazur, 1973; Knoke and Burke, 1980; Agresti, 1990; Hagenaars, 1990). In order to achieve a causal

Table II. Log-linear analyses of cross-tabulated data (method)

		λ/β	T
a. Traffic light, cyclist			
A. Method	1=observation	0.0000	1.0000
	2=vignette analysis (verbal)	0.2076	1.2308
	3=vignette analysis (visual)	0.5559	1.7436
B. Behavior	1=deviant: no	0.0000	1.0000
	2 = deviant: yes	1.0460	2.8462
AB	12	0.0000	1.0000
	22	−0.2922	0.7466
	32	−0.8588	0.4237
b. Traffic light, pedestrian			
A. Method	1 = observation	0.0000	1.0000
	2 = vignette analysis (verbal)	−0.4439	0.6415
	3 = vignette analysis (visual)	0.1072	1.1132
B. Behavior	1 = deviant: no	0.0000	1.0000
	2 = deviant: yes	0.6044	1.8302
AB	12	0.0000	1.0000
	22	0.6228	1.8642
	32	−0.1711	0.8427
c. 'Lost letter'			
A. Method	1 = observation	0.0000	1.0000
	2 = vignette analysis (verbal)	1.0354	2.8163
	3 = vignette analysis (visual)	0.9680	2.6327
B. Behavior	1 = deviant: no	0.0000	1.0000
	2 = deviant: yes	0.7233	2.0612
AB	12	0.0000	1.0000
	22	−3.1656	0.0422
	32	−2.5386	0.0790

interpretation of the relationships between data collection method and frequency of behavior observed or reported, effect models are analyzed. The relative numbers of deviant choices or intentions are compared using the concept of odds (odds_{dev}), and the strength and direction of the relations between data collection method and the number of deviant choices or intentions is judged using the coefficients of the dummy-coded effect model (β-coefficients). Table II shows the results of these analyses for each opportunity.

It emerges from Table II in general that frequencies of deviant behavior differ with regard to data collection method. However, the results have to be regarded with respect to each of the situations analyzed. For the

opportunity to pass a red traffic light vignette analyses underestimated the 'real' number of deviant choices. Compared with the observed frequencies, a smaller number of subjects reported deviant behavioral intentions when confronted with a description of the opportunity to go through a red traffic light ($odds_{dev} = 2.13, \beta_{AB22} = -0.2922$), and a still smaller number of subjects reported deviant intentions when watching a video presentation of this opportunity ($odds_{dev} = 1.21, \beta_{AB32} = -0.8588$). In contrast with the underlying assumptions, the frequencies assessed using visual vignette analyses deviate from observation data most. Table II displays further that vignette analyses using descriptions of an opportunity to walk across a street despite traffic lights requiring one to stop overestimate the amount of this kind of norm violation ($odds_{dev} = 3.41, \beta_{AB22} = 0.6228$), while the results of vignette analyses using video presentations are close to the results of the unobtrusive observations ($odds_{dev} = 1.54, \beta_{AB32} = -0.1711$). Overall, this result does not match expectations, but the data collected on the basis of visual presentations correspond to the observation data, and in this regard, they are quite in line with the underlying assumptions.

Table II also shows that employing vignette analyses leads to a considerable overestimation of the rate at which 'lost' letters are returned. Both types of vignette analyses tempt subjects to report more socially desirable behavioral intentions to return the letter ($odds_{dev} = 0.09, \beta_{AB22} = -3.1656$; $odds_{dev} = 0.16, \beta_{AB32} = -2.5386$).

An overall inspection of the results of the log-linear analyses shows that vignette analyses on the basis of visual stimuli lead to 'realistic" responses for the opportunity of passing a red traffic light only (Tables Ib and IIb). For all other opportunities it has been shown that the results of vignette analyses deviate considerably from the results of nonparticipant observations. This could be stated for the opportunity to return a 'lost letter' in particular. Vignette analyses should not be regarded as an instrument for measuring behavior but rather as a method for assessing a subject's tendency to respond in a socially desirable manner here.

Following on from this discussion of the cross-tabulated data, a third step in the analysis is the examination of the relationships between data collection method and frequency of deviant behavior or deviant behavioral intentions for male and female subjects. Firstly, the respective cross-tables are presented (Table III; variable C: behavior or intention, variable B: data collection method, variable C: respondents' sex) and secondly, log-linear analyses of these tables were undertaken (Table IV).

From Table III, it would seem that there might be relevant discrepancies in frequencies of deviant behavior or deviant behavioral intentions with regard to the subject's sex. However, men take the first opportunity to a larger extent than women (men: $odds_{dev} = 3.82$; women: $odds_{dev} = 2.09$). No sex differences can be stated with regard to the second opportunity (the

Table III. Frequencies of deviant behavior/intentions by method and sex

		C: Behavior/Intention				
A: Sex	B: Method	no	yes		% deviant	$odds_{dev}$
a. Traffic light, cyclist						
1. Female	1 Observ.	22	46	68	67.6	2.0909
		(3.0910)[a]	(3.8286)			
	2 VA verb	27	41	68	60.0	1.5185
		(3.2958)	(3.7136)			
	3 VA vis.	34	34	68	50.0	1.0000
		(3.5264)	(3.5264)			
		83	121	204	59.3	1.4578
2. Male	1 Observ.	17	65	82	79.3	3.8235
		(2.8332)	(4.1744)			
	2 VA verb.	21	61	82	74.4	2.9048
		(3.0446)	(4.1109)			
	3 VA vis.	34	48	82	58.5	1.4118
		(3.5264)	(3.8712)			
		72	174	246	70.7	2.4167
b. Traffic light, pedestrian						
1. Female	1 Observ.	30	60	90	66.7	2.0000
		(3.4012)[a]	(4.0943)			
	2 VA verb	23	67	90	74.4	2.9130
		(3.1355)	(4.2047)			
	3 VA vis.	40	50	90	55.6	1.2500
		(3.6889)	(3.9120)			
		93	177	270	65.6	1.9032
2. Male	1 Observ.	23	37	60	61.7	1.6087
		(3.1355)	(3.6109)			
	2 VA verb.	11	49	60	81.7	4.4545
		(2.3979)	(3.8918)			
	3 VA vis.	19	41	60	68.3	2.1579
		(2.9444)	(3.7136)			
		53	127	180	70.6	2.3962

difference between the $odds_{dev}$ is not relevant; men: $odds_{dev} = 2.00$; women: $odds_{dev} = 1.61$), and ignoring a 'lost' letter is more frequently observed in women than in men (men: $odds_{dev} = 1.61$; women: $odds_{dev} = 2.83$).

For the first opportunity analyzed differences in frequencies of deviant behavior with regard to the method of data collection have been reported above. Table IV shows in addition that there are no differences between

Table III. Continued

A: Sex	B: Method	C: Behavior / Intention no	yes		% deviant	$odds_{dev}$
c. 'lost letter'						
1. Female	1 Observ.	18	51	69	73.9	2.8333
		(2.8904)[a]	(3.9318)			
	2 VA verb	62	7	69	10.1	0.1129
		(4.1271)	(1.9459)			
	3 VA vis.	60	9	69	13.0	0.1500
		(4.0943)	(2.1972)			
		140	67	207	32.4	0.4786
2. Male	1 Observ.	31	50	81	61.7	1.6129
		(3.4340)	(3.9120)			
	2 VA verb.	76	5	81	6.2	0.0658
		(4.3307)	(1.6094)			
	3 VA vis.	69	12	81	14.8	0.1739
		(4.2341)	(2.4849)			
		176	67	243	27.6	0.3807

[a]logarithms of cell frequencies in parentheses.

male and female subjects in the extent to which they underestimate the number of deviant intentions in a vignette analysis using verbal stimuli ($\beta_{ABC222} = 0.0450$). However, vignette analyses using visual stimuli evoke different responses in male and female subjects: compared with women, men tend to underestimate the number of deviant choices more clearly ($\beta_{ABC232} = -0.2587$).

Table IV also shows that vignette analyses using verbal stimuli evoke more deviant responses, especially in male subjects ($\beta_{ABC222} = 0.6425$) for the opportunity to pass a red traffic light as a pedestrian. Vignette analyses employing video presentations reveal that women underreport the number of deviant choices while for men the probability that they would cross the street unlawfully equals the observed frequency of deviant choices ($\beta_{ABC232} = 0.7637$).

It follows from Table IV that vignette analyses of an opportunity return or ignore a 'lost letter' seem to evoke desirable responses. Subjects overestimate the probability of returning the letter in general. However, this result differs with regard to the subject's sex and type of vignette analysis. While vignette analyses using verbal stimuli lead male and female subjects to underestimate equally the number of times the letter is ignored ($\beta_{ABC222} = 0.0233$), vignette analyses using video presentations evoke more

Table IV. Log-linear analyses of cross-tabulated data (method, sex)

		λ/β	T
a. Traffic light, cyclist			
A. Sex	1 = female	0.0000	1.0000
	2 = male	−0.2578	0.7727
B. Method	1 = observation	0.0000	1.0000
	2 = vignette analysis (verbal)	0.2048	1.2273
	3 = vignette analysis (visual)	0.4358	1.5455
C. Behavior	1 = deviant: no	0.0000	1.0000
	2 = deviant: yes	0.7376	2.0909
AC	22	0.6036	1.8286
BC	22	−0.3199	0.7262
	32	−0.7376	0.4786
ABC	222	0.0450	1.0461
	232	−0.2587	0.7720
b. Traffic light, pedestrian			
A. Sex	1 = female	0.0000	1.0000
	2 = male	−0.2657	0.7667
B. Method	1 = observation	0.0000	1.0000
	2 = vignette analysis (verbal)	−0.2700	0.7546
	3 = vignette analysis (visual)	0.2877	1.3333
C. Behavior	1 = deviant: no	0.0000	1.0000
	2 = deviant: yes	0.6931	2.0000
AC	22	−0.2177	0.8043
BC	22	0.3761	1.4565
	32	−0.4700	0.6250
ABC	222	0.6425	1.9011
	232	0.7637	2.1462
c. 'Lost letter'			
A. Sex	1 = female	0.0000	1.0000
	2 = male	0.5436	1.7222
B. Method	1 = observation	0.0000	1.0000
	2 = vignette analysis (verbal)	1.2368	3.4444
	3 = vignette analysis (visual)	1.2040	3.3333
C.Behavior	1 = deviant: no	0.0000	1.0000
	2 = deviant: yes	1.0415	2.8333
AC	22	−0.5634	0.5693
BC	22	−3.2227	0.0398
	32	−2.9386	0.0529
ABC	222	0.0233	1.0236
	232	0.7113	2.0367

deviant responses in male than in female subjects ($\beta_{ABC232} = 0.7113$) than in female subjects.

To summarize, vignette analyses evoke 'realistic' self-reports of deviant behavior for one of the opportunities analyzed and for male respondents only. However, the frequencies of deviant behavior assessed using vignette analyses do not vary systematically across the opportunities under consideration. Verbal vignettes lead to an overestimation of the frequencies of crossing a red traffic light and ignoring a lost letter and to an underestimation of the frequencies of cycling through a red traffic light in this study.

4. Discussion

The central focus of this study has been the analysis of the validity of self-reported deviant behavior, or rather, deviant behavioral intentions, using vignette analyses. Vignette analyses usually consist of descriptions of hypothetical situations which are presented to subjects within the framework of a survey. Vignette analyses have also been carried out using video presentations of situations. Subjects are asked to specify their attitudes towards the social situations presented or to state behavioral intentions which might be evoked by the situation.

What prompted this study was an objection to the idea of using vignette analyses to measure actual behavior. It has been argued that such analyses are suitable only for measuring behavioral *intentions*, and the extent to which these intentions and actual behavior in fact correspond remains completely unknown. Against this background the present study was designed to make a systematic analysis of comparative data with a view to ascertaining whether vignette analyses provide information on actual behavior. On the basis of Abelson's script theory it was suspected that actual behavior and behavioral intentions correspond if vignettes include descriptions of situations which frequently occur in everyday life and which are presented in a short, simple, and clearly structured way. In particular, vignette analyses using visual stimuli should lead to more accurate, i.e. more closely corresponding measurements of behavior compared to vignette analyses using verbal stimuli.

The study presented here addressed these questions, taking as an example three everyday life situations which present themselves as opportunities. Frequencies of riding through a red traffic light as a cyclist, crossing a red traffic light as a pedestrian and not returning a 'lost letter' were assessed employing three measures, namely unobtrusive observations, vignette analyses (visual stimuli) and vignette analyses (verbal stimuli). The correspondence of the observed, described and filmed opportunities had been ensured by an expert's rating. The results of these methods of

data collection were subjected to systematic comparisons using log-linear analyses.

The main result to emerge from the empirical study reported here is undoubtedly the observation that actual behavior and behavioral intentions vary depending on the method of data collection, but also depending on the subject's sex and the opportunity under consideration.

Measures of the frequency of deviant behavior deviate to the largest extent for the opportunity to ignore or to return a 'lost letter'. While the return rate is overestimated by all respondents, the degree of overestimation is smallest for male subjects in the face of a visual vignette.

In contrast, actual behavior and behavioral intentions coincide to a greater extent for the situations involving a red traffic light. Nevertheless, the correspondence between actual behavior and behavioral intention is anything but perfect: For the opportunity to ride through a red traffic light, both types of vignette analyses showed less deviant responses compared with the results of the observations of 'real' life. This result holds for male subjects and visual vignettes in particular. For the situation of crossing a street unlawfully verbal stimuli evoked more deviant responses. Male subjects particularly overestimate the number of deviant behavioral choices. Vignette analyses using visual stimuli reveal that female respondents underestimate the 'real' number of deviant responses while for men the self-reported behavioral intention to cross a street unlawfully corresponds to the observed frequency in 'real' life. This correspondence of frequencies is in accordance with the expectations which form the basis of the research questions presented above.

Overall, for the situation to cross a street unlawfully and for male subjects only, vignettes using visual stimuli the empirical analyses reveal a result which is in line with the underlying assumptions of the study.

To summarize, the validity of vignette analyses seems to depend on the situation analyzed. Validity seems to be reduced especially for measuring return rates of 'lost letters,' where vignette analyses overestimate the return rates observed in 'real' life considerably.

One interpretation for these results could be that the opportunities analyzed are related to different normative codes. While the opportunities to pass or cycle through a red traffic light are controlled by the legal code, the opportunity to return or to ignore a 'lost letter' is governed by the moral code. An opportunity which is related to the moral code might evoke socially desirable responding more clearly than an opportunitiy which is ruled by the legal code.

However, this interpretation has to be treated with caution for methodological reasons mainly. Although the identity of observed, described and filmed opportunities had been rated in the preliminary stages of the empirical study, the subjects might have perceived the verbal and visual

material in a different manner. Interviews of all subjects could have cleared up the question, if all subjects perceived the situations presented equally, and if these perceptions were related to the features of opportunities as they had been defined in this research – namely the elements of opportunities defined within the framework of the Routine Activity Approach (Cohen and Felson, 1979).

The study was designed above all to make a first attempt analyzing the validity of vignette analyses empirically. Independent of the methodological considerations outlined above, however, the results have to be treated with caution in several respects. First, the study is restricted to a university context. Second, it refered to convenience samples of undergraduates only. Thus, the results remain restricted to situations like the ones analyzed and to groups which constituted the samples. Despite these reservations it would clearly be of heuristic interest to pursue the question of validity of vignette analyses. Different forms of behavior could be analyzed, while, clearly, a greater variety of situations should be included, and samples covering larger parts of the population should be used. This would make it possible to consider the relevance of the results presented here, and to analyze causal effects of situational features on behavior in addition to counting frequencies of that behavior.

References

Abelson, R. P. (1976). Script processing in attitude formation and decision making. In: J. S. Carroll & J. W. Payne (eds), *Cognition and Social Behavior.* Hillsdale, NJ: Erlbaum, pp. 33–67.

Agresti, A. (1990). *Categorical Data Analysis*. New York. Wiley.

Ajzen, I. & Madden, T. J. (1986). Prediction of goal-directed behavior: attitudes, intentions and perceived behavioral control. *Journal of Experimental Social Psychology* 22: 453–474.

Bentrup, C. (2004). Problems of behavior measurement. An empirical analysis of the validity of scenario techniques (orig.: Probleme der Erfassung von Verhalten. Eine empirische Analyse zur Validität von Vignettenanalysen). Master Thesis, Faculty for Sociology, University of Bielefeld, Germany.

Bower, G. H. (1970). Imagery as a relational organizer in associative learning. *Journal of Verbal Learning and Verbal Behavior* 9: 529–533.

Clarke, R. V. (Ed.) (1992). *Situational Crime Prevention. Successful Case Studies*. Harrow and Heston, Albany, NY.

Cloward, R. & Ohlin, L. (1959). Illegitimate means, anomie, and deviant behavior. *American Sociological Review* 24: 164–177.

Cloward, R. & Ohlin, L. (1960). *Delinquency and Opportunity*. Glencoe, IL: Free Press.

Cohen, L. & Felson, M. (1979). Social change and crime rate trends. A routine activity approach. *American Sociological Review* 44: 588–608.

Cornish, D. B. & Clarke, R. V. (1986). *The Reasoning Criminal. Rational Choice Perspectives on Offending*. New York, NY: Springer.

Crick, F. I. M. & Asanuma, C. (1986). Certain aspects of the anatomy and physiology of the cerebral cortex. In: J. L. McClelland & D. E. Rumelhart (eds), *Parallel Distributed*

Processing: Explorations in the Microstructure of Cognition, Vol. 2. Cambridge: MIT Press/ Bradford Books, pp. 333–371.

Eifler, S. (2002). Finders are keepers. Empirical examinations of criminal opportunities using scenario techniques (Bielefelder Arbeiten zur Sozialpsychologie, Nr. 203). Bielefeld: University of Bielefeld.

Farrington, D. P. & Kidd, R. F. (1977). Is financial dishonesty a rational decision? *British Journal of Social and Clinical Psychology* 18: 277–284.

Farrington, D. P. & Knight, B. J. (1979). Two non-reactive field experiments on stealing from a "lost" letter. *British Journal of Social and Clinical Psychology* 18: 277–284.

Farrington, D. P. & Knight, B. J. (1980a). Stealing from a "lost" letter. Effects of victim characteristics. *Criminal Justice and Behavior* 7: 423–436.

Farrington, D. P. & Knight, B. J. (1980b). Four studies of stealing as a risky decision. In: P. D. Lipsitt (ed.), *New Directions in Psycholegal Research*. New York, NY: VNR Company, pp. 26–50.

Felson, M. (1998). *Crime and Everyday Life* 2nd edn. Thousand Oaks: Pine Forge Press.

Finch, J. (1987). The vignette technique in survey research. *Sociology* 21: 105–114.

Fishbein, M. & Ajzen, I. (1975). *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*. Reading: Addison-Wesley.

Goldstone, R. L. & Chin, C. (1993). Dishonesty in self-report of copies made: moral relativity and the copy machine. *Basic and Applied Social Psychology* 14: 19–32.

Hagenaars, J. A. (1990). *Categorical Longitudinal Data: Log-Linear Panel, Trend, and Cohort Analysis*. Newbury Park: Sage.

Jasso, G. & Opp, K. D. (1997). Probing the character of norms: a factorial survey analysis of the norms of political action. *American Sociological Review* 53: 919–932.

Kamat, S. S. & Kanekar, S. (1990). Predictions of and recommendation for honest behavior. *Journal of Social Psychology* 130: 597–607.

Kerlinger, F. N. & Pedhazur, E. J. (1973). *Multiple Regression in Behavioral Research*. New York: Holt, Rinehart & Winston.

Knoke, D. & Burke, P. J. (1980). *Log-Linear Modeling*. Beverly Hills, CA.: Sage.

Manstead, A. S. R. & Parker, D. (1995). Evaluating and extending the theory of planned behavior. In: W. Stroebe & M. Hewstone (eds), *European Review of Social Psychology*, Vol. 6. Chichester: Wiley, pp. 69–95.

Paivio, A. (1971). *Imagery and Verbal Processes*. New York: Holt, Rinehart & Winston.

Paivio, A. (1986). *Mental Representations: A Dual Coding Approach*. New York: Oxford University Press.

Roland, P. E. & Friberg, L. (1985). Localization of cortical areas activated by thinking. *Journal of Neurophysiology* 53: 1219–1243.

Rossi, P. H. & Anderson, A. B. (1982). The factorial survey approach. An introduction. In: P. H. Rossi & S. L. Nock (eds), *Measuring Social Judgements. The Factorial Survey Approach*. Beverly Hills, CA: Sage, pp. 15–67.

Schank, R. & Abelson, R. P. (1977). *Scripts, Plans, Goals and Understanding*. Hillsdale: Lawrence Erlbaum.

Shepard, R. N. (1967). Recognition memory for word, sentences, and pictures. *Journal of Verbal Learning and Verbal Behavior* 6: 156–163.

Simon, W. E. & Gillen, M. J. (1971). Return rates of "lost" letter as a function of whether the letter is stamped and amount money apparently in the letter. *Psychological Reports* 29: 141–142.

Sutton, S. (1998). Predicting and explaining intentions and behavior: How well are we doing? *Journal of Applied Social Psychology* 28: 1317–1338.

Tootell, R. B. H., Silverman, M. S., Switkes, E. & DeValois, R. L. (1982). Deocyglucose analysis of retintopic organization in primate striate cortex. *Science* 218: 902–904.
Webb, E. J., Campbell, D. T., Schwartz, R. D., Sechrest, L. & Grove, J. B. (1981). *Nonreactive Measures in the Social Sciences*. Boston: Houghton Mifflin Company.