Addendum to "The Impact of Questionnaire Design on Prevalence and Incidence Rates of Self-Reported Delinquency: Results of an Experiment Modifying the ISRD-2 Questionnaire" *

Effect Sizes of Variables Predicting Delinquent Behaviors

To explore whether the questionnaire design also affects the effect sizes of variables in etiological models to predict delinquency, three different sets of predictor variables were investigated. Apart from variables to control statistically for confounders (sex, grade, school type, migration status), the first model (Model 1) uses family factors (completeness of family, family disruption, family bonding, and parental supervision), the second (Model 2) uses neighborhood variables (neighborhood bonding, neighborhood disorganization, and neighborhood integration), and the third (Model 3) uses indicators of the respondents' lifestyle (self-control, lifestyle composed of different leisure time behaviors (Steketee, 2012), risk behaviors, delinquency of friends) as predictors. Outcome variables were the past year incidences of shoplifting and vandalism as well as versatility as an aggregate measure of delinquency. In each model the interaction of each predictor variable with the experimental condition was tested for significance.

Table 1: Effect Sizes (Incidence-Rate Ratios) of Family Variables Predicting Self-Reported Past Year Offending and Explained Model Variance (Pseudo R^2) by Experimental Group (Long vs. Short): Negative Binomial Regression

	Shoplifting		Vandalism		Versatility	
	Long	Short	Long	Short	Long	Short
Sex: male	2.33 *	1.80 **	3.70 **	5.10***	2.55 **	2.25***
(base = female)	(2.07)	(2.74)	(3.20)	(6.43)	(3.12)	(6.20)
Grade: grade 8	0.61	1.84	0.85	1.69	0.77	1.59 *
(base = grade 7)	(-1.04)	(1.64)	(-0.43)	(1.64)	(-1.14)	(2.24)
grade 9	1.11	1.09	1.11	0.68	0.72	0.97
	(0.18)	(0.22)	(0.27)	(-1.21)	(-1.12)	(-0.16)
School type: med. level	0.44	0.64	1.63	0.85	1.19	0.75
(base = lower)	(-1.06)	(-0.75)	(1.44)	(-0.52)	(0.41)	(-1.70)
upper level	0.91	0.56	0.77	0.63	0.80	0.60 **
	(-0.13)	(-0.94)	(-0.61)	(-1.41)	(-0.47)	(-3.09)
Native: yes	0.62	1.03	1.10	1.04	1.21	1.08
(base = no)	(-1.12)	(0.10)	(0.38)	(0.17)	(0.93)	(0.46)
Family complete: yes	1.81	1.23	0.80	1.30	0.81	1.24
(base = no)	(1.04)	(0.75)	(-0.82)	(0.96)	(-1.32)	(1.20)
Family disruption	1.62	1.24 *	0.89	1.43 *	1.40***	1.28 **
(z-score)	(1.62)	(2.22)	(-0.67)	(2.34)	(3.83)	(3.06)
Family bonding	0.73	0.75	0.56***	0.70 **	0.84	0.74***
(z-score)	(-1.52)	(-1.68)	(-3.99)	(-3.10)	(-1.82)	(-3.86)
Parental supervision: yes	0.17***	0.43 **	0.31***	0.39***	0.41***	0.42***
(base = not always)	(-4.84)	(-2.73)	(-3.86)	(-3.74)	(-5.53)	(-6.33)
LR Chi²	50.80	42.97	149.11	126.28	175.93	165.75
Nagelkerke R^2	0.075	0.069	0.114	0.177	0.168	0.197

Notes: z-values in parentheses; * $p < .05$; ** $p < .01$; *** $p < .001$

Table 2: Effect Sizes (Incidence-Rate Ratios) of Neighborhood Variables Predicting Self-Reported Past Year Offending and Explained Model Variance (Pseudo R^2) by Experimental Group (Long vs. Short): Negative Binomial Regression

	Shoplifting		Vandalism		Versatility	
	Long	Short	Long	Short	Long	Short
Sex: male (base = female)	1.73 (1.59)	1.68 * (2.12)	3.81*** (3.36)	3.14*** (4.94)	2.66*** (3.95)	1.65*** (3.37)
Grade: grade 8 (base = grade 7)	0.76 (-0.52)	1.48 (1.03)	1.17 (0.38)	1.31 (0.87)	0.90 (-0.43)	1.42 (1.65)
grade 9	0.63 (-0.81)	0.84 (-0.57)	0.88 (-0.25)	0.75 (-0.80)	0.60 (-1.80)	1.13 (0.62)
School type: med. level (base = lower)	0.46 (-1.02)	0.60 (-1.16)	2.13 * (2.19)	0.89 (-0.29)	1.29 (0.87)	0.87 (-0.56)
upper level	0.72 (-0.40)	0.53 (-1.32)	0.97 (-0.08)	0.45 (-1.90)	0.69 (-1.00)	0.57 * (-2.19)
Native: yes (base = no)	0.42 ** (-2.60)	0.57 * (-2.31)	1.15 (0.52)	0.85 (-0.79)	1.08 (0.32)	0.98 (-0.12)
Neighborhood bonding (z-score)	0.66 * (-2.10)	0.67 ** (-3.21)	0.63 ** (-2.91)	0.70 ** (-2.67)	0.81 * (-2.34)	0.74*** (-4.61)
Neighborhood disorganiz. (z-score)	1.70 * (2.32)	2.17 ** (5.26)	1.76*** (4.52)	1.70*** (4.60)	1.72*** (6.26)	1.79*** (7.79)
Neighborhood integration (z-score)	1.08 (0.39)	1.30 * (2.08)	1.38 (1.49)	1.03 (0.28)	1.24 * (2.55)	1.15 * (2.11)
LR Chi²	67.81	53.88	75.66	80.26	128.36	109.77
Nagelkerke R^2	0.046	0.077	0.091	0.135	0.158	0.177

Notes: z-values in parentheses; * $p < .05$; ** $p < .01$; *** $p < .001$

Table 1 presents the Model 1 comparisons of effect sizes found in the long and short version groups. Except for the different sizes of the (non significant) effects of the completeness of the family on versatility (interaction effect: IRR = 1.53, $z = 2.10$, $p = .036$) none of the effects differs significantly between the long and short version groups. In this respect both versions of the questionnaire produce the same results. However, in the short version group predictors explain overall more variance than in the long version group (the average pseudo R^2 is 1.22 times larger).

Although (except for the interaction effect mentioned above) there are no statistically significant differences of effect sizes between the short and long version groups, it is revealing to consider effects that are significant in one group but not in the other: If we had no information about the results in the other group, we presumably would interpret the significant effect as a noteworthy result of the study. As to Model 1 there are three differences of this kind between the two groups. The effect of family disruption on shoplifting and vandalism is only statistically significant in the short version group. In this group students of higher level schools seem be significantly less versatile than students of the lower level schools and grade 8 students seem to be significantly more versatile than grade 7 students, whereas these differences are not significant in the long version group.

The effect sizes of Model 2 are presented in *Table 2*. None of the effects on the outcome variables differ significantly between the two versions of the questionnaire. However, again more variance is explained using data of the short version questionnaire, its average pseudo R^2 is 1.43 times larger (although the overall absolute difference is only 3.6 %).

Whereas the effect of neighborhood integration on shoplifting and again the difference of versatility between higher and lower level schools are significant in the short version group and not in the long version group. In the latter group the incidence rate of vandalism is significantly higher in the medium level schools opposed to lower level schools.

Table 3: Effect Sizes (Incidence-Rate Ratios) of Lifestyle Variables Predicting Self-Reported Past Year Offending and Explained Model Variance (Pseudo R^2) by Experimental Group (Long vs. Short): Negative Binomial Regression

	Shoplifting		Vandalism		Versatility	
	Long	Short	Long	Short	Long	Short
Sex: male	1.99	1.80 **	3.76***	3.30***	2.16***	1.93***
(base = female)	(1.50)	(2.60)	(3.80)	(6.00)	(3.32)	(6.03)
Grade: grade 8	0.80	1.22	0.99	0.91	0.97	1.04
(base = grade 7)	(-0.47)	(0.66)	(-0.03)	(-0.39)	(-0.12)	(0.30)
grade 9	0.78	0.95	1.07	0.64	0.71	0.96
	(-0.43)	(-0.15)	(0.19)	(-1.54)	(-1.89)	(-0.30)
School type: med. level	0.79	0.80	2.67 **	1.00	1.64 *	0.91
(base = lower)	(-0.36)	(-0.84)	(2.63)	(-0.01)	(0.32)	(-0.68)
upper level	1.54	1.44	1.19	0.77	1.06	0.86
	(0.63)	(1.18)	(0.43)	(-0.92)	(0.22)	(-1.03)
Native: yes	0.48	0.64	1.31	0.80	0.95	1.06
(base = no)	(-1.71)	(-1.55)	(0.99)	(-1.17)	(-0.23)	(0.43)
Self-control	0.82	0.58 **	0.28***	0.39***	0.58***	0.55***
(z-score)	(-1.38)	(-3.03)	(-5.67)	(-5.92)	(-3.49)	(-8.10)
Lifestyle	1.35	0.98	1.33	1.25	1.41***	1.23 *
(z-score)	(1.44)	(-0.13)	(1.86)	(1.73)	(3.84)	(2.43)
Risk behaviors: 2+	4.58 *	1.25	2.09	2.22***	2.39***	1.62***
(base = max. 1)	(2.50)	(0.82)	(1.67)	(4.58)	(4.02)	(5.22)
Delinquent peers[1)]	1.56***	1.35***	–	–	4.23***	3.97***
	(6.70)	(6.46)	–	–	(5.95)	(6.12)
LR Chi²	106.39	177.73	173.40	299.32	336.60	384.42
Nagelkerke R^2	0.192	0.259	0.221	0.279	0.359	0.429

Notes: *z*-values in parentheses; [1)] number of friends who did steal something from a shop or department store (predicting shoplifting) / having friends who used drugs or committed shoplifting, burglary, extortion, or assault (predicting versatility); * $p < .05$; ** $p < .01$; *** $p < .001$

The only substantial *and* significant difference between the effect sizes of both groups was found as to the Model 3 comparisons (*Table 3*). In the long version group, students with at least two risk behaviors (of going out often at night, drinking strong spirits, using marijuana, or being truant) commit significantly and substantially more acts of shoplifting than students with at the most one risk behavior, whereas this variable shows no significant effect in the short version group. However, on the other hand, in the long version group self-control has no significant effect on the frequency of shoplifting, whereas this effect is strong and significant in the short version group. But in this case the effect sizes do not differ significantly between both groups. Other (also not significant) differences involving significant effects in one but not in the other group are: In the long version group the incidence rates of vandalism and versatility are significantly higher in the medium level schools as compared to lower level schools (which is a rather counter-intuitive finding), whereas these differences are not significant in the short version group. On the other hand

there is a significant positive effect of the number of risk behaviors on vandalism only in the short version group. Overall the Model 3 comparisons confirm the findings of the previous comparisons between both groups: Differences in the questionnaire design yield only one significantly different effect of the predictors. However, not much but consistently more variance is explained by data generated with the short version questionnaire (the average pseudo R^2 is 1.27 times larger).

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* Enzmann, D. (2013). The impact of questionnaire design on prevalence and incidence rates of self-reported delinquency: Results of an experiment modifying the ISRD-2 questionnaire. *Journal of Contemporary Criminal Justice*, 29, 147-177.
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