Report of a Method Effect in the Assessment of Personality Traits in Pairfam

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In Wave 1, five personality traits (self-esteem, loneliness, emotional autonomy, shyness and explosiveness/tendency to anger) have been assessed in CAPI-mode (computer-assisted personal interview; i.e., questions were directly asked by the interviewer), whereas these traits were assessed in CASI-mode (computer-assisted self-administered interview; i.e., respondents completed questionnaires privately on a handheld computer) in the following waves. Our analyses indicated method effects for four of these traits (self-esteem, loneliness, emotional autonomy, shyness).

When comparing the anchors' scores at Wave 1 to the respective following wave[1], we found statistically significant longitudinal differences in means that exceed differences between all other waves. Additionally, the comparison of anchors' scores at Wave 1 to the scores of their partners at Wave 1 revealed statistically significant cross-sectional differences in means. Effect sizes (Cohen's *d)* are comparable in both cases (see Table 1).

Table 1

Change in personality traits in case of assessment with two methods

	ΔM		SD_D		t		Cohen's d[2]	
Variable	Long	Cross	Long	Cross	Long	Cross	Long	Cross
Self-esteem	-0,18	-0,24	0,83	1,07	20,69	13,58	-0,31	-0,32
Loneliness	0,32	0,27	1,30	1,25	-18,67	-12,95	0,35	0,30
Emotional autonomy	-0,07	-0,05	0,80	0,98	7,09	3,10	-0,13	-0,07
Shyness	0,17	0,21	0,82	1,19	-16,24	-10,88	0,29	0,25

Note. Long = longitudinal (anchor Wave 1 – anchor subsequent wave); Cross = cross-sectional (anchor Wave 1 – partner Wave 1); ΔM = difference in means; SD_D = standard deviation of the difference values.

Longitudinal comparisons additionally revealed a noticeably smaller standard deviation of the scores at Wave 1, especially for self-esteem and loneliness (see Table 2). This suggests the scale was used differently at the two measurement occasions, possibly due to influences of social desirability (Heerwegh, 2009).

Table 2

Longitudinal change in personality traits

	M		SD		ΔSD
Variable	T1	T2	T1	T2	
Self-esteem	4,12	3,93	0,76	0,86	12,7 %
Loneliness	1,65	1,95	1,01	1,15	13,6 %
Emotional autonomy	3,90	3,83	0,76	0,76	-0,2 %
Shyness	2,14	2,32	0,84	0,87	3,8 %

[1] The next assessments took place in Wave 2 (self-esteem), Wave 4 (loneliness), and Wave 5 (emotional autonomy and shyness), respectively.

[2] Calculation for dependent variables $d = ([M_2 - M_1]/SD_D) * \sqrt{2}$, SD_D refers to the standard deviation of the difference values (Cohen, 1988).

As can be seen in Table 3 and Table 4 respectively, these effects also appeared similarly when investigating the descriptive parameters separately for each cohort.

Table 3

Longitudinal change in personality traits, separately for each cohort

	Cohort 1				Cohort 2				Cohort 3			
Variable	ΔM	SD_D	t	d	ΔM	SD_D	t	d	ΔM	SD_D	t	d
Self-esteem	-0,14	0,81	10,37	-0,25	-0,17	0,81	10,98	-0,30	-0,24	0,88	14,35	-0,38
Loneliness	0,43	1,29	17,38	0,47	0,20	1,32	6,90	0,22	0,29	1,28	10,63	0,32
Emotional autonomy	0,00	0,86	0,24	-0,01	-0,08	0,77	4,20	-0,14	-0,15	0,75	8,88	-0,28
Shyness	0,14	0,87	8,07	0,23	0,17	0,78	9,40	0,32	0,19	0,78	11,10	0,35

Note. Cohort 1: 1991-1993. Cohort 2: 1981-1983. Cohort 3: 1971-1973

Table 4

Longitudinal change in personality traits, separately for each cohort

	Cohort 1					Cohort 2					Cohort 3				
	M		*SD*		ΔSD	*M*		*SD*		ΔSD	*M*		*SD*		ΔSD
Variable	T1	T2	T1	T2	in %	T1	T2	T1	T2	in %	T1	T2	T1	T2	in %
Self-esteem	4,13	3,99	0,75	0,83	10,7	4,11	3,91	0,76	0,87	14,3	4,11	3,87	0,77	0,87	13,1
Loneliness	1,56	1,99	0,91	1,09	20,4	1,76	1,96	1,07	1,19	11,2	1,63	1,91	1,04	1,18	12,6
Emotional autonomy	3,72	3,72	0,76	0,75	-0,3	3,95	3,86	0,74	0,75	1,2	4,03	3,88	0,75	0,75	0,8
Shyness	2,24	2,41	0,82	0,87	5,8	2,13	2,33	0,85	0,86	2,07	2,03	2,24	0,84	0,87	3,4

Several methods for controlling method effects in mixed mode surveys have been proposed (e.g., Hox, de Leeuw, & Zijlmans, 2015), but these pertain to situations in which data collection modes differed *within* one wave rather than across waves. Under the given circumstances, there are at least two viable solutions to control for the observed method effect. First, a dummy-variable could be introduced in the analyses, comparing Wave 1 (1) vs. all other Waves (0). In situations where it is not possible to include such a dummy variable, for instance due to the type of analysis or the data format required by the analysis software, it is also possible to normalize the anchor scores with respect to the partner scores. This normalization consists of two steps. First, the anchor data have to be centered by subtracting the overall mean from each individual score. The resulting variable has a mean of zero, while preserving the variance of the original scale (i.e., all inter-individual differences remain untouched). Second, the partner mean of the respective scale has to be added to the centered anchor variable (Mund, Finn, Hagemeyer, Zimmermann, and Neyer, in press).

References

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Heerwegh, D. (2009). Mode differences between face-to-face and web surveys: An experimental investigation of data quality and social desirability effects. *International Journal Of Public Opinion Research, 21*(1), 111-121. doi:10.1093/ijpor/edn054

Hox, J. J., de Leeuw, E. D., & Zijlmans, E. A. O. (2015). Measurement equivalence in mixed mode surveys. *Frontiers in Psychology: Quantitative Psychology and Measurement, 6,* 1-11. doi:10.3389/fpsyg.2015.00087

Mund, M., Finn, C., Hagemeyer, B., Zimmermann, J., & Neyer, F. J. (in press). The dynamics of self-esteem in partner relationships. *European Journal of Personality.*