Correction to Stahl, Klauer, & Erdfelder (2008) 'Matching bias in the selection task is not eliminated by explicit negations'

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Abstract

This document reproduces the analyses and corrects the results reported in Stahl, Klauer, & Erdfelder (2008). There were some reporting errors in the article (due to use of an incorrect data file version) that are corrected below. The corrections affect neither the pattern of results discussed nor the conclusions drawn in the article. First, the corrections are given in a compression fashion. For the reader's convenience, those sections of the paper for which any corrections were made are then reprinted below. Raw data and additional material can be obtained at http://osf.io/q5ssw.

Correction to Stahl, Klauer, & Erdfelder (2008) 'Matching bias in the selection task is not eliminated by explicit negations'

There were some reporting errors in Stahl et al. (2008) that were due to use of an incorrect data file version in the original analyses. They are corrected below. The corrections affect neither the pattern of results discussed nor the conclusions drawn in the article. Raw data and additional material can be obtained at http://osf.io/q5ssw.[1]

The correct number of participants in the 8 groups of Experiment 2 is 351, 343, 339, 308, 326, 348, 300, and 346 (p. 288). In Table 1 (p. 291), the correct values for AMI, CMI, and LI for Experiment 2 are 0.16, 0.20, and 0.37 for the implicit-negation condition, as well as 0.05, 0.10, and 0.31 for the explicit-negation condition (and the correct values of the rescaled indices discussed on p. 295 are therefore 0.64 and 0.80). The correct statistics for the t-tests against zero for these indices (reported on p. 292) are: 7.55, 9.83, and 12.79 (df=1340, all $ps < .001$) for the implicit-negation condition; and 2.61, 4.41, and 11.09 (df=1319, all $ps < .01$) for the explicit-negation condition. The correct statistics for the difference between implicit and explicit conditions are, for the AMI, $t = 3.36$, $p = .001$; for the CMI, $t = 3.60$, $p < .001$; and for the LI, $t = 1.62$, $p = .106$ ($df = 2659$). The correct effect sizes for AMI and CMI (discussed on p. 295) are $d = 0.07$ and $d = 0.12$, which (assuming $\alpha = .05$ and $\beta = .80$) require samples sizes of 1263 and 431 for detection; given $N = 32$ and $\alpha = .05$, these effect sizes can be detected with negligible power (0.10 and 0.16). In Table A2 (Appendix), the correct estimates (and 95% CIs) for parameter a in Experiment 1 are (for conditions A3, An3, nA3, nAn3, respectively): 0.79 (0.71, 0.87), 0.73 (0.62, 0.85), 0.55 (0.43, 0.66), 0.74 (0.64, 0.84); and the correct estimates for parameter sn in the explicit-negation groups of Experiment 2 are: 1 (0, 1), 0.32 (0, 1), 0 (0, 1), 0.45 (0.13, 0.77). None of the above corrections affected the article's substantive conclusions.

[1] The present analyses used R (3.3.1, R Core Team, 2016) and the R-packages *MPTinR* (1.10.3, Singmann & Kellen, 2013), *papaja* (0.1.0.9456, Aust & Barth, 2016), *snow* (Knaus, 2015; 0.4.2, Tierney, Rossini, Li, & Sevcikova, 2016), and *snowfall* (1.84.6.1, Knaus, 2015).

Corrected sections of the paper

Section "Participants" (p. 288)

Participants were sampled via the Internet. In Experiment 1 mean age was $M = 26.36$ years, 42% of participants were male, and 19% participated in the German version. In Experiment 2 mean age was $M = 28.57$ years, 44% of participants were male, and 9% participated in the German version. In Experiment 1 there were 336, 300, 341, and 349 participants in the groups labelled A3, An3, nA3, and nAn3, respectively. In Experiment 2 there were 351, 343, 339, 308, 326, 348, 300, and 346 participants in the groups labelled IA3, IAn3, InA3, InAn3, EA3, EAn3, EnA3, and EnAn3, respectively.

Section "Results" (p. 290)

To assess the possibility of selective dropout, we tested as a first step whether the numbers of accepted submissions were significantly different between the experimental groups. The number of participants did not differ significantly between the different experimental groups in each experiment, $G^2_{(df=3)} = 4.25, p = .236$, and $G^2_{(df=7)} = 7.86, p = .345$ for Experiment 1 and 2, respectively. [. . .]

Table 1 (p. 291)

In Table 1, the correct values for AMI, CMI, and LI for Experiment 2 are 0.16, 0.20, and 0.37 for the implicit-negation condition, as well as 0.05, 0.10, and 0.31 for the explicit-negation condition.

Section "Matching and logic indices" (last paragraph, p. 292)

In the implicit groups in Experiment 2, as expected, the AMI, CMI, and LI were significantly larger than zero ($t = 7.55, 9.83, and 12.79$, $df = 1340$, all $ps < .001$). Importantly, and in contrast to the findings reported by Evans et al. (1996), the indices were also significantly larger than zero in the explicit groups ($t = 2.61, 4.41, and 11.09$, $df = 1319$,

all $ps < .01$). The differences between implicit and explicit groups in the AMI and the CMI (but not the LI) were significant: for the difference in the AMI, $t = 3.36$, $p = .001$; in the CMI, $t = 3.60$, $p < .001$; in the LI, $t = 1.62$, $p = .106$ ($df = 2659$).

Section "Discussion" (p. 294f)

When the present indices are rescaled to range between -4 and +4, an AMI value of 0.76 results for Experiment 1, and of 0.64 for the implicit groups of Experiment 2, which is comparable to the value of 0.73 that was obtained by Evans et al. (1995, Exp.3); similarly, the rescaled CMI values were 1 and 0.80 for Experiment 1 and the implicit groups from Experiment 2, respectively, which is of comparable magnitude to the value of 1.33 obtained by Evans et al. (1995, Exp.3).

Section "Discussion" (p. 295, effect sizes and power analyses)

In the explicit negation conditions of the present Experiment 2, the AMI effect was small, $d = 0.07$. To obtain an effect of this magnitude with $\alpha = .05$ and a power of at least $1 - \beta = .80$, a sample size of 1263 is required. Given the $N = 32$ reported by Evans et al. (1995) for the explicit conditions, the power to detect an effect of $d = 0.07$ was only 0.10. Similarly, in the explicit negation conditions of the present Experiment 2, the CMI effect was small, $d = 0.12$; to obtain such an effect $\alpha = .05$ and a power of at least $1 - \beta = .80$, a sample size of 431 is required; and given the $N = 32$ reported by Evans et al. (1995) for the explicit conditions, the power to detect an effect of $d = 0.12$ was only 0.16. We conclude that the residual matching effects in the explicit conditions of the present Experiment 2 were small (cf. Cohen, 1988); in fact, they were too small to be detected in a small sample of $N = 32$, in which effects must be of at least medium size ($d >= .45$) to be detected with an acceptable power of at least $1 - \beta = .80$ (in a one-sample, one-sided t-test).

Table 1

Experiment 1

	A3	An3	nA3	nAn3
p	0.4 (0.18, 0.61)	0.59 (0.39, 0.8)	0.59 (0.44, 0.74)	0.6 (0.4, 0.81)
np	0.3 (0.12, 0.49)	0.23 (0.07, 0.39)	0.3 (0.19, 0.41)	0.25 (0.1, 0.41)
q	0.4 (0.19, 0.62)	0.36 (0.15, 0.57)	0.63 (0.46, 0.79)	0.39 (0.21, 0.57)
nq	0.42 (0.2, 0.65)	0.5 (0.27, 0.73)	0.31 (0.2, 0.42)	0.48 (0.27, 0.68)
a	0.79 (0.71, 0.87)	0.73 (0.62, 0.85)	0.55 (0.43, 0.66)	0.74 (0.64, 0.84)
c	0.51 (0.45, 0.58)	0.43 (0.35, 0.51)	0.54 (0.42, 0.66)	0.46 (0.37, 0.55)
x	0.94 (0.88, 1)	0.99 (0.94, 1)	0.95 (0.83, 1)	0.93 (0.86, 1)
d	0.76 (0.66, 0.86)	0.77 (0.65, 0.9)	0.83 (0.64, 1)	0.63 (0.49, 0.76)
sl	0.93 (0.85, 1)	0.89 (0.79, 0.98)	0.84 (0.73, 0.95)	0.63 (0.48, 0.79)
sn	0.9 (0.6, 1)	0.62 (0.28, 0.96)	0.99 (0, 1)	0.09 (0, 0.37)
sln	0.88 (0.8, 0.96)	0.91 (0.85, 0.97)	0.51 (0.35, 0.67)	0.42 (0.3, 0.53)
i	0.91 (0.87, 0.95)	0.95 (0.9, 0.99)	0.84 (0.74, 0.93)	0.85 (0.78, 0.91)
n	0	1 (0.91, 1)	0.99 (0.77, 1)	0.08 (0, 0.21)

Note. Estimates of parameter a were corrected.

Appendix, Table A2

The model's parameter estimates (reported in Table A2 of the article) are reproduced here in Table 1 (for Experiment 1), Table 2 (Experiment 2, implicit negation), and Table 3 (Experiment 2, explicit negation).

Table 2

Experiment 2, implicit negation

	A3	An3	nA3	nAn3
p	0.38 (0.13, 0.62)	0.35 (0.13, 0.58)	0.51 (0.35, 0.68)	0.61 (0.34, 0.87)
np	0.35 (0.13, 0.57)	0.47 (0.23, 0.71)	0.31 (0.16, 0.46)	0.16 (0.04, 0.29)
q	0.32 (0.1, 0.54)	0.4 (0.2, 0.6)	0.69 (0.53, 0.85)	0.26 (0.12, 0.41)
nq	0.6 (0.32, 0.88)	0.3 (0.12, 0.47)	0.32 (0.19, 0.44)	0.55 (0.28, 0.82)
a	0.83 (0.75, 0.91)	0.79 (0.7, 0.88)	0.65 (0.54, 0.75)	0.69 (0.58, 0.8)
c	0.53 (0.47, 0.6)	0.48 (0.42, 0.54)	0.48 (0.42, 0.54)	0.39 (0.3, 0.48)
x	0.93 (0.87, 0.99)	0.98 (0.93, 1)	0.92 (0.85, 0.99)	0.93 (0.86, 0.99)
d	0.66 (0.56, 0.76)	0.83 (0.74, 0.92)	0.88 (0.74, 1)	0.56 (0.32, 0.79)
sl	0.96 (0.88, 1)	0.94 (0.82, 1)	0.82 (0.73, 0.92)	0.54 (0.27, 0.81)
sn	0.82 (0.55, 1)	0.8 (0.38, 1)	1 (0, 1)	0.35 (0, 0.7)
sln	0.85 (0.76, 0.94)	0.87 (0.78, 0.96)	0.52 (0.36, 0.67)	0.49 (0.37, 0.6)
i	0.87 (0.83, 0.92)	0.95 (0.91, 0.99)	0.89 (0.81, 0.96)	0.92 (0.87, 0.97)
n	0	0.93 (0.84, 1)	0.66 (0.49, 0.82)	0.12 (0, 0.23)

Table 3

Experiment 2, explicit negation

	A3	An3	nA3	nAn3
p	0.21 (0.04, 0.38)	0.47 (0.21, 0.74)	0.33 (0.14, 0.52)	0.7 (0.48, 0.93)
np	0.48 (0.27, 0.7)	0.33 (0.1, 0.56)	0.49 (0.22, 0.76)	0.29 (0.1, 0.47)
q	0.38 (0.15, 0.6)	0.31 (0.13, 0.5)	0.69 (0.44, 0.93)	0.3 (0.14, 0.46)
nq	0.39 (0.17, 0.6)	0.38 (0.17, 0.59)	0.23 (0.08, 0.37)	0.34 (0.17, 0.52)
a	0.76 (0.67, 0.84)	0.77 (0.67, 0.86)	0.77 (0.67, 0.87)	0.72 (0.59, 0.85)
c	0.37 (0.31, 0.42)	0.43 (0.37, 0.48)	0.43 (0.37, 0.48)	0.37 (0.31, 0.42)
x	0.92 (0.87, 0.97)	0.96 (0.9, 1)	0.89 (0.82, 0.95)	0.97 (0.91, 1)
d	0.97 (0.85, 1)	0.77 (0.66, 0.89)	0.73 (0.57, 0.89)	0.55 (0.35, 0.75)
sl	1 (0.86, 1)	0.86 (0.74, 0.98)	0.83 (0.7, 0.96)	0.66 (0.39, 0.93)
sn	1 (0, 1)	0.32 (0, 1)	0 (0, 1)	0.45 (0.13, 0.77)
sln	0.72 (0.62, 0.82)	0.71 (0.61, 0.8)	0.83 (0.73, 0.93)	0.53 (0.43, 0.64)
i	0.95 (0.91, 0.99)	0.94 (0.89, 0.98)	0.93 (0.89, 0.98)	0.89 (0.84, 0.95)
n	0.14 (0.06, 0.22)	0.63 (0.53, 0.72)	0.34 (0.23, 0.45)	0.2 (0.1, 0.3)

Note. Estimates of parameter *sn* were corrected.

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