Electronic Supplementary Materials

Understanding Negative Beliefs About Power: The Role of Autonomy and Influence

Overview

The following document contains additional supplementary analyses. This includes detailed results for the manipulation checks (Studies 1 to 4), and moderation analyses regarding age, gender, and subjective social class[1] (Studies 1 to 4). For Study 1, we also report an additional confirmatory factor analysis and a moderation analysis involving autonomy and influence. For Study 3, we report additional results regarding our second dependent variable, recommended punishment. Finally, for Study 4, we report detailed results regarding order effects.

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[1] This resulted in 27 independendent moderation analysis. We thus used a non-preregistered, Bonferonni-corrected α of .0019 to claim statistical significance for these analyses.

Study 1

Manipulation Check

The manipulation check indicated that our manipulation was successful. Participants in the high power-condition reported the imagined people to have more power ($M = 6.33$, $SD = 1.18$) than participants in the low power-condition ($M = 2.14$, $SD =1.95$), $t(395) = 25.79$, $p < .001$, $d = 2.59$, 95%-CI[2.32, 2.86].

Distinctiveness of Autonomy and Influence Measures.

We conducted non-preregistered confirmatory factor analyses to test whether our autonomy and influence measures indeed reflect distinct constructs, which is a central assumption of this study. These analyses demonstrated the distinctiveness of the measures. The two-factor model differentiating autonomy and influence had a good fit overall: $\chi2=82.61$, $p < .001$, comparative fit index (*CFI*) = .99, root mean square error approximation (*RMSEA*) = .09, standardized root mean square residual (*SRMR*) = .02, and performed significantly better than a one-factor model ($\chi2=426.06$, $p < .001$, *CFI*= .91, *RMSEA*= .23, *SRMR*= .04; $\Delta\chi2= 343.45$, $p < .001$).

Interactions with Gender, Age, and Social Class

We tested whether the effect of power on expected immorality was moderated by gender (women vs. men, excluding two non-binary participants from these analyses), age, or social class by conducting three multiple linear regression analyses, each including the respective moderator and an interaction-term.

The multiple linear regression analysis involving gender suggests that gender did not significantly moderate the relationship between power and expected immorality, $B = 0.28$, $t(387) = 0.89$, $p = .373$.

The multiple linear regression analysis involving age suggests that age did not significantly moderate the relationship between power and expected immorality, $B = 0.02$, $t(389) = 1.30$, $p = .195$.

The multiple linear regression analysis involving social class suggests that social class did significantly moderate the relationship between power and expected immorality, $B = 0.36$, $t(389) = 4.14$, $p < .001$. This pattern is depicted in Figure S1.
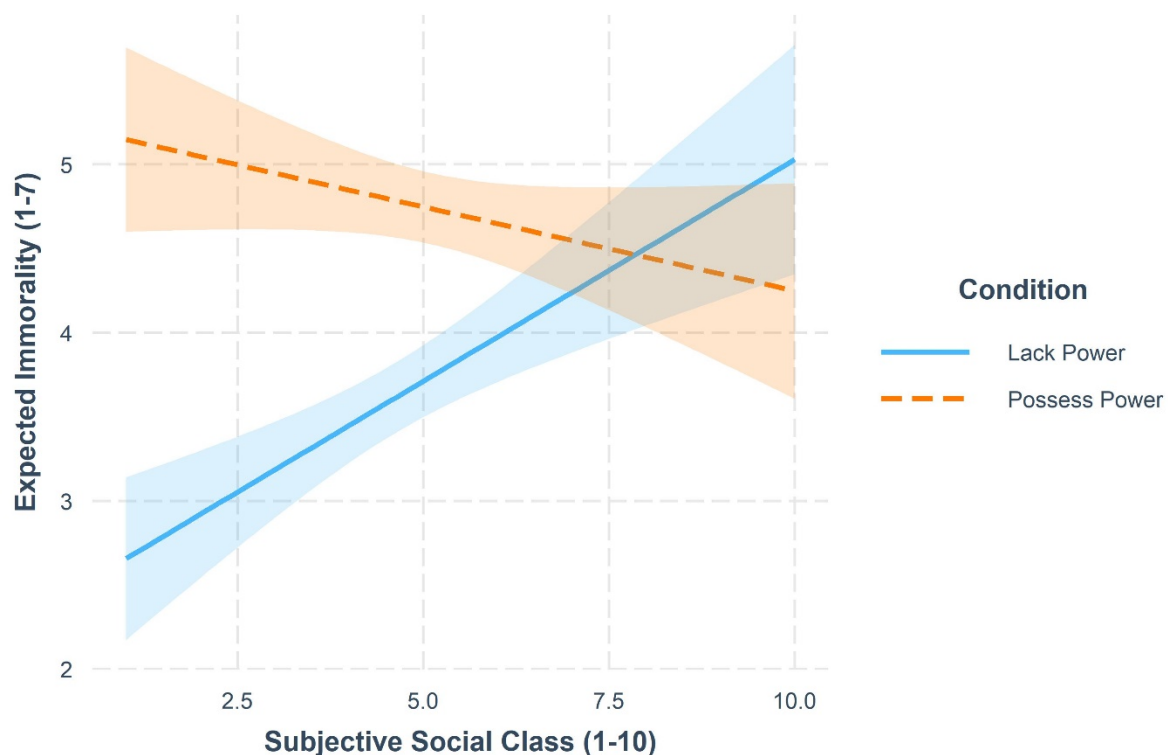

Figure S1. Perceived immorality as a function of condition and subjective social class (presented with 95%-confidence intervals).

Interaction between Autonomy and Influence.

We exploratory tested whether autonomy and influence interacted with each other by fitting a multiple linear regression analysis with autonomy, influence, and their interaction term as predictors, and expected immorality as dependent variable. This model revealed no significant interaction, $B = 0.03$, $t(392) = 1.19$, $p = .233$.

Study 2

Manipulation Checks

The manipulation checks indicated that our manipulation was successful. Participants who read about a person high on autonomy reported more perceived autonomy ($M = 6.55$, $SD = 1.03$) than participants in the low autonomy conditions ($M = 2.58$, $SD = 2.18$), $t(398) = 22.95$, $p < .001$, $d = 2.30$, 95%-CI[2.04, 2.55]. Moreover, participants in the high influence conditions reported a higher perceived influence ($M = 6.21$, $SD = 1.22$) than participants in the low influence conditions ($M = 2.22$, $SD = 1.91$), $t(398) = 24.73$, $p < .001$, $d = 2.47$, 95%-CI[2.21, 2.74]. Importantly, we observed no significant effect of our autonomy manipulation on the influence manipulation check, $t(398) = 0.72$, $p = .469$, $d = 0.07$, 95%-CI[-0.12, 0.27], or of our influence manipulation on the autonomy manipulation check, $t(398) = 0.30$, $p = .768$, $d = 0.03$, 95%-CI[-0.17, 0.23].

Controlling for Gender, Age, and Social Class

We tested whether the effect of autonomy and influence on expected immorality were moderated by gender (women vs. men), age, or social class by conducting three multiple linear regression analyses involving autonomy, and three multiple linear regression analyses involving influence, each including the respective moderator and an interaction-term.

The multiple linear regression analyses involving gender suggested that gender did not significantly moderate the relationship between influence and expected immorality, $B = 0.10$, $t(392) = 0.70$, $p = .483$. The interaction between autonomy and gender also did not reach statistical significance (note that we had Bonferonni-corrected our α-level to .0019), $B = 0.31$, $t(392) = 2.14$, $p = .033$.

The multiple linear regression analyses involving age suggested that age did not significantly moderate the relationship between influence and expected immorality, $B < 0.01$, $t(395) = 0.39$, $p = .699$. The interaction between autonomy and age also did not reach statistical significance, $B < 0.01$, $t(395) = 0.75$, $p = .456$.

Finally, the multiple linear regression analyses involving social class suggested that social class did not significantly moderate the relationship between influence and expected immorality, $B = 0.05$, $t(395) = 1.36$, $p = .175$, nor between autonomy and social class, $B < 0.01$, $t(395) = 0.06$, $p = .952$.

Study 3

Manipulation Checks

The manipulation check indicated that our manipulation was successful. Participants who read about a person high on autonomy reported more perceived autonomy ($M = 6.54$, $SD = 1.04$), than participants in the low autonomy conditions ($M = 2.27$, $SD = 2.04$), $t(962) = 40.94$, $p < .001$, $d = 2.64$, 95%-CI[2.46, 2.81]. Moreover, participants in the high influence conditions reported a higher perceived influence ($M = 6.21$, $SD = 1.29$), than participants in the low influence conditions ($M = 1.84$, $SD = 1.58$), $t(962) = 47.09$, $p < .001$, $d = 3.03$, 95%-CI[2.85, 3.22]. Importantly, we observed only very small effects of our autonomy manipulation on the influence manipulation check, $t(962) = 2.24$, $p = .025$, $d = 0.14$, 95%-CI[0.02, 0.27], and of our influence manipulation on the autonomy manipulation check, $t(962) = 3.31$, $p = .001$, $d = 0.21$, 95%-CI[0.09, 0.34].

Controlling for Gender, Age, and Social Class

We tested whether the effect of autonomy and influence on perceived intentionality were moderated by gender (women vs. men), age, or social class by conducting three

multiple linear regression analyses involving autonomy, and three multiple linear regression analyses involving influence, each including the respective moderator and an interaction term.

The multiple linear regression analyses involving gender suggested that gender did not significantly moderate the relationship between influence and gender, $B = 0.06$, $t(954) = 0.72$, $p = .470$. The interaction between autonomy and gender also did not reach statistical significance $B = 0.01$, $t(954) = 0.12$, $p = .903$.

The multiple linear regression analyses involving age suggested that age did not significantly moderate the relationship between influence and expected immorality, $B < 0.01$, $t(959) = 0.10$, $p = .922$. The interaction between autonomy and age also did not reach statistical significance, $B < 0.01$, $t(959) = 1.08$, $p = .279$.

Finally, the multiple linear regression analyses involving social class suggested that social class did not significantly moderate the relationship between influence and expected immorality, $B = 0.01$, $t(959) = 0.51$, $p = .612$, nor between autonomy and social class, $B = 0.03$, $t(959) = 1.43$, $p = .154$.

Recommended Punishment

We conducted a 2 (described autonomy: low vs. high) × 2 (described influence: low vs. high) between-participant ANOVA with recommended punishment ratings as the dependent variable. This ANOVA again revealed significant main effects of autonomy, $F(1, 960) = 13.11$, $p < .001$, $\eta^2 p = .013$, 95%-CI[.004, .028], and influence, $F(1, 960) = 8.34$, $p = .004$, $\eta^2 p = .009$, 95%-CI[.002, .021], as well as a small but significant interaction, $F(1, 960) = 4.68$, $p = .031$, $\eta^2 p = .005$, 95%-CI[.0002, .015]. Participants in the high autonomy conditions recommended a harsher punishment ($M = 2.71$, $SD = 1.21$), than participants in the low autonomy conditions ($M = 2.42$, $SD = 1.26$). Moreover, participants in the high influence

conditions recommended a harsher punishment ($M = 2.68$, $SD = 1.25$), than participants in

the low influence condition ($M = 2.45$, $SD = 1.23$). This pattern is depicted in Figure S2 and
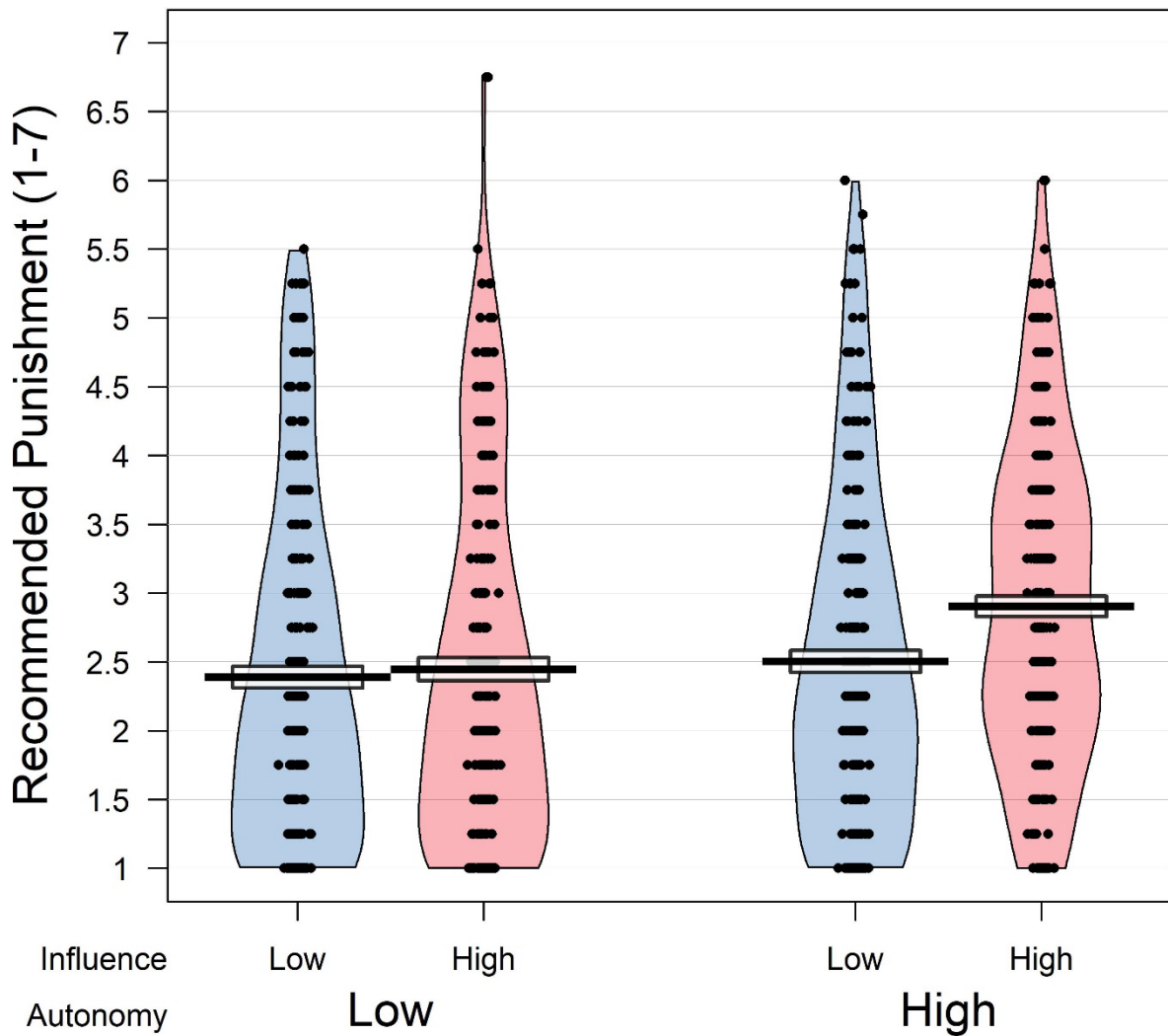
was different from our prediction.

Figure S2. Pirate plot showing recommended punishment as a function of perceived

autonomy and influence in Study 3. The black dots represent the raw data, which is shown

with smoothed densities indicating the distributions in each condition. The central tendency is

the mean and the intervals represent two standard errors around the mean.

Mediated Moderation Analyses. We tested whether the effects of autonomy, influence, and their interaction on recommended punishment are mediated by intentionality (in line with Fragale et al., 2009). We fitted a non-preregistered mediated moderation model using the R-package *lavaan* (Rosseel, 2012). In this model, intentionality is predicted by autonomy, influence, and their interaction and in turn, intentionality predicts recommended punishment. This model was fully supported in our analyses (see Fig. S3). The effects of autonomy and influence on punishment were mediated by intentionality (indirect effects: autonomy $b = 0.30$, 95%-CI[0.19, 0.41]; influence, $b = 0.18$, 95%-CI[0.07, 0.29]). Moreover, the index of mediated moderation reached significance ($b = 0.18$, 95%-CI[0.01, 0.34]). These analyses suggest that the effects of autonomy, influence, and their interaction on recommended punishment are driven by attributed intentionality.
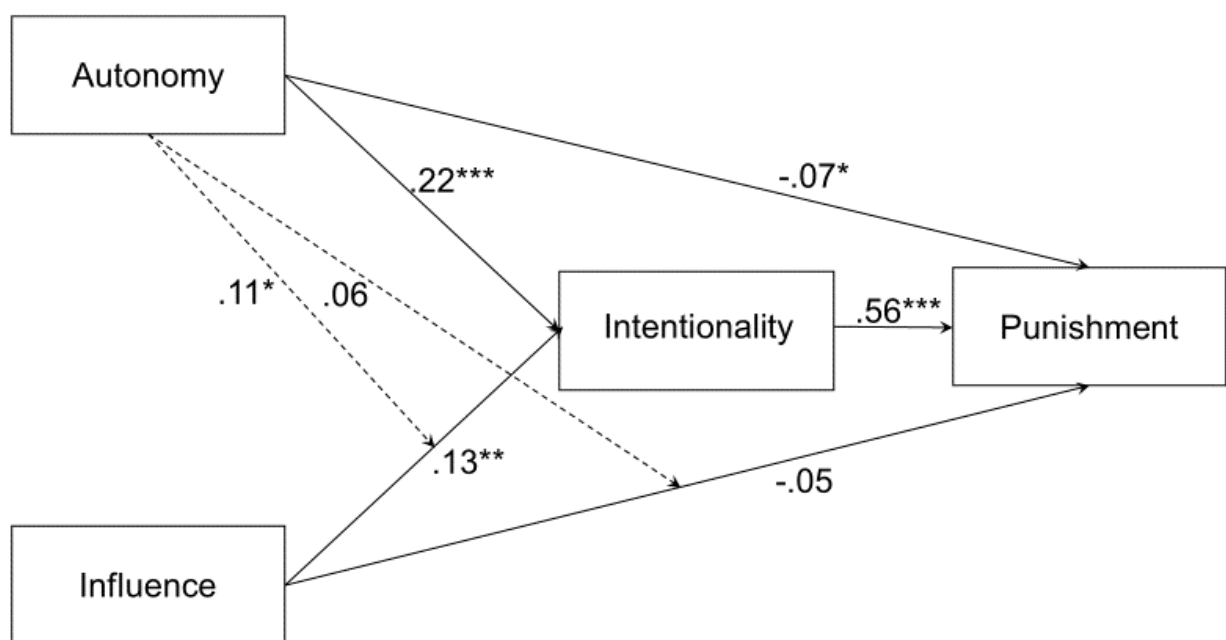

Figure S3. Mediated moderation analyses involving attributed intentionality as mediator for the effect of influence and autonomy on recommended punishment. Values represent standardized path coefficients. Dashed lines represent moderation coefficients.
* indicates significance at the $p < .05$ level, ** at the $p < .01$ level, and *** at the $p < .001$ level.

Study 4

Manipulation checks. The manipulation check indicated that our manipulation was successful. Participants who read about a person high on autonomy reported more perceived autonomy (M = 6.67, SD = 0.89), than participants in the low autonomy conditions (M = 1.83, SD = 1.75), $t(981)$= 54.74, p < .001, d = 3.49, 95%-CI[3.29, 3.69]. Moreover, participants in the high influence conditions reported a higher perceived influence (M = 6.56, SD = 0.90), than participants in the low influence conditions (M = 1.4, SD = 1.07), $t(981)$ = 81.56, p < .001, d = 5.20, 95%-CI[4.94, 5.47]. Importantly, we observed no significant effect of our autonomy manipulation on the influence manipulation check, $t(981)$ = 1.43, p = .152, d = 0.09, 95%-CI[-0.03, 0.22], or of our influence manipulation on the autonomy manipulation check, $t(981)$ = 0.37, p = .708, d = 0.02, 95%-CI[-0.10, 0.15].

Controlling for gender, age, and social class

We tested whether the effect of autonomy and influence on expected immorality and perceived intentionality were moderated by gender (women vs. men), age, or social class by conducting, for each dependent variable, three multiple linear regression analyses involving autonomy, and three multiple linear regression analyses involving influence, each including the respective moderator and an interaction term.

Immorality

The multiple linear regression analyses involving gender suggested that gender did not significantly moderate the relationship between influence and expected immorality, B = 0.01, $t(972)$ = 0.07, p = .941. The interaction between autonomy and gender also did not reach statistical significance B = 0.03, $t(972)$ = 0.36, p = .723.

The multiple linear regression analyses involving age suggested that age did not significantly moderate the relationship between influence and expected immorality, $B < 0.01$, $t(979) = 0.24$, $p = .810$. The interaction between autonomy and age also did not reach statistical significance $B < 0.01$, $t(979) = 0.99$, $p = .322$.

The multiple linear regression analyses involving social class suggested that gender did not significantly moderate the relationship between influence and expected immorality, $B = 0.01$, $t(979) = 0.51$, $p = .611$. The interaction between autonomy and social class also did not reach statistical significance $B = 0.01$, $t(979) = 0.37$, $p = .710$.

Perceived Intentionality

The multiple linear regression analyses involving gender suggested that gender did not significantly moderate the relationship between influence and perceived intentionality, $B = 0.05$, $t(972) = 0.58$, $p = .564$. The interaction between autonomy and gender also did not reach statistical significance $B = 0.02$, $t(972) = 0.22$, $p = .823$.

The multiple linear regression analyses involving age suggested that age did not significantly moderate the relationship between influence and perceived intentionality, $B < 0.01$, $t(979) = 0.42$, $p = .675$. The interaction between autonomy and age also did not reach statistical significance $B < 0.01$, $t(979) = 0.27$, $p = .786$.

The multiple linear regression analyses involving social class suggested that social class did not significantly moderate the relationship between influence and perceived intentionality, $B = 0.04$, $t(979) = 1.79$, $p = .074$. The interaction between autonomy and social class also did not reach statistical significance $B = 0.02$, $t(979) = 0.90$, $p = .368$.

Controlling for order

Immorality

To test for potential order effects, we submitted ratings of expected immorality to a 2 (described autonomy: low vs. high) × 2 (described influence: low vs. high) × 2 (order: immorality first vs. intentionality first) between-participants ANOVA.

Again, influence, $F(1, 975) = 38.30$, $p < .001$, $\eta^2_p = .04$, as well as autonomy, $F(1, 975) = 18.99$, $p < .001$, $\eta^2_p = .02$, had significant main effects. In contrast, the main effect of order did not reach statistical significance, $F(1, 975) = 0.08$, $p = .772$, $\eta^2_p < .001$. Regarding the two-way interactions neither the interaction between influence and autonomy, $F(1, 975) = 0.09$, $p = .762$, $\eta^2_p < .001$, nor the interaction between influence and order were significant $F(1, 975) = 3.10$, $p = .079$, $\eta^2_p = .003$. The tree-way interaction (influence x autonomy x order) also did not reach significance, $F(1, 975) = 1.35$, $p = .246$, $\eta^2_p = .001$. Interestingly, the autonomy x order-interaction was significant, $F(1, 975) = 10.85$, $p = .001$, $\eta^2_p = .01$.

To better understand this autonomy x order interaction, we ran two separate autonomy x influence-ANOVAs, one for each order condition. When immorality was assessed before tax perceived intentionality, there was only a significant main effect for influence, $F(1, 472) = 9.66$, $p = .002$, $\eta^2_p = .02$, whilst autonomy, $F(1, 472) = 0.56$, $p = .456$, $\eta^2_p = .001$, and the interaction between influence and autonomy, $F(1, 472) = 0.36$, $p = .547$, $\eta^2_p < .001$ did not reach significance.

In contrast, when perceived intentionality was assessed before immorality, influence, $F(1, 503) = 32.15$, $p < .001$, $\eta^2_p = .06$, as well as autonomy, $F(1, 503) = 29.79$, $p < .001$, $\eta^2_p = .06$, had significant main effects. The interaction between influence and autonomy, $F(1, 503) = 1.09$, $p = .297$, $\eta^2_p = .002$, however, was not significant. This pattern is depicted in Figure S4.
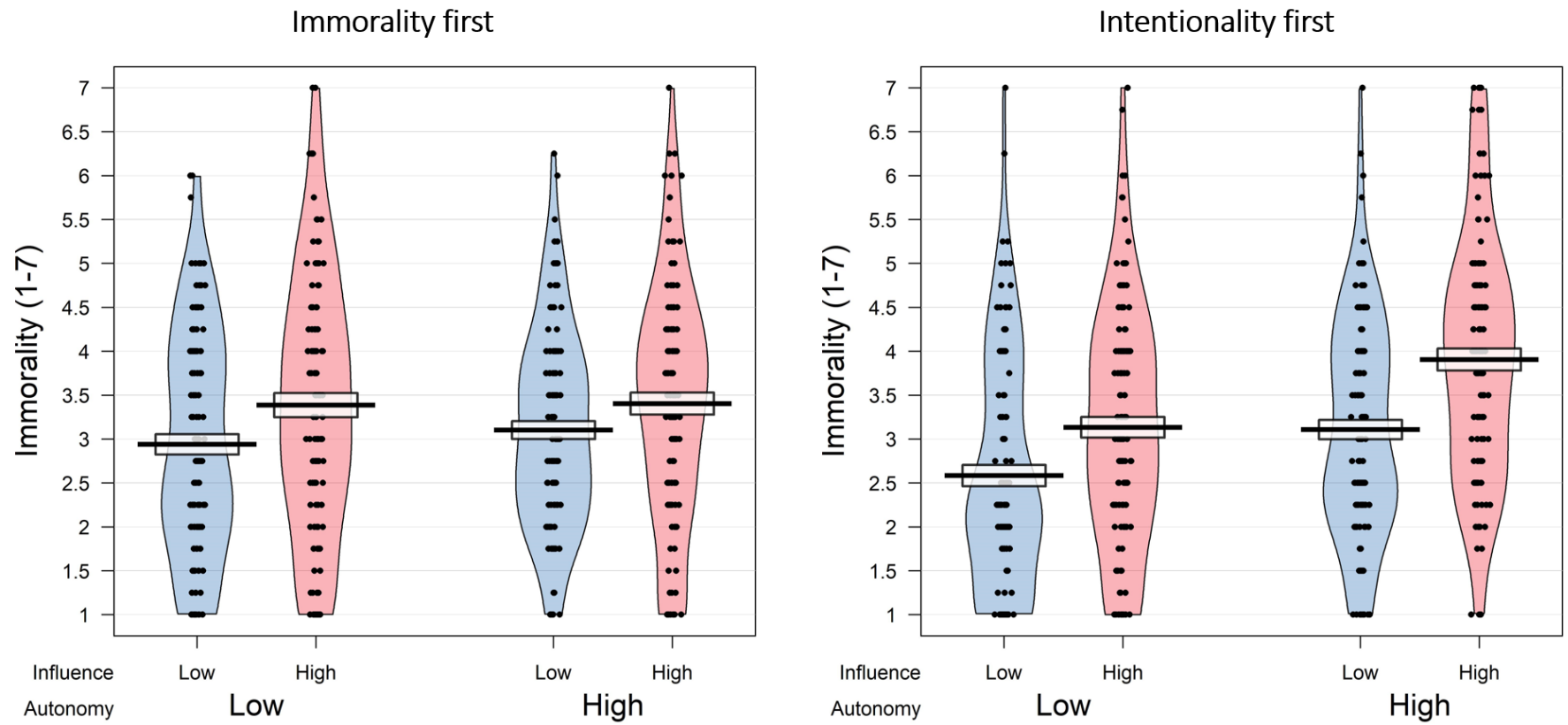
Figure S4. Pirate plot showing expected immorality as a function of perceived autonomy, influence, and item order in Study 4.

Intentionality

To test for potential order effects, we submitted ratings of perceived intentionality to a 2 (described autonomy: low vs. high) × 2 (described influence: low vs. high) × 2 (order: immorality first vs. intentionality first) between-participants ANOVA.

Influence, $F(1, 975) = 63.78$, $p < .001$, $\eta^2_p = .06$, autonomy, $F(1, 975) = 46.50$, $p < .001$, $\eta^2_p = .05$, as well as order, $F(1, 975) = 9.28$, $p = .002$, $\eta^2_p = .009$ had significant main effects. Regarding the two-way interactions, neither the interaction between influence and autonomy, $F(1, 975) = 2.60$, $p = .107$, $\eta^2_p = .003$, nor the interaction between influence and order, $F(1, 975) = 0.67$, $p = .414$, $\eta^2_p < .001$, nor the interaction between autonomy and order showed significant effects, $F(1, 975) = 0.03$, $p = .857$, $\eta^2_p < .001$. Interestingly, the tree-way interaction (influence x autonomy x order), did reach significance, $F(1, 975) = 7.44$, $p = .007$, $\eta^2_p = .007$. Despite being significant, this tree-way interaction however did not meaningfully alter our results (see below).

When immorality was presented before tax declaration, there was a significant main effect for influence, $F(1, 472) = 23.13$, $p < .001$, $\eta^2_p = .05$, as well as for autonomy, $F(1, 472) = 19.84$, $p < .001$, $\eta^2_p = .04$. However, the interaction between influence and autonomy did not show significance, $F(1, 472) = 0.56$, $p = .455$, $\eta^2_p = .001$.

When taxes were presented before immorality, the same pattern occurred. Influence, $F(1, 503) = 43.13$, $p < .001$, $\eta^2_p = .08$, as well as autonomy, $F(1, 503) = 27.26$, $p < .001$, $\eta^2_p = .05$, had significant main effects. The interaction between influence and autonomy, $F(1, 503) = 10.48$, $p = .001$, $\eta^2_p = .02$, was also significant. These patterns are presented in Figure S5.
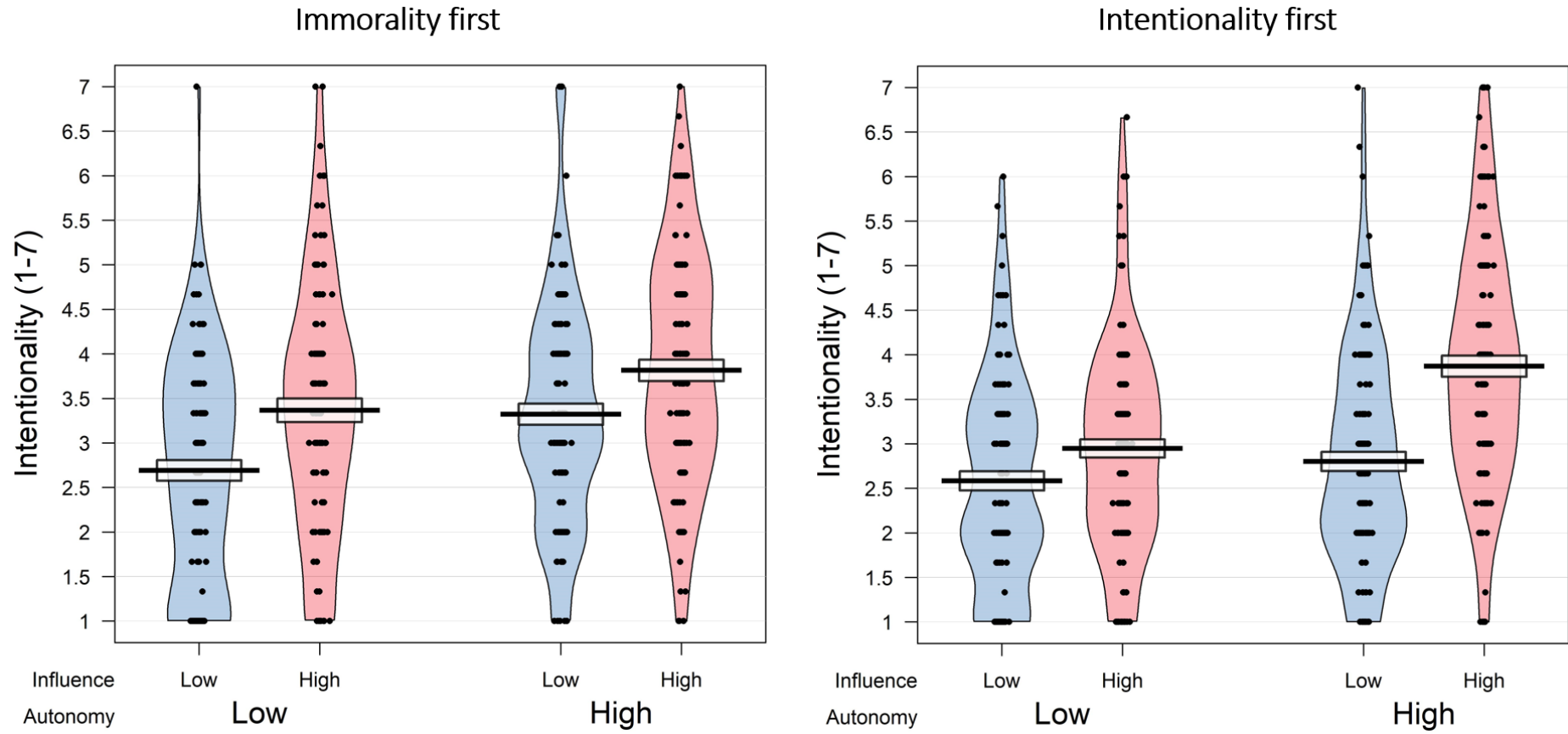
Figure S5. Pirate plot showing perceived intentionality as a function of perceived autonomy, influence, and item order in Study 4.

Supplementary References

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