

Some People Heed Advice Less than Others: Agency (but Not Communion) Predicts Advice Taking

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ABSTRACT

Across three studies (total $N = 793$), we investigated the link between two fundamental dimensions of personality, agency and communion, and advice taking in quantity estimation tasks. We complemented the analyses of the individual studies with meta-analyses across all three studies in order to gain insight into the robustness of our core results. In line with our expectations, agency was associated with less advice taking, and this effect was mediated by individuals' perceptions of their own competence. Contrary to what we expected, we did not find consistent evidence that communion systematically relates to advice taking. Analyses of judges' initial accuracy further suggested that agentic judges' lower willingness to heed advice was justified by greater initial accuracy as compared with their less agentic peers. Our data, thus, provide evidence of individual differences in advice taking and shed some light on the question which individuals are more inclined to heed advice than others. Copyright © 2017 John Wiley & Sons, Ltd.

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Advice is an important ingredient in human interaction. In a qualitative analysis of human communication, Knapp, Stohl, and Reardon (1981) found that 72% of what participants labeled as memorable (or life changing) communication was, in fact, advice. Not surprisingly, then, advice taking (AT) has attracted the interest of psychological research. This research mainly focuses on the question how well individuals tap into the wisdom of others when making judgments and decisions. Previous studies have thoroughly investigated how individuals revise beliefs in the face of advice, which cues lead them to trust an advisor's assessment, and which contextual variables influence advice taking (for reviews, see Bonaccio & Dalal, 2006; Rader, Larrick, & Soll, 2017). Two results generalize across the wide range of contexts in which advice taking has been studied. First, taking advice leads to more accurate judgments or decisions (Bonaccio & Dalal, 2006; Yaniv, 2004). Second, individuals are generally resistant to advice, that is, they do not heed the advice as much as they should, a phenomenon known as *egocentric advice discounting* (Soll & Larrick, 2009; Yaniv & Kleinberger, 2000).

Despite our thorough understanding of average advice taking behavior, we know rather little about individual differences in advice taking, although a study by Soll and Larrick (2009) hints towards those differences. Some participants in this study frequently ignored the advice, others consistently averaged their estimates with those of their advisor, and yet others adopted a mixed strategy. The important conclusion we can draw from Soll and Larrick's (2009) results is that there is not only considerable variance in judges' advice taking behavior but also that investigating these differences might be

necessary in order to understand advice taking and advice discounting—precisely because the average advisee is such a poor model of individual advice taking behavior. Understanding individual differences in advice taking is relevant for both theory and practice. On a theoretical level, it might contribute to elucidating the cognitive and motivational processes underlying the willingness (or lack, thereof) to heed advice as these processes are still poorly understood (Rader et al., 2017). On a more practical level, individual differences in advice taking are relevant because rejecting advice poses the threat of reduced accuracy. Thus, some individuals might require interventions countering their resistance to advice more than others, and even the effectiveness of these interventions might differ with the decision makers' personality.

So far, there is only one published study linking advice taking to advisees' personality. In this study, Kausel, Culbertson, Leiva, Slaughter, and Jackson (2015) predicted—and found—individuals high in narcissism to be less inclined to heed advice. Importantly, they were also able to identify a mediating variable, namely, a systematic devaluation of the advisor's expertise. In the present study, we pursue a similar goal by investigating how two fundamental dimensions of personality, agency and communion, relate to advice taking. We consider agency and communion ideal for investigating the link between personality and advice taking both due to their breadth as fundamental personality dimensions and because they are genuinely social constructs focusing on interpersonal behavior as we will illustrate in the following.

Introduced by Bakan (1966), agency and communion denote two basic styles of how individuals relate to their social world. They represent fundamental dimensions of social content in both social and personality psychology and can be construed in terms of fundamental motives as well as stable personality traits (for overviews, see Abele & Wojciszke, 2014; Paulhus & John, 1998). On the motivational level, agency refers to goal pursuit, a person's striving to master the environment, to assert the self, and to experience personal

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Study 3 was preregistered via the Open Science Framework. This preregistration, the data for all three studies, and the R scripts required to reproduce all analyses are available at the Open Science Framework (<https://osf.io/5qcre/>).

achievement and power, whereas communion represents an individual's desire to closely relate to and cooperate with others. Here, we focus on the personality trait aspect of agency and communion. Agency as a trait contains primarily self-profitable attributes such as dominance or competence and is related to an independent self-construal. Communion as a personality dimension consists of primarily other-profitable attributes such as warmth, trustworthiness, loyalty, and concern for others, and it relates to an interdependent self-construal (e.g., Abele, Uchrowski, Suitner, & Wojciszke, 2008; Abele & Wojciszke, 2007, 2014; Bakan, 1966). Agency and communion form an overarching framework in different fields of psychology such as person perception (Abele & Wojciszke, 2007), social values (Trapnell & Paulhus, 2012), self-deceptive tendencies (Paulhus & John, 1998), stereotypes and group perception (Fiske, Cuddy, Glick, & Xu, 2002), and cultural differences (Markus & Kitayama, 1991). Although sometimes discussed under different names such as personal growth and socialization (Digman, 1997) or warmth and competence (Fiske et al., 2002), researcher generally agree on the conceptual similarity of the differently named dimensions, and empirical evidence supports this agreement (Abele & Wojciszke, 2007; Digman, 1997; Fiske, Cuddy, & Glick, 2007; Judd, James-Hawkins, Yzerbyt, & Kashima, 2005; Saucier et al., 2014; for an overview, see Abele & Wojciszke, 2014; Paulhus & John, 1998). As personality dimensions, agency and communion are frequently referred to as the "Big Two," and they have been proposed as superfactors of the Big Five and the more novel six-factor model of personality (Blackburn, Renwick, Donnelly, & Logan, 2004; Digman, 1997; Saucier, 2009; Saucier et al., 2014; see also Paulhus & John, 1998).

Concerning advice taking, agentic individuals with their independent self-construal should place pronounced importance on making autonomous decisions. One aspect of agency particularly important to our research question is that it entails a firm belief in one's own competence (e.g., Abele & Wojciszke, 2007). Because of agentic individuals' general belief that they are more competent overall, they should also rate their task-specific competencies more positively. Thus, we hypothesize agentic individuals to follow another person's advice less, and we expect the effect of agency on advice taking to be mediated by increased perceptions of one's own task-specific competence. In contrast, communal traits such as agreeableness go along with favorable perceptions of others (e.g., Wood, Harms, & Vazire, 2010). Besides ascribing more positive personality traits and intentions, this likely includes more benevolent evaluations of others' skills, abilities, and expertise. Thus, communal individuals should heed advice more, and we expect more positive evaluations of the advisor's task-specific competence to mediate this effect. An important question that arises in case that our hypotheses receive empirical support is whether differences in judges' perception of their task-related competence and accompanying differences in advice taking are justified. Thus, we aimed to explore how agency and communion relate to judges' actual task-specific competence.¹

¹We thank two anonymous reviewers for suggesting this analysis.

Method

Participants

Participants were 191 university students. Sample size was determined a priori in a power analysis. We aimed for a test power of .80 given an effect size of $r = .20$ for a Type I error level of .05. Participants were, on average, 23.06 years old ($SD = 3.83$); 128 were female (66%), 59 were male (31%), and 4 chose not to report their gender.

Procedure

Participants were invited to an online survey measuring (among other variables) agency and communion. They then signed up for a laboratory study a few days later (median time lag = 6 days, $SD = 4.53$ days). They received a fixed show-up fee of €8 (or course credit) and an additional bonus of up to €3 depending on the accuracy of their final estimates.

In the laboratory session, participants were to estimate 100 airline distances between European Union capital cities in a randomized order. This task was adopted from Schultze, Mojzisch, and Schulz-Hardt (2012). Each trial followed the logic of the judge–advisor paradigm (Sniezek & Buckley, 1995). Participants first made an initial estimate and rated their confidence in its accuracy. Next, they learned the advisor's estimate. Participants, then, made a final (and possibly revised) estimate and rated their confidence in its accuracy. The advisor was identical for all participants, and participants received advice from the same person on each trial. We chose the advisor from a set of 146 participants of previous studies using the same task by selecting the person whose accuracy marked the median of the sample. After participants had completed the last trial of the judgment tasks, they assessed their own competence at the estimation task as well as the competence of their advisor.

Measures

Agency and communion

We assessed agency and communion via a list of 24 German trait adjectives (12 adjectives for each trait; Abele et al., 2008). All items began with the word stem "I am ...," and participants reacted to trait adjectives such as "intelligent," "independent," and "self-reliant" (agency) or "loyal," "polite," and "trustworthy" (communion), indicating the extent to which they felt this statement was true for them on a 6-point Likert scale (1 = not agree at all and 6 = agree completely). Internal consistency was good for both agency ($\alpha = .75$) and communion ($\alpha = .79$).

Competence ratings

Participants rated their own competence and that of their advisor on three items each: first, a global rating of the quality of their own initial estimates and the advisor's estimates on 7-point Likert scale (1 = very bad and 7 = very good); second, the belief about the number of trials in which their

own initial estimates or the advice, respectively, were within 10% of the true values; third, the belief about how the participant and the advisor, respectively, would rank among 100 hypothetical participants based on the accuracy of their initial estimates. We *z*-standardized these items (the third item was reverse coded) and aggregated the three self-related items and the three advisor-related items into measures of perceived competence of the self ($\alpha = .75$) and perceived competence of the advisor ($\alpha = .58$).

Advice taking

We used the *Advice Taking* coefficient introduced by Harvey and Fischer (1997). We used the *Advice Taking* coefficient (AT) introduced by Harvey and Fischer (1997). The AT is defined as (final estimate - initial estimate) / (advice - initial estimate). It equals the percent weight of advice when making the final estimate. It is equal to the percent weight of advice when making the final estimate. We followed the common procedure to truncate the AT scores at 0 and 1 (e.g., Gino, Shang, & Croson, 2009; Soll & Larrick, 2009). Overall, 0.6% of the trials had AT values greater than 1 and 1.6% smaller than 0. In 6.6% of the trials, the AT score was not defined, because the advice equaled the initial estimate.

Confidence shift

Previous research suggests that individuals can use advice as a means of validating their own opinions, thus becoming more confident after receiving the advice (Schultze, Rakotoarisoa, & Schulz-Hardt, 2015). Therefore, we calculated shifts in judges' confidence between the initial and final estimates. Participants rated the confidence in the accuracy of their estimates in each trial twice on a 7-point Likert scale (1 = not at all confident and 7 = very confident). The confidence shift was calculated as the difference between the two ratings.

Decision to adjust

In order to complement the AT score, we employed a dichotomized measure of advice taking, indicating *whether* judges adjusted their initial estimates at all (Schultze et al., 2015). For each trial, adjustment towards the advice was coded as 1, while ignoring the advice was coded as 0. Adding this dichotomized measure of advice taking allows differentiating two possibilities. The first is that personality traits covary with the *magnitude* of the adjustments towards the advice. The second is that the magnitude of adjustments is rather independent of the personality traits but that the traits covary with the *decision to adjust* one's estimate in the first place or not (note that the two are not mutually exclusive).

Accuracy

We measured accuracy as the mean absolute percent error (MAPE). In Studies 2 and 3, we computed an aggregate measure of accuracy across the two judgment tasks by first *z*-standardizing MAPE scores by task and then averaging the two *z*-scores.

Results

The results in this paper were obtained using R 3.3.0 with the packages *dplyr* 0.7.3, *Hmisc* 4.0–3, *lavaan* 0.5–23.1097 (Rosseel, 2012), *lme4* 1–1.13, *meta* 4.8–4, *nlme* 3.1–131, and *psych* 1.7.5. R itself and all packages used are available from CRAN at <http://CRAN.Rproject.org/>. The data and R scripts required to reproduce all analyses are available at the Open Science Framework (<https://osf.io/5qcre/>).

Analysis of advice taking scores

We first computed the average AT score per participant. Overall, participants weighted the advice by 21.84%. Given that our participants and the advisor stemmed from the same population, normative rationality dictates weighting the advice, on average, by 50% (Larrick & Soll, 2006). The actual weight of advice was lower than 50%, $t(190) = -27.07$, $p < .001$, indicating that our participants, like those of previous studies (e.g., Yaniv & Kleinberger, 2000), were resistant to advice. In line with our expectations, however, some individuals weighted advice less than others. The zero-order correlations showed a significant negative relation of agency and advice taking but no relation of communion and advice taking (Table 1).

Analysis of confidence shifts

Because our agency–communion framework made no predictions about social validation, we investigated confidence shifts in a purely exploratory fashion. In line with previous research (Minson & Mueller, 2012), participants were, on average, more confident in the accuracy of their final than in the accuracy of their initial estimates ($M = 3.58$, $SD = 1.38$ vs. $M = 3.28$, $SD = 1.34$), $t(190) = 10.46$, $p < .001$. However, the magnitude of the confidence shifts was neither related to agency nor to communion (both $ps > .350$).

Mediation analysis

We tested for mediation of the relations of the personality variables and the AT scores via participants' rating of their own and their advisor's competence. The results are displayed in Figure 1 (upper panel). The significant total effect of agency (c_1) disappeared when competence ratings were included in the model as indicated by the nonsignificant direct effect of agency (c_1'). Tests of the indirect effect revealed that agency was mediated by both, increased perceptions of participants' own competence, $a_{11} \times b_1 = -.12$, $p < .001$, 95% confidence interval (CI) $[-.19, -.05]$, and less favorable ratings of the advisor's competence, $a_{12} \times b_2 = -.08$, $p = .033$, 95% CI $[-.16, -.01]$.

Analysis of decision to adjust

We predicted the decision to adjust towards the advice from agency and communion in a multilevel logistic regression using the *glmer* function of the R package *lme4*. The model contained random intercepts for the specific stimuli nested

Table 1. Means, standard deviations, and zero-order correlations of all variables in Study 1

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. AT	0.22 (0.22)	0.14 (0.13)					
2. CS	0.30 (0.33)	0.40 (0.33)	.44 (.43)				
3. Agency	4.10 (4.10)	0.56 (0.57)	-.16 (-.29)	.04 (-.01)			
4. Communion	4.75 (4.76)	0.55 (0.52)	.06 (.22)	.07 (.12)	.04 (-.04)		
5. Rated own competence	0.00 (0.06)	0.81 (0.88)	-.35 (-.47)	-.04 (-.07)	.27 (.34)	-.11 (-.09)	
6. Rated advisor's competence	0.00 (-0.01)	0.74 (0.71)	.46 (.42)	.31 (.25)	-.15 (-.26)	.13 (.29)	.11 (.01)

Note: Values in parentheses represent the results obtained when restricting the analyses to naïve participants. Means for the competence ratings are 0 due to z-standardizing. Correlations are based on *N* = 191 observations (or 105 observations, respectively, when analyzing only naïve participants). Correlations in bold font are significant (*p* < .05, two tailed). AT, advice taking; CS, confidence shifts.

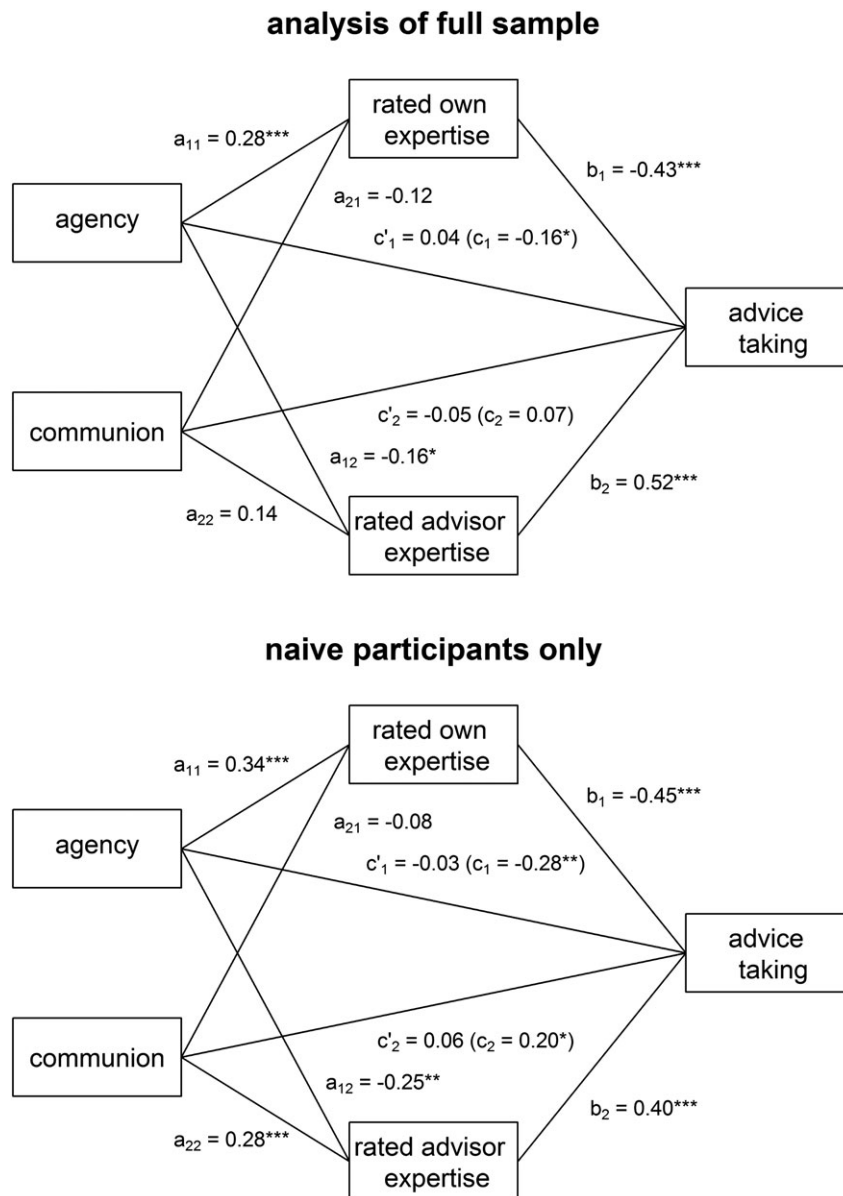


Figure 1. Results of the path analysis in Study 1. The models test for the direct effects of agency (c'_1) and communion (c'_2), as well their corresponding indirect effects ($a \times b$) via perceived own and perceived advisor's competence. The total effects of agency (c_1) and communion (c_2) are denoted in parentheses. The model also contained the correlation of the two mediators, which is necessary to separate the indirect effects; however, because this parameter is of no theoretical interest, it is not displayed here. We report standardized path coefficients. *** *p* < .001, ** *p* < .01, and * *p* < .05

within participants. The random intercepts for stimuli account for the possibility that trials differed with regard to difficulty and, thus, a participant's willingness or perceived

necessity to modify the initial distance estimate. Importantly, by nesting the random effects, we accounted for the possibility that the magnitude of the differences could vary between

participants. The random intercepts for participants contain residual variance on the participant level that is not explained by differences in agency and communion. For convenience, we report odds ratios (ORs) instead of unstandardized regression weights.

As shown in Table 2, agency was associated with less frequent decisions to adjust. Consistent with the path analysis, communion did not systematically relate to the decision to adjust one's initial estimate. In a last step, we explored whether agency was still correlated with the magnitude of adjustment towards the advice when focusing only on trials where participants had adjusted their estimates at all. To this end, we first excluded all trials, in which participants chose not to adjust their initial estimates (i.e., trials with an AT score of 0), and then computed the mean AT score for the remaining trials. The correlation of agency and advice taking was no longer significant, $r(191) = -.04, p = .593$, suggesting that agency influenced the likelihood of adjusting towards advice in the first place, while the magnitude of the adjustments was largely unaffected.

Accuracy of initial estimates

Having observed that agentic individuals heed advice somewhat less because they consider themselves more competent, the question is whether this behavior is justified by greater initial accuracy or whether it is dysfunctional. To this end, we computed the correlation of participants' agency scores and the MAPE scores of their initial estimates. The correlation was negative but not statistically significant, $r(191) = -.12, p = .091$. A similar analysis with participants' communion scores revealed a nonsignificant positive relation with participants' initial MAPE scores, $r(191) = .10, p = .190$.

Exclusion of participants who previously participated in a judge–advisor system study

A substantial number of participants ($N = 86$) reported having previously participated in another judge–advisor system (JAS) study. Because we could not rule out that familiarity with the JAS or information about advice taking conveyed in the debriefing of earlier JAS studies influenced participants' behavior in Study 1, we repeated the analyses described earlier while excluding all participants with prior JAS experience. The results for the remaining 105 naïve participants notably differed from those obtained from the full sample.

First, as shown in Table 1 (in parentheses), the correlation of agency and AT was much stronger. Second, there also was positive relation of communion and advice taking. The path analysis predicting the mean AT scores (Figure 1, lower panel) revealed significant total effects of agency and communion. Both of these effects disappeared when controlling for participants' ratings of their own and their advisors expertise. The effect of agency was mediated by both more positive evaluations of one's own expertise, $a_{11} \times b_1 = -.13, 95\% \text{ CI } [-.22, -.05]$, and less favorable evaluations of the advisor's expertise, $a_{12} \times b_2 = -.09, 95\% \text{ CI } [-.16, -.02]$. The effect of communion was mediated by more positive evaluations of the advisor, $a_{22} \times b_2 = .11, 95\% \text{ CI } [.03, .18]$, but not by elevated ratings of one's own expertise, $a_{21} \times b_1 = .04, 95\% \text{ CI } [-.04, .11]$.

Finally, both the effects of agency and communion were related to the decision to adjust towards advice as shown in Table 2. The respective multilevel logistic regression model showed that agency was related to less frequent adjustments towards advice, while the effect of communion was in the opposite direction. Note, however, that the effect of communion failed to reach statistical significance ($p = .055$). Similar to the analysis of the full sample, the magnitude of

Table 2. Odds ratios of logistic multilevel models predicting the decision to adjust from agency and communion in Studies 1 and 2

	Study 1		Study 2	Study 3
	Full sample	Naïve participants		
Fixed effects				
Intercept	1.02	0.90	1.26***	1.96***
Agency	0.81*	0.70**	0.89*	1.02
Communion	1.10	1.24 [†]	0.92	1.05
Task			0.92***	0.91***
Agency × Task			0.99	1.03
Communion × Task			0.96	0.96*
Random effects				
$\sigma_{\text{intercept} \text{participants}}$	1.23	1.11	0.86	1.04
$\sigma_{\text{intercept} \text{participants/stimulus}}$	0.00	0.00	0.00	0.00
σ_{residual}	1.06	1.07	1.10	1.05
Model fit				
$-2 \times \log \text{ likelihood}$	22 256.50	12 378.66	12 798.17	15 602.99
<i>df</i>	5	5	8	8

Note: Agency and communion were z-standardized; task was effect coded (−1 = distance estimates and 1 = weight estimates). Therefore, intercepts represent the average tendency to adjustment the initial estimate after receiving advice. The analysis are based on $N = 191$ in Study 1 ($N = 105$ for the analysis of naïve participants only), $N = 251$ in Study 2, and $N = 351$ in Study 3.

[†] $p < .10$.
 * $p < .05$.
 ** $p < .01$.
 *** $p < .001$.

adjustments was unrelated to either agency or communion when investigating only those trials in which participants had decided to adjust their initial estimates (i.e., excluding trials with an AT score of 0). A linear regression of mean AT scores of trials with adjustment towards the advice on agency and communion revealed no significant effects, $\beta = -.04$, $t(102) = -0.49$, $p = .623$, and $\beta = .07$, $t(102) = 0.73$, $p = .469$, respectively. Finally, an analysis of the accuracy of participants' initial judgments revealed a significant negative correlation of the MAPE scores with agency, $r(105) = -.21$, $p = .028$, but not with communion, $r(105) = .12$, $p = .216$. This suggests that the reduced willingness to heed advice observed among the more agentic participants is justified by their greater task-specific expertise. In sum, the results of the exploratory analysis with naïve participants only were much more in line with our expectations regarding the relation of agency and communion to advice taking as well as its underlying mediators.

Discussion

The results of Study 1 were in line with our hypotheses concerning possible relations of agency and advice taking. Individuals scoring higher on agency weighted the same advice less than individuals with lower agency scores did. In addition, the effect of agency was partially mediated by increased perceptions of one's own task-related expertise. Interestingly, agentic individuals also devaluated the advisor's expertise, and this devaluation mediated part of the agency effect. Our analyses further revealed that agency was related to the decision to adjust one's initial estimate, whereas the magnitude of the adjustment was largely unaffected by the two traits. Technically speaking, agentic individuals do not seem to weight advice less when they decide to heed it, but rather seem to decide to ignore the advice more frequently.

However, results of Study 1 were somewhat ambiguous regarding the hypothesized positive relation of communion and advice taking. When investigating all participants, this relation was not significant, yet a pattern consistent with our expectations emerged when restricting the analyses to participants who had not previously taken part in an advice taking study. Among naïve participants, those with higher communion scores weighted the advice more, and, as expected, this effect was mediated by more positive evaluations of the advisor's task-related expertise. In addition to the emergence of the anticipated communion effect, restricting the analysis to naïve participants also revealed a stronger agency effect. Finally, the restricted analysis suggests that participants scoring higher in agency were right to heed advice less because their initial estimates were already more accurate than those of participants scoring lower on agency.

It was impossible to say, *ex post facto*, whether the exclusion of participants with prior JAS experience brought us closer to the truth (i.e., prior JAS experience leads participants to behave systematically different) or whether the stark differences between the experienced and naïve participants were a chance finding (i.e., we accidentally *p*-hacked). We aimed to provide an empirical answer to this question in Study 2.

Study 2 pursued three goals: first, to test the replicability of the agency effect observed in Study 1; second, to clarify the existence of a communion effect; and third, to probe the generalizability of the findings by using a second type of judgment task. Study 2 was similar to Study 1 with the following exceptions. We increased the aspired sample size to 250 participants based on recommendation by Schönbrodt and Perugini (2013); our final sample comprised 251 participants with a mean age of 21.27 years old ($SD = 3.31$); 147 were female (59%), 103 were male (41%), and 1 chose not to report their gender. Second, we recruited only naïve participants who had no prior experience with the JAS. Third, in addition to the distance estimates used in Study 1, we asked participants to estimate the weight (in kilograms) of individuals presented on standardized photographs also indicating target's height (in centimeters). The stimulus material for the weight estimates stems from a study on person perception in the context of romantic relationships (Penke & Asendorpf, 2008) and was kindly provided by that study's first author. Similar to the distance estimates, we generated the advice from pretest data ($N = 39$) by choosing the estimates of the person whose performance marked the pretest median. Fourth, we changed the number of trials in order to reduce the length of the study. Instead of 100 trials, participants worked on 30 distance estimates and 30 weight estimates. The first 10 trials of both tasks were practice trials without advice allowing participants to familiarize with the judgment tasks. Fifth, we assessed agency and communion directly before the JAS task. Sixth, we assessed participants' ratings of their own and their advisor's task-related expertise using only one item per judgment task, namely, the 7-point Likert scale also used in Study 1. Finally, because of the reduced length of the study, payment changed to a show-up fee of €5 and a performance-based bonus of up to €2.

Results

Analysis of advice taking scores

We first analyzed participants' mean AT scores, collapsed over both judgment tasks, because participants' mean AT scores for the two tasks were highly correlated, $r(251) = .49$, $p < .001$, and within a comparable range ($M_{\text{distance}} = 22.48\%$; $M_{\text{weight}} = 20.51\%$), even though their difference was statistically significant, $t(250) = 2.43$, $p = .016$. As in Study 1, participants' mean AT scores were substantially lower than the normatively correct weights of 50%, $t(250) = -42.59$, $p < .001$, indicating strong resistance to advice. This pattern holds when investigating both judgment tasks individually, both $t(250) < -30.82$ and both $ps < .001$. An investigation of the zero-order correlations showed a pattern similar to that observed in Study 1, namely, a negative correlation of agency and advice taking, but no effect of communion when collapsing over both tasks. When investigating the two tasks separately, the agency effect emerged consistently. However, there was also an unexpected negative correlation of communion and advice taking in the weight

Table 3. Means, standard deviations, and zero-order correlations of all variables in Study 2

Variables	M	SD	1	2	3	4	5
1. AT	0.21 (0.22/0.21)	0.11 (0.14/0.10)					
2. CS	0.26 (0.26/0.26)	0.32 (0.37/0.37)	.37 (.39/.31)				
3. Agency	4.05	0.54	-.17 (-.15/-.15)	.05 (-.01/-.08)			
4. Communion	4.54	0.70	-.05 (.02/-.13)	-.14 (-.05/-.19)	.13 (.13/.13)		
5. Rated own competence	3.58 (2.86/4.30)	0.94 (1.28/1.03)	-.39 (-.48/-.25)	.06 (.03/-.02)	.25 (.19/.22)	-.06 (-.06/-.03)	
6. Rated advisor's competence	3.62 (3.11/4.13)	0.79 (1.03/1.02)	.23 (.39/.13)	.30 (.30/.21)	.00 (-.05/.06)	-.07 (.01/-.12)	.30 (.01/.32)

Note: The first values in each cell represent the means, standard deviations, and correlations when collapsing across the two judgment tasks. Values in parentheses represent the corresponding means, standard deviations, and correlations when analyzing distance estimates (left-hand side) and weight estimates (right-hand side) separately. Correlations are based on $N = 251$ observations. Correlations in bold font are significant ($p < .05$, two tailed). AT, advice taking; CS, confidence shifts.

estimates (Table 3). We address this finding in an exploratory analysis in the succeeding texts.

Analysis of confidence shifts

As in Study 1, our exploratory analysis of confidence shifts revealed that participants were, on average, more confident in the accuracy of the final than in the accuracy of their initial estimates ($M = 3.82, SD = 1.12$ vs. $M = 3.57, SD = 1.06$), $t(250) = 12.99, p < .001$. Other than in Study 1, the magnitude of the confidence shifts was significantly related to communion, but separate analyses for the two judgment tasks showed that this correlation originated from the weight estimates (Table 3).

Mediation analysis

We next tested for mediation of the effects of agency and communion via participants' rating of their own and their advisor's competence using the same path model as in Study 1. The results—both across judgment tasks and separated by judgment task—are displayed in Figure 2. In all three cases, the total effect of agency (c_1) was no longer significant when controlling for participants' ratings of their own and their advisor's expertise (c_1'). As in Study 1, tests of the indirect effects revealed that agency was mediated by increased perceptions of participants' own competence across judgment tasks, $a_{11} \times b_1 = -.13, p < .001, 95\% \text{ CI } [-.20, -.06]$. The same was true when analyzing the judgment tasks separately, $a_{11} \times b_1 = -.10, p = .002, 95\% \text{ CI } [-.16, -.04]$, for the distance estimates, and $a_{11} \times b_1 = -.07, p = .004, 95\% \text{ CI } [-.12, -.02]$, for the weight estimates, respectively. In contrast to Study 1, we did not replicate the indirect effect of agency via devaluations of the advisor's expertise when analyzing the data across judgment tasks nor when testing the data separately by judgment tasks, all $ps > .274$.

Analysis of decision to adjust

As in Study 1, we predicted the decision to adjust towards the advice from agency and communion in a multilevel logistic regression with random intercepts for the specific pairs of cities nested within participants. We included the type of judgment task and its interactions with agency and communion as additional fixed effects to account for potential moderating effects of task type. As shown in Table 2, agency predicted the decision to adjust, whereas the effect of communion was not significant. Task type did not moderate the effects of agency and communion, but the judgment task itself influenced the decision to adjust with somewhat lower willingness to adjust in the weight estimates.

As in Study 1, we concluded the analysis by investigating the correlation of agency and the magnitude of adjustment towards the advice in trials where participants had adjusted their estimates at all. Again, this association was not significant, $r(248) = -.11, p = .062$, nor when investigating the two judgment tasks separately, $r(246) = -.09, p = .167$, for the distance estimates, and $r(248) = -.09, p = .162$, for the weight estimates, respectively (sample sizes smaller

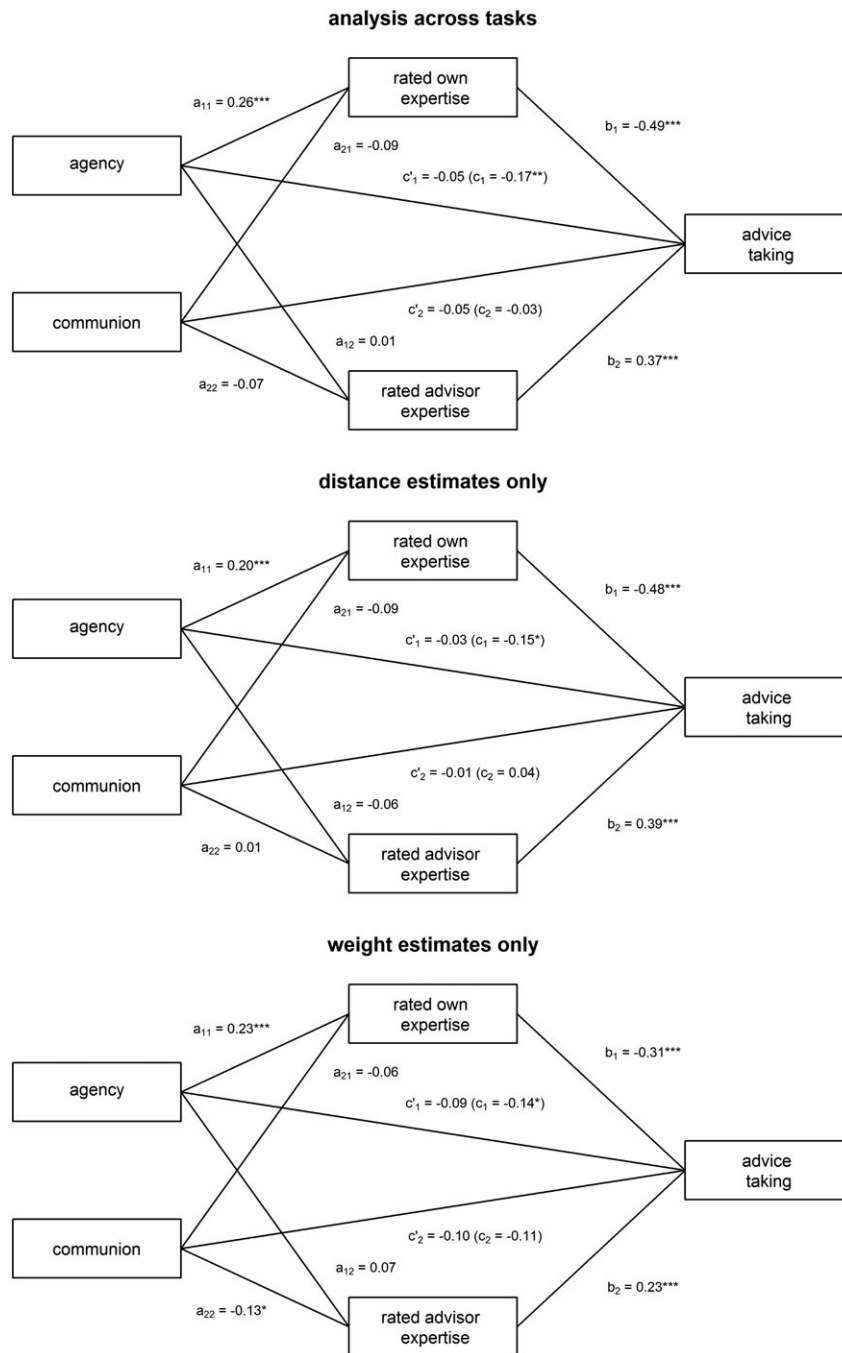


Figure 2. Results of the path models in Study 2. The models tests for the direct effects of agency (c'_1) and communion (c'_2), as well their corresponding indirect effects ($a \times b$) via perceived own and perceived advisor's competence. The total effects of agency (c_1) and communion (c_2) are denoted in parentheses. The model also contained the correlation of the two mediators, which is necessary to separate the indirect effects; however, because this parameter is of no theoretical interest, it is not displayed here. We report standardized path coefficients.
 $***p < .001$, $**p < .01$, and $*p < .05$

than 251 are due to some participants never adjusting their initial estimates). The results support the notion that agency may influence the likelihood of adjusting towards advice in the first place rather than the magnitude of the adjustments.

Accuracy of initial estimates

As in Study 1, we tested the idea that lower willingness to heed advice in agentic individuals might be justified by their greater initial accuracy. Descriptively, agency was associated

with somewhat smaller initial MAPE scores (that is greater initial accuracy), but this effect failed to reach statistical significance, $r(251) = -.08$, $p = .180$. This held true when analyzing the two judgment tasks separately, $r(251) = -.04$, $p = .536$, for the distance estimates, and $r(251) = -.09$, $p = .163$, for the weights estimates, respectively. Consistent with Study 1, communion was not related to initial accuracy, $r(251) = .003$, $p = .958$, and this, too, held true when analyzing the judgment tasks separately, $r(251) = -.01$, $p = .817$, for the distance estimates, and $r(251) = .02$, $p = .756$, for the weights estimates, respectively.

Exploratory analysis of the communion effect for weight estimates

In an attempt to explain the unexpected negative relation of communion and advice taking observed in the weight estimates, we tested whether participants scoring higher in communion might be reluctant to heed advice when the advisor suggested a higher weight than participants had initially estimated. Communal people might be less willing to describe others as corpulent, thus being unwilling to increase their initial weight estimates. To this end, we created a dummy variable indicating whether advice was greater than the initial estimate (0 = lesser and 1 = greater). Using the *lmer* function of *lme4*, we then predicted the AT scores for the weight estimates from this dummy variable, participants' communion scores, and their interaction. The model also contained random slopes of the dummy variable and random intercepts for each participant (note that *lmer* does not compute *p*-values for linear models; we instead report the 95% CIs).

The analysis revealed a strong effect of the dummy variable, $B = -0.04$ ($SE = 0.01$), 95% CI $[-0.05, -0.02]$, indicating that participants heeded advice much less when the advice was greater than the initial estimate. More importantly, this effect was more pronounced for participants with higher communion scores, indicated by a significant negative interaction, $B = -0.02$ ($SE = 0.01$), 95% CI $[-0.029, -0.002]$. When controlling for the dummy variable and its interaction with communion, the main effect of communion was no longer significant, $B = -.01$ ($SE = .01$), 95% CI $[-0.02, 0.01]$. As a control, we ran the same analysis for the distance estimates, finding no significant effects (the 95% CIs for communion, the dummy variable, and their interaction all included 0), suggesting that the unwillingness to adjust one's initial estimates towards a higher value, which was particularly pronounced in high-communion individuals, was specific to the weight estimates. Therefore, this analysis suggests that the unexpected communion effect might represent the communal act of not describing others as "fat."

Discussion

The results of Study 2 replicate the pattern obtained in Study 1 when investigating the full data set. As such, they speak to a small but replicable agency effect on advice taking: Agentic individuals seem to be less receptive to advice, and this effect seems to be mediated by increased perceptions of one's own task-related expertise. Resistance to advice manifested itself in a reduced willingness to adjust one's initial estimates in the first place. In Study 2, an increase in agency of one standard deviation was accompanied by a 12% higher likelihood of ignoring the advice. The results of Study 2 further speak to the generalizability of the agency effect because we found it using two different judgment tasks. Study 2 did not support the communion hypothesis. Although we only tested naïve participants in Study 2, we did not replicate the communion effect obtained for naïve participants in Study 1, suggesting that the communion effect and its mediation via more benevolent ratings of the advisor's expertise observed in the reduced dataset of Study 1 might have been a chance finding. Finally, although

descriptively in the right direction, the data of Study 2 do not support the idea that lower willingness to take advice among agentic individuals is justified by their greater accuracy.

One limitation of Studies 1 and 2 is that we assessed ratings of participants' own task-related expertise and the advisor's expertise at the end of the studies. We cannot rule out that these ratings were post hoc justifications of the degree to which participants relied on the advice. Therefore, we cannot make strong claims concerning the mediating effect of perceived own expertise. Following the recommendation of an anonymous reviewer, we addressed this issue in Study 3.

STUDY 3

We designed Study 3 to provide a stronger test of the hypothesis that perceived own task-specific competence mediates the effect of agency on advice taking. To this end, we replicated Study 2, but instead of assessing the competence ratings at the end of the study, we asked participants to rate their own competence after the training trial but prior to taking any advice. This procedure allowed ruling out post hoc justifications of advice taking as an alternative explanation. This came at the cost of dropping the ratings of advisor competence because at the time of the ratings, participants had not yet received any advice. Otherwise, Study 3 was identical to Study 2 with one exception: Instead of the single-item rating of competence we used in Study 2, we reverted to the three-item measure used in Study 1, as the latter might be more reliable. In Study 3, we aimed for a sample size of at least 343 participants. The minimum sample size results from a power analysis aiming for a power of .80 for a zero-order correlation of .15 (the correlation of agency and advice taking we observed in Studies 1 and 2) given a Type I error level of .05. Our stopping rule for data collection was to stop inviting participants to the lab once we hit the required sample size but to include all participants who had already signed up for the study at that point, resulting in a total sample size of 351 participants. Participants were, on average, 22.79 years old ($SD = 4.02$); 220 were female (64%), 127 were male (36%), and 4 chose not to report their gender. We preregistered Study 3 at the Open Science Framework (<https://osf.io/5qcre/>).

Results

Analysis of advice taking scores

As in Study 2, we first analyzed participants' mean AT scores collapsed over both judgment tasks because of substantial correlation of mean AT scores for the two tasks, $r(351) = .56$, $p < .001$, and because the mean AT scores for the two tasks did not differ significantly ($M_{\text{distance}} = 24.56\%$; $M_{\text{weight}} = 23.47\%$), $t(350) = 1.55$, $p = .122$. Again, participants were resistant to advice weighting it far less than 50%, $t(350) = -40.45$, $p < .001$, and this pattern holds for both judgment tasks individually, both $t(350) < -31.32$, both $ps < .001$. Other than in the previous studies, the zero-order correlation of agency and advice taking was not significant.

Neither was the correlation of communion and advice taking, although this effect was close to statistical significance. Splitting this analysis by judgment task showed that the correlation of agency and advice taking was absent in both tasks. In contrast, there was a significant positive correlation of communion and advice taking in the distance estimates. For the weight estimates, the corresponding correlation was positive but not significant, meaning that we did not replicate the unexpected communion effect observed in Study 2 (Table 4).

Analysis of confidence shifts

As in Study 1, our exploratory analysis of confidence shifts revealed that participants' confidence increased from their initial to their final estimates ($M = 3.44, SD = 1.07$ vs. $M = 3.68, SD = 1.12$), $t(350) = 14.68, p < .001$. As in Study 2, the confidence shifts were significantly related to communion, but this time, the correlation originated from the distance estimates and was in the opposite direction (Table 4).

Mediation analysis

We next tested for mediation of the effects of agency and communion via participants' rating of their own competence. Because we did not measure ratings of advisor competence in Study 3, the path model is somewhat simpler than those in the previous studies. The results—both across judgment tasks and separated by judgment task—are displayed in Figure 3. Consistent with the analysis of the zero-order correlations, the effect of agency on advice taking (c_1) was not significant, and this did not change when controlling for participants' ratings of their own and their advisor's expertise (c_1'). The indirect effect of agency via ratings of judges' own competence emerged as it did in Studies 1 and 2. However, it was notably smaller, $a_1 \times b = -.029, p = .036, 95\% CI [-.055, -.002]$. When analyzing the judgment tasks separately, there was only evidence of mediation for distance estimates, $a_1 \times b = -.04, p = .009, 95\% CI [-.07, -.01]$, but not for the weight estimates, $a_1 \times b = -.01, p = .228, 95\% CI [-.04, .01]$. In sum, the results provide at least partial support for the mediation hypothesis even when ruling out post hoc justification as an alternative explanation.

Analysis of decision to adjust

As in the previous studies, we predicted the decision to adjust towards the advice from agency and communion in a multilevel

logistic regression with random intercepts for the specific pairs of cities nested within participants. As shown in Table 2, neither agency nor communion predicted the decision to adjust. Because there was an interaction of communion and judgment task, we ran separate analyses for the two judgment tasks. However, both models were consistent in that neither agency nor communion predicted the decision to adjust, all z s < 1.46 , all $ps > .145$. Apparently, the interaction was due to a descriptively larger effect of communion in the distance estimates as compared with the weight estimates ($b = 0.10$ vs. $b = 0.01$).

Because agency and communion neither covaried with the AT scores nor with the decision to adjust in Study 3, we decided to omit the follow-up analyses we ran in the previous studies. Absent the effects mentioned earlier, finding that agency and communion are uncorrelated to the AT scores when excluding trials, in which the judges chose to retain their initial estimates, would be uninformative.

Accuracy of initial estimates

As in the previous studies, we investigated the correlation of agency and judges' initial accuracy measured as their MAPE scores. Again, this correlation was negative but nonsignificant when analyzing across tasks, $r(351) = -.07, p = .178$. Separate analyses by task revealed significantly lower initial MAPE scores with increasing agency for distance estimates, $r(351) = -.15, p = .005$, but not for the weight estimates, $r(351) = .04, p = .426$. Concerning communion, there was neither an effect when analyzing across tasks, $r(351) = -.04, p = .485$, nor when separating the analysis by task, $r(351) = .03, p = .513$, and $r(351) = -.09, p = .089$, for the distance and weight estimates, respectively.

Discussion

The results of Study 3 are consistent with the previous studies concerning the indirect effect of agency on advice taking via more positive ratings of judges' own competence. Because we assessed ratings of judges' own competence prior to receiving advice in Study 3, this suggests that the mediating effect we observed in Studies 1 and 2 is not merely the product of judges justifying their weighting of advice post hoc. Contrary to our expectations, and despite greater sample size, we failed to replicate the general effect of agency on advice taking as well as the effect of agency on the decision to adjust. Concerning possible effects of communion, Study 3 is largely in line with Study 2 and the analysis of the full sample of

Table 4. Means, standard deviations, and zero-order correlations of all variables in Study 3

Variables	<i>M</i>	<i>SD</i>	1	2	3	4
1. AT	0.24 (0.25/0.23)	0.12 (0.15/0.12)				
2. CS	0.24 (0.23/0.25)	0.31 (0.36/0.36)	.29 (.30/.18)			
3. Agency	4.05	0.49	-.02 (-.05/.02)	.03 (.05/.00)		
4. Communion	4.70	0.56	.10 (.13/.04)	.12 (.12/.08)	.09 (.09/.09)	
5. Rated own competence	0.00 (0.00/0.00)	0.66 (0.78/0.80)	-.14 (-.24/-.06)	.00 (-.06/-.04)	.21 (.16/.19)	-.07 (-.08/-.03)

Note: The first values in each cell represent the means, standard deviations, and correlations when collapsing across the two judgment tasks. Values in parentheses represent the corresponding means, standard deviations, and correlations when analyzing distance estimates (left-hand side) and weight estimates (right-hand side) separately. Means for the competence ratings are 0 due to z -standardizing. Correlations are based on $N = 351$ observations. Correlations in bold font are significant ($p < .05$, two tailed). AT, advice taking; CS, confidence shifts.

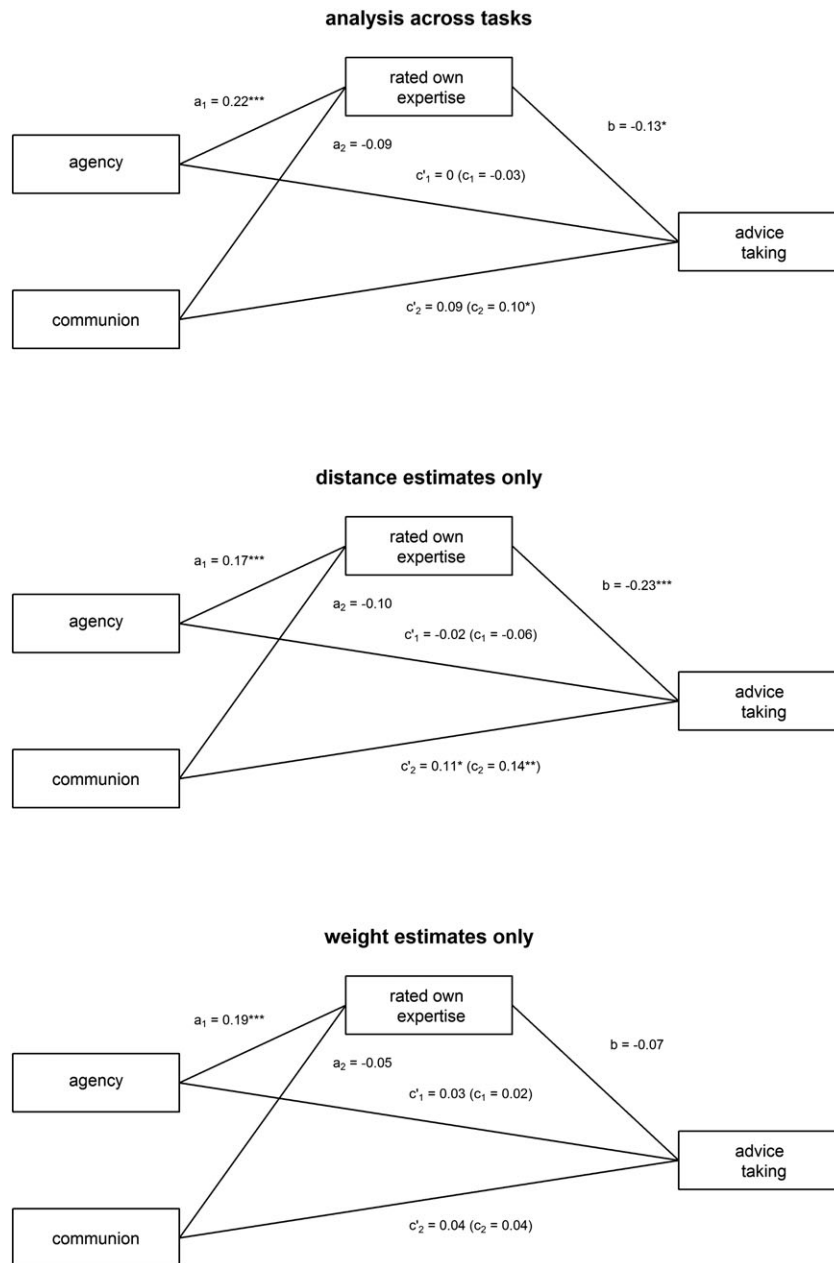


Figure 3. Results of the path models in Study 3. The models tests for the direct effects of agency (c'_1) and communion (c'_2), as well their corresponding indirect effects ($a \times b$) via perceived own competence. The total effects of agency (c_1) and communion (c_2) are denoted in parentheses. We report standardized path coefficients. $^{***} p < .001$, $^{**} p < .01$, and $^* p < .05$

Study 1, suggesting that communion has no consistent influence on advice taking. The main difference here is that Study 3 did not replicate the unexpected negative correlation of communion and advice taking observed for the weight estimates. Thus, we refrain from interpreting this effect further.

META-ANALYSIS

The results of our three studies show some consistencies, but they diverge on other accounts. For example, the indirect effect of agency on advice taking via ratings of judges' own competence seems to be robust, emerging in all three studies. In contrast, the general effect of agency (i.e., the zero-order

correlation) was present in only two of the studies. Accordingly, we followed another recommendation made by an anonymous reviewer and conducted meta-analyses of the main analyses. Although the results of our three studies seem somewhat more consistent concerning possible effects of agency on advice taking, we considered both agency and communion in the meta-analyses for the sake of completeness. In Studies 2 and 3, we collapsed across judgment tasks in the analyses. The results are displayed in Figure 4.

First, we meta-analyzed the zero-order correlations of agency and communion, on the one hand, and advice taking, on the other using random effects models to account for variation between studies. The analysis revealed a robust negative correlation of agency and advice taking, $r = -.11$, 95% CI $[-.22, -.01]$, whereas the relation of communion and

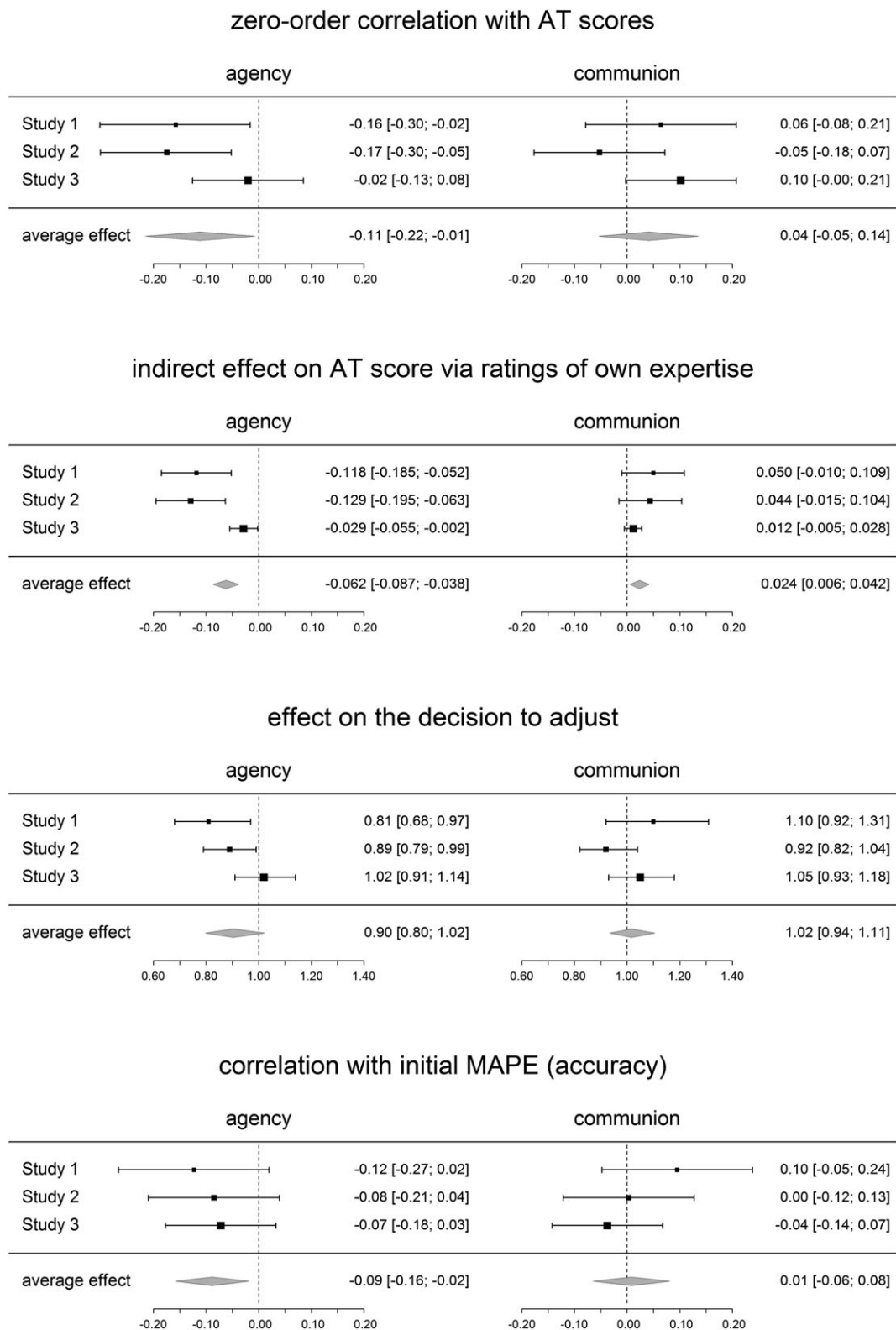


Figure 4. Forest plots of the meta-analyses of the effects of agency and communion. The plots consist of the point estimates and the 95% confidence intervals of the respective effects obtained in the individual studies as well as the meta-analytic estimates of the average effects. With the exception of the indirect effects of agency and communion via ratings of judges' own competence, meta-analytic estimates are based on random effects models. AT, advice taking, MAPE, mean absolute percent error

advice taking was not significantly different from 0, $r = .04$, 95% CI [-0.05, .14].

Second, we conducted meta-analyses on the indirect effects of agency and communion. As we could not measure ratings of advisor competence in Study 3, we only meta-

analyzed indirect effects via rated own competence. Because multilevel mediation models are not yet implemented in the *lavaan* package we used to compute the indirect effects in Studies 1 to 3, we first checked whether including random effects in the analysis was necessary. To this end, we compared

regular linear models treating all participants as independent (thus neglecting that participants were nested within studies) to corresponding multilevel models with random intercepts and slopes varying by study for each of the following regressions involved in mediation analysis: (i) the regression of mean AT scores on agency and communion, (ii) the regression of the mediator, rated own competence, on agency and communion, and (iii) the regression of mean AT scores on agency, communion, and rated own competence. In all three cases, likelihood ratio tests indicated that the random effects models did not provide better model fit than the regular linear models, all $ps > .190$. Hence, we felt that computing a path model treating participants from all studies as independent (i.e., neglecting dependencies within studies) was justifiable. The analyses showed clear evidence of the expected indirect effect of agency via perceived own competence of $-.06$, 95% CI $[-.09, -.04]$. Interestingly, there was also a small indirect effect of communion via rated own expertise of $.02$, 95% CI $[-.01, .04]$, which we did not anticipate.

Third, we meta-analyzed the decision to adjust in a multilevel logistic regression model with standardized agency and communion scores, task type, and their interaction as fixed effects, a random intercept by participants, and a random intercept as well as random slopes for agency and communion by study. The results fail to support the idea that agency and communion influence the decision to adjust as indicated by the meta-analytic ORs not differing significantly from 1, OR = 0.90, 95% CI $[0.80, 1.02]$ for agency, and OR = 1.02, 95% CI $[0.94, 1.11]$ for communion.

Finally, we meta-analyzed the correlations of agency and communion, on the one hand, and initial accuracy, measured as judges' initial MAPEs. Agency was associated with greater initial accuracy, $r = -.09$, 95% CI $[-.16, -.02]$, whereas there was no evidence of a relation of communion and initial accuracy, $r = .01$, 95% CI $[-.06, .08]$.

Separating the meta-analysis by judgment task, we found consistent results for some but not all of the focal analyses (forest plots for the meta-analyses by judgment task are provided as supplemental online material accessible at the Open Science Framework, <https://osf.io/5qcre/>). Most importantly, a significant average effect of agency via rated own competence emerged for both judgment tasks, average indirect effect = $-.07$, 95% CI $[-.09, -.04]$ for distance estimates, and $-.03$, 95% CI $[-.05, -.01]$ for weight estimates. Results were also consistent between tasks concerning the absence of significant effects of agency and communion on the decision to adjust (the 95% CIs of all four ORs included 1), as well as for the absence of a communion–accuracy link, $r = .03$, 95% CI $[-.04, .10]$ and $r = -.04$, 95% CI $[-.15, .07]$ for distance and weight estimates, respectively.

In contrast, the meta-analytic results concerning the zero-order correlations of agency and communion, on the one hand, and mean AT scores, on the other, provided qualitatively different patterns for the two tasks. For the distance estimates, AT scores correlated negatively with agency, $r = -.11$, 95% CI $[-.18, -.04]$, and positively with communion, $r = .08$, 95% CI $[-.01, .15]$. These correlations were not significant for the weight estimates, $r = -.06$, 95% CI $[-.24, .11]$ for agency, and $r = -.04$, 95% CI $[-.21, .13]$ for

communion. However, note that the correlation of agency and advice taking was in the expected direction. A second inconsistency was the unexpected indirect effect of communion via rated own competence, which was significant for the distance estimates, average effect = $.03$, 95% CI $[-.01, .06]$, but not for the weight estimates, average effect = $.01$, 95% CI $[-.004, .018]$, although the latter was in the same direction. Finally, the negative correlation of agency and initial MAPE scores was only significant for the distance estimates, $r = -.11$, 95% CI $[-.18, -.04]$, but not for the weight estimates, $r = -.02$, 95% CI $[-.15, .11]$. Because the meta-analyses of the distance estimates rest on data from all three studies, whereas we only tested the weight estimates in Studies 2 and 3, the apparent inconsistencies—in particular those where the meta-analytic effects failed to reach statistical significance in the weight estimates—could mainly stem from the different sample sizes or a generally greater error variance in the weight estimates.

GENERAL DISCUSSION

In three studies, we investigated how agency and communion relate to advice taking in quantity estimation tasks. We anticipated agency to lead to less advice taking because of increased perceptions of one's own competence. In contrast, we expected participants high in communion to rate their advisor's competence more positively and, ultimately, heed the advice more strongly. Our results support the hypotheses concerning agency, whereas we did not find a replicable effect of communion on advice taking.

Our findings build on recent research that has begun to link advice taking to individual differences. Kausel et al. (2015) showed narcissism to have an impact on advice taking, a finding that fits particularly well in the agency/communion framework due to narcissism being a highly agentic and anti-communal construct (Back et al., 2013; Paulhus, 2001). Our results also complement previous experimental studies showing that differences in experienced power led to differences in advice taking behavior (See, Morrison, Rothman, & Soll, 2011; Tost, Gino, & Larrick, 2012). Both experienced power and agentic dispositions seem to influence advice taking via a similar mechanism, namely, increased confidence in one's ability to perform well at a given task.

Originally, we interpreted the agency effect on advice taking as evidence of an idea first articulated by Goldsmith and Fitch (1997) based on qualitative interviews, namely, that advisees face a conflict between maintaining autonomy and expressing gratitude to their advisors. Agentic individuals might experience stronger threats to their autonomy and, therefore, discount advice more heavily. While we have no data to test this idea directly, our analyses of judges' initial accuracy suggest a simple alternative explanation: agentic individuals could rightfully perceive themselves to be more competent and, therefore, heed advice less because they actually are more competent. Supporting this idea, our meta-analysis showed that initial estimates of agentic participants were somewhat more accurate than

those of their less agentic peers. Thus, their advice taking behavior as well as the mediation via self-rated competence seems rather sensible.

This finding is noteworthy for two reasons. First, it distinguishes the link between agency and advice taking from effects of narcissism on advice taking (Kausel et al., 2015). Given that more narcissistic individuals tend to unduly enhance ratings of their agentic attributes (Paulhus & John, 1998), one might speculate that the effect of agency on advice taking could be due to differences in narcissism. Consistent with this idea, effects of agency and narcissism were both mediated by the same variable (lower ratings of the advisor's competence). However, because narcissism has been shown to be largely unrelated to pre-advice accuracy (Kausel et al., 2015), the positive association of agency and accuracy we observed suggests the correlation of agency and AT to be an independent effect. Second, the agency-accuracy link provides an interesting vantage point to interpret the finding that individuals high in power are less willing to take advice (See et al., 2011; Tost et al., 2012). In the respective studies, the influence of power on advice taking was mainly tested in the laboratory by manipulating experienced power and intentionally holding expertise constant. However, in reality, individuals who attain positions of high power might also be more competent, and their apparent resistance to advice might be justified by greater initial accuracy. Thus, when investigating how characteristics of the advisor relate to advice taking, it may be very informative to test in how far differences in advice taking are justified or not based on judges' initial accuracy.

It is important to note that the correlation of agency and advice taking seems small at first glance, indicated by the meta-analytic estimate of $-.11$. The small effect size might explain why we failed to find evidence of a direct effect of agency on advice taking in Study 3. Assuming that the true effect size is close to the average effect obtained in our meta-analysis, all of our individual studies were underpowered despite their considerable sample sizes. Post hoc power analyses for a correlation of $.11$ with a tolerated Type I error level of $.05$ suggest an actual power of $.33$ for Study 1, $.42$ for Study 2, and $.54$ for Study 3. This highlights the benefit of meta-analyses across multiple studies of a single manuscript (in our specific example, the cumulative sample size of 793 participants provides a good basis for exploring even small correlations of $.10$ with a test power exceeding $.80$). In fact, small effect sizes might also explain why there have been almost no published studies on personality difference in advice taking in the last 10 years (the exception being Kausel et al., 2015), despite Bonaccio and Dalal (2006) criticizing the lack of such studies in their seminal review. One elegant solution to this problem might be data pooling across multiple studies and even across different labs. Hence, it may be worthwhile for researchers investigating advice taking to measure certain personality variables as a low-cost add-on in their studies and to later combine their data sets with others measuring the same variables. Given a sufficient number of participants in the pooled data set, this approach allows detecting effect sizes even smaller than the one we reported in our meta-analysis (for an example of a successful application of such large-scale collaboration, see Wurst et al., 2017).

On a more practical level, the question is whether a small effect of agency on advice taking is noteworthy at all. We would argue that it is. As Abelson (1985) pointed out, small effects can cumulate over time. This might be particularly true in the context of agency and advice taking, if we assume that agency—as a fundamental personality trait—is at least somewhat stable over the course of one's life and that advice is a frequent component of social interaction and human decision making. Based on our findings, we would not expect the judgmental accuracy of agentic individuals to suffer from lower advice taking because they already seem to be more accurate a priori. However, in the long run, they might enjoy less of the other advantages of taking advice such as sharing responsibility (Harvey & Fischer, 1997). In addition, agentic individuals might also incur more of the negative effects associated with rejecting advice such as being perceived more negatively by their advisors (Brooks, Gino, & Schweitzer, 2015).

One question that our first study raised was that participants' experience with advice taking studies might impact their behavior on subsequent studies on advice taking. Excluding participants with prior experience in an exploratory analysis yielded qualitatively different results that were also more in line with our hypotheses. It is tempting to accept the results of exploratory analyses when the analyses are justifiable and the results seem more plausible (because they confirm one's hypotheses). However, rather than accepting the apparently more informative result, we chose to conduct a second study with naïve participants only. Its results mirrored those of Study 1 when including all participants. This suggests that, in contrast to the exploratory analyses of Study 1, prior experience does not have a substantial impact on participants' behavior in the JAS. An important lesson to take from this is that well-reasoned exploratory analyses can yield results that are both plausible but wrong. Therefore, such analyses should be tested for replicability in a separate study. In the case of data exclusion, it is also important to determine the criteria for data exclusion prior to conducting the study and, ideally, make them explicit in a preregistration.

Finally, we tested the idea that agency could be more aligned with advice taking as a dichotomy (decision to adjust) rather than a continuous variable (AT score), based on research by Soll and Larrick (2009) who showed how deceptive aggregate measures of advice taking such as the mean AT scores can be. Although our first two studies suggested that agency was associated with to the decision to adjust at all rather than the magnitude of the adjustment, we did not find this pattern in Study 3, and the respective effect failed to reach statistical significance in our meta-analysis. Regardless, it may be worthwhile for future studies to measure advice taking in terms of both the magnitude of adjustment and the decision to adjust in the first place. This will prevent researchers from misinterpreting their findings as increased/decreased adjustments towards advice while, in fact, they might constitute changes in the likelihood of heeding advice at all or perhaps a combination of both.

Regarding communion, our findings suggest that communion has no direct influence on advice taking nor on the decision to adjust in the classic anonymous JAS (i.e., in the

absence of social interaction). If at all, communion has an indirect effect via lower ratings of judges' own accuracy that do not seem to correspond to their actual accuracy (admittedly, we find it hard to make sense of this indirect effect). However, if the judge–advisor situation entailed more social interaction, a communion effect on advice taking could still emerge. The perceived obligation to express gratitude for a given advice suggests that individuals might heed advice in order not to offend the advisor, an idea that was also discussed by Harvey and Fischer (1997). Such a token amount of advice taking could indeed be particularly common among more communal advisees. Testing this hypothesis in a paradigm that entails social interaction between the judge and advisor might thus prove a fruitful avenue for future research.

Finally, we aimed to probe the generalizability of the effects of agency and communion on advice taking across different judgment tasks. Based on our meta-analyses, it seems that the effects of agency are largely consistent across tasks, although—arguably due to smaller sample size—the zero-order correlation of agency and advice taking failed to reach statistical significance when meta-analyzing only the weight estimates. Thus, we would cautiously interpret this as evidence of the generalizability of the effect of agency of advice taking (both in terms of the general correlation and the indirect effect). The picture was less clear concerning the effects of communion. Whereas the meta-analysis of the weight estimates was consistent with the overall meta-analysis in that none of the four focal effects were significant, the meta-analysis of the distance estimates revealed a significant positive correlation of communion and advice taking that was in line with our original hypothesis as well as an unexpected significant indirect effect via lower ratings of own competence. Because we are careful not to overinterpret this pattern, we consider it premature to make strong claims about the generalizability of the communion effects (or their absence). However, it may be worthwhile for future research to investigate potential moderating effects of task content on the link between communion and advice taking.

Limitations

We can think of three limitations that need consideration. First, our samples constituted typical convenience samples of university students. Hence, it would be desirable to replicate our findings with more heterogeneous samples.

Second, the tasks we used were rather simplistic. While such tasks are the standard in research on advice taking (Bonaccio & Dalal, 2006), they might lead to underestimating the effects of agentic traits on advice taking. It stands to reason that the more personally involved agentic individuals are in a topic, the more they might experience following others' advice as threatening their autonomy (Goldsmith & Fitch, 1997), ultimately making them more likely to ignore the advice. Therefore, future research might benefit from employing tasks characterized by higher relevance to one's identity or higher personal involvement.

A third limitation is that advice was unsolicited. This prevents investigating an understudied aspect of advice taking,

namely, actively seeking advice. Given that agentic individuals are characterized by higher self-ascribed competence in a variety of domains, it is reasonable to expect them to be less inclined to seek out others' advice in the first place. Thus, it might be worthwhile to investigate how agentic and communal individuals seek for advice.

Conclusion

As a final note, we hope that our findings have shown that it is worthwhile to investigate which individuals are more or less likely to heed advice—and, maybe even more importantly, why this might be and whether it is likely to hurt them. At the same time, our studies highlight the importance of sufficient test power when investigating individual differences in advice taking as the effect sizes of each individual trait might be small. We hope that our study can motivate further research that will help us understand why some individuals heed advice less than others.

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