Stay out of our office (vs. our pub): Target personality and situational context affect ostracism intentions☆

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ABSTRACT

Personality characteristics can influence the likelihood of a person becoming a target of ostracism. Particularly, low agreeableness and low conscientiousness have been shown to increase the risk of being ostracized. Here, we investigate whether the situational context in which individuals interact moderates the effect that personality has on ostracism intentions. Within four studies, we show that low target agreeableness increases ostracism intentions more strongly in a social than in a performance context. In contrast, low target conscientiousness increases ostracism decisions more strongly in a performance compared to a social context. The results suggest that individuals make decisions about how to ostracize others strategically and in line with the goals of the respective group within a specific situational context.

Ostracism, excluding and ignoring others, is a behavior individuals engage in more or less frequently, with significant consequences both for those who are ostracized and those who ostracize others (Rudert, Janke, & Greifeneder, 2020; Rudert, Janke, & Greifeneder, 2021; Zadro & Gonsalkorale, 2014). On average, individuals typically report one or two incidents per day where they have ostracized or been ostracized by others (Nezlek, Wesselmann, Wheeler, & Williams, 2012, 2015). The reasons and motives for this behavior vary, ranging from purely incidental ostracism to attempts to defend oneself against attacks or even punish others for behavior individuals perceive as inappropriate (Sommer, Williams, Ciarocco, & Baumeister, 2001; Williams, 2002). Previous research has also demonstrated that the personality of the excluded target can play a crucial role, such that individuals who are low in conscientiousness and/or agreeableness are at a higher risk of being ostracized (Hales, Kassner, Williams, & Graziano, 2016; Rudert, Keller, Hales, Walker, & Greifeneder, 2020). However, it remains an open question whether these effects of personality are generalizable, or depend upon the situational context, such that individuals with a certain personality disposition may be more likely to be excluded in one context, but not in another. In particular, in the present research we test the hypothesis that target conscientiousness and agreeableness affect individuals' ostracism intentions differently in a social, enjoyment-oriented context than in work, performance-oriented context.

1. Motivated reasons for ostracism: the role of target personality

There can be many reasons why individuals become a target of ostracism, from incidental or purely situational causes (such as being forgotten by accident or because they are new in a group), to purposeful exclusion that occurs because members of a group do not want an individual to be a part (Sommer et al., 2001; Williams, 2002). While it is often assumed that such motivated ostracism occurs due to maliciousness or selfishness of the ostracizing sources (Rudert, Sutter, Corrodi, & Greifeneder, 2018), most individuals will be careful to ostracize others deliberately, and only when they feel they have an appropriate reason for doing so that others would accept as well. This is because ostracism without sufficient justification is regarded as being morally wrong (Rudert & Greifeneder, 2016; Wesselmann, Wirth, Pryor, Reeder, & Williams, 2013) and will often result in feelings of guilt (Poulsen & Kashy, 2011), threat to one's own psychological needs (Legate, DeHaan, Weinstein, & Ryan, 2013), and devaluation or even punishment from others (Güroğlu, Will, & Klapwijk, 2013; Over & Uskul, 2016; Rudert

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et al., 2018; Rudert, Ruf, & Greifeneder, 2020; Will, Crone, van den Bos, & Güroğlu, 2013). Thus, in many situations individuals will not ostracize without feeling that they have a socially acceptable reason that others will approve of.

From an evolutionary perspective, one such socially acceptable reason for ostracism is that the excluded group members are perceived to be bad exchange partners (Kurzban & Leary, 2001). Two reasons might contribute to that impression in particular (Rudert, Keller, et al., 2020): First, certain group members might continually violate general or group-specific social norms, for instance by behaving rudely or uncooperatively, and thus threaten group harmony and cohesiveness (Ditrich & Sassenberg, 2016; Kerr & Levine, 2008; Scheepers, Branscombe, Spears, & Doosje, 2002). Second, some group members may hinder the group from achieving its goals because they lack the necessary competencies or capabilities to contribute meaningfully (Wesselmann et al., 2013, Wesselmann, Williams, & Wirth, 2014; Wesselmann, Wirth, Pryor, Reeder, & Williams, 2015). That is, some individuals are bad exchange partners within a group because they *will not cooperate* and others because they *cannot contribute*. This notion is also in line with models of person perception such as the Stereotype Content Model (Fiske, Cuddy, & Glick, 2007) that emphasize both perceived positive or negative *intent* (warmth) as well as *capability* (competence) as jointly important factors that determine how others evaluate and subsequently behave towards individuals or groups (Rudert, Reutner, Greifeneder, & Walker, 2017). Similarly, it is theorized that individuals can commit violations of *integrity*, or alternatively, violations of *competence*, each with different implications for relationship repair (Kim, Ferrin, Cooper, & Dirks, 2004). In line with the literature, we argue that both reasons for ostracism can occur independently of each other. For instance, a person can be a reliable performer (completing tasks with skill, precision, and efficiency), but nevertheless be ostracized due to being cold, or difficult to interact with. On the same note, a warm and friendly person might be ostracized, if lacking the diligence and necessary skills to contribute to a highly important task. It should be noted though, that both reasons are by no means necessarily mutually exclusive and might often even work in tandem, such as when underperformance is interpreted as (intentional) social loafing, or when a person acts so selfishly and uncooperatively that they thoroughly undermine group performance (see Rudert, Keller, et al., 2020). Nevertheless, the fact that a person contributes to a group's cohesion and harmony does not guarantee that they will help the group accomplish more material goals, and the fact that a person contributes to a groups' material goals does not guarantee that they will also promote cohesion and harmony.

While a single norm violation or failure to perform may be undesirable, many groups may not exclude an individual due to a single lapse. However, they may be inclined to do so if a group member continuously behaves in a way that is considered inappropriate or hinders the group. Such is the case if an individual is characterized by certain personality traits that result in them showing behavior that is considered problematic in a variety of situations. The two personality traits from the Big Five characteristics that correspond best to this notion of norm violation versus low performance are agreeableness and conscientiousness (Rudert, Keller, et al., 2020): Agreeableness refers to the tendency to interact with others in an appreciative, warm, generous and trusting manner (McCrae & John, 1992) and has been linked to a strong prosocial motivation. Thus, individuals low in agreeableness are more likely to be uncooperative, violate social norms and thus threaten group's harmony and integrity (Graziano, Habashi, Sheese, & Tobin, 2007; Kagel & McGee, 2014). Conscientiousness, on the other hand, refers the tendency to behave in ways that are organized, efficient, planful, and reliable, and has been demonstrated to be a strong predictor of productivity and performance (Barrick & Mount, 1991; McCrae & John, 1992). As such, individuals that are characterized by low conscientiousness are less likely to make meaningful contributions to groups or perform on a high level. Even though clearly distinguishable factors, empirical findings show that both self-reports as well as peer

reports of conscientiousness and agreeableness are moderately correlated with each other ($r = 0.18$–0.41, Borkenau & Ostendorf, 1990; $r = 0.28$, Soto & John, 2017), indicating that the constructs are related, but ultimately distinct ($r = 0.30$ representing a medium effect according to Cohen, 1992).

For the reasons outlined above, both individuals characterized by low agreeableness as well as individuals characterized by low conscientiousness are at a greater risk of experiencing ostracism. Corroborating empirical evidence stems both from experimental as well as correlational research using broad representative samples in different cultural contexts (Buecker, Maes, Denissen, & Luhmann, 2020; Hales, Kassner, et al., 2016; Nielsen, Glasø, & Einarsen, 2017; Rudert, Keller, et al., 2020; Wu, Wei, & Hui, 2011).

2. The role of the situational context

Personality is associated with stable behavioral tendencies that a person shows over time in a variety of situations (e.g., Fleeson, 2001). Consequently, if one assumes a central, evolutionary motive to avoid bad exchange partners as one of the fundamental drivers of motivated ostracism, then agreeableness and conscientiousness should be important factors regardless of the situational circumstances. Yet different situational contexts are usually characterized by individuals pursuing or prioritizing different goals, and individuals' evaluations and their subsequent behavior are sensitive to these goals (Ferguson & Bargh, 2004; Schwarz, 2007). Concerning ostracism decisions, individuals might thus weigh information regarding a personality characteristic as more important in one situational context compared to another context, depending on the relevance of the personality characteristic in the respective context. For instance, agreeableness might appear particularly relevant in social contexts, in which individuals mainly – explicitly or implicitly - pursue the goal to have a good time. In contrast, conscientiousness might appear particularly relevant in performance-oriented contexts, in which individuals work on high-stakes projects that require a reliable and strong performance from all group members.

Thus, in what we term the *Changes in Relative Impact Hypothesis*, the effects of agreeableness as well as conscientiousness might vary depending on the situational context. Particularly, agreeableness should affect ostracizing intentions more strongly in a social than in a performance context. And vice versa, conscientiousness should affect ostracizing intentions more strongly in a performance than in a social context. In statistical terms, one might thus expect to find a two-way interaction of agreeableness x situational context, and also a two-way interaction of conscientiousness x situational context. See Fig. 1 *a* for a graphical depiction of the Changes in Relative Impact Hypothesis.

In addition, one could speculate that depending on the situational context, not only the relative impact, but also the *interplay* of agreeableness and conscientiousness might differ. In particular, Rudert, Keller, et al., 2020, Study 4) showed that being low on either one of those two personality characteristics cannot be sufficiently compensated by being high on the other. In other words, those who are agreeable but careless increase ostracism intentions in others, as do those that are strong, reliable performers, but also disruptive troublemakers (Rudert, Keller, et al., 2020), reflecting the notion that groups strive to exclude bad exchange partners (Kurzban & Leary, 2001). This might be particularly true in performance contexts, as both individuals that do not adhere to group norms, as well as individuals who cannot contribute to the group's performance goals, may hinder the group from achieving its goals. In contrast, in social contexts in which performance is of little relevance, individuals might not care about a person's conscientiousness and primarily base ostracism decisions on other's perceived agreeableness. Put differently, this assumption entails that agreeableness might matter equally in any kind of context, whereas conscientiousness only matters when performance is required. This argumentation is also in line with the centrality of warmth in person perception (Koch, Imhoff, Dotsch, Unkelbach, & Alves, 2016).
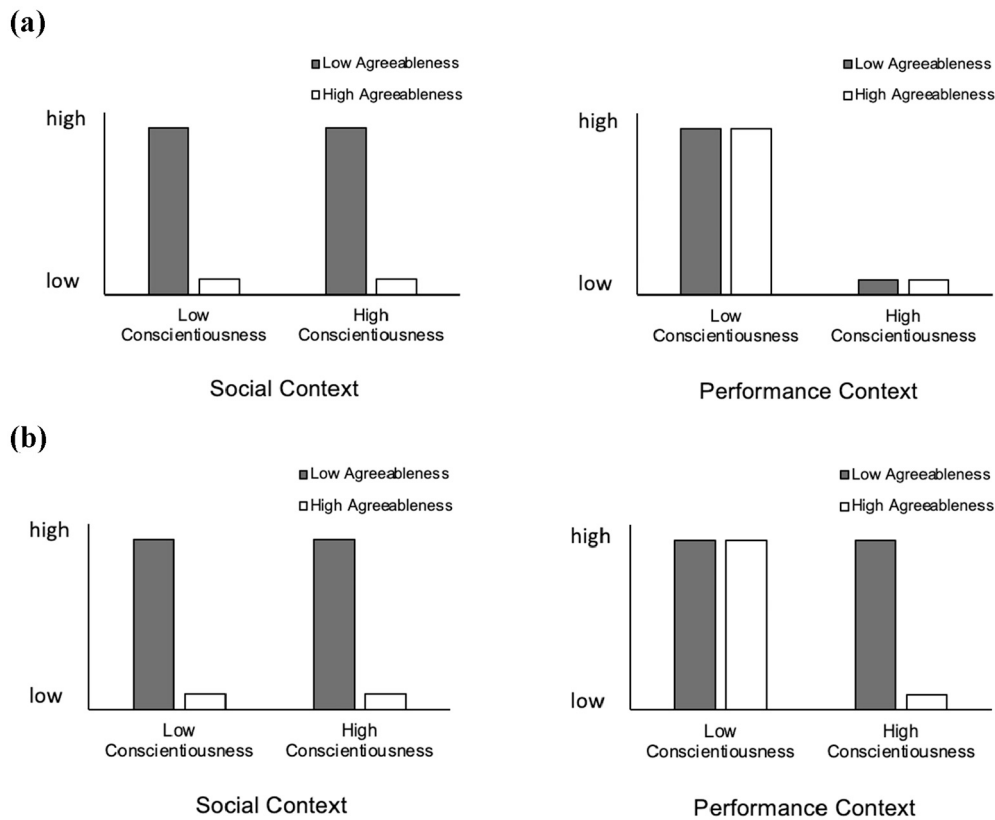
(a)

(b)

Fig. 1. Hypothesized data patterns of ostracism intentions in line with the Changes in Relative Impact Hypothesis (Fig. 1a) and the Changes in Interplay Hypothesis (Fig. 1b). Note that the figure does not represent empirical findings, but a simulation based on artificially generated data.

Consequently, in what we term the *Changes in Interplay Hypothesis*, in social contexts individual's ostracism intentions should primarily depend on a target's agreeableness. However, *both* personality traits should matter in a performance context. Reflecting the strong significance of negative information in impression formation (e.g., Alves, Koch, & Unkelbach, 2017; Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Fiske, 1980), being highly negative on one trait might thus not be compensable by being positive on the other (see Rudert, Keller, et al., 2020; Study 4). Statistically, such a non-linear combination of the effects of both personality traits would be reflected in a three-way interaction agreeableness x conscientiousness x situational context. Simply put, in performance contexts, targets might need to be both conscientious *and* agreeable to be included (reflected by an interaction between agreeableness and conscientiousness), whereas in social contexts, they might only need to be agreeable (simple main effect of agreeableness). See Fig. 1 b for a graphical depiction of the Changes in Interplay Hypothesis.

3. Research questions

Taken together, in the present research, we test whether the situational context moderates the effect that personality information has on ostracism intentions. We had two competing hypotheses for how the resulting interaction might appear:

First, context might merely change the *relative impact* of both agreeableness and conscientiousness. Thus, individuals might put a stronger emphasis on agreeableness information in a social (vs. performance) context, whereas individuals might weigh conscientiousness as more important in a performance (vs. social) context. This should statistically be reflected by two two-way interactions: conscientiousness x situational context as well as agreeableness x situational context (Fig. 1a).

Alternatively, the situational context might change the *interplay* of

agreeableness and conscientiousness. In a social context, individuals might primarily base their decision on agreeableness information. However, individuals might feel that both traits matter in performance contexts, such that being low on one trait should not be (fully) compensable by being high on the other. Statistically speaking, in performance contexts, the combined effect should thus follow a non-linear function such that the effect of either trait would be stronger if the target was described as high (vs. low) on the respective other trait (see Rudert, Keller, et al., 2020; Study 4). Thus, we would expect to find a three way interaction agreeableness x conscientiousness x situational context (Fig. 1 b). Split by situational context, in the social context we would expect to find a main effect of agreeableness, whereas in the performance context, we would expect to find a two-way interaction of agreeableness x conscientiousness.

4. Method statement

To test our hypotheses, we conducted four studies in which participants were presented with targets that differed with regard to agreeableness and conscientiousness and measured their ostracism intentions towards these targets both in a work context as well as a social context. These studies have been approved by the Institutional Review Boards of the Faculties of Psychology, University of Basel (011-17-1) and University of Koblenz-Landau (180_2019) as part of the framework "Why do we ostracize others? Motives for social exclusion in groups", and by the University of Virginia (0428), "Social Interactions." They also conform to recognized standards written in the Declaration of Helsinki. All sample sizes were determined using a priori power analysis and pre-registered accordingly prior to data analysis. In these studies, we report all measures, manipulations, and data exclusions. Verbatim materials, additional analyses, and data for the studies are available at https://osf.io/d2jqa/

5. Study 1

5.1. Method

5.1.1. Participants and design

Hypotheses[2], sample size, exclusion criteria, and analysis plan were preregistered on AsPredicted.org, https://aspredicted.org/ta429.pdf. Participants were recruited online from Prolific Academic (US Americans only) to participate in a "First Impression" study for a payment of £0.40. Sample size was determined based on a previous study (Rudert, Keller, et al., 2020; Study 4) in which 230 participants provided sufficient power (=0.93) to show a significant Agreeableness x Conscientiousness Interaction with an effect size of $f = 0.23$. To have sufficient power to find a knock-out interaction pattern (i.e., the interaction is only relevant in one context but not in the other), we aimed to double the sample size (e.g., Giner-Sorolla, 2018; Simonsohn, 2014). A sensitivity analysis with G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) showed that a sample size of 460 participants would allow us to find a three-way interaction with a minimum effect size of $f = 0.13$ with a power = 0.80.

We collected data from 473 participants on Prolific Academic (www.prolific.ac), excluding two participants who indicated their data should not be used for analysis. The final sample thus consisted of 471 participants (233 female, 238 male; $M_{age} = 31.34$, $Range = 18$–74 years; $SD = 10.76$). Participants were randomly assigned to a 2 (conscientiousness high vs. low) × 2 (agreeableness high vs. low) × 2 (context: work vs. social) mixed design, with context assessed as a repeated measure. Additionally, order of situational context was randomized (work context first vs. social context first).

5.1.2. Materials and procedure

The study's procedure was adapted from Hales, Kassner, et al. (2016) and Rudert, Keller, et al. (2020). All participants read a vignette about a student named Mason. All vignettes shared the same information and only differed in the description of Mason's personality in terms of agreeableness and conscientiousness.

Mason is a 19 year-old Sophomore student. He works as a part time job at a nearby restaurant. [Agreeableness information]. [Conscientiousness information]. In his free time, he likes to watch movies, listen to music, and go outdoors. In a typical day, Mason goes to classes and afterwards spends some time on his computer. After dinner, he usually watches TV shows. His favorites are crime series, but he also enjoys quiz shows.

To manipulate agreeableness, in the low agreeableness condition, Mason was described as being a "cold, untrusting, and uncaring person". In the high agreeableness condition, he was described as being a "warm, trusting, and caring person". To manipulate conscientiousness, in the next sentence, Mason was described as a "lazy, chaotic, and an unreliable and careless worker" in the low conscientiousness condition and as a "diligent, well-organized, and a reliable and precise worker" in the high conscientiousness condition.

Participants were instructed to read Mason's description carefully and picture what type of person Mason is and what it would be like to spend time with him. As manipulation checks, all participants rated Mason's personality on agreeableness (7-point semantic differential; "Mason is disagreeable – agreeable") and conscientiousness (7-point

semantic differential; "Mason is careless – conscientious"). All participants also answered a personality-unrelated attention question (7-point semantic differential; "Mason likes crime series – hates crime series").

Next, participants were asked to imagine a situation where Mason just joined a group that they already belonged to. All participants rated their intention to exclude Mason in a social club in which "the purpose of the club is to socialize and enjoy each other's company" and in a work group in which "the purpose of the group is to collaborate on high-stakes team-projects at work". The order of presentation of the social club and the work group was randomized. Ostracism intentions towards Mason were measured on a scale consisting of seven items (e.g. "I might find myself excluding Mason", disagree completely - agree completely, 5-point scale; Hales, Kassner, et al., 2016; Cronbach's α = 0.91 for ostracism intentions in the work group and Cronbach's α = 0.92 for ostracism intentions in the social club). Finally, participants gave demographic information and were thanked and paid.

5.2. Results

5.2.1. Manipulation Checks

Participants in the high conscientiousness condition perceived Mason to be more conscientious than participants in the low conscientiousness condition, $F(1,467) = 828.66$, $p < .001$, $η^2 = 0.64$ ($M_{high} = 5.65$, $SD = 1.79$ vs. $M_{low} = 1.76$, $SD = 1.30$). Participants in the high agreeableness condition perceived Mason to be more agreeable than participants in the low agreeableness condition, $F(1,467) = 726.02$, $p < .001$, $η^2 = 0.61$ ($M_{high} = 5.89$, $SD = 1.31$ vs. $M_{low} = 2.57$, $SD = 1.50$). Manipulating one personality trait also affected participant's perception of the respective other trait, such that participants perceived Mason to be more agreeable when he was described as conscientious (vs. careless), $F(1,467) = 52.49$, $p < .001$, $η^2 = 0.10$ ($M_{high} = 6.30$, $SD = 0.86$ vs. $M_{low} = 5.49$, $SD = 1.54$), and more conscientious when he was described as agreeable (vs. disagreeable), $F(1,467) = 59.01$, $p < .001$, $η^2 = 0.11$ ($M_{high} = 6.35$, $SD = 0.82$ vs. $M_{low} = 4.96$, $SD = 2.18$). On the conscientiousness measure, there also was a small but significant interaction between agreeableness and conscientiousness, $F(1,467) = 6.79$, $p = .009$ $η^2 = 0.01$, such that when Mason was described positively on one personality trait, the effect of the other respective personality trait was stronger[3]. See Table 1 for means and standard deviations by condition.

It should be noted that although statistically significant, the effect of the respective other personality trait was smaller than the effects of the

Table 1
Manipulation checks in study 1.

Manipulation Check	Conscientiousness	Agreeableness	
		Low	High
Agreeableness (MC)	Low	2.08[a] (1.07)	5.49[b] (1.54)
	High	3.06[b] (1.70)	6.30[d] (0.86)
Conscientiousness (MC)	Low	1.42[c] (0.78)	2.10[b] (1.61)
	High	4.96[c] (2.18)	6.35[d] (0.82)

Note. Means (and standard deviations) as a function of the four experimental conditions. The letters a–d represent significant differences between groups. All values in the same column or row that share the same letter do not differ significantly from each other, values with different letters do.

[2] As a natural part of the research process, findings from earlier studies informed and guided our theorizing and preregistrations for later studies. Particularly, the preregistration of Study 1 specified two possible result patterns matching the Changes in Relative Impact and the Changes in Interplay Hypothesis (albeit only referring to a three-way interaction). Building on the findings of Study 1, in Studies 3 and 4 only the Changes in Interplay Hypothesis (i.e. the three-way interaction as the highest order interaction that required most power) was explicitly preregistered. Study 2, which was conducted as part of the revision process, once again specified both the Changes in Relative Impact and the Changes in Interplay Hypothesis.

[3] Simple main effects showed that when Mason was described as high in conscientiousness, the effect of low (vs.) high agreeableness on the conscientiousness measure was stronger, $F(1, 467) = 53.06$, $p < .001$. $η^2 = 0.10$, than when he was described as low in conscientiousness, $F(1, 467) = 12.87$, $p < .001$ $η^2 = 0.03$. Similarly, when Mason was described as high in agreeableness, the effect of low (vs. high) conscientiousness on the conscientiousness measure was stronger, $F(1, 467) = 344.91$, $p < .001$, $η^2 = 0.51$ than when he was described as low in agreeableness, $F(1, 467) = 344.91$, $p < .001$, $η^2 = 0.43$.

intended manipulation (all $\eta^2 < 0.12$ vs. all $\eta^2 > 0.60$). The control attention item ("Mason likes crime series – hates crime series", 7-point scale) was unaffected by any personality manipulations, smallest $p = .750$.

5.2.2. Dependent variables

We conducted a three-way mixed ANOVA (conscientiousness: high vs. low x agreeableness: high vs. low x context: work group vs. social club) with context as a repeated measure on intentions to ostracize Mason. There were significant main effects of conscientiousness, $F(1,467) = 114.27$, $p < .001$, $\eta^2 = 0.20$, and agreeableness, $F(1,467) = 134.65$, $p < .001$, $\eta^2 = 0.22$, replicating findings that both low conscientiousness and low agreeableness increase intentions of social exclusion (Rudert, Keller, et al., 2020). There was also a significant main effect of context, with people expressing greater ostracism intentions in a social context than in a performance context, $F(1,467) = 7.20$, $p = .008$, $\eta^2 = 0.02$. See Table 2 and Fig. 2 for means and standard deviations split by condition.

As predicted by the *Changes in Relative Impact Hypothesis*, there was a significant interaction between agreeableness x context, $F(1,467) = 67.43$, $p < .001$, $\eta^2 = 0.13$. Simple main effects showed that low (vs. high) agreeableness increased ostracism intentions more strongly in a social context, $F(1,467) = 205.06$, $p < .001$, $\eta^2 = 0.31$, than in a performance context, $F(1,467) = 30.92$, $p < .001$, $\eta^2 = 0.08$. Moreover, there was a significant interaction between conscientiousness x context, $F(1,467) = 71.23$, $p < .001$, $\eta^2 = 0.13$. Simple main effects indicated that low (vs. high) conscientiousness increased ostracism intentions more strongly in a performance context, $F(1,467) = 174.08$, $p < .001$, $\eta^2 = 0.27$, than in a social context, $F(1,467) = 31.22$, $p < .001$, $\eta^2 = 0.06$. There was no significant agreeableness x conscientiousness interaction, $F(1,467) = 3.52$, $p = .061$, $\eta^2 = 0.01$. However, in line with the *Changes in Interplay Hypothesis,* there was a significant three-way interaction, $F(1,467) = 9.94$, $p = .002$, $\eta^2 = 0.02$.

To break down the three-way interaction, we ran the analysis separately for the two situational contexts: In the social context (left panel of Fig. 2), there was a significant main effect of conscientiousness, $F(1,467) = 31.22$, $p < .001$, $\eta^2 = 0.06$, and a comparatively larger significant main effect of agreeableness, $F(1,467) = 205.06$, $p < .001$, $\eta^2 = 0.31$. The agreeableness x conscientiousness interaction was not significant, $F(1,467) = 0.04$, $p = .852$.

In contrast, in the work context (right panel of Fig. 2) there was a significant main effect of conscientiousness, $F(1,467) = 174.08$, $p < .001$, $\eta^2 = 0.27$, and a comparatively smaller main effect of agreeableness, $F(1,467) = 39.92$, $p < .001$, $\eta^2 = 0.08$. These effects were qualified by a significant interaction between agreeableness x conscientiousness, $F(1,467) = 9.52$, $p = .002$, $\eta^2 = 0.02$. Breaking down the interaction via simple main effects, we found that when Mason was described high in agreeableness, the effect of low (vs. high) conscientiousness was larger, $F(1, 467) = 131.68$, $p < .001$, $\eta^2 = 0.22$, than when Mason was described as low in agreeableness, $F(1, 467) = 51.41$, $p < .001$, $\eta^2 = 0.10$.

Alternatively, when Mason was described as high in conscientiousness, the effect of low (vs. high) agreeableness was larger, $F(1, 467) = 44.32$, $p < .001$, $\eta^2 = 0.09$, than when Mason was described as low in conscientiousness, $F(1, 467) = 5.21$, $p = .023$, $\eta^2 = 0.01$.

There was no significant main effect of order of presented context, $F(1,463) = 0.13$, $p = .715$. Although there were small yet significant two-way interactions[4], importantly, all previously reported effects and interactions, including the three-way interaction, remained significant.

5.2.3. Sensitivity power analysis

A sensitivity power analysis with G*Power showed that with an alpha of 0.05 and an obtained correlation of $r = 0.61$ between ostracism intentions in the work and the social context, the sample size was sufficient to detect a minimum effect size of $f = 0.08$ ($\eta^2 < 0.01$) for the three-way interaction and $f = 0.07$ for either of the two-way interactions with a power of 0.90.

5.3. Discussion

The findings from Study 1 suggest that situational context moderates the effect of personality on ostracism intentions. Specifically, situational context affected both the relative impact of agreeableness and consciousness, as well as the interplay of the two traits. In line with the *Changes in Relative Impact Hypothesis*, we found that individuals weigh conscientiousness information as more important in a performance than in a social context. And vice versa, individuals weighed agreeableness information as more important in a social vs. in a performance context.

However, while the effects of conscientiousness and agreeableness were fully additive in the social context, this was not the case in the performance context. Particularly, and in line with the *Changes in Interplay Hypothesis*, we found that in the performance context, the effect of either trait was stronger if the target was described positively on the other trait. Simply put, in a performance context, both agreeableness and conscientiousness seem to matter, as disagreeableness increased ostracism intentions especially when a target was described as conscientious. Similarly, low conscientiousness increased ostracism intentions especially when a target was described as agreeable.

In addition, it should be mentioned that individuals generally seem to take both agreeableness as well as conscientiousness information into account when making their judgements, as indicated by the statistically significant, although comparatively smaller effects of conscientiousness in a social context and agreeableness in a performance context. However, these effects could also be explained by the spillover effects that the manipulation had on the respective other personality trait, such that a person described as agreeable was also perceived as more conscientious and vice versa. This finding is not surprising given that the traits of agreeableness and conscientiousness are naturally correlated with each other and thus, individuals may adjust their perception accordingly (Borkenau & Ostendorf, 1990; Soto & John, 2017). It should be emphasized, though, that the main effects of the personality trait that we intended to manipulate were larger - explaining five times as much

Table 2
Ostracism intentions in study 1.

Situational context	Conscientiousness	Agreeableness	
		Low	High
Work	Low	2.87ᵃ (0.83)	2.62ᵇ (1.03)
	High	2.10ᶜ (0.84)	1.39ᵈ (0.51)
Social	Low	2.88ᵃ (0.87)	1.84ᶜ (0.76)
	High	2.48ᵇ (0.95)	1.41ᵈ (0.55)

Note. Means (and standard deviations) of ostracism intentions as a function of the four experimental conditions, separately for the work and the social context. The letters a–d represent significant differences between groups. All values in the same column or row that share the same letter do not differ significantly from each other, values with different letters do. Ratings were made on a 1 to 5 scale with higher scores representing greater willingness to ostracize.

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[4] More specifically, there were effects of agreeableness x order, $F(1, 463) = 6.56$, $p = .011$, $\eta^2 = 0.01$, conscientiousness x order, $F(1, 463) = 8.79$, $p = .003$, $\eta^2 = 0.02$, and context x order, $F(1, 463) = 11.84$, $p = .001$, $\eta^2 = 0.03$. Breaking these interaction down with simple main effects, when Mason was described as high in agreeableness, ostracism intentions were higher when the social club (vs. the work group) was presented first, $F(1, 463) = 4.26$, $p = .040$, $\eta^2 = 0.01$ ($M_{socialfirst} = 1.90$, $SD = 1.39$ vs. $M_{workfirst} = 1.71$, $SD = 1.45$). Similarly, when Mason was described as low in conscientiousness, ostracism intentions were higher when the social club (vs. the work club) was presented first, $F(1, 463) = 5.50$, $p = .019$, $\eta^2 = 0.01$ ($M_{socialfirst} = 2.66$, $SE = 1.43$ vs. $M_{workfirst} = 1.41$, $SE = 0.07$). Moreover, when the work group was presented first, ostracism intentions were generally higher for the work group compared to the social club, $F(1, 463) = 11.84$, $p = .001$, $\eta^2 = 0.03$ ($M_{social} = 2.20$, $SD = 1.06$ vs. $M_{work} = 2.10$, $SD = 1.06$).

Fig. 2. Mean ostracism intentions (with standard errors) as a function of manipulated agreeableness, conscientiousness, and context in Study 1.

variance - such that those spillover effects cannot easily account for our findings. To verify this reasoning, in an exploratory analysis we re-ran the analysis of Study 1, first controlling for the effect of agreeableness (Model 1) and second for the effect of conscientiousness (Model 2) by including the respective manipulation check as a covariate. If our results were due to spillover effects, one would expect a substantial reduction in the effect sizes of both manipulated variables, which was not the case[5]. In addition, we conducted another study (Study 2) in which we changed the manipulation to increase internal validity and eliminate any potential confounds between both personality traits. Moreover, we adapted the description of the work context and the social context to make it *explicitly only about* performance and *explicitly only about* socializing to further decrease the possibility that effects are influenced by participants' assumptions about social aspects in work context (or performance aspects in social contexts).

6. Study 2

6.1. Method

6.1.1. Participants and design

Hypotheses, sample size, exclusion criteria and analysis plan were preregistered on AsPredicted.org, https://aspredicted.org/7ks8b.pdf. Participants were recruited online from Prolific Academic (US Americans only) to participate in a "First Impression" study for a payment of £0.65. Sample size was determined based on the effect sizes found in Study 1, indicating that 216 participants should provide sufficient power (>0.90) to detect interaction effects with an effect size of $f = 0.14$, which corresponds to the effect size of the three-way interaction in Study 1. We conservatively used the lowest correlation between repeated measures within all studies for the power calculation, $r = 0.40$.

We collected data from 238 participants on Prolific Academic, oversampling slightly to account for data exclusions. In line with the criteria specified in the preregistration, we excluded one participant who indicated their data should not be used for analysis and 13 participants with a value >3 on the "Mason likes crime series – hates crime series" control question. The final sample thus consisted of 224

participants (130 women, 94 men; $M_{age} = 32.02, Range = 18–53$ years; $SD = 11.43$). Participants were randomly assigned to a 2 (conscientiousness high vs. low) x 2 (agreeableness high vs. low) x 2 (context: work vs. social) mixed design, with context assessed as a repeated measure. Additionally, order of situational context was randomized (work context first vs. social context first).

6.1.2. Materials and procedure

All participants read the same basic vignette about Mason as in Study 1. Next, they received information that Mason took a personality test measuring his agreeableness and another personality test measuring his conscientiousness. Participants saw a short definition of the two constructs, and the information that individuals may fall in "low", "average", and "high" clusters on either trait. For instance, they read that *"people who fall in the high Conscientiousness cluster are more diligent, better organized, and more reliable and precise than most people"* and *"people who fall in the high Agreeableness cluster are warmer, more trusting and more caring than most people."* They were further explicitly informed that agreeableness and conscientiousness measure separate traits and that people may score high in one trait and low in the other.

Individuals read next that Mason fell in the low or high cluster in agreeableness and the low or high cluster in conscientiousness. As manipulation checks, all participants rated Mason's personality on agreeableness (7-point semantic differential; "Mason is disagreeable – agreeable") and conscientiousness (7-point semantic differential; "Mason is not conscientious – conscientious"). All participants also answered a personality-unrelated attention question (7-point semantic differential; "Mason likes crime series – hates crime series").

As in Study 1, participants were introduced to the two different contexts, that were revised to more explicitly remove social aspects from the work context, and performance aspects from the social context. Specifically, as a description of the social club, they read: *"The purpose of the club is to socialize and enjoy each other's company. The group members come to the informal gatherings whenever they feel like it. There is no need for any planning or regular commitment."* As a description of the work group they read: *"The purpose of the group is to work on high-stakes projects. The group members each complete their own well-defined tasks independently. There is no need for social interaction or cooperation."* The order of presentation of the social club and the work group was randomized. Ostracism intentions were measured on the same scale as in Study 1 (Cronbach's α = 0.89 for ostracism intentions both in the work group as well as in the social club). Finally, participants gave demographic information and were thanked and paid.

6.2. Results

6.2.1. Manipulation checks

Participants in the high conscientiousness condition perceived Mason to be more conscientious than participants in the low conscientiousness condition, $F(1,220) = 518.40, p < .001, \eta^2 = 0.70$ ($M_{high} = 6.39, SD = 1.24$ vs. $M_{low} = 2.15, SD = 1.54$). Participants in the high

agreeableness condition perceived Mason to be more agreeable than participants in the low agreeableness condition, $F(1,220) = 744.11$, $p < .001$, $\eta^2 = 0.77$ ($M_{high} = 6.64$, $SD = 0.77$ vs. $M_{low} = 2.30$, $SD = 1.51$). Agreeableness had no significant effect on the conscientiousness manipulation check and vice versa, nor were any of the interactions significant, smallest $p = .282$, $\eta^2 = 0.01$. See Table 3 for means and standard deviations by condition. Since we used the control item ("Mason likes crime series – hates crime series") to exclude inattentive participants in Study 2, we did not perform any analyses on it.

6.2.2. Dependent variable

We conducted a three-way mixed ANOVA (conscientiousness: high vs. low x agreeableness: high vs. low x context: work group vs. social club) with context as a repeated measure on intentions to ostracize Mason. There were significant main effects of conscientiousness, $F(1,220) = 21.01$, $p < .001$, $\eta^2 = 0.09$, and agreeableness, $F(1,220) = 37.40$, $p < .001$, $\eta^2 = 0.15$ and a significant main effect of context, with people expressing greater ostracism intentions in a social context than in a performance context, $F(1,220) = 26.94$, $p < .001$, $\eta^2 = 0.11$. See Table 4 and Fig. 3 for means and standard deviations split by condition.

There was no significant agreeableness x conscientiousness interaction, $F(1,220) = 0.32$, $p = .573$, $\eta^2 = 0.00$. However, as predicted by the *Changes in Relative Impact Hypothesis*, there was a significant interaction between agreeableness x context, $F(1,220) = 12.23$, $p = .001$, $\eta^2 = 0.05$. Simple main effects indicated that low (vs. high) agreeableness increased ostracism intentions more strongly in a social context, $F(1,220) = 56.83$, $p < .001$, $\eta^2 = 0.21$, than in a performance context, $F(1, 220) = 11.06$, $p = .001$, $\eta^2 = 0.05$. Moreover, there was a significant interaction between conscientiousness x context, $F(1,220) = 13.61$, $p < .001$, $\eta^2 = 0.06$. Simple main effects indicated that low (vs. high) conscientiousness affected ostracism intentions more strongly in a performance context, $F(1, 220) = 30.03$, $p < .001$, $\eta^2 = 0.12$, than in a social context, $F(1, 220) = 5.09$, $p = .025$, $\eta^2 = 0.02$. The three-way interaction was not significant, $F(1,220) = 0.91$, $p = .340$, $\eta^2 = 0.00$.

There was no significant main effect of order of presented context, $F(1,216) = 0.45$, $p = .505$, $\eta^2 = 0.00$. Although there was a three-way interaction[6], importantly, all previously reported effects and interactions remained significant.

6.2.3. Sensitivity power analysis

A sensitivity power analysis with G*Power showed that with an alpha of 0.05 and an obtained correlation of $r = 0.54$ between ostracism intentions in the work and the social context, the sample size was sufficient to detect a minimum effect size of $f = 0.12$ for the three-way interaction and $f = 0.10$ ($\eta^2 = 0.01$) for either of the two-way

Table 3
Manipulation checks in study 2.

Manipulation check	Conscientiousness	Agreeableness	
		Low	High
Agreeableness (MC)	Low	2.46ᵃ (1.57)	6.63ᵇ (0.90)
	High	2.14ᵃ (1.46)	6.64ᵇ (0.64)
Conscientiousness (MC)	Low	2.15ᵃ (1.24)	2.14ᵃ (1.78)
	High	6.18ᵇ (1.38)	6.59ᵇ (1.07)

Note. Means (and standard deviations) as a function of the four experimental conditions. The letters a–d represent significant differences between groups. All values in the same column or row that share the same letter do not differ significantly from each other, values with different letters do.

Table 4
Ostracism intentions in study 2.

Situational context	Conscientiousness	Agreeableness	
		Low	High
Work	Low	2.56ᵃ (0.85)	2.30ᵃ (0.93)
	High	2.07ᵇ (0.89)	1.61ᶜ (0.54)
Social	Low	2.34ᵇ (0.88)	1.61ᶜ,ᵈ (0.65)
	High	2.12ᵇ (0.83)	1.40ᵈ (0.45)

Note. Means (and standard deviations) of ostracism intentions as a function of the four experimental conditions, separately for the work and the social context. The letters a–d represent significant differences between groups. All values in the same column or row that share the same letter do not differ significantly from each other, values with different letters do. Ratings were made on a 1 to 5 scale with higher scores representing greater willingness to ostracize.

interactions with a power of 0.90.

6.3. Discussion

The findings from Study 2 confirm the findings from Study 1, showing that situational context moderates the effect of personality on ostracism intentions. Again, the results are in line with the Changes in Relative Impact Hypothesis, showing that individuals' conscientiousness information influences ostracism intentions more strongly in an explicitly performance related context than in an explicitly social context, whereas agreeableness information influences ostracism intentions more strongly in an explicitly social compared to a explicitly performance-related context. Importantly, the spillover effects on the manipulation check that we observed in Study 1 were not present in Study 2, reflecting that participants appeared to understand that agreeableness and conscientiousness represent separate traits. Moreover, the work and the social context were explicitly labelled as an explicitly social and an explicitly performance-related context. Study 2 thus allows for an unambiguous test of the importance and interplay of agreeableness, conscientiousness, and context without any spillover effects due to overlap. Note that nevertheless, as in Study 1, conscientiousness affected ostracism intentions even in an explicit social context and vice versa, agreeableness affected ostracism intentions even in an explicit performance context, hinting at a generalizable tendency to exclude potentially bad exchange partners in addition to the observed interaction effects with situational context (Kurzban & Leary, 2001).

Departing from Study 1 and the findings reported by Rudert, Keller, et al. (2020), there was no significant agreeableness x conscientiousness interaction as well as no indication of a three-way interaction, which would have been in line with the Changes in Interplay Hypothesis. One potential explanation might be that the three way-interaction is a mere result of the overlap between agreeableness and conscientiousness (indicated by the spillover on the manipulation check in Study 1). An alternative explanation might be the complete separation of social and performance contexts for the sake of internal validity in Study 2, whereas in reality, few work situations require no social interaction and cooperation altogether (see General Discussion). While the three-way interaction in Study 1 might reflect the realistic assumption of participants that most high-stake work projects require both agreeableness and conscientiousness, the strict separation of both contexts in Study 2 might have made it disappear.

A limitation of both Studies 1 and 2 is that we used only one basic vignette to test our predictions and thus we cannot rule out the possibility that our results are specific and unique to the single target description that was provided. We address this in Studies 3 and 4.

7. Study 3

To address the issue that Studies 1 and 2 may not have been generalizable beyond the single vignette that we used, in Studies 3 and 4 we

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[6] There was a significant agreeableness x context x order interaction, $F(1, 216) = 5.82$, $p = .017$, $\eta^2 = 0.03$, indicated that the agreeableness x context two-way interaction effect was comparatively larger when the work context was introduced first than when the social context was introduced first.

Fig. 3. Mean ostracism intentions (with standard errors) as a function of manipulated agreeableness, conscientiousness, and context in Study 2.

used an experimental paradigm in which participants responded to not just one target, but forty (Hales & Williams, 2019). This design allows us to model targets as a random factor, and provides some assurance that the results results of Studies 1 and 2 generalize not just to other participants, but also to other potential targets (e.g., Judd, Westfall, & Kenny, 2012; Wells & Windschitl, 1999).

7.1. Method

7.1.1. Participants and design

Hypotheses, sample size, exclusion criteria, and analysis plan were preregistered: https://aspredicted.org/z2sj3.pdf. An a priori power analysis with PANGEA (Westfall, 2015) indicated that using a sample of 200 participants and 40 stimuli should allow us to detect a potential three-way interaction effect with an effect size of $d = 0.30$ and a power of .93[7]. We thus collected data of 204 university students who completed the study online for partial course credit. As preregistered, we excluded participants who indicated their data should not be used for analysis ($n = 10$) as well as participants who provided no usable responses (i.e., dropped out before answering any questions; $n = 3$). Participants who provided partial responses ($n = 2$) were included in the analysis as preregistered. The final sample thus consisted of 191 participants (124 women, 63 men, 4 other; $M_{age} = 18.97$, $Range = 18–27$ years; $SD = 1.29$).

Each participant responded to 40 different targets in a completely within-subjects factorial design: 2 (target conscientiousness: high vs. low) x 2 (target agreeableness: high vs. low) x 2 (context: work vs social). Additionally, the order of the context question was counterbalanced such that for half the participants the work context question appeared first, and for the other half, the social context question appeared first.

7.1.2. Procedure

Participants were instructed that they would read descriptions of a variety of different people, and that for each one, they should form an overall impression and give a rating of how likely they would be to ignore/exclude them. Next, participants were introduced to the two different contexts in which they would be making ratings. For the work context, participants read that for each person *"suppose that they just joined a work group that you belong to. The purpose of the group is to collaborate on high-stakes team-projects at work."* For the social context they read *"suppose that the person just joined a social club that you belong to. The purpose of the club is to socialize and enjoy each other's company."* The order of these two descriptions was counterbalanced and matched the order in which participants made the ratings.

Following Hales and Williams (2019), participants were then presented with 40 different target "shell" descriptions, into which

personality information was randomly inserted on each trial. Each shell description was structured in the same way, displaying the target's name, age (randomly 18–25), major in college, interests, and a unique fact. In these descriptions, in between college major and interests, we inserted personality information. The agreeableness information appeared first, followed by the conscientiousness information. For example, Dale was described as a Social Work major who *[Agreeableness information] [Conscientiousness information]* likes "singing, dancing, and playing musical instruments", and who "does not know how to ride a bike." To manipulate agreeableness, targets were described as either "a cold, untrusting, and uncaring person" (low agreeableness) or "a warm, trusting, and caring person" (high agreeableness). To manipulate conscientiousness, they were described as either "lazy, chaotic, and an unreliable and careless worker" (low conscientiousness) or "diligent, well-organized, and a reliable and precise worker" (high conscientiousness). Whether agreeableness and conscientiousness were each high versus low was assigned randomly on each trial, independent from information that had been displayed on previous trials.

Participants rated willingness to ostracize each target in both a work context, and a social context. Specifically, participants were asked, "Imagine that [target name] joined a [work group vs. social group] that you already belong to. How likely is it that you would find yourself ignoring/excluding [target]?" and responded on a 10-point scale (1 = I would definitely NOT ignore/exclude [target]; 10 "I would definitely ignore/exclude [target].") The order of the two questions (work context first vs. social context first) was counterbalanced, with half the sample always answering the work context question first and the social context question second, and vice versa for the other half of the sample. To avoid participant fatigue, after being presented with the first 20 targets, participants were allowed to take a short break and were reminded of the descriptions of the social and work context, before continuing with rating the second half of the targets. We randomized the order of presented targets within each block and also which block was presented first to the participants.

7.1.3. Analysis approach

To account for multiple sources of non-independence, and to model targets as a random factor, results were analyzed using a set of mixed models with the lme4 package in R (Bates, Maechler, Bolker, & Walker, 2015). We first fit an overall model to test the three-way interaction, including fixed effects of all three factors and their interactions, and random intercepts for all main effects and interactions as well as random slopes by-participant and by-target for the agreeableness x

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[7] As Study 2 was conducted later than Studies 3 and 4, it could not be informative for the power analysis.

consciousness x context interaction[8].

To break down the predicted three-way interaction, we ran additional models on the subset of responses in the work context, and the subset of responses in the social context. Both of these models included fixed effects of agreeableness, conscientiousness, and their interaction, as well as by-participant and by-target random slopes of both factors and their interaction. Finally, we ran four additional models to test the simple effect of agreeableness at each level of conscientiousness and situational context. These models included fixed effects of agreeableness, and random intercepts for participants, and targets, as well as random slopes of agreeableness by-participant and by-target[9].

Note that throughout the analyses, coefficients represent unstandardized effect sizes that represent the average expected difference in units of the original scale on which participants responded (i.e., 1 to 10). In addition, we report standardized effect sizes for all direct tests of our hypotheses (i.e., the agreeableness x context, the conscientiousness x context as well as the agreeableness x conscientiousness x context interaction), calculated with the CrossedPower App that uses an approximation of Cohen's d as suggested by Westfall, Kenny, and Judd (2014). We report results with Satterthwaite's degrees of freedom, using the lmerTest package (Kuznetsova, Brockhoff, & Christensen, 2017).[10]

7.2. Results

Each participant rated each target in both contexts, producing 80 observations from each participant who completed the survey. In total, we could analyze 15,166 ratings. Overall ratings were near the scale midpoint, with an average ostracism rating of 4.91 ($SD = 3.09$). The raw correlation between work ratings and social ratings indicates that the two are strongly related, but not identical: $r = 0.45$.

Willingness to ostracize targets split by condition is displayed in Fig. 4. See Table 5 for means and standard deviations. The overall model (and also a visual appraisal of Fig. 4) indicates strong main effects, such that targets elicit greater ostracism intentions when they are disagreeable, $b = -2.49$, $t(14,780) = -74.90$, $p < .001$, and careless, -2.67, $t(14,790) = -80.28$, $p < .001$. There was no main effect of context, $b = 0.02$, $t(14,810) = 0.45$, $p = .648$.

These main effects were qualified by three significant two-way interactions. The agreeableness x conscientiousness interaction indicated that (high vs. low) conscientiousness has a greater effect on ostracism intentions if the target is also agreeable (or that high vs. low agreeableness has a greater effect on ostracism intentions if the target targets is also conscientious), $b = -0.33$, $t(14,820) = -4.89$, $p < .001$.

In line with the *Changes in Relative Impact Hypothesis*, the agreeableness x context interaction was significant, $b = 2.53$, $t(14,830) =$

38.39, $p < .001$, $d = 1.11$. Simple main effects tests indicated that low (vs. high) agreeableness increased ostracism intentions more strongly in social contexts, $b = -3.72$, $t(190.50) = -21.31$, $p < .001$, than in work contexts, $b = -1.16$, $t(185.16) = -14.22$, $p < .001$. Moreover, the conscientiousness x context interaction was also significant, $b = -3.35$, $t(14,920) = -50.89$, $p < .001$, $d = -1.48$. Simple main effects tests indicated that low (vs. high) conscientiousness increased ostracism intentions more strongly in work contexts, $b = -4.33$, $t(190.95) = -24.00$, $p < .001$, than in social contexts, $b = -0.95$, $t(170.19) = -11.87$, $p < .001$.

As for the *Changes in Interplay Hypothesis*, the agreeableness x conscientiousness x context interaction was not significant, $b = -0.26$, $t(174.10) = -1.94$, $p = .054$, $d = -0.11$. However, the pattern was similar to the one observed in Study 1: Within the social context (left panel on Fig. 4) there was a main effect of agreeableness, and a smaller main effect of conscientiousness (as indicated above), and an agreeableness x conscientiousness interaction, $b = -0.20$, $t(97.42) = -2.14$, $p = .035$. Within the work context (right panel on Fig. 4), there was a main effect of conscientiousness, and a smaller main effect of agreeableness (as indicated above), and an agreeableness x conscientiousness interaction effect, $b = -0.41$, $t(105.19) = -3.66$, $p < .001$ (that was larger than the one observed in the social context).

The simple effect of agreeableness was significant at all levels of the other two factors, weakest $b = -0.96$, $t(94.40) = -11.79$, $p < .001$. The standardized effect sizes of agreeableness for each of the conditions are as follows: Work context /low conscientiousness $d = 0.37$, work context/high conscientiousness $d = 0.60$, social context/low conscientiousness $d = 1.16$, social context/ high conscientiousness $d = 1.24$.

Finally, we explored whether participants responded differently based on the order of the social vs work context questions throughout the survey. To do so, we fit an exploratory mixed model with fixed effects of order, and its interaction with agreeableness, conscientiousness, context, agreeableness x conscientiousness, and finally a four-way interaction with all factors. This model also included random intercepts by-participant and by-target. The effect of conscientiousness depended on order, such that conscientiousness had a greater effect when the question about work context was displayed first, interaction, $b = -0.42$, $t(14,990) = -4.34$, $p < .001$. Additionally, there was some indication that the main effect of context depended on order, such that people tended to report slightly higher ostracism intentions for work contexts than social contexts when the social context was presented first, $b = -0.19$, $t(149,30) = -1.98$, $p = .048$. Finally, the four-way interaction involving all factors was not statistically significant, $b = -0.72$, $t(14,930) = -1.89$, $p = .059$[11].

7.2.1. Sensitivity power analysis

A post-hoc sensitivity power analysis using the Crossed Power app (Westfall et al., 2014) showed that the sample size ($n = 191$) and the number of stimuli (40) was sufficient to detect a minimum standardized effect size of $d = 0.08$ ($b = 0.18$) with a power of 0.90 (Variance Partitioning Coefficients obtained in Study 2: $V_E = 0.797$, $V_P = 0.194$, $V_T = 0.004$, $V_{PxAxCxSC} = 0.005$, $V_{TxAxCxSC} = 0.001$).

7.3. Discussion

The findings from Study 3 are largely consistent with that of Studies 1 and 2, and again show strong evidence for situational context moderating the effects of target personality on ostracism intentions across a wide range of targets. Supporting the *Changes in Relative Impact Hypothesis*, and in line with the results of Studies 1 and 2, low (vs. high) agreeableness more strongly increased ostracism intentions in social (vs.

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[8] As outlined in the preregistration, our approach was to first fit a full model to test the three-way interaction, including fixed effects of all three factors and their interactions, as well as random intercepts and random slopes by-participant and by-target for all possible main effects and interactions. This model, however, failed to converge. That is, the model was so complex that the maximum likelihood procedure could not estimate parameters within a reasonable number of iterations. Thus, following the recommendations of Barr, Levy, Scheepers, and Tily (2013), we simplified the model structure. Guided by what we considered the effects of interest, we removed all lower order random slopes, but retained the by-participant and by-target random slopes of the three-way interaction, as this does not inflate false-positive rates for the highest-order interaction (Barr, 2013).

[9] Two of these models failed to converge, so, we removed partial responders, which achieved convergence (except for within the work-conscientious condition, in which case we also removed the by-target random slope).

[10] The preregistration identified that we would use the Kenward Roger method for degrees of freedom. Upon analysis we found that this required prohibitively high computing power, so instead we report results with Satterthwaite's degrees of freedom, which performs similarly well in limiting false positives (Luke, 2017).

[11] Given the unexpected nature of this potential interaction combined with its complexity, and that it was not replicated in Study 3, we refrain here from decomposing and interpreting the myriad of lower order patterns.
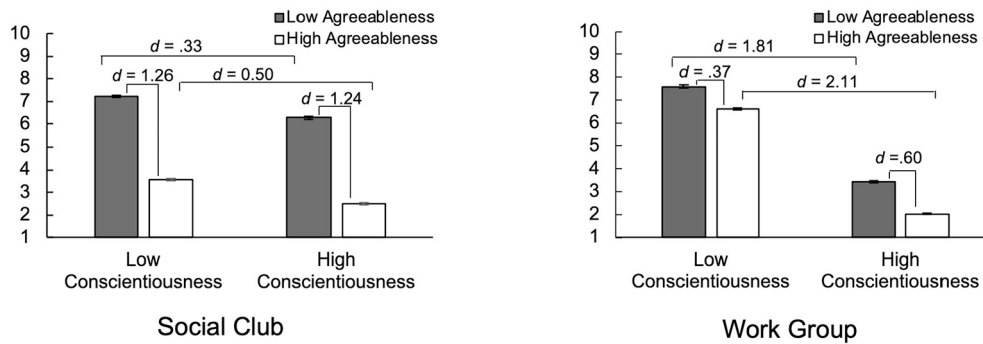
Fig. 4. Mean ostracism intentions (with standard errors) as a function of manipulated agreeableness, conscientiousness, and context in Study 3.

Table 5
Ostracism intentions in study 3.

Situational context	Conscientiousness	Agreeableness	
		Low	High
Work	Low	7.59 (2.49)	6.59 (2.47)
	High	3.43 (2.03)	2.03 (1.79)
Social	Low	7.23 (2.51)	3.57 (2.20)
	High	6.29 (2.51)	2.50 (1.99)

Note. Means (and standard deviations) of ostracism intentions as a function of the four experimental conditions, separately for the work and the social context. Ratings were made on a 1 to 10 scale with higher scores representing greater willingness to ostracize.

work) contexts. Low (vs. high) conscientiousness more strongly increased ostracism intentions in work (vs. social) contexts. Moreover, the interaction effect of agreeableness x conscientiousness x situational context, although not significant, was of the same shape and direction as in Study 1 and in line with the *Changes in Interplay Hypothesis*. In both contexts, the tendency for low conscientiousness to increase ostracism intentions was stronger for targets who were agreeable (and vice versa), however, this interaction tendency appeared stronger in work contexts than in social contexts. Given that the highest-order interaction test was non-significant, though, some ambiguity remains concerning the extent to which the joint effect of agreeableness x conscientiousness depends on situational context.

8. Study 4

Study 4 sought to directly replicate Study 3 with a larger sample, and to do so with a more clearly articulated analysis plan for navigating model non-convergence. To those ends, we increased the targeted sample size from 200 to 300. Power calculations with PANGEA stated that this sample size should allow us to detect a three-way interaction with an effect size of $d = 0.20$ or greater with a power = 0.90 (using the Variance Partitioning Coefficients observed in Study 3 as a proxy in the power analysis). Moreover, we specified in the preregistration how we would progressively remove random slopes to achieve convergence.

8.1. Method

8.1.1. Participants, design, and procedure

The study design and the procedure were identical to Study 3. Hypotheses, sample size, exclusion criteria, and analysis plan were preregistered, see https://aspredicted.org/79jz4.pdf. We assessed data from 305 university students who completed the study online for partial course credit. As preregistered, 13 participants were excluded because they indicated their data should not be used for analysis. An additional two participants provided no usable responses (i.e., dropped out before answering any questions), and were not included. To decrease the

likelihood of convergence issues, we had further preregistered that participants who provided only partial responses would be excluded, so two additional participants were excluded accordingly. The final sample consisted of 288 participants (175 women, 113 men, no other; $M_{age} = 19.04$, *Range* = 18–28 years; $SD = 1.16$).

8.1.2. Analysis approach

The analysis approach was also identical to Study 3, with the exception that we specified a priori that if the initial preregistered models failed to converge, we would first remove random slopes of agreeableness and conscientiousness, and then – if the model still does not converge – also remove the random slope of agreeableness x conscientiousness. The full model indeed failed to converge, and removing random-slopes of the main effects was sufficient to achieve convergence. The models testing second order interactions within each context converged, so removing random slopes was not necessary. Finally, in the four models testing simple effects of agreeableness, it was necessary to remove random-slopes of agreeableness to achieve convergence.

8.2. Results

In total, we could analyze 23,040 ratings. Overall ratings were near the scale midpoint, with an average ostracism rating of 4.97 ($SD = 3.10$). The raw correlation between work ratings and social ratings indicates that the two are strongly related, but not identical: $r = 0.40$. See Fig. 5 for mean willingness to ostracize targets in each condition, and Table 6 for means and standard deviations split by condition.

Replicating Studies 1–3 as well as earlier research (Rudert, Keller, et al., 2020), there were significant main effects indicating that participants reported greater ostracism intentions towards targets low (vs. high) in agreeableness, $b = -2.65$, $t(22,460) = -102.32$, $p < .001$, as well as targets low (vs. high) in conscientiousness, $b = -2.69$, $t(22,440) = -103.89$, $p < .001$. Unlike Study 3, there was a significant main effect of context, such that people reported greater willingness to ostracize targets in work contexts than social contexts, $b = -0.11$, $t(22,330) = 4.32$, $p < .001$.

Also replicating Studies 1–3, these main effects were again qualified by significant two-way interactions. In line with the *Changes in Relative Impact Hypothesis*, the agreeableness x context interaction was significant, $b = 2.73$, $t(22,370) = 53.66$, $p < .001$, $d = 1.18$. Simple main effects tests indicated that low (vs. high) agreeableness increased ostracism intentions more strongly in social contexts, $b = -4.03$, $t(286.56) = -31.36$, $p < .001$, than in work contexts, $b = -1.30$, $t(279.10) = -18.91$, $p < .001$. Moreover, the conscientiousness x context interaction was significant, $b = -3.72$, $t(22,270) = -73.17$, $p < .001$, $d = 1.61$. Simple main effects tests indicated that low (vs. high) conscientiousness increased ostracism intentions more strongly in work contexts, $b = -4.54$, $t(286.79) = -34.75$, $p < .001$, than in social contexts, $b = -0.82$, $t(156.78) = -14.90$, $p < .001$.
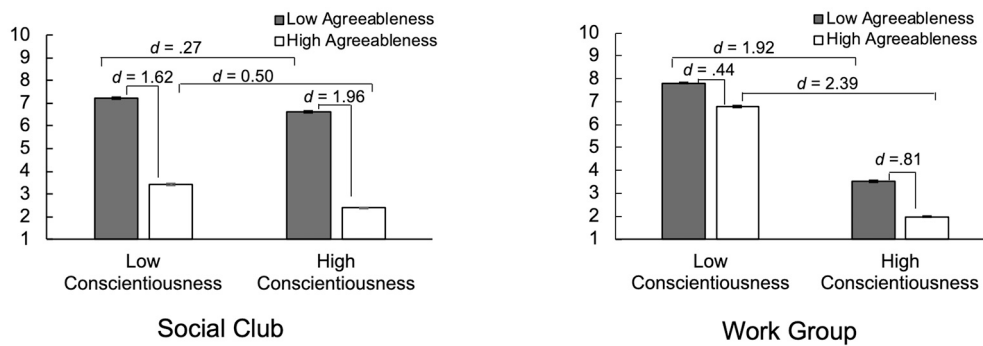
Fig. 5. Mean ostracism intentions (with standard errors) as a function of manipulated agreeableness, conscientiousness, and context in Study 4.

Table 6
Ostracism intentions in study 4.

Situational context	Conscientiousness	Agreeableness	
		Low	High
Work	Low	7.82 (2.29)	6.79 (2.36)
	High	3.54 (2.21)	1.98 (1.58)
Social	Low	7.24 (2.45)	3.44 (2.12)
	High	6.62 (2.37)	2.40 (1.84)

Note. Means (and standard deviations) of ostracism intentions as a function of the four experimental conditions, separately for the work and the social context. Ratings were made on a 1 to 10 scale with higher scores representing greater willingness to ostracize.

There was also an agreeableness x conscientiousness interaction indicating that low (vs. high) conscientiousness increased ostracism intentions more strongly for targets who are agreeable or vice versa, that low (vs. high) agreeableness increased ostracism intentions more strongly for targets who are conscientious, $b = -0.42$, $t(115.80) = -4.84$, $p < .001$. However, the agreeableness x conscientiousness x situational context three-way interaction was not significant, $b = -0.11$, $t(260.50) = -0.88$, $p = .382$, $d = -0.05$, even though the result pattern was similar to the patterns observed in Studies 1 and 3. Looking at the effects of personality within each context, in the social context (left panel on Fig. 5) there was a main effect of agreeableness, and a comparatively smaller main effect of conscientiousness (as indicated above), and an interaction effect, such that low (vs. high) agreeableness increased ostracism intentions more strongly for targets high (vs. low) in conscientiousness, $b = -0.33$, $t(140.25) = -4.03$, $p < .001$. Similarly, within the work context (right panel on Fig. 5), there was a main effect of conscientiousness, and a comparatively smaller main effect of agreeableness (as indicated above), and an interaction effect, with low (vs. high) agreeableness increasing ostracism intentions more strongly for targets high (vs. low) in conscientiousness, $b = -0.51$, $t(145.19) = -5.31$, $p < .001$.

The simple effect of agreeableness was significant at all levels of the other two factors, weakest $b = -1.04$, $t(5,474.65) = -25.34$, $p < .001$. The standardized effect sizes (Cohen's d) of agreeableness for each of the conditions are as follows: Work context/low conscientiousness $d = 0.44$, work context / high conscientiousness $d = 0.81$, social context /low conscientiousness $d = 1.62$, social context / high conscientiousness $d = 1.96$.

Finally, using the same approach as Study 3, we probed for potential order effects, but did not find any, strongest $b = 0.11$, $t(22,810) = 1.38$, $p = .169$.

8.2.1. Sensitivity power analysis

A sensitivity power analysis using the Crossed Power app (Westfall et al., 2014) showed that the sample size (288) and the number of stimuli (40) was sufficient to detect a minimum effect size of $d = 0.16$ (b

$= 0.36$) with a power of 0.90 (Variance Partitioning Coefficients obtained in Study 4: $V_E = 0.692$, $V_P = 0.168$, $V_T = 0.004$, $V_{PxAxCxSC} = 0.133$, $V_{TxAxCxSC} = 0.002$). Note that the proportionate participant slope variance was higher than in Study 3, which might explain why sensitivity in Study 4 was lower despite the increased sample size.

8.3. Discussion

Study 4 was a direct replication of Study 3, using a larger sample and a preregistered, more specific strategy how to deal with non-convergence issues. Taken together, Study 4 replicated the findings of Studies 1–3, showing that agreeableness mattered more in a social compared to a work context and conscientiousness mattered more in a work compared to a social context. The three-way interaction was not significant, despite the increase in sample size, leaving some ambiguity regarding the final status of the *Changes in Interplay Hypothesis*. Note that due to the relative length of the study, neither Study 3 or 4 included a manipulation check, and thus we cannot exclude that there might be spillover effects as in Study 1.

9. Integrativeive data analyses

Studies 3 and 4 both showed a similar pattern with the agreeableness x conscientiousness interaction effect being larger in the work compared to the social context. Thus, we sought to assess the overall evidence for a three-way interaction by performing an integrativeive data analysis (Curran & Hussong, 2009). As Studies 1 and 2 used a highly similar design, we could pool all of the cases from both studies into a single dataset (total $n = 708$) and the same was true for Studies 3 and 4 (total $n = 477$). This allows us to answer the same general question as an internal meta-analysis (McShane & Böckenholt, 2017), however, because we have access to the original data, this approach parsimoniously avoids questions pertaining to how to pool effect sizes from mixed models[12].

9.1. Integrativeive data analysis studies 1 and 2

Within the combined dataset of Studies 1 and 2, the three-way interaction was statistically significant, $F(1, 691) = 9.86$, $p = .002$, $\eta^2 = 0.01$. Split by context, the agreeableness x conscientiousness interaction was significant in the work context, $F(1, 691) = 8.81$, $p = .003$, $\eta^2 = 0.01$, but not in the social context, $F < 1$, $p = .933$, $\eta^2 = 0.00$. The two-way interactions, agreeableness x context, $F(1, 691) = 76.19$, $p < .001$, $\eta^2 = 0.10$ and conscientiousness x context, $F(1, 691) = 79.31$, $p < .001$,

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[12] We conducted an additional integrative data analysis on all four studies. The analysis showed that the three-way interaction effect was small and statistically significant. Notably, the analysis comes with certain caveats due to the strong differences in experimental designs which inflate type I error, and thus should be interpreted with caution. We thus report the overall integrative data analysis as a part of the supplemental material.

$\eta^2 = 0.10$ remained robust as well.

9.1.1. Sensitivity power analysis

A sensitivity power analysis with G*Power showed that with an alpha of 0.05 and an obtained correlation of $r = 0.60$ between ostracism intentions in the work and the social context, the sample size was sufficient to detect a minimum effect size of $f = 0.06$ ($\eta^2 < 0.01$) for both the three-way interaction and the two-way interactions with a power of 0.90.

9.2. Integrative data analysis studies 3 and 4

Using the same analysis approach as the original studies (and including only random slopes for the three-way interaction term, as more maximal models did not converge), within the combined dataset of Studies 3 and 4 the three-way interaction was not statistically significant, $b = -0.18$, $t(414.80) = -1.88$, $p = .061$, $d = 0.08$[13]. The agreeableness x conscientiousness interactions remained robust both within the work context, $b = -0.49$, $t(476) = -5.93$, $p < .001$, and within the social context, $b = -0.28$, $t(329.61) = -4.56$, $p < .001$ (note, in order for the work model to converge, we had to remove all by-target random slopes). Importantly, as in the previous two studies, the agreeableness x context interaction, $b = 2.65$, $t(37,560) = 65.23$, $p < .001$, $d = 1.17$ and the conscientiousness x context interaction, $b = -3.58$, $t(37,490) = -88.09$, $p < .001$, $d = 1.58$ remained robust as well.

As an exploratory analysis, we also tested for a potential effect of target gender, as target gender might influence stereotypical perceptions about target warmth and agreeableness as well as competence and conscientiousness (Ebert, Steffens, & Kroth, 2014; Martin & Slepian, 2020). However, target gender neither had a direct effect on ostracism nor did it interact with any of the manipulated variables, possibly, because the individuating information about personality was more relevant for participants' rating (Eckes, 2002; Jussim, Crawford, & Rubinstein, 2015; Krueger & Rothbart, 1988).

9.2.1. Sensitivity power analysis

A post-hoc sensitivity power analysis with the Crossed Power app (Westfall et al., 2014) showed that the sample size (477) and the number of stimuli (40) was sufficient to detect a minimum effect size of $d = 0.08$ ($b = 0.18$) with a power of 0.90 (Variance Partitioning Coefficients: $V_E = 0.763$, $V_P = 0.183$, $V_T = 0.004$ $V_{PxAxCxSC} = 0.049$, $V_{TxAxCxSC} = 0.000$).

10. General discussion

Previous research has demonstrated that the personality of a target person can affect their risk of being ostracized by others. Particularly, low agreeableness and low conscientiousness have been shown to elicit ostracism intentions and behavior. In the present studies, we investigate the way in which the situational context (performance vs. social context) moderates effects of the target personality on ostracism intentions. We had specified two competing hypotheses about the nature of this interaction: First, that the situational context might change the *relative impact* of agreeableness and conscientiousness, resulting in two significant two-way-interactions: agreeableness x context and conscientiousness x context. Second, that situational context might change the *interplay* of agreeableness and conscientiousness, resulting in a significant three-way interaction agreeableness x conscientiousness x context.

Overall, all four studies showed stable evidence that context information influences whether people intend to ostracize others based on their personality. In line with the *Changes in Relative Impact Hypothesis*, target agreeableness information had a stronger effect on ostracism

intentions in a social compared to a performance context. Likewise, conscientiousness information had a stronger effect in a performance compared to a social context. In contrast, evidence for *the Changes in Interplay Hypothesis* was mixed: In Study 1 as well as in the integrative data analysis of Studies 1 and 2, there was a significant agreeableness x conscientiousness x context interaction. The data pattern indicated that in the work context, agreeableness and conscientiousness information interacted such that being negative on one trait could not be sufficiently compensated by being positive on the other. In contrast, in the social context, there was no interaction and individuals mainly based their judgment on the agreeableness information. However, while the pattern was similar in the subsequent studies, the three-way interaction did not meet the criteria of statistical significance in Studies 2–4 and neither in the integrative data analysis of Studies 3 and 4. We note, that the Changes in Relative Impact Hypothesis and the Changes in Interplay Hypothesis are not necessarily mutually exclusive. Moreover, higher order effects are typically of a smaller effect size and thus require more power to test. This is also reflected in our empirical data: With the exception of Study 1 ($d = 0.29$), effect sizes for the three-way interaction were small (all $d < 0.12$ in Studies 2–4; Integrative Data analysis: $d = 0.24$ in Studies 1 & 2:, and $d = 0.08$ for Studies 3 & 4). Given the similarity of the descriptive pattern throughout the studies, we thus do not wish to reject the Interplay Hypothesis per se. It is possible that the effect might be more pronounced in a different design. Yet based on the present empirical evidence, we tentatively conclude that if existent, the three-way interaction likely represents a small effect (i.e. d = 0.20 according to Cohen, 1992). In contrast, the two-way interaction effects indicating differences in the impact of agreeableness and conscientiousness depending on the social context were stable across all studies and of a medium/large size according to Cohen's conventions (i.e., $d = .50/0.80$ according to Cohen; all $d > 0.46$ in the single studies and $d > 0.67$ in the integrative analyses). Thus, the data from the conducted studies strongly supports what we have termed the *Changes in Relative Impact Hypothesis*. That is, the effect of target personality on ostracism intentions is moderated by the nature of the situational context, such that target agreeableness affects ostracism intentions more strongly in social than in performance contexts, whereas target conscientiousness affects ostracism intentions more strongly in performance than in social contexts.

Methodologically, all our studies were preregistered and well-powered. Study 2 in particular is characterized by a high internal validity due to a clear (albeit potentially artificial) separation of the investigated factors. The mixed model analyses used in Studies 3 and 4, in which we treated both participants and stimuli (target descriptions) as random factors further allowed us to generalize our results from the specific sample of target descriptions that we used (Judd et al., 2012), increasing external validity. However, a potential downside of this procedure is that it might have increased demand effects resulting from the repetitive judgment. In two exploratory analyses, we looked a) at participants' first trial only, b) included the trial as a factor in the model. While there was indeed evidence that some effects seemed to increase with repetition, the two context x personality two-way interactions remained robustly present both within participants' first trial, as well as when controlling for trial order. On a similar note, the within-subject nature of the design (even in Studies 1 and 2) might have made the context particularly salient. It is possible that the effects would have been smaller in an entirely between-subjects design.

10.1. Strategic and context-dependent social exclusion

An important implication of the reported findings is that individuals may ostracize others for strategic, context-dependent reasons and not necessarily out of maliciousness or because they simply do not like the respective person. The latter fits findings from previous studies showing that while liking was an important mediator of the effects of personality, it did not fully explain its effect on ostracism intentions (Hales, Kassner,

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[13] We excluded the two partial-response cases from Study 2 due to the criteria specified in most recent preregistration for Study 3. Including these cases did not change the significance level of the three-way interaction, $p = .067$.

et al., 2016; Rudert, Keller, et al., 2020). Context-dependent considerations may be the missing part of the puzzle: A person that is both careless and chronically unreliable, as well as warm and trustworthy might be invited to social events. However, the same person might be rejected when it comes to work projects in which performance is of high importance, likely because others feel they might become burdensome for the group. In contrast, a person that is cold and disagreeable but a strong, reliable performer might be tolerated within a work team, but be excluded from the after-work drinks in order to maintain the harmony of the group. Importantly though, it should be emphasized that both conscientiousness and agreeableness affected ostracism intentions both in the work as well as in the social context. Given that agreeableness and conscientiousness are correlated in real life (Soto & John, 2017), it is possible that individuals use information about one trait to draw inferences about the level of the more relevant other, as suggested by the spillover effects detected on the manipulation checks in Study 1. However, and in line with the two-way interactions between agreeableness and conscientiousness that we observed in Studies 1, 3, and 4, another plausible explanation is that individuals took into account that few situational contexts are likely purely social or performance-oriented. Work groups often require their members to be both agreeable and conscientious, and even highly competent and reliable persons might be a threat to cohesiveness if they are constantly starting fights, behaving selfishly, and disregarding the other team members. On the other hand, even in a social context, a chaotic and unreliable person might become burdensome or annoying for a group, for instance because they always show up late and forget things. In line with this explanation, agreeableness and conscientiousness interacted in all studies except for Study 2, in which we kept the two contexts artificially separate by introducing a work context devoid of any social interactions as well as a social context with no obligations and responsibilities. Future research might wish to deconstruct the situational context further. Following up on the results of Study 2, work groups that are either purely formal in nature or rely mainly on additive tasks but require little actual cooperation (such as working the same shift in production) might be more tolerant towards disagreeable members than project teams that have to agree on complex decisions and in which close cooperation is essential. In contrast, social groups that meet just for fun, such as a regular get-together for drinks might be more tolerant towards low conscientiousness than social groups that engage in tasks requiring organization and planning, such as organizing events. However, it should be noted that in Study 2, participants still showed a preference for agreeable (vs. disagreeable) individuals even in purely performance-related contexts and a preference for conscientious (vs. careless) individuals even in purely social contexts, which once again highlights the pivotal importance of those two specific personality traits (see Rudert, Keller, et al., 2020) and might be indicative of a generalizable tendency to exclude bad exchange partners (Kurzban & Leary, 2001).

10.2. From ostracism intentions to behavior

Within all studies, we focused on ostracism intentions as the dependent variable. The scale used in studies 1 and 2 has a strong internal consistency and has been successfully used in a variety of previous studies (Hales, Kassner, et al., 2016; Rudert, Keller, et al., 2020). Importantly, it has been demonstrated that ostracism intentions are related to, but ultimately different from other evaluations of the target such as liking (Rudert, Keller, et al., 2020; Study 2). Yet an important question is how well these intentions would translate to actual ostracism behavior. Ostracism represents a morally questionable behavior (Rudert et al., 2018) and thus people may worry that engagement in ostracism reflects negatively on them. Thus, behavioral intentions likely represent a conservative rather than an exaggerated estimate of actual behavior. Accordingly, results from previous studies show that (experimental) effects of target personality on actual ostracism *behavior* are comparable to and replicate the patterns found for the effects of target personality on

ostracism *intentions*. Overall, these studies show that 60–70% of participants decide to exclude a group member with a negative personality trait (compared to <20% within a control group; Rudert, Keller, et al., 2020). Thus, we have reason to expect that the demonstrated effect of context dependency would likely transfer to ostracism behavior as well.

In daily life, however, ostracism decisions might be more difficult. While it might be easy to reject a person within an online or laboratory study, in real life, ostracizing individuals might need to take into account potential negative consequences for themselves. For example, the ostracized person might try to retaliate against the ostracizers (Twenge, Baumeister, Tice, & Stucke, 2001). In addition, observers of an ostracism episode will often devalue or even punish the excluders if they do not have a legitimate reason to ostracize (Güroğlu et al., 2013; Over & Uskul, 2016; Rudert et al., 2018; Rudert, Ruf, & Greifeneder, 2020; Will et al., 2013). In future research, it would be valuable to investigate other factors contributing to ostracism behavior to obtain a comprehensive picture of motivated ostracism.

10.3. Practical implications

A plethora of research has demonstrated the painful effects of ostracism on its targets (e.g., Williams, 2009). Consequently, many studies have focused on how to either diminish the pain of ostracism (e.g., Hales, Wesselmann, & Williams, 2016; Timeo, Riva, & Paladino, 2019) or to make individuals refrain from ostracizing others, for instance by increasing their mindfulness (Ramsey & Jones, 2015). While such interventions might be helpful to prevent ostracism resulting from selfish motivations or obliviousness, ostracism that results from the strategic motivation to maintain either the cohesiveness or the performance of a group might be harder to prevent. Appealing to an individual's moral conscience might be less effective if group goals are at stake, particularly if the ostracizing individuals believe that it is justifiable to exclude disruptive group members. However, the results of the present contribution might also point to a potential solution: namely to change the characteristics of the situational context in which ostracism occurs. Particularly, individuals in high-performance work environments might become more inclusive and tolerant towards less conscientious colleagues if internal competition and time pressure are lowered (Robinson, O'Reilly, & Wang, 2013). In a similar way, social and leisure environments that explicitly highlight that they welcome controversy and debate might be more open to individuals who are argumentative and do not fit in easily.

11. Conclusion

Four experimental studies show that the situational context moderated the effect of target personality on ostracism intentions. Particularly, low agreeableness increases ostracism intentions more strongly in a social context than in a performance context, whereas low conscientiousness increases ostracism intentions more strongly in a performance context than in a social context. The results add to the understanding of motivated ostracism, implying that individuals use ostracism not randomly but rather as a targeted tool to ensure group cohesiveness and performance.

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