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Do Objective and Peer-perceived Qualities Moderate the Effect of Narcissism on Social Outcomes?

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Abstract

Narcissistic individuals have a strong desire for attracting short-term mates, being influential in groups, and attaining prestige and material wealth. Past research suggests that narcissistic individuals are also quite successful in attaining these outcomes and these effects are due to narcissists' grandiose self-image and admiration-seeking tendency (i.e., *admiration* component of narcissism). In the current research, we investigated whether the effects of narcissistic admiration are moderated by specific qualities that are helpful for attaining the respective outcomes. Specifically, we tested whether physical attractiveness moderates the effect of narcissistic admiration on short-term mate appeal, whether intelligence and socio-emotional abilities moderate the effect on social influence, and whether intelligence moderates the effects on occupational prestige and material wealth. Analyzing data from a speed-dating study (Study 1, $N = 397$), a round-robin laboratory study (Study 2, $N = 256$), and a panel study representative of the German population (Study 3, $N = 1,477$), we found that narcissistic admiration and the respective qualities predicted the outcomes, but in most cases, their interactions were non-significant. There was one exception: Narcissistic admiration interacted with verbal intelligence in the sense that the effects of narcissistic admiration on occupational prestige and material wealth were more positive, the higher verbal intelligence was.

Keywords: narcissism, admiration and rivalry concept, moderator, social outcomes

Do Objectively assessed and Peer-perceived Qualities Moderate the Effect of Narcissism on Social Outcomes?

Narcissism is a personality trait with far reaching social consequences (Campbell & Miller, 2011; Hermann et al., 2018; Miller et al., 2021). Yet, what exactly these consequences are, is a matter of controversy. Some previous studies have, for example, indicated that grandiose narcissism goes along with short-term romantic appeal (Dufner et al., 2013), social influence (Grijalva et al., 2015a), and material wealth (Piff, 2014). In other studies, however, the links between narcissism and social outcomes were mixed (e.g., Kufner et al., 2013; Leder et al., 2021; Wurst et al., 2017).

It has been repeatedly proposed that moderating factors might explain these inconsistent results and research has indeed identified several such moderators, such as the narcissism facet that is being investigated (assertive self-enhancement vs. antagonistic self-protection; Back et al., 2013) and the time perspective (short-term vs. long-term effects; Campbell & Campbell, 2009). In the present research, we addressed another potentially moderating factor, namely the presence versus absence of specific qualities. With the term “qualities”, we mean normative attributes that are conducive for attaining certain social outcomes, such as physical attractiveness for attracting mates, intelligence and socio-emotional abilities for attaining social influence and intelligence for attaining material wealth. In the current research, we tested whether the effects of narcissism on such desirable social outcomes are more positive, the higher these qualities are. We did so by considering both actual, objectively assessed qualities and qualities, and subjectively perceived by interaction partners.

Narcissism and Social Outcomes

In recent years, there has been increasing agreement on two major forms of narcissism, namely grandiose and vulnerable narcissism (Miller et al., 2011; Wink, 1991).

Grandiose narcissism is associated with high self-esteem (Sedikides et al., 2004), a strong self-enhancement motive (Morf & Rhodewalt, 2001), and approach motivation (Foster & Trimm, 2008). Vulnerable narcissism, in contrast, is connected to low self-esteem, shame, and avoidance motivation (Czarna et al., 2018; Weiss & Miller, 2018). It has been proposed that the self-enhancing, approach motivated aspects typical of grandiose narcissism facilitate the attainment of desirable social outcomes (Campbell & Foster, 2007). In line with this proposal, only grandiose, but not vulnerable, narcissism has been positively linked to mate appeal, social influence, and material wealth (Dufner et al., 2013; Grijalva et al., 2015a; Piff, 2014). The present investigation focused on such cases, where grandiose narcissism can be conducive for attaining desired social outcomes.

According to the *Narcissistic Admiration and Rivalry Concept* (NARC, Back et al., 2013), the motivational core of grandiose narcissism is the desire to maintain a grandiose self-concept. This goal can be attained via two distinct strategies, which entail distinct cognitive, affective and behavioral features and lead to different social outcomes. The first strategy, *narcissistic admiration*, represents the tendency for increasing the positivity of the self by engaging in assertive self-enhancement. It is associated with high self-esteem, self-confidence, and extraversion and leads to social potency (Back et al., 2013; Leckelt et al., 2015; Geukes et al., 2017). The second strategy, *narcissistic rivalry*, is characterized by antagonistic self-protection represents the tendency to defend the self against threats by derogating others. It is related to the devaluation of others, aggressiveness, and disagreeableness and leads to social conflict (Back et al., 2013; Rau et al., 2020).

According to the NARC, many of the positive effects of narcissism on social outcomes are due to the admiration dimension. Persons high in admiration are motivated to boost their egos by impressing others; and because they truly believe in themselves and possess a self-confident demeanor, they often manage to do so (Back et al., 2013). The central claim of the NARC that admiration leads to high social potency has been repeatedly backed up empirically

(for a review, see Back, 2018). In the following, we will outline how grandiose narcissism, and particularly narcissistic admiration, is linked to the positive social outcomes of mate appeal, social influence, and material wealth/occupational prestige.

Mate Appeal

Narcissistic individuals often seek to satisfy their desire for admiration in the romantic domain (Campbell, 1999). Successfully courting romantic partners can be a powerful means to boost the ego (Preuss & Alicke, 2009) and previous research indicates that grandiose narcissism is accompanied by an increased tendency to engage in flirtatious behavior and to enter short-term affairs (Brunell & Campbell, 2011; Jonason et al., 2009; Koladich & Atkinson, 2016). Studies have also shown that narcissism is positively linked to mate appeal (i.e., the initial appeal an individual exerts on others as a potential sexual or romantic partner) and that this link is solely driven by the admiration dimension (Dufner et al., 2013; Wurst et al., 2017).

Social Influence

Another, and arguably a more proximal indicator of social potency is the social influence a person has attained in a group. Social influence is defined as the possibility of exerting influence over others, for example, by guiding the decisions. It can be assessed by group member ratings of influence or leadership nominations (Anderson et al., 2008). Narcissistic individuals are highly motivated to become group leaders (Emmons, 1989) and grandiose narcissism has been linked to leadership emergence (Grijalva et al., 2015a)—even though the appeal of narcissistic leaders seems to vanish in the long run (Brunell et al., 2008). A recent study found that only narcissistic admiration, but not narcissistic rivalry, was a positive predictor of social influence in group settings (Härtel et al., 2021).

Material Wealth and Occupational Prestige

Another way of gaining admiration is by accumulating material wealth (i.e., gaining money and/or precious possessions; Belk, 1988). Grandiose narcissism is associated with materialism (Sedikides et al., 2007) and an increased desire for material wealth (Kasser & Ryan, 1996; Roberts & Robins, 2000). And in fact, in a recent study representative of the German population, narcissistic admiration has also been related to a higher gross monthly income (Leckelt et al., 2019).

Finally, admiration can also be gained by working in a prestigious occupation, particularly one with a leadership position (Campbell et al., 2010). Occupational prestige describes that social prestige that is associated with a particular job (Ganzeboom & Treiman, 1996). Previous research has shown that narcissism is linked with a strong desire for a prestigious occupation (Roberts & Robins, 2000) and that individuals who score high on narcissistic admiration tend to have prestigious occupations (Leckelt et al., 2019).

The Role of Objectively Assessed Qualities

Our reasoning thus far suggests that narcissistic individuals are highly motivated to boost their egos by attaining high mate appeal, social influence, material wealth, and a prestigious occupation and that they often succeed in attaining these outcomes. The narcissism dimension responsible for these effects is narcissistic admiration. However, whether a desired outcome can be attained does not only depend on motivational factors, such as a narcissistic need for admiration, but also on objectively assessed qualities (Heider, 1958; McClelland, 1987).

For attracting mates, a highly relevant quality is physical attractiveness (Feingold, 1990; Langlois et al., 2000). When asked about their mate preferences, people across cultures indicate that physical attractiveness is an important factor (Shackelford et al., 2005) and in

speed-dating studies, physical attractiveness has shown to be a key predictor of dating success (Asendorpf et al., 2011).

For attaining social influence, an important quality is intelligence, as previous research reports a robust positive link between intelligence and leadership emergence (Härtel et al., 2021; Judge et al., 2004; Rubin et al., 2002). Also highly desired in leaders are socio-emotional abilities which describe the ability to understand others' thoughts and feelings (George, 2000). Indeed, past research reports positive association between emotional intelligence and leadership emergence (Côté et al., 2010; Wolff et al., 2002). As Kellett et al. (2002) showed, both mental and socio-emotional abilities play an important role for attaining social influence.

Intelligence is also a beneficial quality for accumulating wealth and attaining a prestigious occupation, as previous research has linked intelligence to both income and occupational prestige (Strenze, 2007). Thus, on average more intelligent persons are paid more and end up in more prestigious occupations.

Because motivation in the absence of any required objectively assessed qualities is insufficient for attaining a desired outcome (Heider, 1958; McClelland, 1987), we propose that the positive effect of admiration on a given outcome is absent or attenuated if the necessary objectively assessed quality is very low and becomes larger the higher the objectively assessed quality is. Conceptually, moderate to high levels of objective qualities would represent something like a necessary precondition for the positive effects of admiration to emerge. In this case, the association between admiration on mate appeal should be more positive the more physically attractive a person is, the association between admiration and social influence should be more positive the more intelligent and emotionally skilled a person is, and the associations between admiration and wealth and occupational prestige should be

more positive the more intelligent a person is. We thus predicted that the effect of admiration on social outcomes should be moderated by specific, objectively assessed qualities.

The Role of Perceived Qualities

Several of the social outcomes that we focused on involve judgments of other persons, namely dating partners in the case of mate appeal and peers in the case of social influence. It seems plausible that in these cases not objective qualities per se, but *perceived* qualities, as subjectively seen by the evaluators, moderate the effect of narcissistic admiration. For example, peers might grant persons high in narcissistic admiration high social status if they perceive them as intelligent, regardless of whether or not this perception is accurate.

Past research indicates that displays of self-confidence and self-promotion, as they typically occur among persons high in admiration (Back et al., 2013), can have very different effects, depending on whether or not the evaluator believes that these displays are backed up by objective qualities. For example, in studies by Tenney and Spellman (2011) participants evaluated vignette target persons who made confident claims about their abilities positively, but only when they believed that these claims were actually true. Consistently, other research has shown that when evaluators feel that a target's self-confident behavior is not backed up by objective ability, this often evokes negative evaluations in others (Sedikides et al., 2015).

It thus seemed possible that the effects of admiration on social outcomes are moderated by perceived qualities, in the sense that the higher perceived qualities are, the more positive the effect is. Irrespective of whether the focus is on objectively assessed or evaluator-perceived qualities, it seems likely that the same type of quality is relevant for a specific social outcome. That is, evaluators should grant persons high in narcissistic admiration high social status if they perceive them as intelligent and high in socio-emotional abilities, and dating partners should view persons as particularly appealing if they also see them as highly

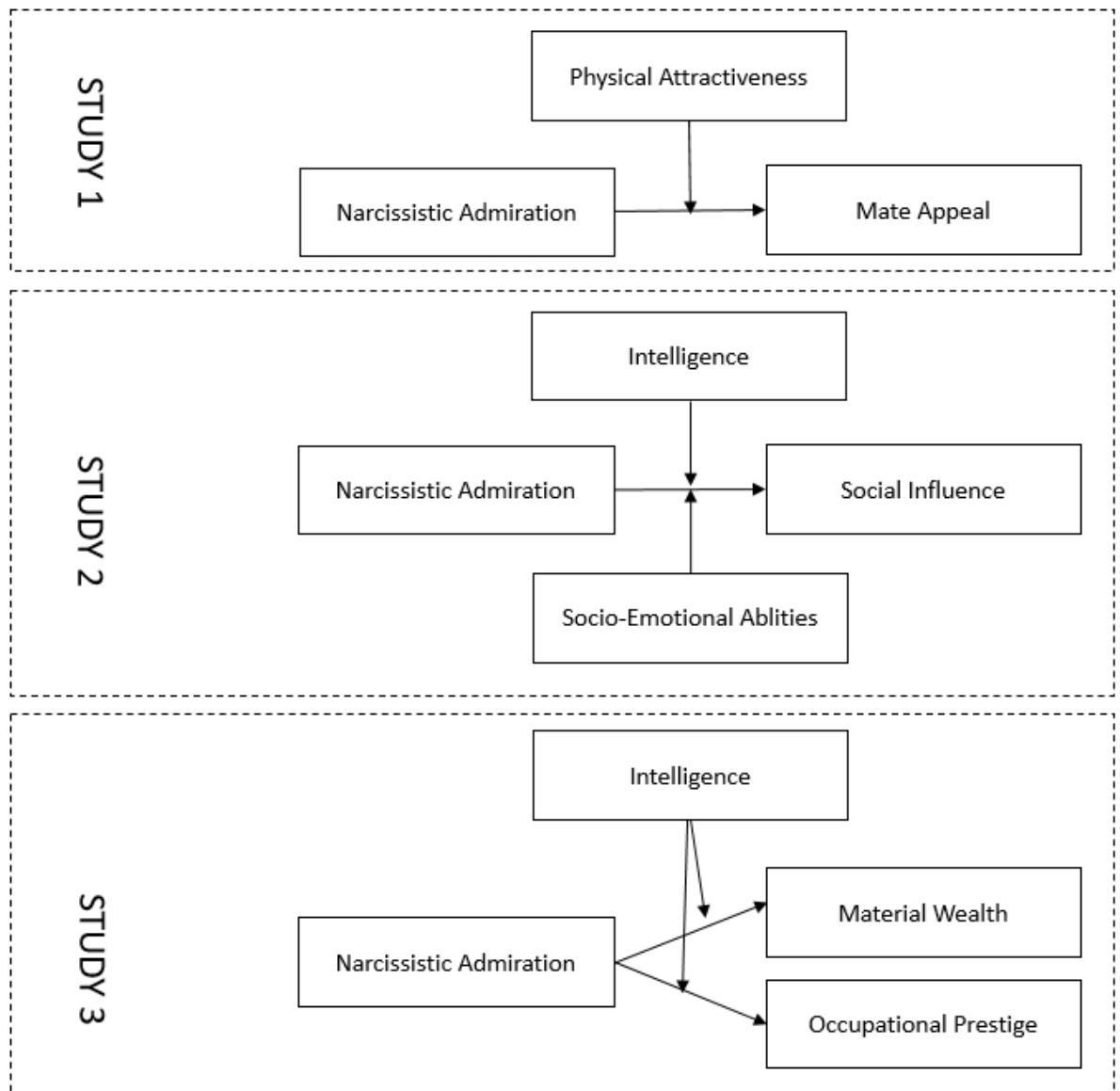
attractive. Thus, the expectations are analogous to the ones above with the difference that perceived, rather than objectively assessed, qualities are the moderator.

The Current Research

In three studies, we investigated potential moderators of the effects of narcissistic admiration on particular desirable social outcomes, namely mate appeal in Study 1, social influence in Study 2, and material wealth and occupational prestige in Study 3. In each study, we examined the moderating role of specific objectively assessed qualities. (The numbering of the studies does not correspond to their temporal order.) In Study 1, we considered physical attractiveness as a moderator of the link between admiration and mate appeal, in Study 2, we considered intelligence and socio-emotional abilities as moderators of the link between admiration and social influence and in Study 3, we considered intelligence as a moderator of the links between admiration and material wealth and occupational prestige. An overview can be

Figure 1

Overview of the interaction effects tested in the three studies



In Studies 1 and 2, which contain social evaluations as outcomes, we also examined the role of evaluator-perceived qualities. In each case, we tested the basic hypothesis that the higher the respective perceived quality is, the more positive the link between admiration and the outcome becomes. Even though our hypotheses concerned only the admiration dimensions of narcissism, we nevertheless explored the main and interaction effects of narcissistic rivalry (results were mainly non-significant) and report them in the SOM (<https://osf.io/sjycp>).

Open Science Statement

For Study 1, the study codebook can be found online (<https://osf.io/n7dw9/>), the data of interest for this research question and the analysis script can be downloaded from the Open Science Framework (OSF) (<https://osf.io/yms58/>). For Study 2, the data, analysis script and study codebook can also be downloaded from the OSF (<https://osf.io/yms58/>). For Study 3, we could not make the data publicly available, due to the German data protection law. However, the data can be requested from the German Institute for Economic Research/German Socio-economic Panel Study (e-mail: soepmail@diw.de). The analysis script can be downloaded from the OSF (<https://osf.io/yms58/>).

The analyses of Study 1 were pre-registered (<https://osf.io/8f623> [Kraft and Dufner, 2018]). In addition to the pre-registered analyses, we conducted several exploratory analyses. These will be clarified as such.

Study 1

The goal of Study 1 was to test whether the link between narcissistic admiration and mate appeal is more positive, the more physically attractive a person is. We tested this hypothesis in a large speed dating study and considered both physical attractiveness as rated by uninvolved observers, and evaluator-perceived physical attractiveness, as rated by the potential dating partners.

Generally speaking, in dyadic data (such as data stemming from dyadic speed-dating interactions) three types of effects contribute to the overall variability (next to error variance), namely the target-, perceiver- and relationship effect (Kenny, 1994). The target effect represents how a target is generally seen by others (in this case, how appealing a target generally is for dating partners), the perceiver effect describes how a specific perceiver generally sees others (in this case, the extent to which a perceiver on average sees others as appealing) and the relationship effect represents how a specific perceiver perceives a

particular target, above and beyond the respective target- and perceiver-effects (in this case, the unique tendency of a given perceiver to find a specific target appealing).

Thus, the question of whether evaluator-perceived qualities moderate the effect of narcissistic admiration could be addressed on two levels. On the level of the target effect, we tested whether the link between admiration and general mate appeal across all dating partners (i.e., the mate appeal target effect) was stronger for individuals who were generally seen as physically attractive (i.e., who had a high physical attractiveness target effect). On the level of the relationship effect, we tested whether admiration was more positively linked to the unique tendency to find the interaction partner appealing (i.e., the mate appeal relationship effect) for interaction partners who were high in a unique tendency to find the interaction partner physically attractive (i.e., the physical attractiveness relationship effect).

Method

We analyzed data from the “Date me for Science” study (Back & Humberg, 2022; Wurst & Back, 2016), a speed-dating study designed to investigate initial romantic attraction and longitudinally track relationship development. Thus far, three publications exist that are based on the study, yet they all deal with research questions that are distinct from the current one (Humberg et al., in press; Kerr et al., 2020; Wurst et al., 2018a, 2018b). We will only describe the study parts and measures that are relevant here.

Sample and Procedure

The sample included 397 participants (200 females, $M_{age} = 22.87$, $SD = 2.62$) who identified as predominantly heterosexual, aged between 18 and 28, and currently looking for a romantic partner. Please note, that the pre-registration included 400 participants. However, three participants were excluded from the analyses because only missing values were available. During 42 speed-dating sessions, mostly five women and five men had 3-minute

speed-dates. Beforehand, narcissism was assessed via an online questionnaire. After each date, participants rated the dating-partner on different attributes, including perceived physical attractiveness and mate appeal. At the end of the speed-dating session, a portrait and a body photograph was taken. The study was approved by the local ethical committee.

Measures

Narcissism. Narcissistic admiration and rivalry were assessed with the Narcissistic Admiration and Rivalry Questionnaire (NARQ ; Back et al., 2013). Participants indicated how strongly they agreed with nine statements for each narcissism dimension (sample item admiration: “I deserve to be treated like a great personality”; sample item rivalry: “I want my rivals to fail”) on a rating scale from 1 (*not agree at all*) to 6 (*agree completely*).

Physical attractiveness. Physical attractiveness was rated by observers (opposite-sex research assistants who did not participate in the speed-dating study; ten male observers rated all female participants and ten female observers rated all male participants) based on the photographs of the participants. They rated the attractiveness of the face and the body separately on a rating scale from 1 (*not attractive at all*) to 7 (*very attractive*). We averaged the ratings from each observer for each participant and then we averaged the ratings across all respective observers for each participant. The inter-rater agreement was $ICC(3,k) = .91$.

Evaluator-perceived attractiveness. Evaluator-perceived attractiveness (perc. Att) was assessed via ratings of the dating partners on the following single item: “This person is good-looking” (1 = *do not agree at all* to 7 = *agree completely*). The inter-rater agreement was $ICC(2,k) = .77$. We calculated the *target effect* (perc. Att) and the *relationship effect* (perc. Att_{rel}) using Kenny’s formulas (Kenny & La Voie, 1984).

Mate appeal. Mate appeal was assessed via ratings of the potential dating partners based on three operationalizations. Operationalization 1 was a dichotomous measure of dating success (dating.dicho) and consisted of the following item: “I would like to exchange contact

information with this person” (1 = *yes*; 0 = *no*). In order to obtain an aggregated measure, we summed the number of dating partners who were willing to exchange contact information with the target and divided this value by the total number of dating partners.

Operationalization 2 was a continuous measure of dating success (*dating.date*) and included the mean value of the following two continuous items: “I would be interested in having another date with this person,” “I want to get to know this person better,” (1 = *do not agree at all* to 7 = *agree completely*). Operationalization 3 was a continuous measure and assessed the extent to which a person was viewed as arousing or sexually attractive (*dating.arousing*). It included the mean value of the following four continuous items: “I feel sexually attracted to this person,” “To me, this person might be a partner for a one-night stand or a sexual affair,” “I found this person sexy/sensual,” and “I think this person is romantically appealing” (1 = *do not agree at all* to 7 = *agree completely*). It turned out that the two continuous measures of Operationalization 2 and 3 were very highly correlated ($r = .89$) and accordingly, we also computed a mate appeal composite score consisting of all items. For this composite score, we computed both the *target effect* (mate appeal) and the *relationship effect* (mate appeal_{rel}).

Power Analysis

We used the “pwr” package (Lee & Yu, 2013) to gauge the statistical power of our analyses (the code can be found on the OSF page: <https://osf.io/xnm2r>). Using two-tailed testing and an alpha level of .05, statistical power for finding a medium interaction effect of $f^2 = 0.15$ (Cohen, 1988) was $>.90$ for the analyses pertaining to mate appeal on the target effect level. On the relationship level, where several ratings were nested within each individual, statistical power was higher.

Results

Descriptive Statistics and Intercorrelations

Table 1 shows descriptive statistics and reliabilities for all analyzed study variables as well as intercorrelations between them (correlation with gender and age can be found in the Table S1). The attractiveness ratings (ratings made by independent observers and attractiveness target effects) were highly positively correlated. Furthermore, in line with past research, admiration and all operationalizations of attractiveness were positively correlated with mate appeal.

Table 1

Descriptive Statistics and Intercorrelations for Study 1

	<i>M</i>	<i>SD</i>	α	2	3	4	5	6	7	8
1 Adm	3.23	0.77	.82	.35**	.14**	.14**	.13**	.12*	.11*	.12*
2 Riv	2.14	0.67	.77	-	-.01	-.05	-.05	-.09	-.12*	-.11*
3 Phy.attractiv	3.23	0.85	.49		-	.76**	.54**	.56**	.70**	.66**
4 Perc.attractiv	4.20	1.13	-			-	.71**	.80**	.89**	.88**
5 Dating.dicho	0.43	0.30	-				-	.90**	.82**	.87**
6 Dating.date	3.50	1.29	.97					-	.89**	.95**
7 Dating.arousing	3.18	1.20	.96						-	.99**
8 Mate appeal	3.29	1.20	.97							-

Note. Adm = Narcissistic admiration; Riv = Narcissistic rivalry; phy.attractiv = average of 10 observers-ratings of physical attractiveness of face and body, perc.attractiv = target effect of evaluator-perceived attractiveness; dating.dicho = operationalization 1 of mate appeal (one dichotomous item), dating.date = operationalization 2 of mate appeal (two continuous items), dating.arousing = operationalization 3 of mate appeal (four continuous items), mate appeal = target effect of mate appeal (operationalized by six continuous items); * $p < .05$; ** $p < .01$.

Moderator effects

The analyses pertaining to effects on the level of the target effect and using the three separate indicators of mate appeal were pre-registered. The analyses pertaining to the mate appeal composite score were not. We used linear regressions to test whether attractiveness (physical attractiveness) moderated the association between narcissistic admiration and mate appeal (using the three separate indicators). In each model, we included the two (z-standardized) independent variables (admiration and observer-rated physical attractiveness) as

well as their interaction effect as predictors (Aiken et al., 2003). As Table 2 shows, physical attractiveness did not moderate the relation between narcissistic admiration and mate appeal.

Table 2

Linear Regression Models, Predicting Mate Appeal (three different Indicators) by Narcissistic Admiration, Attractiveness, and Their Interaction

	Operationalization 1 Dating.dicho (Model 1)				Operationalization 2 Dating.date (Model 2)				Operationalization 3 Dating.arousal (Model 3)			
	<i>b</i>	<i>SE</i>	<i>t</i>	<i>P</i>	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Intercept	.00	.04	0.20	.984	-.00	.04	-0.10	.921	-.00	.04	-0.15	.882
Adm	.05	.04	1.09	.276	.04	.04	0.83	.409	.01	.04	0.19	.851
phy.attractiv	.54	.04	12.40	<.001	.56	.04	13.11	<.001	.69	.04	18.80	<.001
Adm x phy.attractiv	-.02	.04	-0.54	.587	-.05	.04	-1.11	.266	.01	.04	0.21	.838

Note. Adm = Narcissistic admiration; phy.attractiv = average of 10 observers-ratings of physical attractiveness of face and body, dating.dicho = operationalization 1 of mate appeal (one dichotomous item), dating.date = operationalization 2 of mate appeal (two continuous items), dating.arousing = operationalization 3 of mate appeal (four continuous items); *SE* = standard error; *t* = *t*-value; *p* = *p*-value. *b* can be interpreted as a standardized estimate (β) because the models were run with standardized variables.

Furthermore, we also used linear regressions to test whether attractiveness (physical attractiveness and target effect of evaluator-perceived attractiveness) moderated the association between narcissistic admiration and the mate appeal composite. In each model, we included the two (z-standardized) independent variables (either admiration and observer-rated physical attractiveness or admiration and target effect of evaluator-perceived attractiveness) as well as their interaction effect as predictors (Aiken et al., 2003). As Table 3 shows, neither physical attractiveness nor the target effect of evaluator-perceived attractiveness moderated the relation between narcissistic admiration and mate appeal. For narcissism, age and gender effects have been reported (Grijalva et al., 2015b, Wetzell et al., 2020) and the same is true for physical attractiveness (Greenlees & McGrew, 1994; Webb et al., 1989) and even though in the current data only gender and age correlated with physical attractiveness (S1), these variables qualify as potentially confounding third variables. We, therefore reran the models, controlling for gender and age, as well as the interaction effects between gender and attractiveness (for both physical attractiveness and the target effect of evaluator-perceived attractiveness) and between age and attractiveness (again for both physical attractiveness and the target effect of evaluator-perceived attractiveness). Results were nearly identical. Furthermore, there was a main effect for gender on mate appeal but not for age (Supplemental Online Material S2 and S3).

Table 3

Linear Regression Models, Predicting Mate Appeal by Narcissistic Admiration, Attractiveness, and Their Interaction

		<i>b</i>	<i>SE</i>	<i>T</i>	<i>p</i>
Model 1	Intercept	-.01	.04	-0.14	.893
	Adm	.02	.04	0.45	.655
	phy. Attractiv	.66	.04	17.26	<.001
	Adm x phy. Attractiv	-.01	.04	-0.31	.759
Model 2	Intercept	.00	.02	0.08	.933

Adm	.00	.02	0.05	.958
perc. Attractiv	.88	.02	35.85	<.001
Adm x perc. Attractiveness	.00	.03	0.18	.861

Note. Adm = Narcissistic admiration; phy. attractiv = average of 10 observers-ratings of physical attractiveness of face and body; perc. attractiv = target effect of evaluator-perceived attractiveness; mate appeal = target effect of mate appeal; *SE* = standard error; *t* = *t*-value; *p* = *p*-value. *b* can be interpreted as a standardized estimate (β) because the models were run with standardized variables.

We then tested whether evaluator-perceived attractiveness moderated the effect of admiration on mate appeal on the relationship level. We ran the same models as above, but used the standardized relationship effect of evaluator-perceived attractiveness as a predictor, together with standardized admiration and the evaluator-perceived attractiveness * admiration interaction. The relationship effect of mate appeal (mate appeal_{rel}) was the outcome variable. We ran multilevel models and included a random intercept for dyad. As Table 4 shows, the relationship effect of evaluator-perceived attractiveness had a strong main effect on mate appeal, but this effect was not moderated by narcissistic admiration. We reran the models, controlling for gender and age, as well as the interaction effect between gender and the relationship effect of evaluator-perceived attractiveness and the one between age and the relationship effect of evaluator-perceived attractiveness. The pattern of the results was nearly identical (see Supplemental Online Material S4).

Table 4

Multilevel Regression Model, Predicting the Relationship Effect of Mate Appeal by Narcissistic Admiration, the Relationship Effect of Evaluator-Perceived Attractiveness, and Their Interaction

		<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Model 3	Intercept	-.00	.02	-0.10	.924
	Adm	.03	.02	1.50	.134
	perc. Att_{rel}	.87	.02	47.94	<.001
	Adm x perc. Att _{rel}	-.01	.02	-0.34	.735

Note. Adm = Narcissistic admiration; perc.Att_{rel} = relationship effect of evaluator-perceived attractiveness; SE = standard deviation; t = t -value; p = p -value. b can be interpreted as a standardized estimate (β) because the models were run with standardized variables, the b s represent standardized regression coefficients.

Discussion

In Study 1, our goal was to test whether the link between narcissistic admiration and mate appeal is more positive for people who are physically attractive than for people who are less attractive. We tested interaction effects for attractiveness, as rated by independent observers and also as rated by the dating partners, and we considered effects on both the target effect (three separated indicators and mean value) and the relationship effect level (for mean value). The results did not support the hypothesis. Instead, they suggested that both admiration and physical attractiveness are correlated with mate appeal, but that they do not interact. Interestingly, admiration was positively correlated with mate appeal, but this association dropped to non-significance when physical attractiveness was controlled. Such a pattern of results fits with previous research indicating that individuals scoring high in narcissism are appealing partly because they put more effort into their appearance and are therefore more physically attractive (Dufner et al., 2013). Importantly for the current research question, the effect of admiration does not seem to depend on physical attractiveness.

Study 2

The goal of Study 2 was to test whether intelligence and socio-emotional abilities moderate the link between narcissistic admiration and social influence in small groups. Again, we considered both objectively assessed intelligence and socio-emotional abilities, and evaluator perceptions of these qualities. For evaluator perceptions, we again considered effects on the level of the target effect and on the level of the relationship effect.

Method

Study 2 was a comprehensive study on personality on social behavior called the LeiCo-Study. We will only describe the study parts and measures that are relevant the current research question. A full study description can be found in the codebook online:

<https://osf.io/zc9ns>. Thus far, four publications exist that are based on the study, but all deal with different research questions (Dufner, et al., 2022; Grosz et al., 2020; Rau et al., 2021; Schliebener et al., 2022).

Sample and Procedure

Participants were recruited via social networks and notice-boards. They had to be between 18 and 35 years old in order to participate and their mother tongue had to be German. Psychology students were excluded. Participants were paid 70 Euros if they completed all study parts. A total of 256 (78% female) participants did so. Twenty-two participants did not have valid data for all study parts (online questionnaire, round-robin data, etc.). We did not exclude these participants in general, but rather included their values into all analyses for which they had valid data. An overview of the available data can be found on the osf (https://osf.io/pkaxq?view_only=6acdb3cdf2dc45c1a30f69e6c7efacd3). Participants were between 18 and 35 years old ($M = 24.57$, $SD = 4.38$), and most of them were students (79%). The study was approved by the ethics board of the German Psychological Society.

First, participants completed an online questionnaire in which narcissism was assessed. Then, participants attended group sessions (2 hours each) and afterwards a laboratory session, in which intelligence and socio-emotional abilities were assessed (2 hours). For the group sessions, participants were assigned to 50 same-sex groups of four to six (12 groups of 4, 20 groups of 5, 18 groups of 6) persons each. Participants were unacquainted with their group members before the first session. Each group met twice during the course of two consecutive weeks, once for Group Session A and once for Group Session B. Session A

included three competitive tasks, a cognitive task, a moral dilemma, and a debate, during which participants had to defend a position assigned to them. Session B involved tasks that were cooperative in nature. That is, participants played a getting-acquainted game, recounted various experiences, and created a common group logo. A detailed description of the tasks can be found in the study codebook. The two group sessions were seven days apart from each other and their ordering was balanced across participants. Participants were filmed by four unobtrusive video cameras during the group interactions. Round-robin ratings of social influence, perceived intelligence, and perceived socio-emotional abilities were gathered at the beginning and at the end of each group session. We analyzed the ratings provided at the end of the second sessions as by that time participants had the largest amount of information available about each other.

Measures

Narcissism. Narcissistic admiration and rivalry were again assessed with the NARQ (Back et al., 2013).

Intelligence. Intelligence was assessed via three distinct measures, which were used in combination for a comprehensive assessment of intelligence before (Geukes et al., 2019). Participants completed a 15-item short version of Raven's (Raven et al., 1962) progressive matrices ($Int_{\text{reasoning}}$; Denissen et al., 2011), which is a measure of fluid intelligence. As the second measure of intelligence, participants were presented with a task from the working memory test (WM, Oberauer et al., 2000), assessing working memory capacity (Int_{working}). Participants were presented with a list of simple mathematical equations and had to indicate for each of them whether or not it is correct. Simultaneously, they had to memorize the last digit of the result. Later, participants had to repeat the memorized digits in a correct order. Each digit was treated as an item and coded with 1 (*correct*) and 0 (*false*) in a recall test. The third measure was the multiple-choice vocabulary test B (Int_{verbal} ; MWT-B; Lehrl et al.,

1995). This test consists of 36 sets of five (pseudo) words, only one of which is a correctly spelled word. The total score was calculated via the number of correct answers. The score of one participant were set to missing, because the score of this person on the MWT-B was detected as an extreme negative outlier (only one answer was correct, which was even far beyond chance level and indicated that the participant might have sabotaged the assessment).

Socio-emotional abilities. Socio-emotional abilities were assessed via two distinct measures. The first one tapped into emotion recognition ability. Participants completed three subtasks from the Test Battery for the Perception and Recognition of Facial Expressions of Emotion (EMO, Wilhelm et al., 2014). In two tasks, pictures of individuals displaying a specific emotion were shown. Participants had to choose which out of the six possible emotions (sad, disgust, fear, happy, anger, surprise) was displayed. In the first task, they had to identify the emotion from composite faces that consisted of an upper half and a lower half showing different emotional expressions. One half should be classified, the other half was to be ignored, indicated by prompt words “TOP” or “BOTTOM”. In the second task, they had to identify emotions of different intensity from upright and inverted moving faces. In the third task, a matrix of nine pictures was presented. A majority of these pictures showed a specific emotion, while the remaining pictures showed other emotions. Participants had to identify the pictures that did not show the prominent emotion. For each task, the mean number of correct answers was calculated. The three tasks were positively correlated with each other (mean $r = .45$; for details, see Table S9). Therefore, we calculated a total score (Wilhelm et al., 2014). Again, the scores of one participant who showed extremely low performance ($z = -4$) and likely did not (2016), but inconsistent with other parts that found negative links between narcissism and socio-emotional) were set to missing (there were no further exclusions).

The second measure, Movie for the Assessment of Social Cognition (MASC, Dziobek et al., 2006) tapped into perspective taking ability. This video-based test measures the ability to recognize intentions and thoughts of others. Participants was a short film showing four

persons at a dinner party. The video stopped several times and participants were requested to answer questions concerning the actors' emotions, thoughts, and intentions. If their answer matched with a pre-defined solution, the item was solved. Again, the mean number of correct answers were calculated. Previous research indicates high reliability and validity of both the EMO (Geiger et al., 2021; Olderbak et al., 2019) and the MASC (Dziobek et al., 2006; Fossati et al., 2018).

Evaluator-perceived intelligence. Evaluator-perceived intelligence was assessed via round-robin peer-ratings on the following item: "This person is clever" (1 = *strongly disagree* to 6 = *strongly disagree*). As an indicator of the evaluator-perceived intelligence, we used the *target effect* (perc.Int) and the *relationship effect* (perc.Int_{rel}) using the R package TripleR (Schönbrodt et al., 2012) from Kenny's Social Relations Model (1994).

Evaluator-perceived emotional abilities. Evaluator-perceived emotional abilities were assessed via round-robin peer-ratings during the laboratory sessions on the following item: "This person is compassionate" (1 = *strongly disagree* to 6 = *strongly disagree*). We again computed the *target effect* (perc.compassion) and the *relationship effect* (perc.Empathy_{rel}) based on this item.

Social Influence. Social influence was assessed via round-robin peer-ratings on the following three items: "This person has a lot of power and influence on our group," "This person has a high status (respect, prominence) within our group," and "This person would be a good leader of our group." (1 = *strongly disagree* to 6 = *strongly disagree*). We calculated the *target effect* (SI) and the *relationship effect* (SI_{rel}) for each item and then aggregated the three items as indicators of the social influence that group members ascribed to a participant.

Power Analysis

We used the same approach as in Study 1 to gauge our statistical power of our analyses (code: <https://osf.io/hygcz>). Using two-tailed testing and an alpha level of .05,

statistical power for finding a medium-sized interaction effect of $f^2 = 0.15$ (Cohen, 1988) was $>.95$ for the analyses pertaining to social influence on the target effect level. On the relationship level, where several ratings were nested within each individual, statistical power was higher.

Descriptive Statistics and Intercorrelations

Table 5 shows descriptive statistics and reliabilities for all study variables and their intercorrelations (correlations with gender and age can be found in Table S11). The internal consistency of the MASC was low ($\alpha = .50$), which impairs the interpretability of results based on this measure. Furthermore, $Int_{\text{reasoning}}$ was positively correlated with both other operationalizations of intelligence (Int_{working} and Int_{verbal}), whereas Int_{verbal} and Int_{working} were uncorrelated. Furthermore, the operationalizations of socio-emotional abilities (EMO and MASC) were positively correlated. The target effect of evaluator-perceived intelligence was positively correlated with $Int_{\text{reasoning}}$ and Int_{working} but not with Int_{verbal} or the operationalizations of emotional abilities. The target effect of evaluator-perceived emotional abilities (perc.Empathy) was negatively correlated with narcissism but not with any of the other variables. In line with past research, admiration, objectively assessed intelligence (at least measured via $Int_{\text{reasoning}}$) and the target effect of evaluator-perceived intelligence were positively correlated with social influence.

Table 5
Descriptive Statistics and Intercorrelations for Study 2

	<i>M</i>	<i>SD</i>	α	2	3	4	5	6	7	8	9	10
1 Adm	2.95	0.84	.85	.40**	-.06	-.03	-.02	.05	-.17**	.00	-.15*	.17*
2 Riv	2.25	0.72	.79	-	-.12	-.12*	.05	.04	.00	-.09	-.23*	-.04
3 EMO	0.74	0.06	.86		-	.29**	.33**	.24**	.12	.09	.02	.06
4 MASC	0.81	0.08	.50			-	.13	.05	.08	.03	-.08	.03
5 Int _{reasoning}	8.51	3.04	.69				-	.28**	.22**	.18**	-.08	.17*
6 Int _{working}	34.21	12.94	.93					-	-.01	.10	-.13*	.03
7 Int _{verbal}	29.32	2.90	.75						-	.09	-.05	.05
8 perc.Int	4.46	0.57	-							-	.12	.63**
9 per.Empathy	4.57	0.51	-								-	.07
10 SI	3.95	0.79	.88									-

Note. Adm = Narcissistic admiration; Riv = Narcissistic rivalry; EMO = measure of socioemotional ability: mean of scores on three task of the Test Battery for Perception and Recognition of Facial Expressions of Emotion; MASC = measure of socioemotional ability: Movie for the Assessment for the Social Cognition; Int_{reasoning} = measure of intelligence: Raven matrices test (15 items); Int_{working} = measure of intelligence: Working memory test (60 items), Int_{verbal} = measure of intelligence: Multiple choice vocabulary test (37 items); perc.Int= target effect of evaluator-perceived intelligence (group mean added for the calculation of mean and standard deviation); perc.Empathy= target effect of evaluator-perceived emotional abilities (group mean added for the calculation of mean and standard deviation); SI = mean of the target effect of social influence (group mean added for the calculation of mean and standard deviation); * $p < .05$; ** $p < .01$.

Moderator effects

We used the same approach as in Study 1 to test moderator effects. As intercorrelations between the different measures of intelligence and socio-emotional abilities were only relatively weak, we computed a separate model for each measure. As Table 7 shows, in no case was the interaction between admiration and the respective measure significant. Admiration and intelligence (measured with $Int_{\text{reasoning}}$ and target effect of evaluator-perceived intelligence) had positive main effects on social influence. Like in Study 1, we reran the models, controlling for gender and age as well as the interactions between gender and the different measures of intelligence and socio-emotional abilities and between age and the different measures of intelligence and socio-emotional abilities. The pattern of the results was nearly identical. However, both main effects of intelligence (measured via $Int_{\text{reasoning}}$ and target effect of evaluator-perceived intelligence) were no longer statistically significant, instead there was a significant age effect in these models (see Supplemental Online Material S12).

Table 7

Linear Regression Models; Predicting Social Influence by Narcissistic Admiration and Socio-Emotional Ability/Intelligence, and Their Interaction

		<i>b</i>	<i>SE</i>	<i>T</i>	<i>p</i>
Model 1	Intercept	.03	.05	0.42	.675
	Adm	.13	.05	2.51	.013
	Int_{reasoning}	.13	.05	2.62	.009
	Adm x Int _{reasoning}	.04	.05	0.70	.485
Model 2	Intercept	.00	.05	0.03	.980
	Adm	.12	.05	2.52	.012
	Int _{working}	.01	.05	0.26	.792
	Adm x Int _{working}	.01	.05	0.22	.830
Model 3	Intercept	-.00	.05	-0.07	.946
	Adm	.13	.05	2.67	.008
	Int _{verbal}	.05	.05	1.14	.256
	Adm x Int _{verbal}	-.03	.05	-0.60	.552

Model 4	Intercept	.01	.05	0.31	.760
	Adm	.13	.05	2.70	.008
	EMO	.05	.05	1.15	.253
	Adm x EMO	.07	.05	1.54	.124
Model 5	Intercept	.00	.05	0.04	.967
	Adm	.12	.05	2.58	.010
	MASC	.02	.05	0.50	.615
	Adm x MASC	-.03	.05	-0.64	.526
Model 6	Intercept	-.00	.04	-0.23	.818
	Adm	.12	.04	3.20	.002
	perc.Int	1.14	.09	12.74	<.001
	Adm x perc.Int	-.11	.09	-1.29	.198
Model 7	Intercept	.00	.05	0.03	.977
	Adm	.13	.05	2.69	.008
	perc.Emathy	.15	.11	1.40	.162
	Adm x perc.Emathy	-.02	.11	-0.19	.846

Note. Adm = Narcissistic admiration; EMO = measure of socioemotional ability: average of three tasks of the Test Battery for the Perception and Recognition of Facial Expressions of Emotion; MASC = measure of socioemotional ability: Movie for the Assessment for the Social Cognition; Int_{reasoning} = measure of intelligence: Raven matrices test; Int_{working} = measure of intelligence: Working memory test, Int_{verbal} = measure of intelligence: Multiple choice vocabulary test, perc.Int = target effect of evaluator-perceived intelligence; perc.Emathy = target effect of evaluator-perceived emotional abilities; *SE* = standard error; *t* = *t*-value; *p* = *p*-value; *b* can be interpreted as a standardized estimate (β) because the models were run with standardized variables; Please note that β above 1 is unusual, but might occur due to multicollinearity.

We then turned to the relationship level. That is, we ran the same models as above, but predicted the social influence relationship by the relationship effect of evaluator-perceived intelligence or emotional abilities respectively, narcissistic admiration, and the interaction between the two. As Table 8 shows, in no case was the relation between narcissistic admiration and the relationship effect of social influence moderated by the relationship effect of peer-perceived emotional abilities (perc.Emathy_{rel}), and the relationship effect of peer perceived intelligence (perc.Int_{rel}). We reran the models, controlling for gender and age, as well as the interaction effect between gender and the relationship of evaluator-perceived intelligence and socio-emotional abilities and the one between age and the relationship of

evaluator-perceived intelligence and socio-emotional abilities. The pattern of the results was nearly identical as the one reported above (see Supplemental Material S13).

Table 8

Multilevel Regression Models, Predicting Social Influence by Narcissistic Admiration, the Relationship Effect of Peer-Perceived Intelligence/Emotional Abilities, and Their Interaction

		<i>b</i>	<i>SE</i>	<i>T</i>	<i>p</i>
Model 8	Intercept	-.00	.01	0.00	.999
	Adm	.00	.01	0.00	.999
	perc.Int_{rel}	.48	.03	16.28	<.001
	Adm x perc.Int _{rel}	.04	.03	1.35	.178
Model 9	Intercept	-.00	.02	0.00	.999
	Adm	.00	.02	0.00	.999
	perc.Emathy_{rel}	.16	.03	5.23	<.001
	Adm x perc.Emathy _{rel}	.05	.03	1.76	.079

Notes. Adm = Narcissistic admiration; perc.Int_{rel}= relationship effect of evaluator-perceived intelligence; perc.Emathy_{rel}= relationship effect of evaluator-perceived emotional abilities. *SE* = standard error; *t* = *t*-value; *p* = *p*-value. *b* can be interpreted as a standardized estimate (β) because the models were run with standardized variables.

Discussion

In Study 2, our goal was to test whether the link between narcissism and social influence is more positive for people who possess higher intelligence or socio-emotional abilities than for persons scoring lower on these abilities. We considered both objectively assessed and evaluator-perceived qualities. The results did not support our hypothesis. Instead, they suggested that both narcissistic admiration as well as intelligence (both objectively assessed and evaluator-perceived) positively predicted social influence, but they do not interact. On the whole then, there was no convincing evidence that the link between admiration and social influence is stronger among persons who are—or are perceived as—particularly intelligent or high in socio-emotional abilities.

Study 3

The goal of Study 3 was to test whether the link between admiration and material wealth and the one between admiration and occupational prestige are more positive the higher the objectively assessed intelligence is.

Method

We analyzed data from the Innovation Sample (SOEP-IS, Richter & Schupp, 2012) of the German Socio –Economic Panel (SOEP; Wagner et al., 2007). The SOEP-IS is a nationally representative longitudinal study of private households in Germany and includes an annually changing set of questions and innovative content. The same dataset has also been analyzed in the above-mentioned publications by Leckelt et al. (2019) and by Leder et al. (2021). However, none of these publications investigated interaction effects between narcissistic admiration and intelligence. We will only describe the study parts and measures that are relevant for the current research question.

Sample and Procedure

A total of 1,477 participants (52% women) took part in the SOEP-IS survey in 2013 (the year when narcissism was assessed). For 1,476 of them, data for all relevant variables were available. Three individuals were excluded from the analyses because they reported an income of 0 Euros. This means that the data from 1,473 participants were available. The average age was $M = 51.34$ ($SD = 17.27$) in 2013. The survey is conducted by Kantar Public in the form of personal computer-assisted interviews (CAPI) by specially trained interviewers on a representative basis throughout Germany.

Measures

Narcissism was measured in 2013 and intelligence in 2014. Material wealth and occupational prestige were assessed annually (currently available until 2017). For the current analyses, we used the averages of available respective data from 2014 to 2017 (correlations between the annual assessments can be found in the Supplemental Material S18 and S19).

Narcissism. Narcissistic admiration and rivalry were assessed with the short version of the NARQ (NARQ-S; Leckelt et al., 2018).

Intelligence. Intelligence was assessed via two distinct measures. The first one was a measure of crystallized verbal intelligence (Int_{verbal}), namely the Multiple-Choice Vocabulary Test [Mehrfachwahl-Wortschatztest] (MWT-A; Lehrl et al., 1995), a parallel version of the measure used in Study 2. The second measure was a test of processing speed ($Int_{\text{proc.Speed}}$), namely the Symbol Correspondence Test (SCT; Lang et al., 2007), which resembles the symbol-digit-modalities-test (Smith, 1995). Participants were asked to match as many numbers and symbols as possible within 90 seconds according to a given reference list, which was shown on the screen. The total score was calculated by subtracting the number of incorrect matches from the correct ones. Sum scores after 30 seconds, 60 seconds, and 90 seconds were provided. We used the sum score after 90 seconds, as it contained the most information.

Material wealth. Material wealth was measured via income. For the sake of comparability, only persons who have had a full-time job for at least one year during the time of assessment were included in the analysis. Participants declared their current gross labor income in Euros in an open-ended format. Three individuals were excluded from the analysis because they reported an income of 0 Euros. The calculated mean of the assessed time points (currently available until 2017) was log-transformed, because the distribution of income was skewed (Aitchison & Brown, 1957). Results without log transformation are highly similar and can be found in the Supplement (S21 & S23).

Occupational prestige. Participants' current occupation was assessed via open text fields. Their entries were scored with regard to the occupational prestige score index (ISCO-88/ISCO-08, Ganzeboom & Treiman, 1996). The index ranges from 6 (e.g., hunter) to 78 (e.g., medical doctor). We calculated the mean value across the years.

Power Analysis

We used the same approach as in Studies 1 and 2 to gauge the statistical power of our analyses (code: <https://osf.io/629gz>). Using two-tailed testing and an alpha level of .05, statistical power for finding a medium interaction effect of $f^2 = 0.15$ (Cohen, 1988) was $>.99$.

Results

Descriptive Statistics and Intercorrelations

Table 9 shows descriptive statistics and reliabilities for all analyzed variables as well as their intercorrelations (correlations with gender and age can be found in the Supplemental Online Material S20). Material wealth and occupational prestige were positively correlated. The two operationalizations of intelligence were also positively correlated, albeit weakly. We therefore decided to conduct our hypothesis tests separately for each intelligence measure. In line with past research, admiration was positively correlated with income and occupational prestige and the same was true for intelligence (at least for Int_{verbal}).

Table 9

Descriptive Statistics and Intercorrelations for Study 3

	<i>M</i>	<i>SD</i>	<i>α</i>	2	3	4	5	6
1 Adm	2.04	1.08	.81	.51**	-.05	.16**	.11**	.18**
2 Riv	1.74	0.78	.62	-	-.13**	.04	.01	.06
3 Int_{verbal}	30.02	3.77	.81		-	.15**	.27**	.40**

4 Int _{proc.Speed}	28.66	10.33	-	-	.09*	.16**
5 Income	3393.20	2193.14	-	-	-	.51**
6 Prestige	45.92	12.48	-	-	-	-

Note. Adm = Narcissistic admiration; Riv = Narcissistic rivalry; Int_{verbal} = intelligence (verbal) measured via MWT (Multiple-Choice Vocabulary); Int_{proc.Speed} = intelligence (processing speed) measured via SCT (Symbol Correspondence Test); Income in Euros (log-transformed version for the correlations), Prestige = occupational prestige score index; * $p < .05$; ** $p < .01$.

Moderator Effects

We used the same approach as in Studies 1 and 2 to test moderator effects. As Table 10 shows, the two interaction effects between admiration and intelligence as operationalized via the Int_{verbal}, on income (Model 1) and on prestige (Model 3) attained statistical significance. The association between narcissistic admiration and income and prestige (Figure 1) was indeed more positive when intelligence was high than when intelligence was low. We also ran simple slope tests using the R package *rockchalk* (Johnson & Johnson, 2019). For individuals with mean levels of intelligence (Model 1[income]: $t(584) = 3.022, p = .003$; Model 3 [prestige]: $t(612) = 5.018, p < .001$) and with high levels of intelligence (Model 1[[income]: $t(584) = 3.882, p < .001$; Model 3[prestige]: $t(612) = 5.212, p < .001$) the slopes were significant. For individuals with low levels of intelligence the slopes were not significant (Model 1[income]: $t(584) = 0.250, p = .802$; Model 3[prestige]: $t(612) = 1.771, p = .0771$).

In all cases with intelligence operationalized via the Int_{proc.Speed} the interaction effects between narcissistic admiration and intelligence were non-significant. Like in the first two studies, we reran the models, controlling for gender and age as well as the interaction effect between gender and intelligence and the one between age and intelligence. The pattern of the results was nearly identical. As in the original analyses, the interaction effects between narcissism admiration and verbal intelligence (operationalized via Int_{verbal}) on income and prestige were significant, whereas all other interaction effects were not (see S22).

Table 10

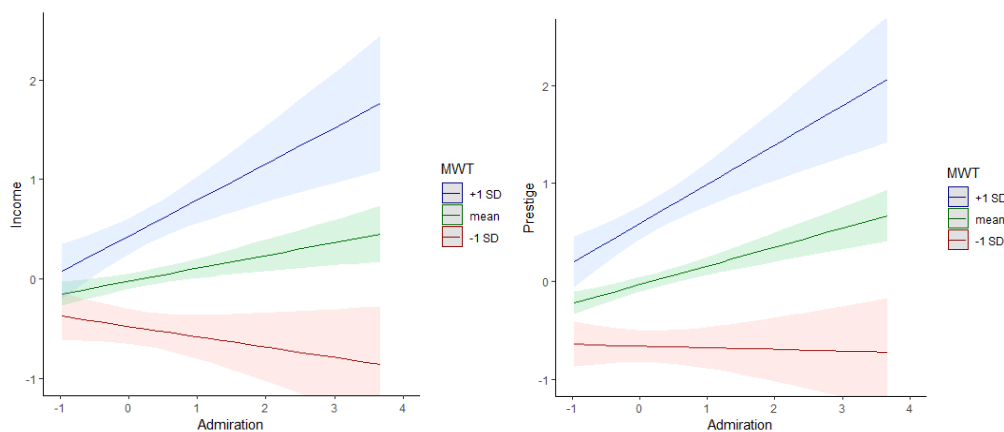
Linear Regression Models, Predicting Material Wealth and Occupational Prestige by Narcissistic Admiration, Intelligence, and Their Interaction

	Income				Prestige			
	(Model 1/Model 2)				(Model 3/Model 4)			
	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Intercept	-.03	.04	-0.70	.486	-.04	.04	-1.16	.245
Adm	.12	.04	3.00	.003	.18	.04	4.99	<.001
Int_{verbal}	.25	.04	6.15	<.001	.38	.04	10.31	<.001
Adm x Int_{verbal}	.10	.04	2.75	.006	.10	.04	2.73	.006
Intercept	-.05	.05	-1.00	.316	-.09	.04	-2.03	.042
Adm	.13	.05	2.77	.006	.18	.05	3.93	<.001
Int _{proc.Speed}	.08	.05	1.75	.082	.16	.05	3.41	.001
Adm x Int _{proc.Speed}	-.06	.05	-1.34	.182	-.05	.05	-1.07	.284

Note. $N_{model 1 \& 2} = 591$, $N_{model 3 \& 4} = 616$; Adm = Narcissistic admiration; Int_{verbal} = intelligence (verbal) measured via MWT (Multiple-Choice Vocabulary); Int_{proc.Speed} = intelligence (processing speed) measured via SCT (Symbol Correspondence Test); Income = Income in Euro (log-transformed version), Prestige = occupational prestige score index; *SE* = standard error; *t* = *t*-value; *p* = *p*-value. *b* can be interpreted as a standardized estimate (β) because the models were run with standardized variables.

Figure 2

Left panel: Interaction Effect between Admiration and Verbal Intelligence (MWT) on Income (all Variables were Z-standardized); Right Panel: Interaction Effect between Admiration and Verbal Intelligence (MWT) on Prestige (all Variables were Z-standardized)



Discussion

In Study 3, our goal was to test whether the links of admiration with material wealth and occupational prestige are more positive for people who are rather intelligent than for those who are not. The results matched with this hypothesis, albeit only for verbal intelligence. Thus, findings suggest that people who score high on narcissistic admiration are especially likely to attain material wealth and occupational prestige if they are also highly verbally intelligent. In contrast, the association between narcissistic admiration and the two outcomes does not seem to depend on numeric aspects of intelligence.

General Discussion

The goal of the current research was to test whether the links of narcissism with desirable social outcomes are dependent on the presence of specific qualities. To address this possibility comprehensively, we considered three distinct social outcomes that have all been linked to narcissism in past research.

Replicating previous findings, narcissistic admiration was positively linked with each of the relevant outcomes. That is, it was correlated with high mate appeal in Study 1, to social influence in Study 2, and to material wealth and occupational prestige in Study 3. This corroborates the claim from the NARC that the admiration dimension of grandiose narcissism mainly leads to positive social outcomes. Furthermore, with few exceptions, the objectively assessed qualities were also positively correlated with the respective outcomes. That is, physical attractiveness was linked to mate appeal in Study 1 and intelligence was linked to social influence in Study 2 as well as to material wealth and occupation prestige in Study 3. These results indicate that the findings from the literature that we derived our hypotheses from are credible and robust and that our research designs were generally suitable for detecting the effects. Also in line with the literature, narcissism was positively linked to

physical attractiveness (Holtzman & Strube, 2010; Weber et al., 2021) and not consistently linked to intelligence (Zajenkowski & Dufner (2020). Narcissism was also unrelated to socio-emotional abilities, which is consistent with parts of the literature (e.g., Czarna et al., 2016), but inconsistent with other parts that found negative links between narcissism and socio-emotional abilities (e.g., Mota et al., 2019). Furthermore, previous research also indicates that emotional intelligence predicts popularity in social networks not initially, but only over longer time periods (Czarna et al., 2016). Future research should explore this issue more comprehensively. Most importantly in the current case, we found only little evidence for our general hypothesis that objectively assessed qualities moderate the effect of narcissistic admiration on social outcomes.

There was notable exception, however. Verbal intelligence moderated the effects of narcissistic admiration in Study 3. The effect appeared for both outcomes in the expected direction and the p -values were smaller than .01. The main effects of the two types of intelligence indicate verbal intelligence was a more relevant predictor than numeric intelligence (which only had negligible effects) for material wealth and occupational prestige. From this perspective, it seems quite natural that the effects of narcissism are contingent on people's level of verbal, but not their numeric intelligence. Thus, when it comes to job-related outcomes, such as one's income and the level of prestige one's job entails, a combination of strong narcissistic admiration and high verbal intelligence might be especially beneficial. Of course, before any firm conclusions can be drawn, future research should try to replicate the findings from Study 3.

Whereas we could replicate main effects of objectively assessed qualities on the respective social outcomes in most cases, this was not the case in Study 2 for our measures of objectively assessed socio-emotional abilities. That is, in contrast to the study by George (2000), we could not find a positive relation between socio-emotional abilities and social

influence. For one of our measures, the MASC, insufficient reliability might have accounted for the null effect. Yet, it is an open question why our second measure, EMO, was also unrelated to social influence. The finding indicates that being able to recognize emotions in others may not be crucially important for gaining social influence in newly formed groups.

In virtually all cases when the desirable social outcome represented the judgments of other persons, evaluator-perceived qualities were positive predictors. In Study 2, for example, we found that people who are *perceived* as intelligent and compassionate (at least at the level of the relationship effect) were granted higher social status. These findings indicate that not just objectively assessed qualities per se are important, but also the extent to which these qualities are attributed to target persons. It is conceivable that such perceived qualities mediate the effect of objectively assessed qualities, for example in the sense that a highly intelligent target person is to some extent accurately recognized as such and will therefore be granted high social status. This process is also described in the lens model (Brunswik, 1956; Nestler & Back, 2013). Yet then, the correlations between objectively assessed intelligence and peer-perceived qualities were rather small (which is unsurprising given the minimal acquaintance paradigm), which leaves a large portion of variance in peer-perceived qualities unexplained. Given the relevance of peer-perceived qualities, it will be an important task for future research to investigate which factors other than the relevant qualities themselves affect these peer-perceptions (for example time perspective of acquaintance).

Our investigation was comprehensive in the sense that it addressed multiple key outcomes that have been linked to grandiose narcissism in the past and that it considered several objectively assessed and evaluator-perceived qualities. Nevertheless, one cannot extrapolate the current results to other social outcomes that have been linked to grandiose narcissism. Instead, the current findings indicate that the results might be dependent on the outcome chosen and the respective quality. Future research might therefore investigate other

outcomes, such as for example task performance or likability as well. Furthermore, even though the present research was comprehensive in scope and included several studies that were relatively large for psychological standards, none of the effects were replicated in another sample, which renders the robustness of the findings across samples somewhat unclear. Another limitation of the current research concerns its unknown generalizability. With the exception of Study 3, the studies tested student samples. More diverse samples would have been desirable. Other limitations include the insufficient reliability of the MASC and the usage of single-item measures of evaluator-perceived qualities. Future research should use measures with higher psychometric quality. Furthermore, regarding Study 1 and Study 2 the results are based on first impressions, which are often more positive for narcissists (Back et al., 2010) and more positive than for long-term interactions (Czarna et al., 2016; Dufner et al., 2012; Leckelt et al., 2020; Leckelt et al., 2015). Future research should ideally investigate different levels of acquaintance.

Thoughts on Statistical Power

Whenever an expected effect turns out to be non-significant, a critical question is whether statistical power has been large enough to reliably detect the effect. As our power analyses have shown, power was sufficient to detect a medium interaction effect of $f^2 = 0.15$ (Cohen, 1988). However, the value of $f^2 = 0.15$ is decades old and seems overly optimistic from today's perspective (Aguinis et al., 2005; plus it is debatable how informative squared effect sizes are; Funder & Ozer, 2019). In fact, the significant interaction effects in Study 3 (verbal intelligence * narcissistic admiration on income and on prestige) had only an effect sizes of $f^2 = 0.01$, which was considerably smaller than expected, but actually quite similar to effect sizes of moderation tests in other content domains (Aguinis et al., 2005). Assuming similar effect sizes in Studies 1 and 2, the original power analysis was too optimistic and that Studies 1 and 2 are not sufficiently powered to find a plausible small interaction effect. The

likelihood of finding an effect size of $f^2 = 0.01$ with the given sample sizes with a likelihood of 80% was only 35% in Study 1 and 23% in Study 2. In Study 1, the effect size would have needed to be at least $f^2 = 0.03$ and in Study 2, it would have needed to be $f^2 = 0.05$ to be detected with 80% power.

To gain a more concrete understanding of the attained power in our studies, we used a *Shiny App* by Baranger et al. (2022; https://david-baranger.shinyapps.io/InteractionPowerR_analytic/). An interaction effect implies that the association (beta) between the predictor and outcome differs at different levels of the moderator. With the app, one can find out how much the association would need to change with a 1 SD increase in the moderator. For example, one can find out how much more positive the association between admiration and income would have to be at medium vs. 1 SD above average levels of verbal intelligence so that the moderation effect becomes significant with an 80% chance. Information about all other known parameters (reliabilities of the measures, which are highly relevant for the statistical power for finding interaction effects; Bussemeyer & Jones, 1983; intercorrelations between variables, sample size) are included into the analysis. For Study 3, power was sufficient for finding a difference in effect sizes of $\beta = |.08|$ to $|.09|$ (depending on the reliabilities of the used measures in the respective analyses and their interactions). The actual difference we empirically found was .10. For Study 1, given the sample size reliabilities, and intercorrelations, power would have been sufficient to find differences in effect sizes of at least $\beta = |.20|$ and for Study 2, power would have been sufficient to find differences in effect sizes of at least $\beta = |.21|$ to $|.29|$ with a likelihood of 80%. It is therefore unlikely that effects of these magnitude were present, but smaller effects still remain possible.

Conclusion

The current research suggests that both a strong narcissistic need for admiration and the presence of specific qualities are likely beneficial for attaining desirable social outcomes. Individuals who are highly appealing to potential mates, individuals who are socially influential and individuals who are wealthy and have prestigious occupations all tend to have elevated narcissistic admiration and it is paired with physical attractiveness for the first group and with high intelligence in the second and third group. From this pattern, one might get the impression that the unique combination of narcissistic grandiosity and objectively assessed qualities is key for attaining specific outcomes. However, rather than being dependent on each other and forming a unique combination of the “gifted narcissist,” our findings indicate that the effects of narcissism and the objectively assessed qualities are independent and can therefore compensate each other. Only for the combination of a strong narcissistic need for admiration paired with high verbal intelligence, it might be true that it is especially beneficial for accumulating material wealth and getting a prestigious occupation. We hope that these insights might contribute to a more comprehensive understanding of the social effects of narcissism.

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Competing Interests

None of the authors have a conflict of interest to disclose.

Data Accessibility Statement

For Study 1, the study codebook can be found online (<https://osf.io/n7dw9/>), the data of interest for this research question and the analysis script can be downloaded from the Open Science Framework (OSF <https://osf.io/yns58/>). For Study 2, the data, analysis script and study codebook can also be downloaded from the OSF (<https://osf.io/yns58/>). For Study 3, we could not make the data publicly available, due to the German data protection law. However, the data can be requested from the German Institute for Economic Research/German Socio-economic Panel Study (e-mail: soepmail@diw.de). The analysis script can be downloaded from the OSF (<https://osf.io/g2pur>).

The analyses of Study 1 were pre-registered (<https://osf.io/8f623> [Kraft and Dufner, 2018]). In addition to the pre-registered analyses, we conducted several exploratory analyses. These will be clarified as such.

Different ethical committee (detail information in each study section) approved the studies.

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