Article

A Longitudinal Field Investigation of Narcissism and Popularity Over Time: How Agentic and Antagonistic Aspects of Narcissism Shape the Development of Peer Relationships

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Abstract

Grandiose narcissism has been linked to initial popularity but to later unpopularity in peer groups and laboratory contexts. Do these effects on peer relationships also emerge in larger real-life contexts and what are the underlying behavioral processes (i.e., behavioral expressions, interpersonal perceptions)? Using data from the longitudinal CONNECT field study ($N = 126$), we investigated effects of agentic and antagonistic aspects of grandiose narcissism on emerging popularity in a complete peer network. A cohort of psychology first-year students was assessed with a quasiexperimental, experience-sampling methodology involving online surveys, diaries, and behavioral observations. In contrast to previous laboratory research, narcissism was unrelated to popularity at the level of zero-order correlations. However, results indicated that (a) an agentic behavioral pathway fostered popularity across time, and an antagonistic behavioral pathway drove the long-term decline in popularity, and (b) the two pathways were differentially related to agentic (admiration) and antagonistic (rivalry) aspects of narcissism.

Keywords

narcissism, peer relationships, network, field study

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Getting to know others is an integral part of people's lives. Positive interpersonal evaluations by others early in the acquaintance process have been shown to result in relevant interpersonal outcomes (e.g., being popular, making friends, acquiring status; Human, Sandstrom, Biesanz, & Dunn, 2013; Sunnafrank & Ramirez, 2004). This process is particularly important in early adulthood where a key developmental task is finding a congenial social group (Hutteman, Hennecke, Orth, Reitz, & Specht, 2014) and where marked changes in living situations (i.e., moving away from the parental home) and (old) friendship networks (Arnett, 2000; Asendorpf & Wilpers, 1998) take place. The transition to university particularly reflects these changes as first-year students are confronted with a new social context and engage in numerous interactions with their previously unknown peers.

Previous research has shown that grandiose narcissism influences the acquaintance process in peculiar ways: In initial acquaintance situations, narcissists are perceived positively and attain popularity (e.g., Back, Schmukle, & Egloff, 2010; Carlson, Vazire, & Oltmanns, 2011; Küfner, Nestler, & Back, 2013; Paulhus, 1998). Later, however, narcissism is related to a long-term decline in positive peer-evaluations and to less adaptive outcomes (e.g., decreased popularity; e.g., Czarna, Leifeld, Śmieja, Dufner, & Salovey, 2016; Leckelt, Küfner, Nestler, & Back, 2015; Paulhus, 1998). This evidence was mainly obtained in laboratory contexts. However, much less is known about how narcissism and popularity are linked and whether identical processes apply in naturalistic field-settings where social interactions are

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self-selected and not restricted to a defined group but embedded in larger social networks (Selfhout et al., 2010).

Here, we move beyond previous research and apply a differentiated process model that addresses both the agentic and antagonistic aspects of grandiose narcissism in a naturalistic context. To apply this naturalistic approach to study the longitudinal development of narcissists' popularity, we leveraged recent technological advances and used mobile devices that allowed for ecologically valid, fine-grained, longitudinal assessments of behavior (Harari et al., 2016), process dynamics (e.g., Carpenter, Wycoff, & Trull, 2016), and their consequences (Wrzus & Mehl, 2015).

The Influence of Agentic and Antagonistic Aspects of Narcissism on Popularity

Until recently, grandiose narcissism had been conceptualized and treated as a unidimensional construct. Thus, previous research on the link between narcissism and popularity (Carlson, Naumann, & Vazire, 2011; Carlson, Vazire, & Oltmanns, 2011; Heatherton & Vohs, 2000; Küfner et al., 2013; Paulhus, 1998; Rauthmann, 2012) has mainly focused on narcissism total scores from the Narcissistic Personality Inventory (NPI; Raskin & Hall, 1979). Empirical evidence and conceptual advances in recent years, however, have converged on the importance of systematically distinguishing agentic, antagonistic, and neurotic aspects of narcissism (Back, 2018; Back et al., 2013; Back & Morf, in press; Brown, Budzek, & Tamborski, 2009; Krizan & Herlache, 2018; Miller, Lynam, Hyatt, & Campbell, 2017; Miller et al., 2015; Paulhus, 2001). Although vulnerable narcissism has weak or no links to agentic trait expressions, and encompasses neurotic and antagonistic aspects, grandiose narcissism is unrelated or even negatively related to neurotic trait expressions and encompasses agentic and antagonistic aspects. Here, we focus on grandiose narcissism.

A theoretical framework that comprehensively captures this distinction between agentic and antagonistic aspects of grandiose narcissism is the Narcissistic Admiration and Rivalry Concept (NARC; Back et al., 2013; Back, 2018). The NARC is a process model that covers the strategies and behavioral dynamics that are driven by narcissists' overarching goal to maintain a grandiose self. It distinguishes between a narcissistic self-enhancement strategy that is linked to agentic behavioral dynamics called admiration and a narcissistic self-defense strategy that is linked to antagonistic behavioral dynamics called rivalry.

A process understanding of the social consequences of personality (Back & Vazire, 2015; Back, Baumert, et al., 2011) posits that personality (e.g., narcissism) has to be expressed in observable behaviors, which have to be detected and utilized by social partners to result in personality impressions, and then need to be evaluated by those social partners—a generic flow of processes that is also entailed in the lens model (Back, Schmukle, & Egloff, 2011; Brunswik, 1956; Nestler & Back, 2013). In line with this, the NARC proposes two process pathways that link agentic and antagonistic aspects of narcissism to (un)popularity. Each pathway is defined by specific behavioral expressions, interpersonal perceptions, and evaluation processes (Back et al., 2013; Back, Küfner, & Leckelt, 2018; Küfner et al., 2013; Leckelt et al., 2015).

Each pathway is defined by specific behavioral expression, interpersonal perception, and evaluation processes (Back et al., 2013; Back et al., 2018; Küfner et al., 2013; Leckelt et al., 2015). Figure 1 gives an overview of this conceptual model. The agentic pathway (product of paths *a, b, c*) involves (a) the expression of dominant-expressive behaviors (e.g., acting dominantly, sociable, self-revealing) that (b) lead to being perceived as assertive (e.g., extraverted, enthusiastic, self-confident), which (c) is evaluated positively (i.e., liking). The antagonistic pathway (product of paths *d, e, f*) involves (d) antagonistic behaviors (e.g., acting arrogantly, exploitatively, unfriendly) that (e) lead to being seen as critical-coldhearted (e.g., combative, manipulative), which (f) is evaluated negatively (i.e., disliking). To provide an appropriate test of the two pathways, each aspect of the conceptual model has to be assessed in a single study with data from relevant data sources. That is, actual interaction behavior (e.g., via behavior codings or interaction partner reports), the personality impressions formed based on this behavior (e.g., other-reported personality impressions), and, finally, a relevant outcome, such as popularity, need to be assessed. Popularity, in this context, can be indexed by how much individuals are liked by their peers (i.e., using ratings of likeability across different interactions and interaction partners (Back, Schmukle, & Egloff, 2011; Bohrnstedt & Felson, 1983; Kenny, 1994).

The diverging social consequences of agentic and antagonistic aspects of narcissism and their respective pathways over time have been most clearly revealed in laboratory studies. In a longitudinal lab-based study, Leckelt et al. (2015) investigated the development of popularity in small groups of unacquainted students. Groups met weekly for 3 weeks and performed tasks that mirrored the natural acquaintance process, ranging from self-introductions, team work tasks, and group discussions to interaction tasks involving moral dilemmas. They found that admiration was related to popularity, especially in early stages, whereas rivalry was related to decreasing popularity over time. In this study, the changing relationship between agentic and antagonistic aspects of narcissism was driven by decreasing displays of agentic and increasing displays of antagonistic behaviors (paths a and d, respectively) as well as a weakening effect of agency-related personality perceptions on popularity and an increasing negative effect of antagonistic personality perceptions on popularity (paths c and f, respectively). Lange, Crusius, and Hagemeyer (2016) investigated dyads of varying closeness and found that admiration was related to peer-rated social

potency, whereas rivalry was related to peer-rated social conflict.

Using a less restricted nonlaboratory setting, Carlson and Lawless DesJardins (2015) further corroborated these findings. They investigated popularity and status in small, freely interacting discussion groups for 15 weeks. The (agentic) Leadership/Authority (L/A) subscale of the NPI was related to initial status achievement, and the (antagonistic) Exploitative/Entitlement (E/E) subscale was related to decreasing status and popularity.

In sum, previous research in laboratory contexts and with circumscribed groups of peers in more natural contexts has identified markedly different consequences of agentic and antagonistic aspects of narcissism: Initial attainment of popularity is driven by the agentic aspects, whereas the antagonistic aspects lead to losses in status and popularity over time. Thus, the dual-pathway approach has been validated in laboratory contexts, but the short-term positive and long-term negative effects of the agentic and antagonistic aspects of narcissism and the mediating processes have yet to be investigated in a naturalistic field setting.

Present Study

How is narcissism related to popularity over time in field settings? Despite accumulating evidence linking narcissism to initial and subsequently declining popularity in laboratory contexts and in less controlled "quasi-field" settings, to our knowledge, it has not yet been investigated how agentic and antagonistic narcissism aspects are related to popularity in larger and naturally developing peer networks. In addition, the underlying processes of this time-dependent pattern of narcissists' (un-)popularity have not been comprehensively investigated in the field. The intensive study designs needed to investigate these research questions have only recently become feasible due to advances in ambulatory assessment and experience sampling methods (Carpenter et al., 2016; Harari et al., 2016).

In the present study, we aimed to address these open questions by employing data from an intensive, naturalistic field study, the CONNECT study (Geukes et al., in press). CONNECT is an investigation of an emerging peer network in its natural context in which a cohort of psychology first-year students was followed from zero acquaintance until the end of their undergraduate studies (for an in-depth description of the study, see osf.io/2pmcr/). As a field study, CONNECT aims to investigate naturally occurring interactions within the larger social networks they are embedded in (Everett & Borgatti, 2005; Selfhout et al., 2010) and as they unfold over time (e.g., friendship development; Wrzus & Mehl, 2015). In contrast to previous laboratory-based studies with predefined interaction partners and contact durations, in CONNECT participants were free to actively select interaction partners and decide whether to (dis-)continue contact.

In our methodological approach, we followed the dual-pathway approach outlined above and based our investigation on the mediation models described in Küfner et al. (2013) and Leckelt et al. (2015). To this end, we used data from an online survey, an initial zero-acquaintance experiment, an online diary, and smartphone-based experience-sampling during the first semester. This resulted in data on (a) participants' personality traits (i.e., agentic and antagonistic narcissism), (b) objectively assessed and independently rated appearance and behavioral cues, (c) first impressions, (d) interaction-partner-reported behaviors, interpersonal perceptions, and evaluations reported across the development of a complete student network.

As a further extension of previous work, we used both self-reports and acquaintance-reports of participants' narcissism because previous research has shown that a complete picture of a person's personality requires both the person's own perspective and others' perspectives (Luan, Hutteman, Denissen, Asendorpf, & van Aken, 2017; Vazire, 2010; Vazire & Carlson, 2011; Watson & Humrichouse, 2006). In summary, we investigated the cues and perceptions through which narcissistic admiration and rivalry are related to popularity at zero acquaintance, followed by an investigation of the behavioral, perceptual, and evaluative processes that underlie the narcissism-popularity link across the natural development of a complete peer network.

Based on previous findings (e.g., Back et al., 2010), we expected narcissistic admiration to lead to increased popularity at zero-acquaintance through cues related to attractiveness and dominance expressiveness and corresponding dominance perceptions, whereas narcissistic rivalry should be unrelated to popularity at zero-acquaintance. For the longitudinal effects, we expected to find a similar pattern to the laboratory-based investigation by Leckelt et al. (2015): Decreases in the indirect effect of narcissistic admiration (product $a * b * c$) and increases in the indirect effect of narcissistic rivalry (product $d * e * f$), driven by changes in behavior expression (decrease of a and increase of d) as well as changes in the evaluation of the personality perceptions (decrease of c and increase of f).

Analytical Approach

To address the different levels of analysis, we employed two different analytic methods. First, for the analysis of the *zero-acquaintance experiment* (T0), we applied a lens model approach (Brunswik, 1956; Funder, 1999; Nestler & Back, 2013) that links (a) personality to observable cues, (b) these cues to impressions of interaction partners, and (c) the impressions to evaluations of popularity. Second, to investigate the longitudinal development of the narcissism-popularity link across the five time points, we followed Leckelt et al.'s (2015) approach and estimated mediation models (see Figure 1) for each of the time points. This way, between-person time-point-specific changes in the narcissism-popularity relation

could be displayed over time, which would otherwise not be possible because alternatives, such as latent growth or multigroup models, would answer different questions (i.e., are there significant mean level changes across all time points?) or would not be suitable for the data (i.e., nonindependent groups). We used bootstrapping with 5,000 bootstrap samples to test the significance of the indirect effect (Hayes, 2013). For all analyses, we used R (R Core Team, 2016; version 3.4.0) in combination with the packages *psych* (Revelle, 2017; version 1.7.8) and *lavaan* (Rosseel, 2012; version 0.5-23.1097). We used a *full information maximum likelihood* estimator to deal with missing data (Enders, 2001).

All types of analyses were conducted separately for self-reported and acquaintance-reported narcissistic admiration and rivalry as well as for the self- and acquaintance-report aggregates. In the main text, we will focus on the analysis of the overall scores because they provide the most complete picture of participants' personality (Vazire, 2010; Vazire & Carlson, 2011). We z-standardized all variables before conducting the analyses and in the following report only standardized coefficients. To give readers a complete overview of the results from the time-point-specific mediation models, we report results for self-reports and acquaintance-reports separately in the supplement (the code and data for all analyses are available on the OSF: osf.io/n34dz). Given the rather modest sample size of this study and the rather complex analyses, we used manifest rather than latent indicators to keep the model complexity low and achieve as much statistical power as possible (Jackson, 2003).

Method

Participants

The initial sample consisted of 131 psychology first-year students who entered a large German university in October 2012. Five participants did not participate properly and essentially dropped out (i.e., they were rated by interaction partners but did not fill out the online questionnaires or participate in the event-based and time-based assessments), leaving a final sample of $N = 126$. Because the students who participated fully had reported on interactions with the individuals who dropped out, we used these data to estimate our models where available.[1] Participants had a mean age of 21.38 years ($SD = 3.88$), and 107 were women. All students participated in exchange for research participation credit, monetary compensation (up to 260 Euro for the full study), participation in a lottery for several gift vouchers, and individual feedback on their personality and personality development. We would like to note that complex, multimethodological field designs such as the one used here come with an inherent trade-off between number of participants and richness of data. Whereas this study allowed for a comparatively detailed capturing of interaction processes "in the wild," it was possible to realize this only with at least a medium-sized sample. Specifically, we used data from an entire cohort of first-year students, and thus, an upper limit on sample size was naturally set by cohort size. The university's institutional review board approved all procedures, which were also in line with the recommendations of the German Research Foundation (DFG) and the German Psychological Society (DGPs).

Procedure

The CONNECT study (Geukes et al., in press) aimed at investigating the social processes that underlie the joint development of personality and social relationships in an emerging peer network. We used two main parts that featured (a) an introductory session that included a zero-acquaintance experiment in which participants introduced themselves to their peers and (b) a field phase in which participants reported on their interactions with fellow students, their interaction partners' behaviors, and how they perceived and how much they liked their partners using an experience-sampling smartphone app (event-based assessment) and an online diary (time-based assessment). In the following, we describe the introductory session and zero-acquaintance experiment, the event-based and time-based assessments, and the measures used in subsequent analyses (narcissism, interaction behaviors, personality perceptions, popularity). Figure 2 presents a timeline outlining the time points used in our analyses. A complete overview of the CONNECT study's procedures can be found in a detailed Codebook at osf.io/2pmcr/.

Introductory session including zero-acquaintance experiment. The introductory session took place at the beginning of the winter semester, 1 week before classes started. Of the total sample of 131, the introductory session was attended by 113 participants who were thus included in the zero-acquaintance experiment. This experiment lasted 90 min (including a 10-min break). At the beginning of the session, participants were randomly assigned respondent numbers that they were asked to visibly wear. In addition, participants received a folder with their participant number including a questionnaire booklet, an informed consent form, and a manual explaining the study. Respondent numbers were randomly matched to seat numbers in the lecture hall where the session took place. After completing a brief questionnaire, participants were asked to introduce themselves (average duration: 15 s) by individually stepping forward, standing in front of the entire cohort, and stating their participant number, first name, age, and place of origin. All self-introductions were videotaped, and immediately after each introduction, participants were rated by all other first-year students regarding personality perceptions and likeability in a round-robin design. The maximum number of possible ratings was 113 *

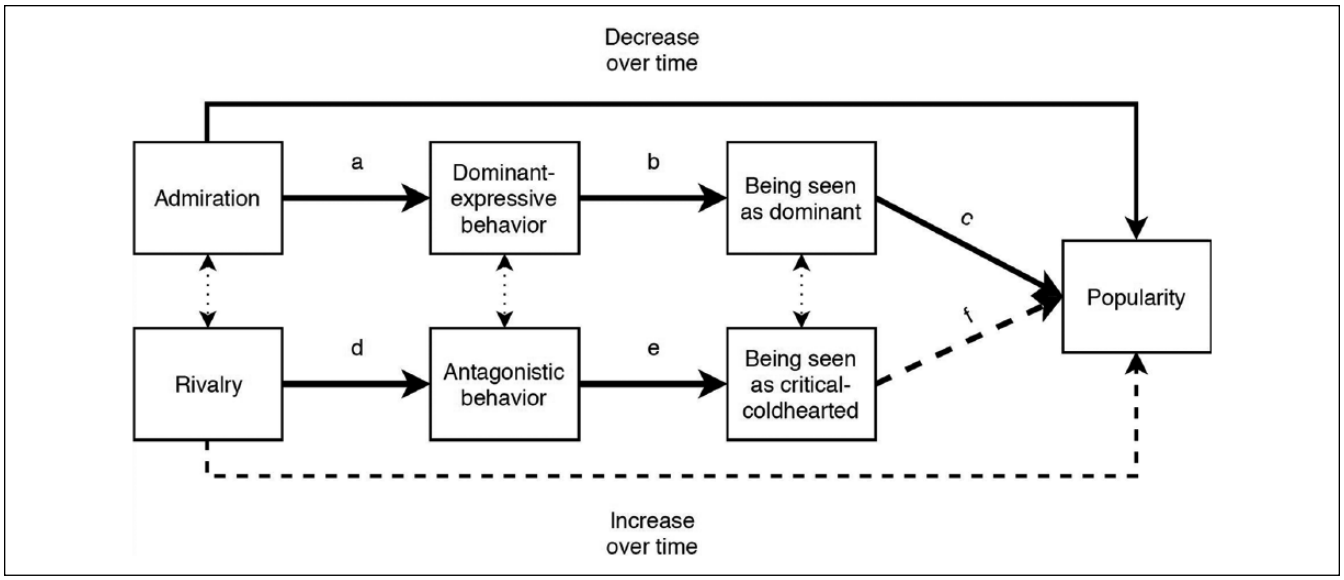


Figure 1. Conceptual overview of the time-point-specific mediation models estimated at each time point.
Note. The indirect effects of admiration and rivalry on popularity are calculated as a * b * c for the *agentic pathway* (at T1 only a * c) and d * e * f for the *antagonistic pathway* (at T1 only d * f). Dashed lines indicate negative associations, solid lines positive associations. Dotted lines indicated covariances.

112 = 12,656. Due to missing values, the number of available ratings (exclusive self-ratings) ranged from 12,199 for *affectionate* to 12,205 for *liking*; ratings were not visible to others; for details, see Measures.

After each introduction, full-body and portrait pictures were taken with a neutral facial expression. After the zero-acquaintance experiment and a 30-min break, future study procedures and the event-based and time-based assessments were explained in detail to ensure that all participants were able to complete the online diaries and the smartphone-based assessment. Participants who did not have a smartphone were loaned an iPod Touch for the duration of the event-based assessment. During this time, all pictures that were taken during the zero-acquaintance experiment were properly formatted and uploaded to the smartphone survey. The introductory session concluded with an informal gathering where participants had the chance to get to know each other in a naturalistic way and could start using and familiarizing themselves with the smartphone-based assessment (event-based). Eighteen participants who were unable to attend the introductory session attended late-starter meetings where they received the same information and, except for the zero-acquaintance round-robin evaluations, followed the same data collection procedure (i.e., portrait and full-body pictures were taken, and participants followed the same videotaped self-introduction protocol). Photos of "late-starters" were formatted and uploaded to the smartphone-based app just as the photos from the introductory session were and were labeled as "new."

Event-based assessment. We measured event-based ratings of interaction partners' behaviors in real-life social interactions with an online questionnaire for smartphones implemented in Qualtrics (www.qualtrics.com). There were three phases of event-based assessment. The first phase took place in the first 3 weeks of the study, starting at the informal gathering after the zero-acquaintance experiment. The second phase took place 2 months later (1 week, beginning of December 2012), and the third phase another 6 weeks later (1 week, end of January 2013). During these phases, participants were asked to report every interaction they had with a fellow student. An interaction was defined as *an encounter with one or more people that lasted at least 5 min and in which one responds to the behavior of the other persons* (Nezlek, Schütz, Schröder-Abé, & Smith, 2011; Sekara, Stopczynski, & Lehmann, 2016). Immediately after each interaction, participants were asked to select their interaction partners from a scroll-down menu of pictures (portrait picture taken during the zero-acquaintance experiment, along with the participant number and first name) and asked to report, among other things, the behaviors of each interaction partner. At each of the six time points displayed in Figure 2 (T0: zero-acquaintance experiment, T1-T5: field phase), we aggregated all reported interaction behaviors reported for a given participant. The time points were chosen to provide a more fine-grained assessment in the early phases of acquaintance (i.e., T1 covered the first 2 days and T2 the first week) and a more coarse-grained assessment at later points to capture long-term development (i.e., T3 spanned 2, T4 about 5, and T5 about 6 weeks).

Time-based assessment. Participants filled out online diaries, so we could obtain interpersonal perceptions (including liking and personality perceptions) at regular time intervals.

Month	Timepoint	Weekday	Date	Event-based Assessment	Time-based assessment	
	T0	Saturday (until afternoon)	6.Oct.12		Popularity	Personality perceptions
	T1	Saturday (from afternoon)	6.Oct.12	App Behavior	Popularity	
		Sunday	7.Oct.12	App Behavior	Popularity	
	T2	Monday	8.Oct.12	App Behavior		
		Tuesday	9.Oct.12	App Behavior	Popularity	
		Wednesday	10.Oct.12	App Behavior		
		Thursday	11.Oct.12	App Behavior	Popularity	
		Friday	12.Oct.12	App Behavior		
		Saturday	13.Oct.12	App Behavior	Popularity	Personality perceptions
		Sunday	14.Oct.12	App Behavior		
Okt 12	T3	Monday	15.Oct.12	App Behavior		
		Tuesday	16.Oct.12	App Behavior	Popularity	
		Wednesday	17.Oct.12	App Behavior		
		Thursday	18.Oct.12	App Behavior	Popularity	
		Friday	19.Oct.12	App Behavior		
		Saturday	20.Oct.12	App Behavior	Popularity	
		Sunday	21.Oct.12	App Behavior		
		Monday	22.Oct.12	App Behavior		
		Tuesday	23.Oct.12	App Behavior	Popularity	
		Wednesday	24.Oct.12	App Behavior		
		Thursday	25.Oct.12	App Behavior	Popularity	
		Friday	26.Oct.12	App Behavior		
		Saturday	27.Oct.12	App Behavior	Popularity	Personality perceptions
		Sunday	28.Oct.12	App Behavior		
Nov 12	T4	Saturday	3.Nov.12	-	Popularity	
		Saturday	10.Nov.12	-	Popularity	Personality perceptions
		Saturday	17.Nov.12	-	Popularity	
		Saturday	24.Nov.12	-	Popularity	Personality perceptions
		Saturday	1.Dec.12	-	Popularity	
Dez 12		Monday	3.Dec.12	App Behavior		
		Tuesday	4.Dec.12	App Behavior		
		Wednesday	5.Dec.12	App Behavior		
		Thursday	6.Dec.12	App Behavior		
		Friday	7.Dec.12	App Behavior		
		Saturday	8.Dec.12	App Behavior	Popularity	Personality perceptions
		Sunday	9.Dec.12	App Behavior		
Jan 13	T5	Saturday	15.Dec.12	-	Popularity	
		Saturday	12.Jan.13	-	Popularity	Personality perceptions
		Saturday	19.Jan.13	-	Popularity	
		Monday	21.Jan.13	App Behavior		
		Tuesday	22.Jan.13	App Behavior		
		Wednesday	23.Jan.13	App Behavior		
		Thursday	24.Jan.13	App Behavior		
		Friday	25.Jan.13	App Behavior		
		Saturday	26.Jan.13	App Behavior	Popularity	Personality perceptions
		Sunday	27.Jan.13	App Behavior		

Figure 2. Overview of study timeline and time points used in the analyses.

Using a link to their personalized diary via email, participants provided ratings of their fellow students. Participants were asked to report on interactions during the last week only with fellow students whom they said they knew. Furthermore, they were asked whether they had interacted with a specific student during the last week only if they had previously indicated in the diary that they knew the person. Questions regarding *liking* were answered for all known participants, whereas *personality perceptions* were assessed only for those participants with whom they had interacted in the previous week. At each time point displayed in Figure 2, we aggregated all diary entries up to the last assessment. For example, T3 is an aggregate of all diaries

Table 1. Descriptive Statistics and Correlations on the Between-Person Level Between Measures in the Zero-Acquaintance Experiment.

	n	*M*	*SD*	Admiration	Rivalry	Attractiveness-style	Dominant-expressive behavior	Arrogant behavior	Dominance perceptions	Affection perceptions
Admiration	123	3.13	0.57							
Rivalry	123	1.96	0.44	**.39**						
Attractiveness-style	131	0.00	1.00	.07	.05					
Dominant-expressive behavior	131	0.00	1.00	**.28**	.07	.14				
Arrogant behavior	126	0.00	1.00	.16	.05	.12	**.34**			
Dominance perceptions	109	0.00	0.43	**.25**	.07	**.50**	**.73**	**.33**		
Affection perceptions	109	0.00	0.27	−.11	−.12	.10	−.10	**−.57**	−.17	
Popularity	109	0.00	0.37	.01	−.10	**.44**	**.26**	**−.31**	**.35**	**.77**

Note. Bold indicates significance at $p < .05$. The sample size per variable represents the data that were available after missing values were removed.

that assessed *liking* (six diaries) and all diaries that assessed the personality perceptions (one diary).

Measures

In the following, we will report on only the measures used in the present research and refer the reader to the CONNECT study description on the Open Science Framework (OSF; osf.io/2pmcr), the overview paper by Geukes et al. (in press), and the CONNECT codebook (osf.io/9zcy7) for a complete overview of the study and all measures. For all measures described here, interrater agreement was measured with the intraclass correlation coefficient (ICC 2,k; e.g., McGraw & Wong, 1996), reliability of the aggregates was assessed with the Spearman-Brown formula for aggregates of two items (r_{SB}; Eisinga, Grotenhuis, & Pelzer, 2013), and Cronbach's alpha was used for aggregates consisting of more than two items. There were unsystematic missing values on any given measure, and the effective sample size for each variable can be found in Tables 1 and 2.

Narcissism. Narcissism *self-reports* were assessed with the Narcissistic Admiration and Rivalry Questionnaire (NARQ; Back et al., 2013). The full version of the NARQ is an 18-item measure of grandiose narcissism, distinguishing the agentic ($\alpha_{admiration} = .79$) and antagonistic ($\alpha_{rivalry} = .77$) aspects of grandiose narcissism. A typical admiration item is "Being a very special person gives me a lot of strength," and a typical rivalry item is "I want my rivals to fail." Items are answered on a 6-point scale ranging from 1 (*do not agree at all*) to 6 (*agree completely*). For the *narcissism acquaintance-reports*, participants were asked to send a link to an informant survey to (at least) two family members or well-acquainted friends. The informant version of the NARQ was identical to the self-report ($\alpha_{admiration} = .83$, $\alpha_{rivalry} = .85$) with items adjusted to fit other-descriptions. To generate admiration and rivalry *total scores*, self-reports and acquaintance-reports were averaged ($r_{admiration} = .37$, $p < .001$, $r_{rivalry} = .19$, $p = .042$).

Physical appearance. In the *zero-acquaintance experiment*, cues of attractiveness and style from the portrait and full-body photographs were coded by trained raters (for an overview of interrater agreement and all cue measures, see Supplemental Table S1). The cue aggregate *attractiveness* ($r_{SB} = .74$) was created from the cues *attractiveness face* and *attractiveness body*. The cue aggregate *style* ($\alpha = .81$) was created from the cues styled hair, stylish clothes, stylish appearance, neat appearance, neat hair, neat clothes, flashy clothes, flashy appearance, modern clothes, and trendy haircut. In a final step, attractiveness and style were aggregated to form the *attractiveness-style* aggregate ultimately used in our analyses ($r_{SB} = .78$). All variables were *z*-standardized before aggregation. Correlations between narcissism and the single cues can be found in Supplemental Table S2.

Self-introduction and interaction behaviors. Trained raters rated dominant, expressive, and arrogant behavior in the videotaped self-introductions from the zero-acquaintance experiment or the late-starter session. Rater training involved three practice sessions involving sample videos and photographs; after independently rating each training video, raters jointly discussed their ratings to develop a shared understanding and to ensure reliable and accurate assessments. The behavioral cue aggregate *expressive behavior* ($\alpha = .54$) was formed from the video-based cues expressiveness, open posture, dynamic body movement, and smile. The s*elf-assured behavior* cue aggregate ($\alpha = .92$) consisted of the single cues self-confidence,

Table 2. Overview of Descriptive Statistics and Intercorrelations for the Variables in the Time-Point-Specific Mediation Models Based on Data From the Field Study.

	n	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1. Admiration	123	3.13	0.57																								
2. Rivalry	123	1.96	0.44	**.39**																							
3. DomExp B T1	110	4.88	0.64	**.34**	.14																						
4. DomExp B T2	125	4.95	0.46	**.26**	.10	**.48**																					
5. DomExp B T3	130	5.11	0.34	.16	.08	.19	**.58**																				
6. DomExp B T4	124	5.15	0.38	**.35**	−.03	.12	**.36**	**.44**																			
7. DomExp B T5	120	5.19	0.42	.02	−.02	.13	.16	**.28**	**.27**																		
8. Antag. B T1	110	2.48	0.47	.08	.06	.00	−.12	−.13	−.03	**−.20**																	
9. Antag. B T2	125	2.47	0.40	.13	.05	.17	**−.30**	−.05	−.02	−.08	**.36**																
10. Antag. B T3	130	2.31	0.32	**.26**	**.19**	.17	−.04	**−.27**	−.03	−.02	**.28**	**.52**															
11. Antag. B T4	124	2.28	0.43	.12	**.24**	.19	−.08	**−.21**	**−.39**	**−.27**	.07	**.32**	**.52**														
12. Antag. B T5	120	2.24	0.40	**.19**	**.22**	−.02	−.09	−.14	−.03	**−.52**	**.32**	**.38**	**.38**	**.46**													
13. Dom. P T2	129	7.34	1.30	**.21**	**.23**	**.51**	**.58**	**.54**	.15	.15	.15	**.19**	.15	.12	.02												
14. Dom. P T3	128	7.76	1.21	**.28**	.17	**.42**	**.60**	**.73**	**.35**	**.25**	.12	.12	.05	.05	.02	**.79**											
15. Dom. P T4	127	8.08	1.21	**.36**	**.23**	**.40**	**.61**	**.72**	**.42**	**.33**	.00	.04	.01	−.01	−.09	**.74**	**.88**										
16. Dom. P T5	125	8.01	1.21	**.28**	.17	**.38**	**.51**	**.62**	**.40**	**.43**	−.03	.05	−.01	−.11	**−.19**	**.64**	**.73**	**.85**									
17. CritCold. P T2	129	4.04	0.67	**.31**	**.22**	.13	−.12	−.11	−.03	−.13	**.29**	**.57**	**.46**	**.33**	**.35**	.14	.14	.08	.12								
18. CritCold. P T3	128	3.64	0.76	**.23**	**.33**	.06	−.17	**−.24**	−.07	**−.28**	**.28**	**.55**	**.53**	**.46**	**.50**	.03	−.04	−.05	−.10	**.63**							
19. CritCold. P T4	127	3.32	0.71	**.23**	**.24**	.11	**−.20**	**−.35**	**−.26**	**−.25**	**.21**	**.43**	**.49**	**.54**	**.39**	−.03	−.12	**−.19**	−.13	**.57**	**.74**						
20. CritCold. P T5	125	3.25	0.94	.14	.18	−.06	**−.30**	**−.33**	**−.22**	**−.27**	.14	**.37**	**.41**	**.41**	**.40**	−.13	**−.23**	**−.27**	**−.35**	**.42**	**.57**	**.71**					
21. Popularity T1	122	7.18	0.72	−.05	−.03	.17	**.26**	.14	.14	.07	−.17	−.17	**−.19**	**−.20**	**−.20**	**.20**	.15	.14	**.24**	**−.38**	**−.27**	**−.35**	**−.36**				
22. Popularity T2	130	7.44	0.50	−.08	−.04	.16	**.34**	**.39**	**.20**	**.19**	−.13	**−.32**	**−.31**	**−.21**	**−.24**	**.31**	**.40**	**.41**	**.39**	**−.52**	**−.49**	**−.56**	**−.59**	**.71**			
23. Popularity T3	130	7.34	0.47	−.08	−.06	.15	**.32**	**.38**	.16	**.21**	−.07	**−.38**	**−.37**	**−.25**	**−.26**	**.27**	**.36**	**.40**	**.39**	**−.56**	**−.54**	**−.55**	**−.57**	**.65**	**.94**		
24. Popularity T4	128	7.27	0.46	−.08	−.09	.21	**.29**	**.28**	.12	**.19**	−.01	**−.39**	**−.40**	**−.29**	**−.30**	**.23**	**.30**	**.32**	**.34**	**−.55**	**−.54**	**−.51**	**−.55**	**.63**	**.87**	**.95**	
25. Popularity T5	127	7.23	0.45	−.06	−.11	.16	**.29**	**.25**	.16	**.18**	−.05	**−.40**	**−.44**	**−.36**	**−.31**	**.20**	**.25**	**.27**	**.31**	**−.54**	**−.52**	**−.52**	**−.56**	**.61**	**.80**	**.86**	**.94**

Note. B = behavior, *p* = perceptions, DomExp = dominant-expressive, Antag. = antagonistic, Dom = dominance, CritCold = critical-coldhearted. Bold indicates significance at $p < .05$.

nervousness (reverse coded), self-assured facial expression, self-assured body movements, nervous behavior (reverse coded), and self-assured behavior. The cue aggregate *strong voice* ($\alpha = .88$) was created from the cues volume voice, powerful voice, and self-assured voice. In a final step, the *dominant-expressive behaviors* aggregate, which was used in the subsequent analysis ($\alpha = .64$), was created by aggregating *expressive behavior, self-assured behavior*, and *strong voice*. All variables were *z*-standardized before aggregation. *Arrogance* was assessed with one cue ("*shows cocky, bigheaded behavior, behaves in a braggy, arrogant way*").

Interaction-partner-reported behaviors in the *field phase* of the study were assessed with an event-based online questionnaire accessible through a smartphone survey. Here, we used ratings of interaction partners' *dominant* (vs. submissive), *sociable* (vs. reclusive), *friendly* (vs. unfriendly), *arrogant* (vs. modest), *exploitative* (vs. cooperative), and *self-revealing* (vs. reserved) behaviors rated on bipolar scales ranging from 1 to 7. We created aggregates for each of the five time points for *dominant-expressive* behavior (dominant, sociable, self-revealing; $\alpha_{T1\text{-}T5}$: .75, .69, .71, .62, .62) and *antagonistic* behavior (unfriendly, arrogant, exploitative; $\alpha_{T1\text{-}T5}$: .73, .79, .76, .84, .69). That is, at each time point, all behavioral reports for a given dimension were averaged across interactions and interaction partners to derive a robust estimate of how each participant behaved on average at a given time point (as seen by his or her interaction partners). Please see Supplemental Table S3 for descriptive statistics of the number of interaction partners reported on and the number of interaction partners who provided ratings.

Personality perceptions. For the personality perception variables, we applied Social Relations Model analyses with the *TripleR* package (Schönbrodt, Back, & Schmukle, 2012) to calculate target effects that indicated the extent to which a person showed the tendency to be seen as high or low on a specific judgment (e.g., a high target effect on the variable *dominance* indicates the degree to which a given person is perceived as dominant).

In the *zero-acquaintance experiment*, participants judged and were judged by all other participants in a round-robin design with regard to *dominance* (0 = *submissive/insecure* to 5 = *dominant/self-confident*) and *affectionateness* (0 = *cold-hearted/manipulative* to 5 = *loving/trustworthy*).

For the *field phase* of the study, we used ratings of *extraversion* (from extraverted, enthusiastic to reserved, quiet), *criticalness* (from critical, combative to understanding, warmhearted), *dominance* (from dominant, self-confident to submissive, insecure), and *affection* (from affectionate, trustworthy to cold-hearted, manipulative). Ratings were made on an 11-point bipolar scale and were based on the *time-based* assessments from the online diaries. We created aggregates for target effects of *dominance* (dominant, extraverted; $\alpha_{T2\text{-}T5}$: .96, .91, .94, .89) and *critical-coldhearted* (critical, coldhearted; $\alpha_{T2\text{-}T5}$: .91, .90, .90, .85). That is, at each time point, all personality perceptions from interaction partners for a given dimension were averaged across interaction partners to derive a robust estimate of how each participant was perceived on average at a given time point (as perceived by his or her interaction partners). Please see Supplemental Table S3 for descriptive statistics of the number of interaction partners reported on and the number of interaction partners who provided ratings.

Popularity. In both the *zero-acquaintance experiment* and the *field phase*, we used the interpersonal ratings of *liking* (zero-acquaintance experiment: 0 = *don't like the person at all* to 5 = *like the person very much*; field phase: 11-point bipolar scale) to calculate *popularity* as the target effect of liking ratings (Back & Kenny, 2010; Kenny, 1994).

Results

For reasons of readability, we only report results for the aggregated self-reports and other-reports of narcissism in the main manuscript. Separate results for self-reports and other-reports as well as respective comparisons can be found in the supplementary material (Supplemental Tables S2, S4, and S5; Supplemental Figure S1). An overview of the main results from the field part of the study can be found in the appendix.

Zero-Acquaintance Experiment—How Are Agentic and Antagonistic Aspects of Narcissism Related to Popularity Based on First Impressions?

Table 1 presents descriptive statistics and intercorrelations between the measures used in the analyses of the zero-acquaintance experiment (additional results for self-reported and acquaintance-reported narcissism are in Supplemental Table S4). Figure 3 presents the main results from the lens model analysis. Contrary to previous studies, correlational analyses showed no significant association of either admiration ($r = .01$, $p = .909$) or rivalry ($r = –.10$, $p = .295$) with popularity or the cues of attractiveness-style ($r_{admiration} = .07$, $p = .444$; $r_{rivalry} = .05$, $p = .574$).

In line with the dual-pathway model and previous research on first impressions, only the agentic aspect of grandiose narcissism (admiration) was indirectly associated with popularity at zero acquaintance (indirect effect [IE] = .10, 95% confidence interval [CI] = [.04, .17]). This positive effect of the agentic narcissistic strategy on popularity was due to admiration's positive association with cues related to dominance and expressiveness ($\beta = .30$, 95% CI = [.12, .48], $p < .001$) and the cues' association with subsequent perceptions of dominance ($\beta = .65$, 95% CI = [.55, .76], $p < .001$), which were positively related to popularity at zero acquaintance ($\beta = .50$, 95% CI = [.40, .60], $p < .001$).

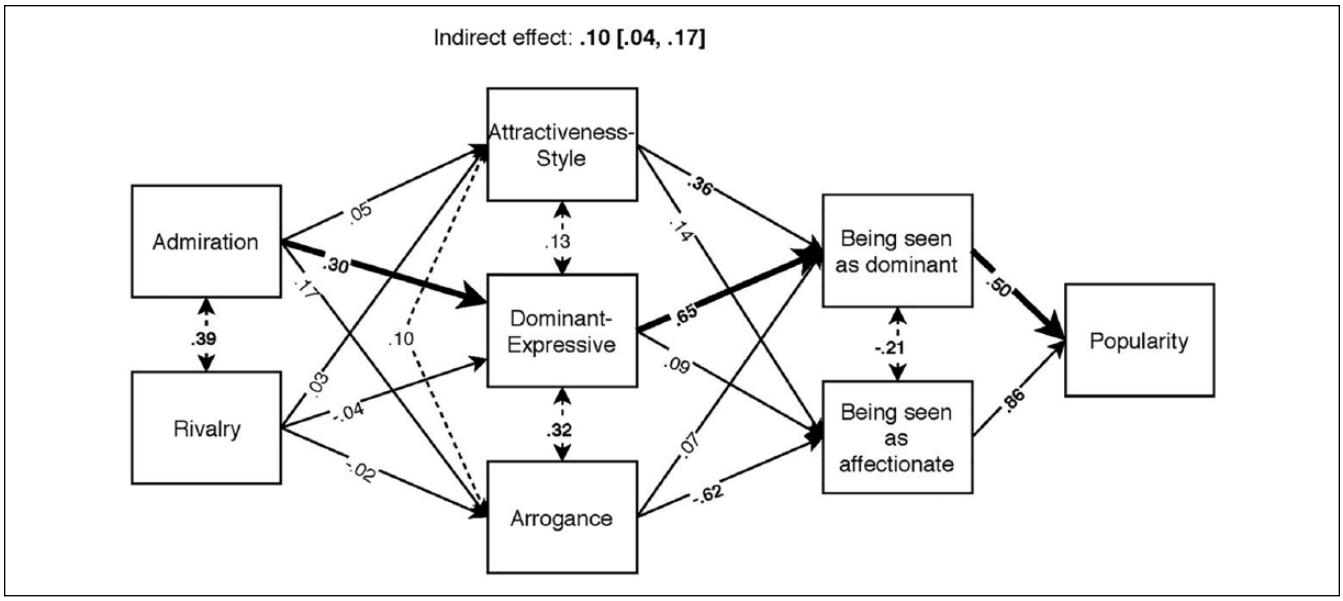


Figure 3. Lens model linking narcissistic admiration and rivalry to popularity at zero acquaintance through observable cues and associated personality perceptions.
Note. Bold indicates significance at $p < .05$, and the 95% confidence interval for the indirect effect is given in brackets.

Table 3. Result of Bootstrapped Time-Point-Specific Mediation Models Showing the Indirect Effects of the Agentic and Antagonistic Pathways Based on Data From the Field Study.

Time point	Agentic pathway		Antagonistic pathway	
	IE	95% CI	IE	95% CI
1	**.09**	[.022, .165]	−.01	[−.047, .028]
2	**.06**	[.023, .111]	−.02	[−.071, .036]
3	**.06**	[.011, .110]	**−.05**	[−.104, −.008]
4	**.04**	[.015, .080]	**−.04**	[−.085, −.001]
5	.01	[−.003, .022]	**−.04**	[−.080, −.007]

Note. Bold font indicates coefficients with bootstrapped 95% confidence interval not including zero. IE = indirect effect; CI = confidence interval.

Replicating previous findings, in a zero-acquaintance situation and based on first-impressions, narcissistic rivalry was not significantly related to any of the cues, most notably arrogance (β = –.02, 95% CI = [–.20, .17], $p = .833$).

Field Phase—How Are Agentic and Antagonistic Aspects of Narcissism Related to Popularity Over Time?

Contrary to previous research, correlational analyses (Table 2 and Supplemental Table S5) indicated that across all time points, neither admiration nor rivalry had a significant association with popularity (rs = –.03 to –.11, ps > .209).

Turning to the underlying processes of the narcissism–popularity link, we estimated the between-person effects of the agentic and antagonistic narcissism pathways separately for each of the five time points. At T1, when no personality perceptions were available yet, the agentic pathway consisted of admiration's associations with dominant-expressive behaviors and subsequent popularity (paths *a* and *c* in Figure 1), whereas the antagonistic pathway consisted of rivalry's association with antagonistic behavior and subsequent popularity (paths *d* and *f* in Figure 1). For T2 to T5, additional personality perceptions (agentic: being seen as dominant; antagonistic: being seen as critical-coldhearted) were available, completing the process model. The effects of admiration and rivalry were estimated by linking the narcissism aspects to expressed behaviors, these behaviors to personality perceptions of interaction partners, and finally the personality perceptions to popularity (agentic: paths $a * b * c$; antagonistic: paths $d * e * f$ in Figure 1). Results can be found in Table 3 (see Table 2 for intercorrelations and descriptive statistics).[2]

Results from the time-point-specific analyses (Table 3) confirmed the findings from previous research (Leckelt et al., 2015), showing that from the beginning to later acquaintance (T1-T4), the agentic pathway positively mediated the relation between narcissistic admiration and popularity, whereas mediation through the antagonistic pathway was present only in the later phases of acquaintance (T3-T5). In line with previous research (Küfner et al., 2013), both pathways mediated the relation between narcissism and popularity at medium levels of acquaintance (T3), such that the narcissism-popularity relation was positively mediated through the agentic pathway (IE = .06, 95% CI = [.011, .110]) and negatively mediated through the antagonistic pathway (IE = –.05, 95% CI = [–.104, –.008]).

Table 4. Detailed Results of Time-Point-Specific Mediation Models Based on the Field Study Data Showing All Agentic and Antagonistic Pathways.

Time point	Facet	Pathway	Narcissism→ behavior			Behavior→ perception			Perception→ popularity		
			β	95% CI	*p*	β	95% CI	*P*	β	95% CI	*p*
1	Adm	Agentic	**.34**	[.157, .518]	<.001	—	—	—	**.25**	[.041, .468]	.019
	Riv	Antagonistic	.04	[–.166, .250]	.693	—	—	—	−.19	[–.391, .016]	.070
2	Adm	Agentic	**.28**	[.112, .443]	.001	**.59**	[.450, .732]	<.001	**.40**	[.261, .533]	<.001
	Riv	Antagonistic	.06	[–.118, .236]	.516	**.58**	[.415, .737]	<.001	**–.57**	[–.710, –.432]	<.001
3	Adm	Agentic	**.22**	[.049, .384]	.011	**.73**	[.611, .851]	<.001	**.36**	[.220, .500]	<.001
	Riv	Antagonistic	**.19**	[.024, .361]	.025	**.53**	[.367, .683]	<.001	**–.52**	[–.379, –.666]	<.001
4	Adm	Agentic	**.37**	[.221, .526]	<.001	**.42**	[.261, .572]	<.001	**.28**	[.113, 444]	.001
	Riv	Antagonistic	.16	[–.004, .322]	.055	**.57**	[.423, .718]	<.001	**–.44**	[–.599, –.283]	<.001
5	Adm	Agentic	.09	[–.066, .255]	.248	**.42**	[.260, .573]	<.001	.16	[–.010, .323]	.065
	Riv	Antagonistic	**.18**	[.027, .341]	.021	**.42**	[.256, .584]	<.001	**–.51**	[–.637, –.327]	<.001

Note. At T1, behavior was directly linked to popularity because personality perceptions were not available yet. Bold font indicates significance at $p < .05$. CI = confidence interval; Adm = admiration; riv = rivalry.

To better understand the changing mediation effects from T1 to T5, a closer look at the behavioral expression, interpersonal perception, and evaluation processes that constitute the two pathways paints an interesting picture (Table 4). The relations between narcissism and the dominant-expressive and antagonistic behaviors underwent specific changes. Whereas admiration and dominant-expressive behavior were significantly related from T1 to T4, the strength of the relation fell from T1 to T3, spiked at T4, and was nonsignificant at T5. Conversely, narcissistic rivalry and antagonistic behavior were significantly related only at T3 and T5, falling just short of the $p < .05$ cut-off at T4.

By contrast, both dominant-expressive and antagonistic behaviors were consistently (and fairly stably) linked to personality perceptions of dominance and being seen as critical-coldhearted, respectively, across all time points. Thus, behavioral expressions consistently evoked corresponding personality perceptions. With regard to evaluation processes, dominance perceptions were positively (T2 to T4), and critical-coldhearted perceptions were negatively (T2 to T5) linked to popularity across all four time points (T2 to T5). It is interesting that both decreased in strength from T2 to T3, and the relation of critical-coldhearted perceptions and popularity stabilized from there. Dominance perceptions, by contrast, were less strongly related to popularity at T5 than before.

In summary, results of the current study generally confirmed previous laboratory-based findings concerning the behavioral processes driving effects of narcissism on popularity in the field. Agentic and antagonistic aspects of narcissism were differentially linked to popularity across time through agentic and antagonistic behavioral pathways. Specifically, the agentic pathway linked narcissistic admiration to popularity from the beginning through the midpoint of acquaintance but diminished to the last time point. The antagonistic pathway linked narcissistic rivalry to unpopularity only from the midpoint of acquaintance and was still relevant at later acquaintance. At the zero-order level, however, the relation between narcissism and popularity and attractiveness-style-related cues differed from previous research in that agentic aspects of grandiose narcissism were unrelated to popularity and attractiveness and style cues.

Discussion

With this study, we aimed to investigate how narcissistic admiration and rivalry are related to popularity in a field setting from the earliest stages of acquaintanceship (zero-acquaintance experiment), through early and longer term acquaintance, up to 16 weeks later. An extensive longitudinal assessment of students' developing peer network included first impressions, independently rated behavioral and physical cues, behavior in real-life interactions, personality perceptions, likeability evaluations, and self-reported and informant-reported personality. Results (a) offer initial insights into the association between narcissism and popularity in larger peer networks, (b) uncover some of the behavioral processes that convey the narcissism-popularity link in real life, (c) point to important differences between self-reports and acquaintance-reports of narcissism as well as between laboratory and field settings, and (d) have relevant implications for the future study of narcissism and the personality-popularity interplay.

Narcissism and Popularity Dynamics

Regarding simple associations between aspects of narcissism and popularity across time, there were notable discrepancies between the findings of the present study and previous research: Admiration was not significantly related to initial and later popularity, nor was rivalry significantly related to unpopularity at later stages of acquaintance. Of course, these findings need to be evaluated in light of the moderate level of

statistical power in this research, and they need to be replicated in further field contexts before definite conclusions about the relations of aspects of narcissism and popularity "in the wild" can be drawn.

Results regarding the mediating agentic and antagonistic pathways were similar in direction and magnitude to findings from previous laboratory-based research (Leckelt et al., 2015). However, our patterns were not as clear, and the smaller sample size of the current study highlights the need for larger scale replications in the field. In line with the NARC's dual-pathway approach and previous laboratory research, positive effects of dominant and expressive behaviors and resulting personality perceptions (agentic pathway) were already apparent after the first 10-15 s of the acquaintance process. Underlining the importance and persistence of these first impressions (Human et al., 2013; Sunnafrank & Ramirez, 2004), and again in line with previous laboratory-based research, the pattern of results remained relatively consistent over subsequent measurement points until later acquaintance, that is, more than 9 weeks into the field phase. Throughout the first four of the five time points, the agentic pathway was positively linked to narcissistic admiration. Thus, although the effects were not apparent on the level of zero-order correlations in this particular study context (potentially due to additional diverging pathways), results showed that admiration is systematically linked to an agentic pathway that has the potential to create popularity early on in the acquaintance process.

By contrast, and in line with the NARC and previous laboratory research, antagonistic behaviors and subsequent perceptions of being critical-coldhearted (antagonistic pathway) were not detrimental to initial popularity and affected (un-) popularity only in mid to late acquaintanceship. Starting with the third time point, the antagonistic pathway was positively linked to narcissistic rivalry. Thus, despite the lack of significant negative zero-order correlations in this particular study context, results again showed that rivalry was systematically linked to an antagonistic pathway that has the potential to create unpopularity over time.

These findings further emphasize that narcissism's effects on social outcomes depend on time and context (see Back et al., 2018 for an overview; also see Campbell & Campbell, 2009; Morf & Rhodewalt, 2001) and illustrate that these effects can be understood in a more fine-grained way through a close analysis of underlying behavioral, perceptual, and evaluative processes. Short- and long-term contexts come with their unique affordances and expectations (e.g., initiating vs. maintaining interpersonal ties; being expressive/outgoing vs. friendly/supportive), which can theoretically affect all three (behavioral expression, perception, evaluation) process stages of the agentic and antagonistic pathways. As a consequence, and depending on the concrete contextual features, narcissism's relations with social outcomes (e.g., popularity) can be positive (typically at short-term acquaintance), negative (typically at longer term acquaintance), or both at the same time (typically in between). The applied process approach can be used to help determine why exactly (i.e., by means of what kind of concrete process class) length of acquaintance moderates the narcissism-popularity dynamic.

Our results indicate that, parallel to process patterns found in laboratory-based studies (Leckelt et al., 2015), the behavioral expression of narcissism undergoes specific changes that show an early and relatively stable display of dominant-expressive behaviors and an increasing display of antagonistic behaviors. On the perceptual side, however, expressed behaviors are consistently related to personality perceptions, pointing to stable cue utilization processes (Brunswik, 1956; Nestler & Back, 2013; Vazire, Naumann, Rentfrow, & Gosling, 2008). That is, dominant-expressive and antagonistic behaviors are used to a similar degree to form assertiveness-dominance and coldness-uncommunal personality perceptions from early to later acquaintance. Finally, perceptions of agentic personality were evaluated more positively at early and middle time points, and to a lesser degree at later time points, though perceptions of antagonistic personality were more consistently evaluated. Thus, narcissists' changing popularity seems to be particularly due to effects of the context of acquaintance on behavioral expression and evaluation processes and less due to effects on interpersonal perceptions of given behavioral expressions.

Differences Between Self-Reports and Acquaintance-Reports of Narcissism

Findings were largely consistent across self- and acquaintance-reported narcissism with the difference that acquaintance-reported admiration and rivalry were both more negatively related to popularity (Supplemental Table S4). This is consistent with the additional negative influence of acquaintance-reported admiration on popularity through arrogant behavior and perceptions of being unaffectionate (Supplemental Figure S1). Thus, acquaintance-reports of narcissism might have a more negative connotation across aspects of narcissism. This was corroborated by the stronger intercorrelation between narcissistic admiration and rivalry found in the acquaintance-report ($r = .53$) as compared with the self-report ($r = .23$), indicating that acquaintances have a less differentiated picture of narcissists. In line with this suggestion, previous studies have shown that narcissistic traits have lower self-informant agreement than other pathological traits do (Klonsky, Oltmanns, & Turkheimer, 2002) and that self-reported narcissism scores are more strongly related to adaptive social outcomes, whereas informant-reported narcissism scores are more strongly related to maladaptive social outcomes (Oltmanns, Crego, & Widiger, 2018). Together, these findings suggest that the method used to assess grandiose narcissism is important and should receive further consideration in future research.

Differences Between Laboratory and Field Studies

An important difference that sets the current study apart from previous research is the fact that a large, complete peer network was followed longitudinally, thus offering the advantage that individuals were able to self-select their social interactions with specific social partners. In previous studies, even those that employed a cross between a laboratory and field design, peer groups were always assigned and constant, ranging from four to 30 in size (Carlson & Lawless DesJardins, 2015; Czarna, Dufner, & Clifton, 2014; Czarna et al., 2016; Paulhus, 1998), whereas here, we assessed a complete peer network of 126 students, allowing for the naturalistic expression of personality-driven self-selection. This is important because previous research showed that extraversion, a trait related to agentic aspects of narcissism, is linked to peer network size (Asendorpf & Wilpers, 1998), the amount of interaction with unacquainted peers (Paulhus & Trapnell, 1998), and popularity (Anderson & Cowan, 2014; Stopfer, Egloff, Nestler, & Back, 2013). Moreover, narcissism is marked by a high approach and low avoidance orientation (Foster & Trimm, 2008), the tendency to use affiliative behavior as an agentic way to gain the admiration of others (Back et al., 2013), and the seeking of *emerging contexts* where they are most successful (Campbell & Campbell, 2009). As a consequence, people higher in narcissism might engage in a higher number of initial contacts with peers and are motivated to leave an existing peer group and engage with a new peer group in order to "always be emerging" (Campbell & Campbell, 2009, p. 223). In addition to this, narcissists are also relatively aware of their narcissism (Carlson, Vazire, et al., 2011) and declining popularity (Carlson & Lawless DesJardins, 2015), providing further motivation to repeatedly approach new interaction partners.

The opportunity to freely select interactions and interaction partners might result not only in narcissists being motivated to remain in the emerging zone but also in interaction partners pushing narcissists back into the "emerging zone" because narcissists are deselected as interaction partners. Narcissists' interaction partners might be motivated to disengage with narcissists over time because narcissists show increased antagonistic behaviors (Leckelt et al., 2015), lower agreeableness (e.g., Back et al., 2013), and a low need for intimacy (Carroll, 1987). In addition, narcissists believe narcissistic traits are favorable (Adams, Hart, & Alex Burton, 2015), so that long-term interactions with narcissists come with higher costs for interaction partners (Campbell & Campbell, 2009). As a consequence, as described in Campbell and Campbell's *contextual reinforcement model*, narcissists may enter cycles that are marked by initial benefits for them (and possibly to their interaction partners), followed by decreasing benefits to the narcissistic self and increasing costs for others over time, leading narcissists to repeat such cycles over and over again. Future field research on narcissism and popularity over even longer time spans might try to systematically investigate such cycles.

Limitations and Future Directions

Although we provided important answers to open questions regarding the narcissism–popularity link in this study, there are also limitations that future research might want to address. First, whereas the richness and variety of the data used in this study, including self-reports and informant-reports of personality, independently observed and interaction–partner–reported behavior, and personality perceptions, exceeds that of previous studies, the modest sample size places limitations on the precision of the effect estimates. The current results showed effect size estimates that were very similar in size to those from larger scale investigations, speaking to the validity of our findings and conceptually replicating Leckelt et al.'s (2015) study. Nonetheless, future replications in the field with larger samples will be indispensable for demonstrating the robustness of these effects. Multilab investigations represent one such approach that could be applied to pay tribute to the multimethodological data needed to investigate the processes and, at the same time, increase statistical power.

Second, all participants in this study were psychology students and most of them women. Given known gender differences in narcissism (Grijalva, Newman, et al., 2015; Leckelt et al., 2018), it would be interesting to test these effects in a more diverse sample. This might be especially fruitful because the gender composition of our sample may have placed constraints on the range of mechanisms that can be studied. For instance, several studies suggest that narcissism may play a role in attaining popularity through interpersonal attraction among heterosexual individuals (Dufner, Rauthmann, Czarna, & Denissen, 2013; Jauk et al., 2016; Wurst et al., 2017). Studying the relationship between popularity and narcissism facets in a gender-balanced sample may potentially reveal more dramatic effects and additional mechanisms. Also, it might be that some of the revealed process-paths are pronounced more or less when investigating participants that are not psychology students (e.g., psychology students might put more weight on communal behavior in their evaluations). Thus, although the strength of the mediation effects we found in this study were comparable to those found in laboratory-based research that used gender-balanced samples and different student subjects (e.g., Leckelt et al., 2015), we recommend additional field studies with different sample characteristics to further investigate the influence of sample composition.

Third, the phase of transitioning to university and establishing new friendship networks is an important and crucial life event for young adults. Whereas we assessed a complete peer network of an entire cohort of psychology first-year, which enabled a more naturalistic investigation compared with previous studies, future research should extend the

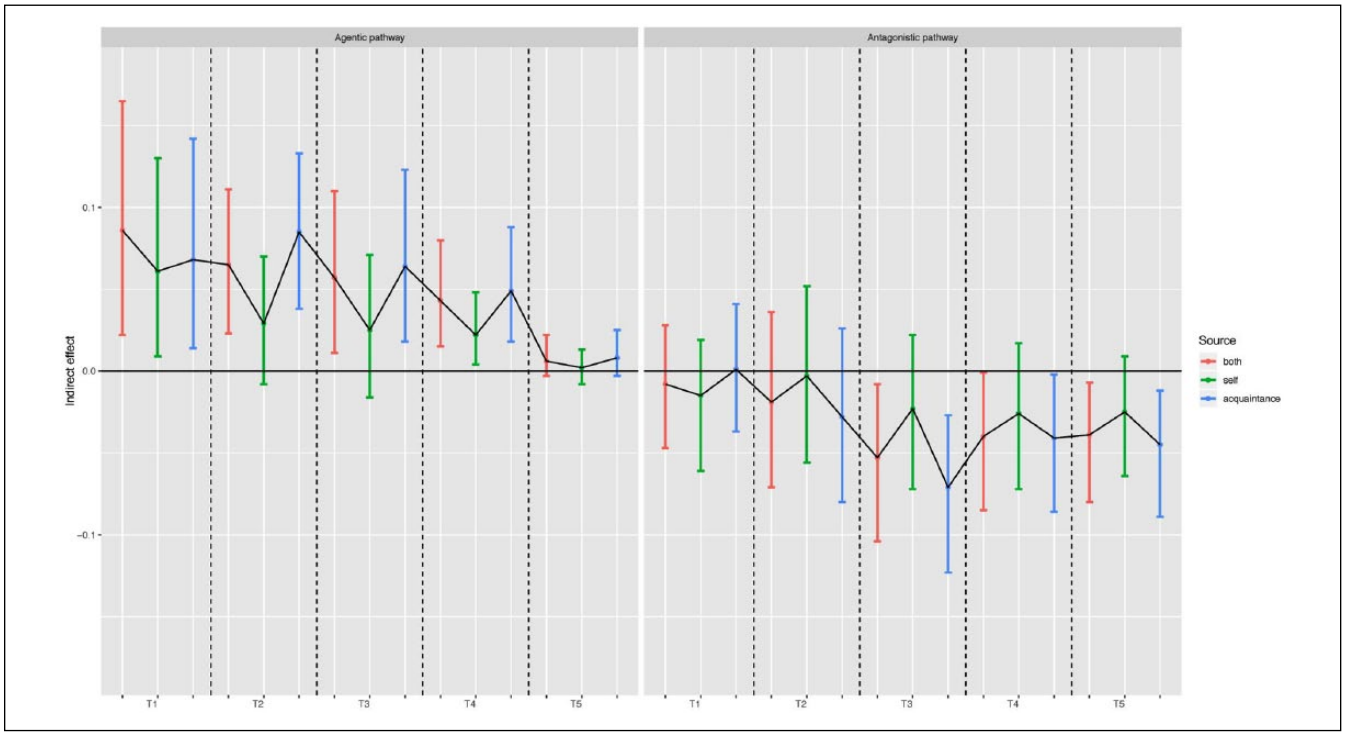
contexts in which narcissism is related to social outcomes that go beyond college life. This might be insightful for at least two reasons: (a) narcissism declines with age (Foster, Campbell, & Twenge, 2003) and (b) narcissism has been shown to especially influence workplace contexts such as team performance (Goncalo, Flynn, & Kim, 2010), workplace behavior (Grijalva & Newman, 2015), and leadership (Brunell et al., 2008; Grijalva, Harms, Newman, Gaddis, & Fraley, 2015). Looking at how narcissism is linked to social outcomes in contexts that become more important in later life will help paint a more complete picture of how narcissists fare in social contexts across the lifespan.

Conclusion

This research provided initial insights into the effects of narcissism on emerging peer popularity in a large natural field context. Whereas associations between narcissism and popularity were not evident at the zero-order level, both agentic aspects of narcissism (narcissistic admiration) and antagonistic aspects of narcissism (narcissistic rivalry) were systematically and differentially linked to behavioral pathways that underlie initial popularity and decreasing popularity over time. We highlighted the importance of taking a process-oriented approach that offers a way to pinpoint the concrete processes that mediate the changing relations between aspects of grandiose narcissism and popularity: In particular, behavioral expressions of narcissism and evaluations of personality impressions change over time, whereas the utilization of behavioral expressions to form personality impressions remains fairly constant. We hope that our process approach facilitates a deeper understanding of narcissism dynamics and inspires future larger scale field studies that will aim to replicate and extend our findings.

Appendix

Overview of indirect effects from time-point-specific mediation models based on field study data separate for narcissism aggregates, self-reports, and acquaintance-reports.



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Supplemental Material

Supplemental material is available online with this article.

Notes

1. Results were virtually unchanged when these individuals were excluded (see Supplemental Tables S6 and S7).
2. See Supplemental Table S5 for an overview including narcissism self-reports and acquaintance-reports.

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