

# Positivity in Peer Perceptions Over Time: Personality Explains Variation at Zero-Acquaintance, Popularity Explains Differential Change

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People have characteristic ways of perceiving others' personalities. When judging others on several traits, some perceivers tend to form globally positive and others tend to form globally negative impressions. These differences, often termed perceiver effects, have mostly been conceptualized as a static construct that taps perceivers' personal stereotypes about the average other. Here, we assessed perceiver effects repeatedly in small groups of strangers who got to know each other over the course of 2–3 weeks and examined the degree to which positivity differences were stable versus developed systematically over time. Using second-order latent growth curve modeling, we tested whether initial positivity (i.e., random intercepts) could be explained by several personality variables and whether change (i.e., random slopes) could be explained by these personality variables and by perceivers' social experiences within the group. Across three studies ( $n_s = 439, 257, \text{ and } 311$ ), personality variables characterized by specific beliefs about others, such as agreeableness and narcissistic rivalry, were found to explain initial positivity but personality was not reliably linked to changes in positivity over time. Instead, feeling liked and, to a lesser extent, being liked by one's peers partially explained changes in positivity. The results suggest that perceiver effects are best conceptualized as reflecting personal generalized stereotypes at an initial encounter but group-specific stereotypes that are fueled by social experiences as groups get acquainted. More generally, these findings suggest that perceiver effects might be a key variable to understanding reciprocal dynamics of small groups and interpersonal functioning.

**Keywords:** perceiver effect, interpersonal perception, positivity, reciprocity, popularity

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People have characteristic ways of perceiving others. Using the example of Pam and Nancy who meet a group of people for the first time, Pam's impressions of her group members might be fairly positive, whereas Nancy sees them more negatively in general. These tendencies to see others in more positive versus negative ways are called *perceiver effects* (Kenny, 1994) and are likely important elements of personality and interpersonal functioning. Here, we investigated whether the positivity of perceiver effects in early acquaintanceship reflect people's stable view of others or whether they differentially develop as perceivers get acquainted with the group.

To identify the sources of stability and change, we examined the role of the perceiver's personality and the role of the perceiver's social experience within the group. The current work contributes to a better understanding of interpersonal processes in developing peer groups.

## Perceiver Effects

Imagine a group of people meeting for the first time, and assume that everyone provides their impressions of one another on an attribute such as *trustworthiness* or *assertiveness* using a 1–9 scale.

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Additional materials including data, R-Code, supplementary analyses, and a list of prior publications using data presented here are retrievable from <https://osf.io/trb52/>. An overview of all additional materials is presented in Appendix E.

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a supporting role in investigation and writing of review and editing and equal role in conceptualization and writing of original draft. Michael Dufner played a supporting role in writing of original draft and writing of review and editing and equal role in data curation and funding acquisition. Katharina Geukes played a supporting role in conceptualization and writing of original draft and equal role in data curation. Livia Kraft played equal role in data curation. Sascha Krause played equal role in data curation and funding acquisition. Lucie Nikoleizig played equal role in data curation. Steffen Nestler played a supporting role in formal analysis and equal role in methodology. Mitja D. Back played a supporting role in conceptualization, writing of original draft, and writing of review and editing and equal role in funding acquisition.

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Coming back to our example of Pam and Nancy, if the overall group impression of these traits was neutral (i.e., grand mean of 5), Pam would have a positive perceiver effect, if her average impression of group members was more positive than the grand mean (e.g., +2, if her average impression was 7) and Nancy would have a negative perceiver effect, if her average impression was more negative than the grand mean (e.g., -2, if her average impression was 3). Thus, perceiver effects are the unique way people tend to view others relative to how the typical group member sees others. They explain around 25% of the variance in personality ratings (Kenny, 2019) and were treated as a methodological nuisance until recent work demonstrated that they are a meaningful individual difference variable (Rau, Nestler, et al., 2021; Srivastava et al., 2010; Wood et al., 2010).

Our example focuses on perceiver effects for a specific attribute, but recent work exploring the factorial structure across several attributes has shown that the crucial source of perceiver effects is differential positivity (i.e., some perceivers see others in more desirable ways than others; Rau, Carlson, et al., 2021; Srivastava et al., 2010; Heynicke et al., 2021).<sup>1</sup> For example, Pam tends to see others in more positive ways, a tendency that influences her perceptions on specific attributes (e.g., trustworthiness, assertiveness). Studies in different social settings have found that positivity is associated with a variety of personality characteristics of perceivers, such as the Big Five and personality pathology (Rau, Nestler, et al., 2021; Wood et al., 2010), which suggests that perceiver effects reflect the personal perceptual filters people bring with them to many contexts. In addition to positivity, trait-specific perceiver effects (i.e., some perceivers see others as higher in a particular trait than others, such as assertiveness) and differences in acquiescence (i.e., some perceivers use higher numbers than others) also exist (Rau, Nestler, et al., 2021; Srivastava et al., 2010; Heynicke et al., 2021), but they account for a smaller portion of perceiver effects and are not the focus of the present work. Given that a substantial source of perceiver effects comes from the positivity component, our predictions and results focus on the global positivity of perceiver effects.

As a group becomes acquainted, it is likely that people's initial perceiver effects will predict their perceiver effects later on fairly well. Studies on interpersonal perception in newly acquainted groups with time intervals ranging from several days to several months have reported stability coefficients for perceiver effects between  $r = .41$  and  $r = .64$  (Back et al., 2010; Kenny et al., 1992; Montgomery, 1986; Srivastava et al., 2010). This implies that if Pam formed relatively more positive impressions of others than Nancy initially, this difference would probably still be observed after the group has had a chance to get acquainted. However, stability is far from perfect, suggesting that perceivers' positivity may also change as they interact with the target persons. Studies that have measured perceiver effects at more than two timepoints during the acquaintance process have consistently found that stability increases in step with level of acquaintanceship (Montgomery, 1986; Srivastava et al., 2010), which suggests that perceiver effect development is the most dynamic soon after people meet (Kenny, 2019). Thus, when Pam first meets people, her initial perceiver effect might not be a particularly strong indicator of how positively she sees people later on.

Why might changes in perceiver effects be greatest in the early stages of the acquaintance process? Arguably, the most obvious reason is that the meaning of the perceiver effect depends on how much the perceiver knows about the group. When meeting for the

first time, perceiver effects are likely driven by people's best guesses as to what others are globally like given the limited availability of cues or by their general working model of others (i.e., perceiver effects reflect personal generalized stereotypes; Kenny, 2004). For example, Pam might have a default assumption that people are generally good, whereas Nancy has a default assumption that people are generally bad. Where these assumptions come from is an empirical question, but they might reflect a relational self-schema (e.g., Pam's mental summary of past interactions with people) or be rooted in early attachment dynamics (e.g., Pam's secure attachment in early childhood; Fraley, 2002; Srivastava et al., 2010). However, as acquaintanceship grows, people have multiple experiences within their group that could reinforce their global beliefs or lead to new beliefs about what this particular group is like. Indeed, perceiver effects have been suggested to develop into a local belief about what others are like in a particular context (i.e., personal group-specific stereotypes; Srivastava et al., 2010). The notion of these two different influences on perceiver effects—the perceiver's dispositional way of seeing the world and their experience within the group—is illustrated in Figure 1. The present research investigates how these two factors influence perceiver effect development.

Taken together, this article is organized around three questions, which are labeled as paths in Figure 1: (1) to what extent do people's perceiver effects remain stable versus systematically develop over the course of the getting acquainted process?, (2a) which personality traits explain people's best guesses at zero-acquaintance and (2b) can they also explain systematic development over time?, (3) do social experiences related to the group's popularity hierarchy feedback into the group members' perceiver effects? The following sections will address each of the three lead questions in more detail.

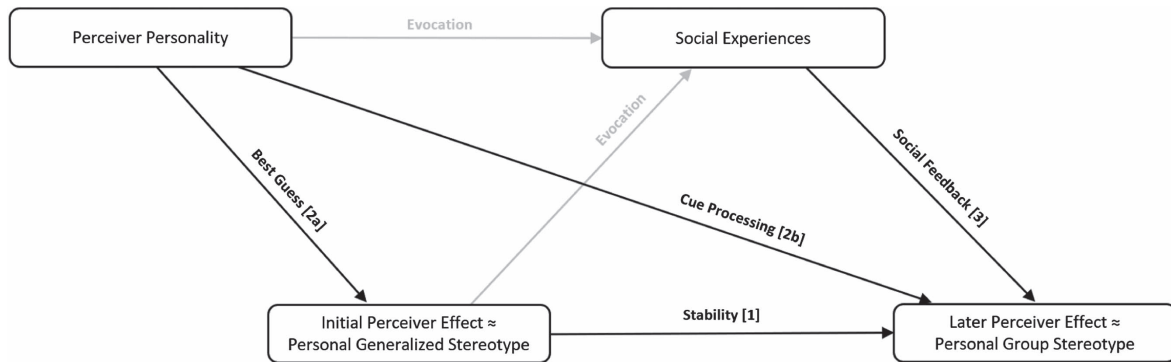
### Question 1: Stability and Change in Perceiver Effects

As discussed above, a fair amount of evidence suggests that perceiver effects are moderately stable in the early acquaintance process. At the same time, the fact that rank-order stability is far from perfect implies that perceivers change their views of others from one timepoint to the next to a considerable degree. However, these changes might not be systematic. Temporal stability may be reduced because perceivers change their views gradually over time (i.e., linear change), because they change irregularly, going up and down in response to momentary influences such as mood or measurement error, or because both systematic and unsystematic changes coexist, an example of which is illustrated in Figure 2.

The fact that Pam has more positive values than Nancy across all timepoints in Figure 1 illustrates the rank-order stability of perceiver effects over time. Yet, Pam's and Nancy's trajectories do not only differ with respect to their overall level but also with respect to their temporal development. Specifically, Pam starts with a very positive view of her peers at zero-acquaintance but shows a downward trend over time, whereas Nancy starts with a very negative view and shows an upward trend. Of course, there may be other members of the group who show different trajectories, such as starting with a

<sup>1</sup> Because desirable traits are more common than undesirable traits, one might suspect that positivity differences occur due to differential normative accuracy (i.e., some perceivers have more accurate ideas than others regarding how common certain traits are). However, positivity and normative accuracy are conceptually distinct in that the latter refers to some external truth or accuracy criterion, whereas the former does not.

**Figure 1**  
Schematic Illustration of Potential Influences on Perceiver Effects in First Impressions and Later Stages of Acquaintanceship



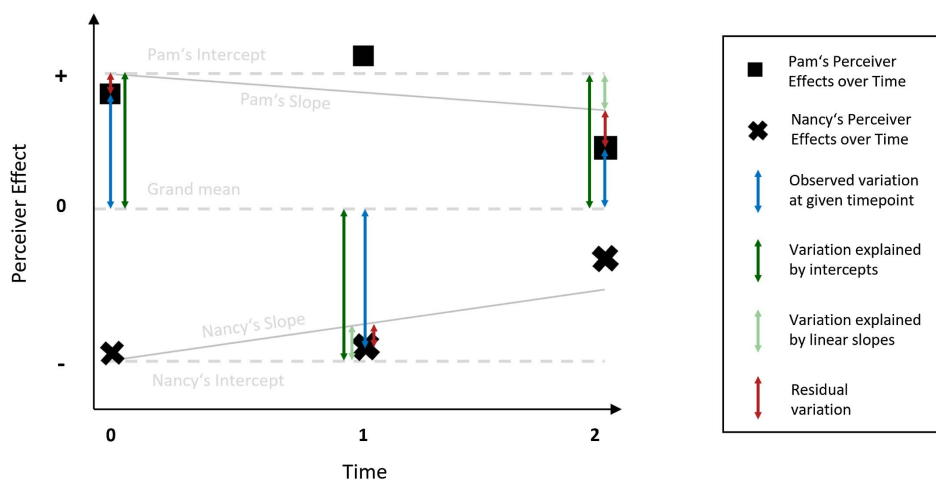
positive view and developing an even more positive view over time or starting with a negative view that stays constant over time. Whether or not people’s starting points (i.e., intercepts) are associated with their developmental trends (i.e., linear slopes) is an empirical question. For the example of Pam and Nancy, it appears they may have different default assumptions about the average person, which explains their initially positive and negative perceiver effects, respectively. However, as they interact with the others, Pam may enjoy being part of the group less than does Nancy, such that Pam’s perceiver effect gradually decreases, while Nancy’s increases over time. Of course, it is also possible that perceiver effects develop in a systematic but nonlinear way such that, for instance, they show steep shifts after the first few interactions and approximate some asymptote later on.

It is important to note that, no matter their exact shape, these developmental changes are not in absolute terms because perceiver

effects are defined relative to the average perception, usually of all group members. For example, if Pam’s group shifts from a neutral to a more positive impression over time in absolute terms (e.g., the grand mean moves from a 5 to a 7), Pam’s perceiver effect will be stable if her impressions change in step relative to others and she continues to see others in relatively more positive ways (e.g., her average impression moves from a 7 to a 9). If the group changed their absolute impressions in this way, her perceiver effect would change in a negative direction if her impressions remained the same in absolute terms.

Evidence for differential and systematic perceiver effect development would suggest that people have characteristic ways of viewing others, but they also have characteristic ways of changing these views relative to others. To the best of our knowledge, research has not tested the important question of whether perceiver effect development is systematic (e.g., linear). As such, using three, large

**Figure 2**  
Illustration of Systematic and Unsystematic Temporal Changes in Perceiver Effects of Two Perceivers



*Note.* The two perceivers should be viewed as members of a larger group whose remaining members are not displayed here for clarity. The grand mean has a value of zero at each timepoint because perceiver effects are centered on the grand mean at each measurement occasion. The grand mean of raw judgments (rather than perceiver effects) is not depicted and may change from timepoint to timepoint. See the online article for the color version of this figure.

samples, the current article presents the first investigation of the question whether people differentially develop views of others in a systematic way and, if so, to what extent these changes account for the observed variation in perceiver effects over the course of the getting acquainted process.

## Question 2: The Role of Personality in Perceiver Effects Development

As depicted in Figure 1, the perceiver's personality is likely to play a central role in shaping perceiver effects. We will consider potential personality influences both at zero-acquaintance and over the course of the acquaintance process.

### Personality Influences on Perceiver Effects at Zero-Acquaintance

Given the limited availability of information, perceiver effects at zero-acquaintance have been suggested to result from "best guesses" and reflect the perceivers' personal stereotypes about the average other (Kenny, 1994, 2004). They describe who tends to make more positive and who tends to make more negative best guesses. The most promising answer comes from personality constructs that entail beliefs about others as a core feature. For example, seeing others as trustworthy is a facet of *agreeableness* in the Big Five model of personality (Goldberg, 1990) and a major aspect of *secure attachment* (Bowlby, 1988). Further, holding optimistic anthropologic beliefs—such as believing in versus doubting the existence of true altruism—is the essence of the *philosophies of human nature* construct (Wrightsmann, 1992) and viewing others as inferior to the self is a main element of *narcissistic rivalry* (Back et al., 2013). Given that generalized beliefs about others are inherent to these constructs, these traits should account for perceiver effects at zero-acquaintance.

Empirically, only one study has examined correlates of positivity in perceiver effects at zero-acquaintance and results corroborated the above reasoning concerning agreeableness and narcissistic rivalry but did not find a consistent association with attachment security and explicit anthropologic beliefs (Rau, Nestler, et al., 2021). However, this work assessed perceiver effects in an abstract context where perceivers rated targets who were strangers presented on a computer screen rather than individuals met in real life. Thus, it is unclear whether these results generalize to in-person settings where personal involvement is higher.

### Personality Influences on Perceiver Effects Over Time

Does personality also explain changes in perceiver effects as groups become acquainted? Theoretically, personality constructs may explain how people interpret the behaviors displayed by their peers which would lead them to develop differential perceiver effects over time (see the differential processing path in Figure 1; Kenny, 2004). For example, there is preliminary evidence that people higher in agreeableness form more extreme views of people based on perceptions of prosocial behavior (Kammrath & Scholer, 2011), a tendency that might temper their initially positive impressions of others over time because they will probably encounter some suboptimal instances of prosociality. In the early phases of acquaintanceship then, more agreeable people might see others in more

positive ways at first but see others less positively over time due to how they process cues.

There is another way in which personality differences might explain perceiver effects development (not depicted in Figure 1), such that personality explains the degree to which someone changes their relative view of others *at all*. As an example, if Pam was very open to new experiences but Nancy was not, Pam may let go of her initial guesses easily, whereas Nancy holds on to hers more persistently. In other words, some personality traits might not explain differences in how people change in more positive or negative directions over time (i.e., linear slopes) but instead might explain the degree of change more generally (i.e., the *absolute values* of these slopes). Using the example of openness, people who are more open might not systematically increase or decrease in their perceiver effects over time (linear change) but people who are more open might change more in either direction (absolute change). Further, people with personality pathology are believed to have rigid interpersonal schemas that distort the content of their impressions (e.g., mistrust schema) but also the strength of impressions, which in turn would result in fairly rigid impressions over time (Bernstein & Clercx, 2018). In line with this idea, there is some work suggesting people with borderline personality disorder symptoms hold onto their negative impressions of others' moral character in the face of new information (Siegel et al., 2020). Thus, to consider the possibility of differential persistence, we explored the link between personality and absolute slopes.

In addition, an indirect influence of personality on changes in perceiver effects are possible if these changes are based on social experiences in the group, experiences that might stem from personality differences (see the *evocation* paths in Figure 1). For example, Nancy might be high in some trait that the group deems socially valuable, and as such, Nancy's group might tend to listen to what she has to say and make positive comments about her contributions which would make her feel more positively about her group over time. Of course, there are likely many specific social experiences that could explain the link between personality and the development of positive impression over time. In the current work, we assume that consensual liking, or popularity, offers a broad summary of the overall positivity of a person's social experiences in a group. People who are liked more by group members are likely treated in positive ways, whatever that might look like in a given group context. Broadly speaking then, people with traits that are more socially valued likely experience greater popularity which in turn leads to seeing group members in more positive ways over time.

As for which traits might explain a rise or fall in popularity, there is evidence that people higher on traits such as narcissistic admiration and extraversion tend to become more popular in early interactions of newly formed groups (Back et al., 2011; Grosz et al., 2020; Leckelt et al., 2015). Supporting the idea that social experiences are associated with positivity in peer perceptions, Wood et al. (2010) observed more positive perceiver effects among participants who were popular in a study among floormates and members of the same fraternity or sorority. Thus, personality is associated with popularity and popularity is associated with perceiver effects, pointing toward a potential indirect link from personality to perceiver effect development. However, to date, no study has examined this indirect link deliberately.

Overall, personality might play an important role in different aspects of perceiver effect development. In the beginning phase of

acquaintanceship, there is good reason to believe that traits defined in terms of general beliefs about others explain perceiver effects at zero-acquaintance (i.e., predict intercepts). With respect to change, personality characteristics might also determine who changes toward a more negative versus positive view (i.e., personality predicting linear slopes), who changes their view at all (i.e., personality predicting absolute values of linear slopes), and how people’s perceptions of others change via social experiences. To our knowledge, research has not examined personality influences on the developmental trajectories of perceiver effects to date. Thus, the present research will offer insight into a potentially powerful but understudied mechanism behind individual differences in interpersonal functioning.

### Question 3: The Role of Social Experiences in Perceiver Effects Development

As argued above and shown in Figure 1, the development of perceiver effects in a group may partly be based on how people’s personalities shape their general social experience of being liked. Of course, however, popularity can arise for reasons other than a broad personality traits or might arise from individual differences we failed to measure. Thus, we also consider the possibility that popularity alone plays an important role in shaping perceiver effects. For example, individuals who are systematically liked more than others over time probably experience objectively more positive interactions, which in turn results in more positive impressions over time. Thus, Nancy’s increasingly positive perceiver effect could reflect her reality, which is especially positive social experiences. There is some evidence that over time, groups do come to like specific people more than others, suggesting that popularity is a dynamic social process (Back et al., 2010; Kenny, 2019). There is also evidence that people who tend to be liked, tend to like others (Kenny, 2019). Of course, these links are potentially bidirectional such that a positive perception of others might also improve a perceiver’s popularity. Whatever the direction of these effects, it is possible that popularity change is associated with changes in perceiver effects, a possibility we investigate in the current work.

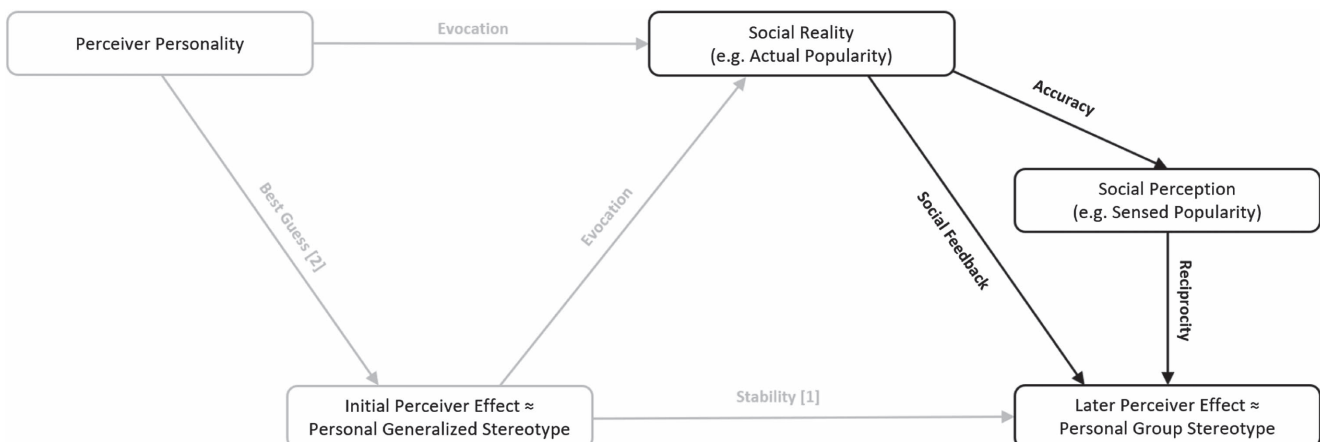
Another important element of one’s social experience is feeling liked by others or sensed popularity in a group. People arguably care deeply about their relational value to avoid rejection (Leary, 2005) and one way to monitor their value is through their popularity. This sense of one’s social value in terms of popularity might go hand in hand with how positively people view a group because liking tends to be reciprocal (Kenny, 2019). Using our example of Nancy, she might sense that over time, her group members like her more which would make her like her group more. This liking should infuse her judgments with more positivity, an effect that would be observed with a positive perceiver effect slope. Importantly, this sensed popularity does not always track actual popularity. People do have some sense of how popular they are, but accuracy is far from perfect (Kenny, 2019). For example, most people tend to underestimate how much people like them and fail to detect available social feedback (Boothby et al., 2018) and they tend to erroneously assume that their experiences of liking others is shared more than it really is (i.e., assumed reciprocity; Malloy, 2018). It is possible that people’s insight into how their popularity changes can explain why their perceiver effects change, but it is also possible that people’s beliefs about how much others like them have independent effects on their perceptions. Indeed, actual liking and beliefs of being liked can have unique effects on people’s subjective experiences in groups (Srivastava & Beer, 2005), suggesting that actual and sensed popularity are distinct social experiences. Thus, we also examined the role of perceived popularity changes on perceiver effect changes.

Taken together, we conceived that actual popularity change may shape perceiver effects, an effect that will likely be partially explained by people’s beliefs about their popularity. At the same time, we also conceived that above and beyond reality, people’s beliefs about their popularity may also influence perceiver effect development. This is illustrated in Figure 3 which is an extension of Figure 1 where the Social Feedback path has been supplemented by an indirect path involving accuracy and reciprocity.

### Research Overview

In three studies (*n*s = 439, 254, and 311), we examined stability and change in perceiver effects during the early stages of the getting

**Figure 3**  
*Schematic Illustration of Social Feedback Influences on Perceiver Effects Development*



acquainted process in small groups. First, we investigated the extent to which people gradually change their initial views of others in a more positive or a more negative direction over time. Previous research has emphasized the stable nature of perceiver effects, but there might also exist differential developmental trends. Second, we examined to what extent a perceiver's personality explains the developmental trajectory of positivity, starting with the initial encounter. To the degree that initial impressions reflect personal generalized stereotypes, personality constructs characterized by beliefs about others should explain people's "starting points" (i.e., predict the intercepts of individual trajectories). Personality variables might further explain the degree to which perceiver effects gradually increase or decrease (linear slopes) or persist instead of change (absolute slopes). Third, we explored if perceiver effect development can be explained by social experiences in a group, specifically actual popularity and/or sensed popularity. As groups get acquainted, it is likely that differences in popularity emerge and, possibly, those who turn to be popular might also turn to see others more positively.

We addressed these questions by analyzing data from people who met in person over the course of 2–3 weeks, starting from a zero-acquaintance encounter (i.e., people provided judgments of one another based on brief introductions). None of our analyses were preregistered, and the data sets were not collected with these research questions in mind. Notably, we originally considered the first two questions before analyzing the data, but with respect to the direct role of social experiences, we originally treated social experiences as a potential mediator of personality effects rather than an explanatory variable in their own right. After observing effects independently of personality differences, we included theoretical reasons for the direct role of social experiences in the introduction as well. While not preregistered, these data sets offer high power to reach robust conclusions on perceiver effect development during a dynamic time period.

To uncover personality effects, we took a rather inclusive approach. Even though we have provided some examples for the potential role of specific traits before, our goal was to showcase the plausibility of personality effects more generally rather than to make specific predictions. We considered *agreeableness*, *narcissistic rivalry*, *anthropologic beliefs*, and *attachment security* because these traits are defined by beliefs about other people and most of them have been associated with perceiver effects. We also considered *extraversion*, *conscientiousness*, *emotional stability*, *openness to experience*, *narcissistic admiration*, (*overall*) *grandiose narcissism*, and *self-esteem* since these traits were assessed in all three studies and allowed for an exploration of additional potential personality influences. In our interpretation, we focused on traits that yield robust results across the three studies. Where possible, we operationalized personality variables by aggregating self- and informant-reports to guard against the possibility of method artifacts.

To capture social feedback influences, we considered a perceiver's actual popularity within the group, defined as the average liking judgment about the perceiver, as well as a perceiver's sensed popularity, defined as their average meta-liking judgment, over the course of the study. We expected that an increase in actual popularity over time would be reflected in an increase in sensed popularity, which would be associated with increasingly positive peer perceptions (see Figure 3).

## Method

All three studies used similar methods and are described together. Sample descriptions and crucial design features are shown in Table 1. Given that the studies were not planned for investigating the present research questions, we conducted a post hoc sensitivity power analysis which confirmed that the power was good to excellent for detecting the majority of plausible true effect sizes across research questions. Details on the methods and results of the respective simulations can be found as an Online Supplemental Materials (OS 1). Studies A and B were approved by the ethics committee of the University of Leipzig (titles: "Implicit Interpersonal Attraction in Small Groups" and "Moderators of the Effects of Narcissism on Social Outcomes," protocol numbers SK 102014 and MD 122016\_rev, respectively) and Study C was approved by the Review Board of the University of Mainz (title: The Longitudinal Course of Narcissists' Reputations: A Developmental Social Interaction Approach, no protocol number). Herein, we will focus on the studies' aspects directly relevant for the current research question. Detailed study descriptions including all additional aspects such as a comprehensive explanation of all measures and procedures have been documented elsewhere (Study A: Rau et al., 2020; Study B: Kraft et al., 2021; Study C: Geukes et al., 2019). Parts of the data have been used in previous publications but none of them concerned perceiver effect development. Additional materials including data, R-Code, supplementary analyses, and a list of prior publications using data presented here are retrievable from <https://osf.io/trb52/>.

## Participants and Procedure

All studies were advertised as studies on the interplay of personality and group dynamics via email lists, flyers, and announcements on social media. Participants were incentivized by a monetary compensation at an hourly rate of 8 EUR (approximately 9.50 USD). The majority of participants were students (Study A: 76%, Study B: 79%, Study C: 100%) from various disciplines. Participants who signed up were invited to complete a battery of self-report personality questionnaires and were then scheduled for a meeting in the laboratory with a group of other participants. They were told the names of the other group members and rescheduled in case they were familiar with any of them. In Studies B and C, participants were additionally requested to recruit several acquaintances who knew them well and would complete an informant-report version of (some of) the personality scales.

Upon arriving at the laboratory, participants were welcomed, seated, and asked not to talk to each other until instructed to do so. They were then asked one after another to introduce themselves by stating their name, age, and hometown. After each self-introduction, the remaining group members provided personality impressions on a personal computer or a tablet using several rating scales (i.e., Round-Robin ratings; see Measures section). After this, the groups completed a variety of tasks, some of which involved getting to know one another more deeply, working together on solving of a problem, discussing a moral dilemma, bargaining over limited resources, and several more. Each task was followed by Round-Robin ratings. The groups attended two (Study B) or three (Studies A and C) weekly meetings, each of which involved a different

**Table 1**  
*Overview of Studies*

Study	Reference	N (Round-Robin group size)	Age <i>M</i> ( <i>SD</i> )	% Female	Description	Considered Round-Robin ratings	Measurement occasions (group meetings)	Considered personality traits
A	Rau et al. (2020)	439 <sup>a</sup> (4)	26.43 (5.79)	51	Small same-gender groups worked cooperatively on various tasks in three meetings	<i>Personality</i> : Pleasantness, Similarity to self, Self-confidence, Intelligence <i>Popularity</i> : Liking, Meta-Liking	6 (3)	<i>Self-reports</i> : Big Five, Self-Esteem, Narcissism, Narcissistic Admiration, & Rivalry, Philosophies of Human Nature, Attachment Styles <i>Self-reports</i> : Big Five, Self-Esteem, Narcissism, Narcissistic Admiration, & Rivalry <i>Informant-reports</i> : Narcissistic Admiration & Rivalry
B	Kraft et al. (2021)	254 <sup>b</sup> (4–6)	24.60 (4.38)	78	Small same-gender groups played ice-breaking games and worked on various tasks in two meetings	<i>Personality</i> : Trustworthiness, Ambitiousness, Cleverness, Leadership, Warmth, Honesty, Status, Influence <i>Popularity</i> : Liking, Meta-Liking	4 (2)	<i>Self-reports</i> : Trustworthiness, Ambitiousness, Cleverness, Leadership, Warmth, Honesty, Status, Influence <i>Popularity</i> : Liking, Meta-Liking
C	Geukes et al. (2019)	311 <sup>c</sup> (4–6)	23.79 (3.93)	55	Small same-gender and mixed-gender groups played ice-breaking games and worked on various tasks in three meetings	<i>Personality</i> : Trustworthiness, Annoyingness, Assertiveness, Leadership, Intelligence, Admiration, Rivalry <i>Popularity</i> : Liking, Meta-Liking	9 (3)	<i>Self- and Informant-reports</i> : Big Five, Self-Esteem, Narcissism, Narcissistic Admiration, & Rivalry

<sup>a</sup> 7, 63, and 51 participants missed the first, second, and third meeting, respectively. <sup>b</sup> 4 and 11 participants missed the first and second meeting, respectively. <sup>c</sup> 25, 16, and 17 participants missed the first, second, and third meeting, respectively.

number and different kinds of tasks which yielded a total of six, four, and nine<sup>2</sup> measurement timepoints for Studies A, B, and C, respectively.

## Measures

### Mutual Perceptions

Round-Robin ratings were collected on various attributes, which either concerned personality impressions (e.g., trustworthiness, assertiveness) or popularity (i.e., liking, meta-liking). An overview of all attributes is given in Table 1. In all studies, participants were asked for their personal, subjective impressions of the others and were reassured that their responses would remain anonymous. No attention checks were used. Details on the phrasing of specific items can be found in Rau et al. (2020), Kraft et al. (2021), and Geukes et al. (2019), for Studies A, B, and C, respectively. We subjected each of these ratings to Social Relations Model (SRM; Kenny, 1994) analyses as implemented in the *TripleR* package (Schönbrodt et al., 2012) in R (Version 4.0.4; R Development Core Team, 2008). This was done separately for each timepoint. The SRM assumes that a perceiver's rating (e.g., trustworthiness) about any given target is comprised of three sources: the way the perceivers sees people in general (perceiver effect), the way people see the target in general (target effect), and the unique relationship between the perceiver and the target (relationship effect including measurement error). SRM analysis quantifies the contribution of these sources by a decomposition of the variance in ratings (see Appendix A for variance proportions of each attribute) and provides estimates of each participant's perceiver and target effect. Of note, perceiver effects accounted for a significant portion of the variance across attributes with the majority of them falling between .20 and .30, which is in line with past work (e.g., .25; Kenny, 2019). They also largely exceeded the benchmark of .10 that has been suggested to indicate a substantial contribution worthy of follow-up investigation (Kenny, 1994) and were normally distributed upon visual inspection.

### Positivity

Positivity was modeled in a structural equation modeling (SEM) framework as the shared variance among each of the item-level perceiver effect estimates saved from *TripleR* (see Analyses section for details).

### Popularity

Actual popularity at a given timepoint was measured as the degree to which a target individual was liked more than others by the group (i.e., target effect of liking). Sensed popularity at a given timepoint was measured as the degree to which a target individual believed they were liked more than others by the group (i.e., meta-perception perceiver effect of liking; see Appendix A for SRM variances). As we were interested in popularity *changes* over the course of the studies, we estimated a linear growth model for each of the two popularity variables using the *lme4* package (Version 1.1-26; Bates et al., 2015) and saved the intercept and slope estimates.<sup>3</sup> Intercepts and slopes were highly correlated (ranging from  $r = .67$  to  $r = .72$  for actual popularity and  $r = .48$  and  $r = .66$  for sensed popularity across studies) which suggests that the (sensed) popularity of individuals who were (or believed to be) initially liked tended to increase over

time whereas the (sensed) popularity of those who were (or believed to be) initially less liked tended to decrease. As we were interested in popularity *change* that was unaffected by baseline differences, we used the residuals after regressing the slope on the respective intercept variable. We will refer to these variables as *actual popularity development* and *sensed popularity development*.<sup>4</sup>

## Personality Measures

Appendix B displays the scales, reliabilities, and descriptive statistics of all considered individual difference measures. As shown, all three studies included: (a) the Big Five personality traits as measured by the Big Five Inventory (BFI; Danner et al., 2016; Soto & John, 2017), (b) self-esteem measured by the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965; von Collani & Herzberg, 2003), and (c) Narcissism measured by the Narcissistic Personality Inventory (NPI; Raskin & Hall, 1979; Schütz et al., 2004), and the narcissistic admiration and rivalry as measured by the Narcissistic Admiration and Rivalry Questionnaire (NARQ; Back et al., 2013). Study A also included Philosophies of Human Nature (PHN; Wrightsman, 1992) and attachment styles (Bartholomew & Horowitz, 1991) as measured in Rau, Nestler, et al. (2021). Traits for which informant-reports were available showed moderate to high agreement between self and others (see Appendix B) which points toward a common core of consensually perceived personality differences and corroborates the validity of these measures. We report results based on composite scores from self- and informant-reports in the main text and show separate results for exclusive self- and informant-reports in Appendix D.

## Analyses

Latent growth curve modeling was used to test for differential development of perceiver effects as well as which traits and social experiences predicted their development. All analyses were run with the *lavaan* package (Version 0.6-8; Rosseel, 2012) with full information maximum likelihood estimation to handle missing data (Enders & Bandalos, 2001). We relied on the Bayesian information criterion (BIC; Schwarz, 1978) for model selection due to its insensitivity to between-study differences in statistical power and its tendency to favor parsimonious specifications. To evaluate model fit, we report the comparative fit index (CFI), the root-mean-square error of approximation (RMSEA), and standardized root-mean-square residual (SRMR). We first describe how we established a

<sup>2</sup> In Study C, participants provided a first round of ratings solely based on physical appearance (i.e., before introducing themselves to one another). Since including this timepoint would have limited the comparability to the remaining studies, we did not include it in the analyses.

<sup>3</sup> Random effects variances in Study A were  $\sigma_0^2 = .329$  and  $\sigma_1^2 = .005$  for actual popularity and  $\sigma_0^2 = .304$  and  $\sigma_1^2 = .005$  for sensed popularity. In Study B, random effects variances were  $\sigma_0^2 = .329$  and  $\sigma_1^2 = .005$  for actual popularity while no growth model could be estimated for sensed popularity because sensed popularity was only assessed at two timepoints. Instead, we computed difference scores between the second and first timepoint;  $\sigma_{\Delta}^2 = .261$ ,  $\sigma_{\Delta}^2 = .232$ . Random effects variances in Study C were  $\sigma_0^2 = .216$  and  $\sigma_1^2 = .197$  for actual popularity and  $\sigma_0^2 = .547$  and  $\sigma_1^2 = .461$  for sensed popularity.

<sup>4</sup> In response to a comment by a reviewer, we verified that the choice to partial out baseline differences did not change the results in meaningful ways (see OS 5).



longitudinal measurement model for perceiver effects, before turning to the growth model that addresses the substantive research questions.

The first step in establishing a suitable measurement model involved the specification of a positivity factor for each timepoint. This was done by allowing free loadings of all perceiver effect variables (called *indicators* in the following) of a given timepoint on a common factor for this timepoint, while allowing for correlations between these positivity factors from different timepoints.<sup>5</sup> To account for method effects, we also allowed all residuals of the same indicator to covary with one another across timepoints. This is known as a *correlated uniqueness* approach in the SEM literature (Jöreskog, 2007; Kenny, 1976; Sörbom, 1975) and avoids any potential misfit due to method effects. In Study A, this approach led to convergence problems, which could be overcome by constraining the residual correlations to an equal value for each indicator, suggesting the full correlated uniqueness model had been overparameterized.

We next considered the possibility of *acquiescence bias* contributing to variation in perceiver effects. Acquiescence refers to perceivers' differential tendencies to endorse all items irrespective of their content, and if not accounted for, these response tendencies may inflate the variance in perceiver effects and blur their substantive meaning. We controlled for this tendency in two ways that varied across samples. First, in Study C, we accounted for acquiescence by specifying a method factor with a fixed loading of 1 for all indicators assessed in the same group meeting. Given that Study C featured both positively and negatively keyed items, this specification discerned variation in acquiescence from variation in the substantive construct of interest (i.e., positivity in our case). The acquiescence factors accounted for a substantial amount of variance in perceiver effects in all group meetings (all variances  $p < .05$ ). Second, in Studies A and B, all indicators were keyed in the same direction, which made it impossible to model acquiescence as a latent variable as we did in Sample C. Instead, we computed acquiescence scores from a questionnaire completed by the participants that featured both positively and negatively keyed items and included this score as a manifest covariate. Specifically, we used the overall mean from participants' answers on the BFI-2 (Danner et al., 2016), which has an equal number of positively and negatively keyed items within each Big Five dimension, as an acquiescence score (see e.g., Soto et al., 2008 for the same approach). Note that the manifest acquiescence score approach assumes acquiescence bias to be a stable individual difference variable, which has received empirical support (Wetzel et al., 2016). The acquiescence score was associated with the positivity factors ( $\beta$ s between .06 and .15;  $ps < .05$  for two timepoints) in Study A but was not correlated with positivity ( $\beta$ s between  $-.12$  and  $.03$ ; all  $ps > .05$ ) in Study B. Nevertheless, we retained the acquiescence score as a covariate in both studies to maximize comparability across studies.

Importantly, the loading pattern for the positivity factors was consistently characterized by positive loadings for desirable personality features (e.g.,  $\lambda = .56$  for *trustworthiness* and  $\lambda = .57$  for *intelligence* in Study C) and negative loadings for undesirable features (e.g.,  $\lambda = -.50$  for *annoyingness* and  $\lambda = -.65$  for *rivalry* in Study C; see Appendix C for details) which is consistent with the use of *positivity* as the factor label. To determine that this characterization of positivity was stable over time, we established longitudinal measurement invariance, which is also a prerequisite for

analyzing latent growth. To do so, we compared the model described above (i.e., configural measurement invariance) to a model with a fixed loading pattern over time where each indicator's loading on positivity was constrained to be equal across timepoints (i.e., strong measurement invariance) and to a model which additionally constrains the residual variances of each indicator to be equal across timepoints (i.e., strict measurement invariance). Testing the equality of the indicators' intercepts is unnecessary because perceiver effects have a mean of zero by definition.

In all studies, the model with strong invariance outperformed the configural model as indicated by a lower BIC. In Studies B and C, the strictly invariant model further outperformed the strongly invariant model, whereas this was not the case in Study A. However, given that model fit for the strictly invariant model in Study A was still acceptable in absolute terms, we opted to select the strictly invariant model in all studies for reasons of comparability. The CFIs were .937, .951, and .955, the RMSEAs were .065, .059, and .047, and the SRMRs were .057, .071, and .116 for Studies A, B, and C, respectively. Overall then, the measurement invariance results suggest that positivity had the same conceptual meaning across measurement occasions.

The stability correlations between neighboring positivity factors were quite sizable (ranging from  $r = .70$  to  $r = .97$ ; see Appendix C for detailed results). The discrepancy with the more moderate stability coefficients from existing research can be explained by the much shorter time intervals between measurement occasions of the studies at hand.

To further foster our interpretation of the positivity factor, we inspected its association with the perceivers' overall liking of their group members by adding perceiver effects of liking at zero-acquaintance to the first timepoint positivity factor and the perceiver effects of liking at the last timepoint positivity factor. Across all studies, the loadings were sizable at zero-acquaintance ( $\lambda$ s = .83, .83, and .47 for Studies A, B, and C, respectively) and descriptively larger at the final timepoint ( $r$ s = .92, .90, and .55), which corroborates that the positivity factors captured globally evaluative tendencies.

## Results

### Stability and Change in Perceiver Effects

Is there systematic differential change in perceiver effects over time? To examine our first research question regarding the existence and strength of differential change in perceiver effects, we compared three versions of a second-order latent growth model. The first growth model assumed no systematic differential change over time and involved only a latent intercept factor on which all positivity factors loaded with a fixed value of 1. The second growth model assumed differential linear change and additionally involved a latent slope factor on which loadings for the  $t$  positivity factors were fixed to  $\lambda_1 = 0, \lambda_2 = 1, \lambda_3 = 2, \dots, \lambda_t = t - 1$ . The third model allowed for

<sup>5</sup> In Study C, residuals for the leadership and the assertiveness indicator and residuals for the admiration and the rivalry indicator were allowed to correlate, respectively, when measured in the same group meeting. This was necessary in order to avoid misfit, presumably because both pairs of indicators reflect a common substantive construct above and beyond positivity (i.e., leadership potency and narcissism, respectively).

**Table 2**  
*Model Comparison Testing for Differential Change of Perceiver Effects Over Time*

Study	Model	$\chi^2(df)$	CFI; RMSEA; SRMR	BIC	$\Delta$ BIC compared to previous model
A	Random intercept only	967(300)	.921; .071; .096	9,690	
	Random intercept linear slope	857(299)	.934; .065; .068	9,586	-104
	Random intercept nonlinear slope	845(295)	.935; .065; .062	9,598	12
B	Random intercept only	620(268)	.926; .071; .115	4,660	
	Random intercept linear slope	511(268)	.949; .059; .071	4,551	-109
	Random intercept nonlinear slope	502(266)	.951; .059; .073	4,553	2
C	Random intercept only	3,077(1,681)	.944; .052; .121	19,312	
	Random intercept linear slope	2,901(1,680)	.951; .048; .118	19,142	-170
	Random intercept nonlinear slope	2,883(1,673)	.951; .048; .121	19,165	22

Note. RMSEA = root-mean-square error of approximation; CFI = comparative fit index; BIC = Bayesian information criterion; SRMR = standardized root-mean-square residual.

the possibility that people might also change in nonlinear, yet systematic, ways and involved free loadings for all slope factor loadings except for the first and last timepoint (Isiordia & Ferrer, 2018). The results are shown in Table 2.

As can be seen, the model allowing for random linear slopes outperformed the more restrictive model without random slopes in all three studies. This means that some perceiver's scores on the perceiver effect positivity factors for earlier timepoints were systematically lower than those for later timepoints, whereas the opposite was true for other perceivers. Thus, people differed not only in the positivity of their initial, zero-acquaintance impressions (random intercepts) but also differed in how they developed more positive or negative views of their group over time (random slopes). The linear slope model also clearly outperformed the less restrictive nonlinear slope model which suggests that changes over time occurred gradually rather than in some curvilinear or asymptotic shape. The variance parameters of the linear model were estimated to be 0.184 [95% CI: 0.151; 0.217], 0.105 [95% CI: 0.079; 0.132], and 0.186 [95% CI: 0.136; 0.237] for the intercept factors and 0.004 [95% CI: 0.003; 0.006], 0.012 [95% CI: 0.009; 0.015], and 0.001 [95% CI: 0.001; 0.002] for the slope factors of Studies A, B, and C, respectively. Although hard to interpret in absolute terms, these variances imply that a relatively large portion of positivity differences occurred at zero-acquaintance, whereas a somewhat smaller portion was due to differential development over time.

Intercepts and slopes were not substantially correlated in any of the studies ( $r_A < .00$ ;  $r_B = .01$ ;  $r_C = .10$ ; all  $ps > .05$ ), which suggests that differential change occurred independently of people's initial impressions and which led us to fix the correlation to zero in subsequent analyses for reasons of parsimony.

Next, to better understand the strength of differential change, we plotted the predicted trajectories for a selection of 32 participants in each study. This selection was based on a stratified random sample, which guaranteed that two participants from each quartile in terms of both intercepts and slopes, respectively, would be represented in the plot. For instance, two participants were sampled whose intercepts and slopes were both in the first quartile (i.e., who initially saw others negatively and also declined further over time), two participants were sampled whose intercepts were in the first quartile but slopes were in the second quartile, and so forth. The plots are shown in Figure 4. As can be seen, it was possible for perceivers who first saw others in neutral ways to develop a more positive or negative view over the course of the study, but rarely did perceivers who first

saw others in extremely positive ways develop an extremely negative view (or vice versa) over the course of the studies.

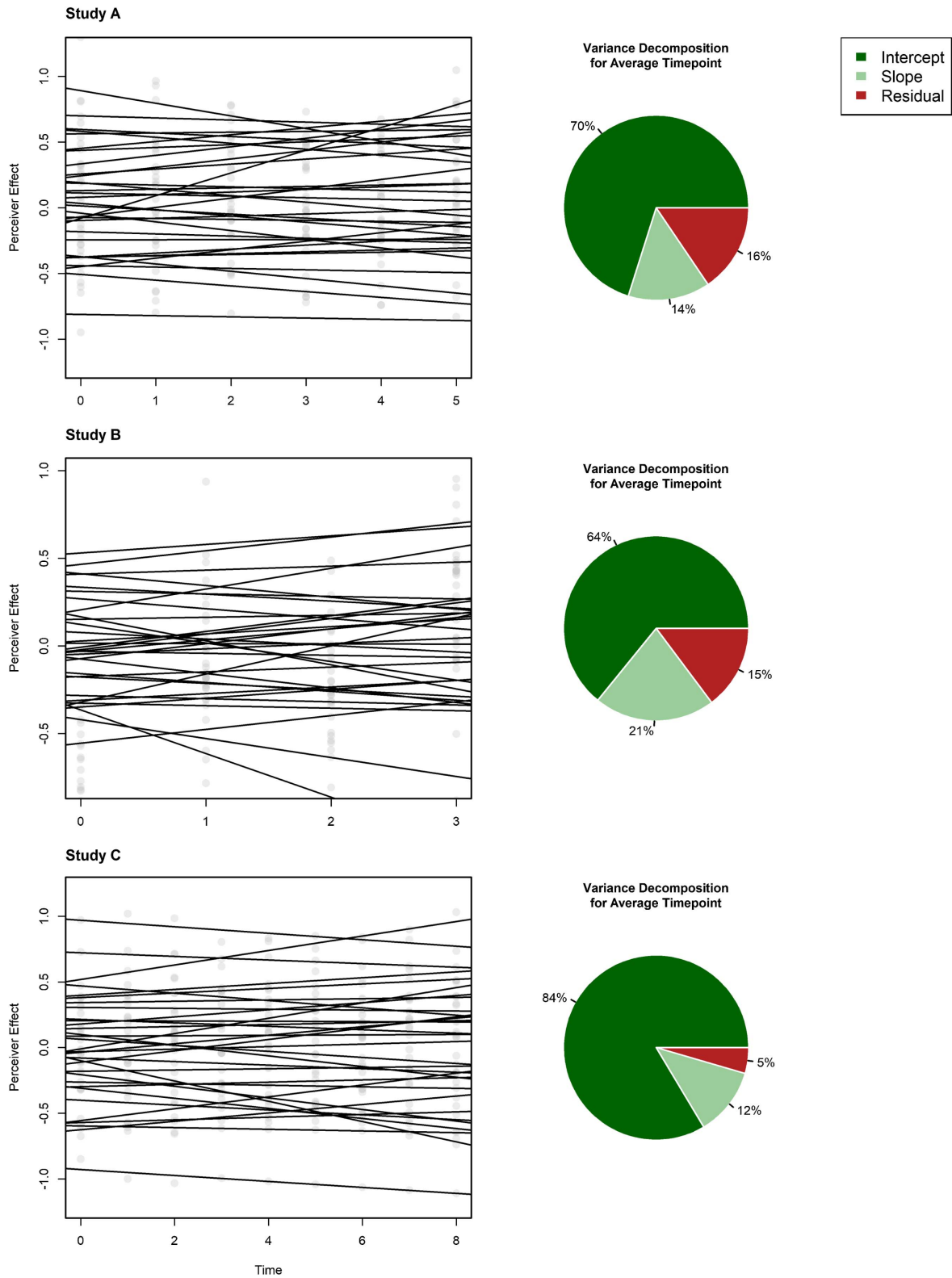
To quantify the relative importance of differential linear change, we decomposed the variances of the positivity factors into the portion that was explained by the intercept factor, the portion that was explained by the slope factor, and the portion that remained unexplained.<sup>6</sup> The results of the decomposition are shown in the right panel of Figure 4. Most of the variance could be explained by intercepts but the contribution of slopes was also noteworthy, falling between 12% in Study C and 21% in Study B. There was also a small portion of variance that remained unexplained, which indicates the presence of unsystematic fluctuations, which may have psychological sources such as mood swings but may also reflect random measurement error. We note that the particularly high level of stability in Study C is likely explained by the fact that this study had a quite high temporal resolution in the sense that ratings were collected up to four times within a single group meeting. Apart from this, the similarity of results across studies is noteworthy and highlights the robustness of evidence for the existence of differential linear trajectories in perceiver effects over the first 2–3 weeks of acquaintanceship.

### The Role of Personality in Perceiver Effects Development

To tackle our second research goal of identifying which personality predictors accounted for variation in the development of perceiver effects, we entered each personality measure separately as an exogenous observed variable predicting the latent intercept and latent slope factors. This addresses the questions of *who sees others positively versus negatively initially* (i.e., prediction of intercepts) and *who develops a more positive versus negative view over time* (i.e., prediction of slopes). The standardized regression weights are shown in Table 3.

<sup>6</sup> The decomposition was computed based on the standardized solution where  $\text{var}(\text{pos}_1) = 1 = \lambda_{\text{intercept}}^2 + \lambda_{\text{slope}}^2 + \text{var}(\delta)$ ,  $\delta$  being residual. Note that in Study C, there was a fourth term to the decomposition since acquiescence was modelled as a latent variable. For comparability to the remaining studies, we report the proportions between  $\lambda_{\text{intercept}}^2$ ,  $\lambda_{\text{slope}}^2$ ,  $\text{var}(\delta)$  after removing  $\lambda_{\text{acq}}^2$ .

**Figure 4**  
*Growth Trajectories Implied by the Random-Intercept Linear Slope Models*



*Note.* For clarity, a subset of 32 participants is displayed per study. They were drawn as a stratified sample to make sure that each quartile of both intercepts and slopes is equally represented in the plot. See the online article for the color version of this figure.

**Table 3**  
*Personality Predictors of Initial Positivity and Differential Longitudinal Changes of Positivity in Peer Perceptions*

Predictor	Prediction of positivity intercept						Prediction of positivity slope					
	Study A		Study B		Study C		Study A		Study B		Study C	
	$\beta$	95% CI	$\beta$	95% CI	$\beta$	95% CI	$\beta$	95% CI	$\beta$	95% CI	$\beta$	95% CI
Extraversion	.04	-.07; .15	-.04	-.18; .11	-.01	-.13; .11	-.18	-.32; -.05	.10	-.04; .25	.07	-.10; .23
Agreeableness	.25	.15; .36	.28	.15; .42	.25	.14; .37	.05	-.09; .19	.11	-.04; .25	-.05	-.21; .11
Conscientiousness	.14	.03; .25	.13	-.01; .27	-.02	-.15; .10	-.02	-.16; .11	.03	-.12; .18	.02	-.13; .18
Neuroticism	-.12	-.23; -.02	-.13	-.27; .01	-.08	-.20; .04	.05	-.09; .18	-.18	-.33; -.03	.08	-.08; .23
Openness to Experience	.06	-.04; .17	.01	-.13; .15	.10	-.02; .22	-.06	-.20; .08	.06	-.09; .21	-.10	-.29; .08
RSES Self-esteem	.15	.05; .26	.09	-.05; .23	.03	-.10; .15	-.04	-.18; .09	.10	-.05; .25	-.07	-.25; .10
NPI Narcissism	-.17	-.28; -.06	-.15	-.33; .03	-.21	-.33; -.10	-.12	-.26; .02	.06	-.36; .49	-.03	-.18; .12
NARQ Admiration	.00	-.11; .11	-.13	-.27; .01	-.13	-.25; -.01	-.14	-.28; -.01	.06	-.09; .21	-.01	-.16; .14
NARQ Rivalry	-.32	-.42; -.22	-.26	-.40; -.13	-.34	-.45; -.23	.05	-.09; .19	-.03	-.18; .12	.09	-.07; .24
PHN General	.15	.04; .26					.07	-.06; .21				
PHN Trustworthiness	.23	.12; .33					.07	-.07; .20				
PHN Altruism	.03	-.08; .13					.09	-.05; .23				
PHN Independence	.09	-.02; .20					.04	-.10; .18				
PHN Strength of will	.07	-.04; .17					-.00	-.14; .14				
Secure Attachment	.13	.02; .24					.02	-.12; .16				
Dismissing Attachment	-.14	-.25; -.03					-.01	-.14; .13				
Preoccupied Attachment	.01	-.10; .12					-.01	-.15; .13				
Fearful Attachment	-.16	-.27; -.06					-.05	-.19; .09				

\*  $p < .001$ .

### ***Personality Influences on Perceiver Effects at Zero-Acquaintance***

Who sees others positive versus negative initially? In line with the generalized stereotype account, the left part of Table 3 shows that in all three studies, relative to one's group members, more agreeable people tended to see others initially in more positive ways. Likewise, in all three studies, people higher in narcissistic rivalry tended to see others initially in more negative ways, a pattern that was similar for overall grandiose narcissism (the NPI) with the exception of Study B. Optimistic anthropologic beliefs (PHN) and secure attachment, which were only assessed in Study A, predicted more positive initial impressions, whereas dismissing and fearful attachment predicted more negative ones. Taken together, attributes defined by general beliefs about others tended to explain how people perceived others at zero-acquaintance. This also became evident when we meta-analytically integrated the effect sizes across studies and found that the effects of agreeableness, overall narcissism, and narcissistic rivalry reached statistical significance on an alpha level of  $\alpha = .001$ . In addition, we observed a significant negative effect for neuroticism when combining across samples, which suggested that people who were less emotionally stable saw others in more negative ways initially. However, this effect was not hypothesized a priori and was markedly weaker than the ones for agreeableness and narcissistic rivalry.

The remaining personality traits showed no robust association with zero-acquaintance positivity. In Study A, people higher in self-esteem and conscientiousness tended to form more positive initial impressions but neither were these effects replicated in the other studies nor found meta-analytically. In Study C, narcissistic admiration was negatively linked to positivity but this effect similarly did not show across samples.

We also reran the above described analyses using self- versus informant-reports separately where possible to learn whether the observed effects might be fueled differentially by personality aspects accessible to the self versus close others. However, we found no indication that the source of personality reports made any difference (see Appendix D for detailed results).

### ***Personality Influences on Perceiver Effects Over Time***

Who develops a more positive versus negative view in early acquaintanceship? As shown in the right part of Table 3, personality traits did not reliably predict the development of perceiver effects, specifically the degree to which people's perceptions of others relative to their group changed. Results of Study A suggested that extraversion and narcissistic admiration predicted decreasing positivity and results of Study B suggested that agreeableness predicted increasing positivity while neuroticism predicted decreasing positivity. However, these effects did not show across samples and could reflect a Type I error. As before, we found no indication that the source of personality reports mattered when we repeated these analyses using self- and informant-reports in separation (see Appendix D).

We also explored whether personality traits explained the degree to which someone changed their initial impression *at all* (i.e., persistence). To do so, we saved the factor scores of the latent slope and used it to compute *persistence*, which is the absolute value of the slope scores, centered around zero, and reversed. However,

regressing persistence on the individual difference variables did again not yield any replicable effects (see OS 2 for details).

Further, we examined whether there were indirect effects of personality variables on positivity slopes via popularity development, that is, via being increasingly or decreasingly liked by one's group. Although we did not observe zero-order effects of personality on positivity slopes above, these types of indirect effects could still exist in case there also exist additional indirect effects in the opposite direction via other (unobserved) mediating variables. However, only 2 out of the 36 conducted tests indicated an indirect effect ( $p < .05$ ). This proportion of positive test results (5.6%) closely matches the expected Type I error rate and are thus not further interpreted here. Detailed results can be found online (OS 3).

Finally, we also explored the possibility that personality variables did not per se predict positivity slopes but did so only conditional on a certain popularity development. However, we found no evidence for this type of interaction effect for any personality trait in any of the studies (all of the 36 respective significance tests were negative). Detailed results on these tests can also be found online (OS 4).

### **The Role of Social Experiences in Perceiver Effects Development**

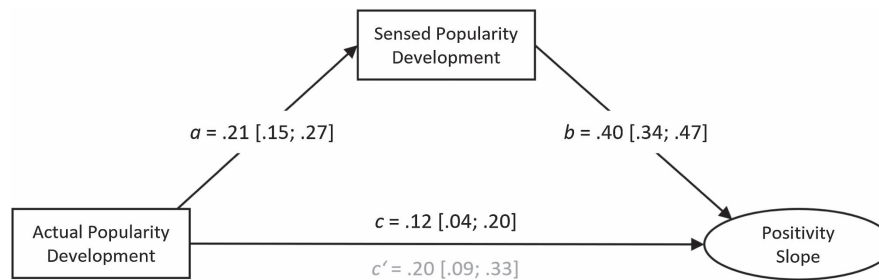
Our final goal was to learn about the role of popularity differences in shaping perceiver effects trajectories over time. To this end, we entered *actual popularity development* and *sensed popularity development* as exogenous variables to the SEM and specified mediation-type regression paths as illustrated in Figure 5.

Overall, people's social experiences in the group in early acquaintanceship seemed to explain some of the observed perceiver effect development. In all three studies, people who believed they were liked more over 2–3 weeks developed more positive perceiver effects over time (see *b* path of Figure 5) and this effect was quite sizable. Further, people who thought they were liked more over time were actually liked more over time (*a* path), suggesting that sensed popularity was partly grounded in reality. Whereas this effect was moderate in Studies A and C and not significantly different from zero in Study B, it was clearly visible meta-analytically. Taken together, these effects are also reflected in the fact that actual popularity development predicted positivity slopes (*c'* path) which was partially explained by a process of accuracy (i.e., people took notice of changes in actual popularity) and reciprocity (i.e., people adjusted their views of others in correspondence with these changes; see reduced *c* path compared to *c'*). The meta-analytic indirect effect  $a \times b$  was statistically significant, 95% CI [.039; .093]. Finally, it is noteworthy that, across all three studies, a considerable part of the effect of sensed popularity on positivity changes was not based on actual popularity developments but instead appeared to result from illusory meta-perceptions.

### **Discussion**

Using data from three studies, we tested whether people's perceiver effects develop in unique but systematic ways in early acquaintanceship and whether personality and social experiences explain this development. All three studies demonstrated that perceiver effects in newly formed groups developed differentially and systematically over the course of 2–3 weeks, such that some people's perceiver effects gradually became more positive or

**Figure 5**  
*The Role of Actual and Sensed Popularity Development in Predicting Positivity Slopes*



*Note.* Coefficients  $a$ ,  $b$ ,  $c$ , and  $c'$  reflect meta-analytically integrated effect sizes with 95% confidence intervals. Individual study effects are  $a = .28, .07, \text{ and } .20$ ;  $b = .48, .28, \text{ and } .37$ ;  $c = .18, .07, \text{ and } .09$ ; and  $c' = .32, .09, \text{ and } .15$ , for Studies A, B, and C, respectively.

negative. This differential linear development accounted for 12%–21% of the variance in perceiver effects over time, which is quite substantial given that earlier work has mostly conceptualized perceiver effects as a stable construct and because only 5%–16% of the variance remained unexplained (i.e., was due to mood swings or measurement error) after accounting for stable differences and linear change. Taken together with past work (e.g., Rau, Carlson, et al., 2021; Srivastava et al., 2010; Wood et al., 2010), these findings suggest that people not only differ in how positively they tend to see others' personalities but also in terms of how their perceptions change in early acquaintanceship.

We aimed at understanding the nature of perceiver effect development, starting from the very first impressions, by exploring the roles of personality traits and social experiences. Personality traits characterized by generalized stereotypes explained how positively people initially perceived their group members. Notably, this was true both when personality traits were reported by the self and by knowledgeable informants which strengthens the interpretation that differences in actual personality rather than just subjective self-concept account for initial perceiver effects. However, none of the personality traits we measured explained perceiver effect development. Instead, social experiences in a group, specifically sensed popularity and to a lesser extent, actual popularity, partially explained perceiver effect development. This means that some people developed more positive or negative views of others as a function of how much they thought others liked them, a belief that was somewhat grounded in reality. Thus, perceiver effect development was largely explained by social experiences in the group, which arose independently from the personality differences we measured.

### Stability and Change in Perceiver Effects

Perceiver effects have historically been treated as a source of measurement error and have only recently gained attention as consequential and stable individual difference (Srivastava et al., 2010; Wood et al., 2010). However, the current results suggest that a more complete account of perceiver effects considers the ways in which they are stable as well as the ways in which they change. This has important consequences for how perceiver effects in new versus existing groups should be conceptualized. Specifically, we found that change was mostly linear, which implies that, with growing acquaintanceship over a few weeks, perceivers moved further and further

away from their original impression of a group, which was arguably largely based on generalized stereotypes. Furthermore, we found that random intercepts and slopes were not correlated, suggesting that increases and decreases in positivity cannot be explained by how positively people perceive their group upon a first meeting. Taken together, this points toward the possibility that perceiver effects in well-acquainted contexts, such as close friends or long-time work partners, reflect a local, contextualized belief of group members rather than variation in people's generalized stereotypes.

To confirm this reasoning, future work should explore the development of perceiver effects with more, equally spaced measurement occasions and over a longer span of time. This will allow to identify potential systematic but nonlinear change. For example, perceivers might experience momentary dips and spikes in positivity driven by fluctuations in mood or by specific events in the group. It is also likely that the linear effects we observed do not span indefinitely over time. Srivastava et al. (2010) showed that perceiver effects became more stable over the course of 4 weeks, which suggests that change is likely asymptotic in general, and there may be individual differences in terms of whose impressions level out sooner than others'. In other words, assessing differential developmental trajectories over longer periods of time may yield differences in starting points and trends but also in asymptotic endpoints within the study.

### The Role of Personality in Perceiver Effects Development

We considered the possibility that personality shaped perceiver effect development via generalized stereotypes, how readily people changed their views at all, and in terms of how personality might evoke and interact with certain social experiences that in turn shaped perceiver effects. Overall, the only personality influence we observed was the generalized stereotype or best guess account. People high on agreeableness and low on narcissistic rivalry were more likely to perceive their peers' personalities in positive ways after a first, in-person encounter. This finding lines up with previous work measuring generalized perceiver effects via a standardized procedure that presents participants with short video clips or social network sites of strangers rather than allowing them to interact personally with targets (Rau, Nestler, et al., 2021), suggesting that this influence is quite robust. Further, we found people with adaptive attachment and optimistic philosophies about human nature to form more positive first impressions in Study 1. These associations have

not been found in studies that measured perceiver effects in the absence of personal interactions (Rau, Nestler, et al., 2021), which points toward a potential gain in ecological validity when studying perceiver effects in real-life social settings. However, this finding relies on a single study and warrants replication. Finally, past work that has examined correlates of perceiver effects among well-acquainted individuals (e.g., members of the same organization) has also found that positivity was higher at higher levels of agreeableness but has additionally found similar associations for extraversion, conscientiousness, emotional stability, and openness and for more contextualized constructs such as *sense of fitting in* (Wood et al., 2010). This highlights our assumption that perceiver effects reflect more than a generalized stereotype at higher levels of acquaintanceship and that they are likely additionally fueled by traits that are socially adaptive in the specific context.

In the present investigation, we did not find evidence that personality explained differential change of perceiver effects over time. However, there are other ways of measuring perceiver effects that might demonstrate such personality effects. For example, indexing trait-specific perceiver effect development (e.g., how perceiver effects of assertiveness uniquely change; Rau et al., 2019) might reveal that a differential processing of cues accounts for perceiver effect change. For example, Pam might focus on cues for assertiveness more than Nancy does and/or she might process cues in different ways than Nancy does, and as such, they perceive others differently over time on assertiveness. For example, as more valid, trait-specific information becomes available (e.g., how ambitious and confident group members are), Pam might hold onto her initial perceiver effects or change less than Nancy does because she misses cues or does not weigh them heavily enough. This differential cue use might be explained by personality traits and warrants future study.

It is also possible that the role of personality in shaping perceiver effects is contextual. First, features of the social context might shape individual differences in how people experience a group because situations are perceived in idiosyncratic ways (e.g., Rauthmann, 2012). For example, people higher in extraversion might perceive group members in a social context more positively than group members in a task-based context (e.g., group project) simply because of how they perceive the situation. Second, the ways in which personality shapes perceiver effect development might also be contextual. Extraversion might evoke increasingly positive social experiences in a social setting but not in a task-based context. Third, within a given context, the traits that are valued or likable to group members might shift over time. For example, people seem to value extraversion in the first phase of acquaintanceship but value communal traits (e.g., agreeableness) in friends (Back et al., 2011; Wortman & Wood, 2011). This would mean that positive social experiences might be observed at different times for different people, which would make it difficult to detect personality effects. The current research provided a general test of whether personality explained perceiver effect development, but future work is needed to better understand potential personality and context interactions.

### The Role of Social Experiences in Perceiver Effects Development

Perceiver effect development was largely explained by social experiences, but what might the underlying process of this

experience be? Based on the constructs we were able to measure, we believe the observed perceiver effect development is best explained by reciprocity dynamics. People who like other people think they are liked by others (assumed reciprocity) and to a lesser degree are actually liked by others (actual reciprocity; Kenny, 2019). We did not isolate the direction of these assumed and actual reciprocity dynamics, as there are many ways popularity, feeling liked, and forming positive impressions might be associated and causally linked over time. This complex dynamic might be yet another reason why personality was not found to predict perceiver effect development. Who is liked or who feels liked in a particular context or specific group within that context likely varies for reasons beyond the personality factors we considered. If perceiver effect development is a reciprocity dynamic, future work might explore whether groups with stable popularity hierarchies show less perceiver effect development than groups with more change in popularity.

### Limitations and Future Prospects

There are some limitations of the present studies that should be acknowledged. First, our analyses do not warrant causal inferences, particularly with respect to how social experiences influenced perceiver effects. Indeed, we modeled changes in social experiences as a cause of perceiver effect development, but it is possible that changes in social experiences were caused by changes in perceiver effects or that there was a common, unidentified cause for both. For example, one common mechanism for changes in perceiver effects and social experiences might be groups finding (or failing to find) common ground. Nancy might see others in more positive ways because she realizes she has a lot in common with other people in her group, a sentiment that also confers more liking of her.

Second, we found clear evidence that perceiver effects develop systematically but we did not test whether people's characteristic developmental trends are a stable, individual difference. On the one hand, we observed that developmental trends were explained by social experiences and these experiences might occur quite randomly in a person's daily life. Nancy's positivity might increase in one group and decrease in another for reasons that are contextual rather than due to something stable in her. On the other hand, people might have systematic ways of changing their perceptions in general due to consistent social experiences (e.g., Nancy is liked less over time in most groups) or a general working model of relationships that is independent from reality (e.g., Nancy assumes people like her less the more they know her in just about any context). Future studies are needed that test how consistent people's trajectories are across groups or contexts.

Finally, we observed that perceived popularity predicted perceiver effect development more strongly than did actual popularity, but this link was probably partly driven by method effects. We were able to control for acquiescence bias as one source of method effects, but self-reports of one social perception may nevertheless be associated to any other self-reported variable due to other types of bias related to the measurement source. As such, while strong, this link includes an unknown combination of method variance and a true association.

## Constraints on Generality

These findings may not generalize beyond participants in Germany and among younger adults, the specific context of the interactions (i.e., newly formed small groups of peers playing icebreaking games and working on various interactive tasks), 2–3 weeks of initial acquaintanceship, the items used to index positivity, the measurement occasions we selected, or specific personality measures used in the current studies. While we can only speculate on which factors might result in poor generalizability, we think the most important ones might be measurement timing and the social contexts in which people meet. For example, popularity could play a major role in perceiver effect development in casual peer groups but perhaps status plays a more important role in structured professional groups (e.g., coworkers), suggesting unique but important effects for psychosocial versus professional functioning. Future work would be needed to confirm potential methodological boundary conditions, arguably focusing on specific instances in which perceiver effects of positivity develop in response to social experiences.

## Conclusion

People differ in how positively they see strangers but also in terms of whether they develop more positive versus negative views of others as they get acquainted. Individual differences in the positivity of initial impressions seem to be driven by the perceiver's personality but changes in positivity in the first few weeks of acquaintanceship seem to reflect the perceiver's social experiences. Indeed, people developed more positive or negative views of others partly as a function of how much they thought others liked them, a belief that was somewhat grounded in reality. Thus, initial perceiver effects might reflect a generalized stereotype, but at higher levels of acquaintanceship, they likely reflect a local group stereotype based on complex actual and perceived reciprocity dynamics.

## References

- Back, M. D., Küfner, A. C. P., Dufner, M., Gerlach, T. M., Rauthmann, J. F., & Denissen, J. J. A. (2013). Narcissistic admiration and rivalry: Disentangling the bright and dark sides of narcissism. *Journal of Personality and Social Psychology, 105*(6), 1013–1037. <https://doi.org/10.1037/a0034431>
- Back, M. D., Schmukle, S. C., & Egloff, B. (2010). *From first sight to friendship: A longitudinal social relations analysis of stability and change in interpersonal attraction*. Unpublished Manuscript. <https://osf.io/97ru8/>.
- Back, M. D., Schmukle, S. C., & Egloff, B. (2011). A closer look at first sight: Social relations lens model analysis of personality and interpersonal attraction at zero acquaintance. *European Journal of Personality, 25*(3), 225–238. <https://doi.org/10.1002/per.790>
- Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology, 61*(2), 226–244. <https://doi.org/10.1037/0022-3514.61.2.226>
- Bates, D., Mächler, M., Bolker, B., & Walker, S. (2015). Fitting linear mixed-effects models using lme4. *Journal of Statistical Software*. Advance online publication. <https://doi.org/10.18637/jss.v067.i01>
- Bernstein, D. P., & Clercx, M. (2018). Schema therapy. In W. J. Livesley & R. Larstone (Eds.), *Handbook of personality disorders, second edition: theory, research, and treatment* (2nd ed., pp. 555–570). Guilford Publications.
- Boothby, E. J., Cooney, G., Sandstrom, G. M., & Clark, M. S. (2018). The liking gap in conversations: Do people like US more than we think? *Psychological Science, 29*(11), 1742–1756. <https://doi.org/10.1177/0956797618783714>
- Bowlby, J. (1988). *A secure base*. Basic Books.
- Danner, D., Rammstedt, B., Bluemke, M., Treiber, L., Berres, S., Soto, C., & John, O. P. (2016). *Die deutsche version des big five inventory 2 (BFI-2)*. ZIS - GESIS Leibniz Institute for the Social Sciences. <https://doi.org/10.6102/zis247>
- Enders, C., & Bandalos, D. (2001). The relative performance of full information maximum likelihood estimation for missing data in structural equation models. *Structural Equation Modeling, 8*(3), 430–457. [https://doi.org/10.1207/S15328007SEM0803\\_5](https://doi.org/10.1207/S15328007SEM0803_5)
- Fraley, C. R. (2002). Attachment stability from infancy to adulthood: Meta-Analysis and dynamic modeling of developmental mechanisms. *Personality and Social Psychology Review, 6*(2), 123–151. [https://doi.org/10.1207/S15327957PSPR0602\\_03](https://doi.org/10.1207/S15327957PSPR0602_03)
- Geukes, K., Breil, S. M., Hutteman, R., Nestler, S., Küfner, A. C. P., & Back, M. D. (2019). Explaining the longitudinal interplay of personality and social relationships in the laboratory and in the field: The PILS and the CONNECT study. *PLOS ONE, 14*(1). <https://doi.org/10.1371/journal.pone.0210424>
- Goldberg, L. R. (1990). An alternative “description of personality”: The big-five factor structure. *Journal of Personality and Social Psychology, 59*(6), 1216–1229. <https://doi.org/10.1037/0022-3514.59.6.1216>
- Grosz, M. P., Leckelt, M., & Back, M. D. (2020). Personality predictors of social status attainment. *Current Opinion in Psychology, 33*, 52–56. <https://doi.org/10.1016/j.copsyc.2019.07.023>
- Heynicke, M., Rau, R., Leising, D., Wessels, N., & Wiedenroth, A. (2021). Perceiver effects in person perception reflect acquiescence, positivity, and trait-specific content: Evidence from a large-scale replication study. *Social Psychological and Personality Science*. Advance online publication. <https://doi.org/10.1177/19485506211039101>
- Isiordia, M., & Ferrer, E. (2018). Curve of factors model: A latent growth modeling approach for educational research. *Educational and Psychological Measurement, 78*(2), 203–231. <https://doi.org/10.1177/0013164416677143>
- Jöreskog, K. G. (2007). *Statistical estimation of structural models in longitudinal-developmental investigations*. Academic Press.
- Kammrath, L. K., & Scholer, A. A. (2011). The Pollyanna myth: How highly agreeable people judge positive and negative relational acts. *Personality and Social Psychology Bulletin, 37*(9), 1172–1184. <https://doi.org/10.1177/0146167211407641>
- Kenny, D. A. (1976). An empirical application of confirmatory factor analysis to the multitrait-multimethod matrix. *Journal of Experimental Social Psychology, 12*(3), 247–252. [https://doi.org/10.1016/0022-1031\(76\)90055-X](https://doi.org/10.1016/0022-1031(76)90055-X)
- Kenny, D. A. (1994). *Interpersonal perception: A social relations analysis*. Guilford Press.
- Kenny, D. A. (2004). PERSON: A general model of interpersonal perception. *Personality and Social Psychology Review, 8*(3), 265–280. [https://doi.org/10.1207/s15327957pspr0803\\_3](https://doi.org/10.1207/s15327957pspr0803_3)
- Kenny, D. A. (2019). *Interpersonal perception: The foundation of social relationships* (2nd ed.). Guilford Publications.
- Kenny, D. A., Horner, C., Kashy, D. A., & Chu, L. C. (1992). Consensus at zero acquaintance: Replication, behavioral cues, and stability. *Journal of Personality and Social Psychology, 62*(1), 88–97. <https://doi.org/10.1037/0022-3514.62.1.88>
- Kraft, L., Dufner, M., & Schliebener, M. (2021). *Codebook of the Leipzig context (LeiCo) study*. <https://osf.io/u4trj/>
- Leary, M. R. (2005). Sociometer theory and the pursuit of relational value: Getting to the root of self-esteem. *European Review of Social Psychology, 16*(1), 75–111. <https://doi.org/10.1080/10463280540000007>
- Leckelt, M., Küfner, A. C. P., Nestler, S., & Back, M. D. (2015). Behavioral processes underlying the decline of narcissists' popularity over time.



- Journal of Personality and Social Psychology*, 109(5), 856–871. <https://doi.org/10.1037/pspp0000057>
- Leckelt, M., Wetzel, E., Gerlach, T. M., Ackerman, R. A., Miller, J. D., Chopik, W. J., Penke, L., Geukes, K., Küfner, A. C. P., Hutteman, R., Richter, D., Renner, K.-H., Allroggen, M., Brecheen, C., Campbell, W. K., Grossmann, I., & Back, M. D. (2018). Validation of the Narcissistic Admiration and Rivalry Questionnaire Short Scale (NARQ-S) in convenience and representative samples. *Psychological Assessment*, 30(1), 86–96. <https://doi.org/10.1037/pas0000433>
- Malloy, T. E. (2018). Arrma: Assumed reciprocity, reciprocity, and meta-perception accuracy. In T. E. Malloy (Ed.), *Social relations modeling of behavior in dyads and groups* (pp. 201–219). Academic Press is an imprint of Elsevier. <https://doi.org/10.1016/B978-0-12-811967-9.00009-6>
- Montgomery, B. M. (1986). An interactionist analysis of small group peer assessment. *Small Group Behavior*, 17(1), 19–37. <https://doi.org/10.1177/104649648601700102>
- Raskin, R. N., & Hall, C. S. (1979). A narcissistic personality inventory. *Psychological Reports*, 45(2), Article 590. <https://doi.org/10.2466/pr0.1979.45.2.590>
- Rau, R., Carlson, E. N., Back, M. D., Barranti, M., Gebauer, J. E., Human, L. J., Leising, D., & Nestler, S. (2021). What is the structure of perceiver effects? On the importance of global positivity and trait-specificity across personality domains and judgment contexts. *Journal of Personality and Social Psychology*, 120(3), 745–764. <https://doi.org/10.1037/pspp0000278>
- Rau, R., Nestler, S., Geukes, K., Back, M. D., & Dufner, M. (2019). Can other-derogation be beneficial? Seeing others as low in agency can lead to an agentic reputation in newly formed face-to-face groups. *Journal of Personality and Social Psychology*, 117(1), 201–227. <https://doi.org/10.1037/pspp0000250>
- Rau, R., Nestler, S., Dufner, M., & Nestler, S. (2021). Seeing the best or worst in others: A measure of generalized other-perceptions. *Assessment*, 28(8), 1897–1914. <https://doi.org/10.1177/1073191120905015>
- Rau, R., Thielmann, I., Breil, S. M., Geukes, K., Krause, S., Nikoleizig, L., Back, M. D., & Nestler, S. (2020). Do perceiver effects in interpersonal perception predict cooperation in social dilemmas? *Collabra: Psychology*, 6(1), 35. <https://doi.org/10.1525/collabra.332>
- Rauthmann, J. F. (2012). You say the party is dull, I say it is lively: A componential approach to how situations are perceived to disentangle perceiver, situation, and perceiver  $\times$  situation variance. *Social Psychological and Personality Science*, 3(5), 519–528. <https://doi.org/10.1177/1948550611427609>
- R Development Core Team. (2008). *R: A language and environment for statistical computing* [Computer software]. R Foundation for Statistical Computing.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton University Press. <https://doi.org/10.1515/9781400876136>
- Rossee, Y. (2012). Lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, 48(2), 1–36. <https://doi.org/10.18637/jss.v048.i02>
- Schönbrodt, F. D., Back, M. D., & Schmukle, S. C. (2012). TripleR: An R package for social relations analyses based on round-robin designs. *Behavior Research Methods*, 44(2), 455–470. <https://doi.org/10.3758/s13428-011-0150-4>
- Schütz, A., Marcus, B., & Sellin, I. (2004). Die messung von narzissmus als persönlichkeitskonstrukt. *Diagnostica*, 50(4), 202–218. <https://doi.org/10.1026/0012-1924.50.4.202>
- Schwarz, G. (1978). Estimating the dimension of a model. *Annals of Statistics*, 6(2), 461–464. <https://doi.org/10.1214/aos/1176344136>
- Siegel, J. Z., Curwell-Parry, O., Pearce, S., Saunders, K. E. A., & Crockett, M. J. (2020). A computational phenotype of disrupted moral inference in borderline personality disorder. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*, 5(12), 1134–1141. <https://doi.org/10.1016/j.bpsc.2020.07.013>
- Sörbom, D. (1975). Detection of correlated errors in longitudinal data. *British Journal of Mathematical & Statistical Psychology*, 28(2), 138–151. <https://doi.org/10.1111/j.2044-8317.1975.tb00558.x>
- Soto, C. J., & John, O. P. (2017). The next big five inventory (BFI-2): Developing and assessing a hierarchical model with 15 facets to enhance bandwidth, fidelity, and predictive power. *Journal of Personality and Social Psychology*, 113(1), 117–143. <https://doi.org/10.1037/pspp0000096>
- Soto, C. J., John, O. P., Gosling, S. D., & Potter, J. (2008). The developmental psychometrics of big five self-reports: Acquiescence, factor structure, coherence, and differentiation from ages 10 to 20. *Journal of Personality and Social Psychology*, 94(4), 718–737. <https://doi.org/10.1037/0022-3514.94.4.718>
- Srivastava, S., & Beer, J. S. (2005). How self-evaluations relate to being liked by others: Integrating sociometer and attachment perspectives. *Journal of Personality and Social Psychology*, 89(6), 966–977. <https://doi.org/10.1037/0022-3514.89.6.966>
- Srivastava, S., Guglielmo, S., & Beer, J. S. (2010). Perceiving others' personalities: Examining the dimensionality, assumed similarity to the self, and stability of perceiver effects. *Journal of Personality and Social Psychology*, 98(3), 520–534. <https://doi.org/10.1037/a0017057>
- von Collani, G., & Herzberg, P. Y. (2003). Eine revidierte fassung der deutschsprachigen skala zum selbstwertgefühl von rosenberg. *Zeitschrift für Differentielle und Diagnostische Psychologie*, 24(1), 3–7. <https://doi.org/10.1024/0170-1789.24.1.3>
- Wetzel, E., Lüdtke, O., Zettler, I., & Böhnke, J. R. (2016). The stability of extreme response style and acquiescence over 8 years. *Assessment*, 23(3), 279–291. <https://doi.org/10.1177/1073191115583714>
- Wood, D., Harms, P., & Vazire, S. (2010). Perceiver effects as projective tests: What your perceptions of others say about you. *Journal of Personality and Social Psychology*, 99(1), 174–190. <https://doi.org/10.1037/a0019390>
- Wortman, J., & Wood, D. (2011). The personality traits of liked people. *Journal of Research in Personality*, 45(6), 519–528. <https://doi.org/10.1016/j.jrp.2011.06.006>
- Wrightsman, L. S. (1992). *Assumptions about human nature: Implications for researchers and practitioners* (2nd ed.). Sage Publications. <https://doi.org/10.4135/9781483325934>

(Appendices follow)

## Appendix A

## Variance Decomposition of Intepersonal Perceptions

Table A1

Variance Components Due to Perceivers (*P*) and Targets (*T*) by Timepoint in Study A

Rating dimension	T1		T2		T3		T4		T5		T6		Overall	
	<i>P</i>	<i>T</i>	<i>P</i>	<i>T</i>	<i>P</i>	<i>T</i>	<i>P</i>	<i>T</i>	<i>P</i>	<i>T</i>	<i>P</i>	<i>T</i>	<i>P</i>	<i>T</i>
Pleasantness	.15	.19	.18	.21	.22	.18	.23	.23	.22	.21	.23	.23	.21	.21
Similarity to self	.20	(.03)	.29	.13	.33	.07	.30	.12	.30	.06	.33	.08	.29	.08
Self-confidence	.11	.30	.06	.40	.13	.34	.08	.41	.16	.31	.14	.35	.11	.35
Intelligence	.24	.20	.22	.20	.25	.23	.18	.25	.24	.23	.27	.25	.23	.23
Liking	.22	.08	.26	.19	.28	.18	.22	.18	.28	.14	.26	.21	.25	.16
Meta-liking	.28	(.05)	.34	.12	.42	.07	.41	.11	.37	.13	.38	.11	.37	.10

Note. All values are standardized and can be interpreted as percentages of variance. Values in parentheses are not significantly different from zero ( $p > .05$ ).

Table A2

Variance Components Due to Perceivers (*P*) and Targets (*T*) by Timepoint in Study B

Rating dimension	T1		T2		T3		T4		Overall	
	<i>P</i>	<i>T</i>	<i>P</i>	<i>T</i>	<i>P</i>	<i>T</i>	<i>P</i>	<i>T</i>	<i>P</i>	<i>T</i>
Warmth	.14	.24	.20	.21	.23	.21	.29	.11	.22	.19
Honesty	.24	(.03)	.31	(.04)	.34	.07	.37	(.02)	.32	(.04)
Trustworthiness	.24	.12	.26	.09	.30	.11	.39	.09	.30	.10
Ambitiousness	.11	.22	.13	.30	.14	.25	.14	.24	.13	.25
Cleverness	.25	.13	.28	.13	.28	.11	.32	.11	.28	.11
Leadership potential	.07	.23	.07	.33	.09	.33	.09	.35	.08	.31
Liking	.28	.10	.27	.14	.27	.11	.32	.13	.29	.12
Meta-liking	—	—	.36	(.04)	—	—	.44	(.06)	.40	(.05)

Note. All values are standardized and can be interpreted as percentages of variance. Values in parentheses are not significantly different from zero ( $p > .05$ ).

Table A3

Variance Components Due to Perceivers (*P*) and Targets (*T*) by Timepoint in Study C

Rating dimension	T1		T2		T3		T4		T5		T6		T7		T8		T9		Overall	
	<i>P</i>	<i>T</i>	<i>P</i>	<i>T</i>	<i>P</i>	<i>T</i>	<i>P</i>	<i>T</i>	<i>P</i>	<i>T</i>	<i>P</i>	<i>T</i>	<i>P</i>	<i>T</i>	<i>P</i>	<i>T</i>	<i>P</i>	<i>T</i>	<i>P</i>	<i>T</i>
Trustworthiness	.52	.04	.51	.03	.50	.03	.52	(.02)	.53	.02	.48	.03	.47	.05	.51	.05	.53	.06	.52	.03
Annoyingness	.57	.05	.53	.04	.49	.04	.49	(.02)	.53	(.01)	.52	.04	.45	.04	.49	(.03)	.41	.04	.48	(.01)
Assertiveness	.21	.22	.22	.25	.23	.25	.27	.23	.27	.24	.23	.30	.24	.30	.25	.27	.30	.27	.35	
Leadership potential	.20	.20	.22	.25	.19	.25	.26	.23	.25	.24	.23	.24	.24	.26	.27	.23	.27	.27	.25	.30
Friendship potential	.31	.09	.35	.11	.29	.07	.33	.09	.35	.08	.34	.07	.37	.09	.34	.12	.37	.10	.37	.08
Intelligence	.40	.09	.48	.07	.50	.06	.49	.07	.53	.08	.44	.12	.47	.07	.49	.09	.55	.07	.54	.09
Admiration	.38	.18	.39	.15	.41	.14	.48	.12	.47	.13	.50	.09	.51	.09	.53	.12	.57	.09	.52	.12
Rivalry	.46	.07	.45	.06	.43	.05	.49	.06	.49	.06	.50	.08	.54	.08	.54	.06	.58	.07	.50	.09
Liking	.50	.06	.41	.08	.40	.08	.43	.09	.47	.06	.43	.08	.38	.08	.47	.06	.42	.09	.43	.09
Meta-liking	.52	(.01)	.49	.03	.50	.04	.51	.06	.57	.04	.54	.03	.51	.03	.56	.04	.55	.05	.52	.04

Note. All values are standardized and can be interpreted as percentages of variance. Values in parentheses are not significantly different from zero ( $p > .05$ ).

(Appendices continue)

**Appendix B**  
**Descriptive Statistics of Individual Difference Measures**

**Table B1**  
*Descriptive Statistics of Individual Difference Measures in Study A*

Measure	Scale range	<i>M</i>	<i>SD</i>	$\alpha$
BFI-2 Extraversion	1–5	3.33	0.64	.86
BFI-2 Agreeableness	1–5	3.74	0.56	.83
BFI-2 Conscientiousness	1–5	3.29	0.69	.87
BFI-2 Neuroticism	1–5	2.75	0.66	.86
BFI-2 Openness to Experience	1–5	3.77	0.60	.82
RSES Self-esteem	1–4	3.10	0.55	.89
NPI-15 Narcissism	1–15	4.31	3.27	.79
NARQ Admiration	1–5	2.70	0.60	.79
NARQ Rivalry	1–5	1.98	0.59	.77
Philosophies of Human Nature (PHN)	1–6	3.23	0.85	.58
PHN Trustworthiness	1–6	3.54	1.27	—
PHN Altruism	1–6	3.45	1.38	—
PHN Independence	1–6	2.71	1.30	—
PHN Strength of will	1–6	3.21	1.17	—
Secure Attachment	1–6	3.61	1.44	—
Dismissing Attachment	1–6	3.10	1.27	—
Preoccupied Attachment	1–6	2.88	1.38	—
Fearful Attachment	1–6	3.00	1.30	—

*Note.* BFI = Big Five Inventory; RSES = Rosenberg Self-Esteem Scale; NPI = Narcissistic Personality Inventory; NARQ = Narcissistic Admiration and Rivalry Questionnaire; PHN = Philosophies of Human Nature. The bottom eight scales each comprised a single item.

**Table B2**  
*Descriptive Statistics of Individual Difference Measures in Study B*

Measure	Scale range	Self-report			Informant-report			<i>r</i> <sub>self-other</sub>
		<i>M</i>	<i>SD</i>	$\alpha$	<i>M</i>	<i>SD</i>	$\alpha$	
BFI-2 Extraversion	1–5	3.28	0.68	.88	—	—	—	—
BFI-2 Agreeableness	1–5	3.76	0.53	.82	—	—	—	—
BFI-2 Conscientiousness	1–5	3.22	0.73	.89	—	—	—	—
BFI-2 Neuroticism	1–5	2.95	0.74	.90	—	—	—	—
BFI-2 Openness to Experience	1–5	3.71	0.65	.86	—	—	—	—
RSES Self-esteem	1–4	3.51	0.61	.89	—	—	—	—
NPI Narcissism <sup>a</sup>	0–39	12.41	6.39	.84	—	—	—	—
NARQ Admiration <sup>b</sup>	1–6	2.95	0.84	.85	2.82	0.80	.77	.32
NARQ Rivalry <sup>b</sup>	1–6	2.25	0.72	.79	2.12	0.68	.72	.40

*Note.* BFI = Big Five Inventory; RSES = Rosenberg Self-Esteem Scale; NPI = Narcissistic Personality Inventory; NARQ = Narcissistic Admiration and Rivalry Questionnaire.

<sup>a</sup> Answers on one item were not recorded due to a programming error. <sup>b</sup> Informants completed the short form of the NARQ (Leckelt et al., 2018).

**Table B3**  
*Descriptive Statistics of Individual Difference Measures in Study C*

Measure	Scale range	Self-report			Informant-report			<i>r</i> <sub>self-other</sub>
		<i>M</i>	<i>SD</i>	$\alpha$	<i>M</i>	<i>SD</i>	$\alpha$	
BFI-S Extraversion	1–7	4.79	1.24	.81	5.27	1.10	.84	.57
BFI-S Agreeableness <sup>a</sup>	1–7	4.82	0.90	.63	5.09	.85	.77	.38
BFI-S Conscientiousness	1–7	4.78	1.04	.63	5.36	0.94	.79	.48
BFI-S Neuroticism	1–7	4.31	1.34	.76	3.83	1.14	.80	.64
BFI-S Openness to Experience	1–7	4.98	1.11	.63	5.12	0.91	.67	.45
RSES Self-esteem	1–4	3.10	0.55	.88	3.22	0.37	.86	.49
NPI Narcissism <sup>b</sup>	0–40/15	14.33	6.03	.80	5.46	2.69	.80	.50
NARQ Admiration	1–6	3.17	0.78	.82	3.87	0.54	.75	.30
NARQ Rivalry	1–6	2.33	0.74	.78	2.06	0.65	.87	.28

*Note.* BFI = Big Five Inventory; RSES = Rosenberg Self-Esteem Scale; NPI = Narcissistic Personality Inventory; NARQ = Narcissistic Admiration and Rivalry Questionnaire.

<sup>a</sup> To increase reliability, this scale was supplemented with the two agreeableness items from the BFI-10. <sup>b</sup> A short version (15 items, range 0–15) of the NPI was used for the informant-report.

(Appendices continue)

### Appendix C

#### Measurement Model Parameters

**Table C1***Standardized Parameter Estimates of Strictly Invariant Measurement Model in Study A*

Parameter	Estimate	95% CI
Factor loadings		
Pleasantness	.83	.80; .86
Similarity to self	.45	.40; .50
Assertive	.61	.56; .65
Intelligent	.83	.80; .86
Correlations of positivity factors		
t1-t2	.70	.64; .76
t2-t3	.86	.82; .90
t3-t4	.86	.82; .90
t4-t5	.91	.88; .94
t5-t6	.92	.89; .95

**Table C2***Standardized Parameter Estimates of Strictly Invariant Measurement Model in Study B*

Parameter	Estimate	95% CI
Factor loadings		
Warmth	.74	.69; .79
Honesty	.74	.69; .79
Trustworthiness	.74	.69; .79
Ambitiousness	.60	.53; .66
Cleverness	.72	.67; .78
Leadership potential	.42	.35; .49
Correlations of positivity factors		
t1-t2	.78	.71; .84
t2-t3	.70	.63; .78
t3-t4	.93	.89; .96

**Table C3***Standardized Parameter Estimates of Strictly Invariant Measurement Model in Study C*

Parameter	Estimate	95% CI
Factor loadings		
Trustworthiness	.56	.50; .61
Annoyingness	-.50	-.56; -.44
Assertiveness	.58	.52; .63
Leader	.58	.53; .64
Intelligence	.57	.51; .62
Admiration	-.66	-.71; -.61
Rivalry	-.65	-.71; -.60
Correlations of positivity factors		
t1-t2	.96	.94; .98
t2-t3	.96	.95; .98
t3-t4	.93	.91; .96
t4-t5	.95	.92; .97
t5-t6	.96	.94; .98
t6-t7	.93	.90; .95
t7-t8	.98	.97; .99
t8-t9	.97	.96; .99

*(Appendices continue)*

**Appendix D**

**Personality Effects by Measurement Source**

**Table D1**

*Self- and Informant-Reported Narcissistic Admiration and Rivalry as Predictors of Perceiver Effect Development in Study B*

Source	Predictor	Prediction of PE at T0		Prediction of PE slope	
		$\beta$	95% CI	$\beta$	95% CI
Self	NARQ Admiration	-.13	-.26; .01	.12	-.03; .26
	NARQ Rivalry	<b>-.23</b>	<b>-.37; -.09</b>	-.06	-.21; .09
Informant	NARQ Admiration	-.06	-.21; .09	-.07	-.22; .09
	NARQ Rivalry	<b>-.17</b>	<b>-.32; -.03</b>	-.09	-.25; .07

Note. NARQ = Narcissistic Admiration and Rivalry Questionnaire. Bold coefficients are significantly different from zero ( $p < .05$ ).

**Table D2**

*Self- and Informant-Reported Individual Difference Variables as Predictors of Perceiver Effect Development in Study C*

Source	Predictor	Prediction of positivity intercept		Prediction of positivity slope	
		$\beta$	95% CI	$\beta$	95% CI
Self	Extraversion	.03	-.09; .15	.02	-.13; .18
	Agreeableness	.20	.08; .31	.00	-.15; .15
	Conscientiousness	-.02	-.14; .10	.05	-.11; .20
	Neuroticism	-.07	-.19; .05	.03	-.11; .18
	Openness to Experience	.09	-.03; .21	-.12	-.29; .06
	RSES Self-esteem	.02	-.10; .14	-.04	-.19; .11
	NPI Narcissism	<b>-.17</b>	<b>-.29; -.06</b>	-.07	-.26; .11
	NARQ Admiration	-.13	-.25; -.01	-.01	-.15; .14
	NARQ Rivalry	<b>-.35</b>	<b>-.45; -.24</b>	.06	-.08; .20
	Informant	Extraversion	-.03	-.15; .09	.09
Agreeableness		.23	.11; .34	-.06	-.22; .10
Conscientiousness		-.03	-.15; .09	.03	-.13; .18
Neuroticism		-.07	-.19; .05	.11	-.04; .26
Openness to Experience		.08	-.04; .20	-.05	-.21; .11
RSES Self-esteem		-.01	-.13; .11	-.08	-.27; .10
NPI Narcissism		<b>-.20</b>	<b>-.31; -.08</b>	-.01	-.16; .15
NARQ Admiration		-.08	-.20; .04	-.01	-.16; .14
NARQ Rivalry		<b>-.19</b>	<b>-.31; -.08</b>	.04	-.10; .19

Note. NARQ = Narcissistic Admiration and Rivalry Questionnaire; RSES = Rosenberg Self-Esteem Scale; NPI = Narcissistic Personality Inventory. Bold coefficients are significantly different from zero ( $p < .05$ ).

**Appendix E**

**Overview of Additional Materials Retrievable From**

<https://osf.io/trb52/>

- OS 1: Power Simulations
- OS 2: Personality Predictors of Persistence
- OS 3: Indirect Effects of Personality and Social Experiences on Positivity Slopes
- OS 4: Interaction Effects of Personality and Social Experiences on Positivity Slopes
- OS 5: Results Based on Alternative Operationalization of Popularity Development
- OS 6: List of Prior Publications Using Data Presented in the Article
- OS 7: Data and R-Code

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