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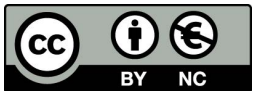

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Full Length Article

Does insecurity lead to envy? The longitudinal interplay between dispositional envy and self-esteem

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ABSTRACT

Despite evidence of a close, cross-sectional association between dispositional envy and low self-esteem, there is no research on the mutual development of these two constructs across time. The aim of the present research was to systematically investigate correlated change and prospective effects between dispositional envy and self-esteem at the global level and within comparison domains. In two preregistered longitudinal studies across 6 years (N_{total} > 7,000 adult participants), change in dispositional envy was negatively correlated with concurrent self-esteem change at the global level and within domains. Moreover, we found preliminary evidence that self-esteem predicted later change in dispositional envy but not vice versa. Our findings illustrate that the development of dispositional envy is closely intertwined with self-esteem development.

1. Introduction

Imagine Alex, who has just finished drama school and is now pursuing a career in acting. Whenever one of his peers manages to obtain a prestigious part in a theater play, he is tormented by feelings of envy. When you picture Alex, is he confident or insecure about his acting skills? And how do you imagine his tendency to feel envy might change if he works with a famous director who further undermines his self-esteem with continuous criticism?

From the early beginnings of envy research, the nature of the relationship between envy and self-esteem has been the subject of lively debates (Foster, 1972; Heider, 1958; Salovey & Rodin, 1991; Silver & Sabini, 1978). Today, it is well-established that dispositional envy (i.e., a person's trait-like tendency to experience envy) is related to low self-esteem (e.g., Rentzsch & Gross, 2015; Smith et al., 1999; Vrabel et al., 2018). However, the theoretical assumption of a reciprocal interplay between these two trait constructs has never been empirically investigated. With the present studies, we sought to extend the existing literature by examining how the development of dispositional envy is intertwined with self-esteem development across a time span of 6 years in two large multiwave samples. Specifically, we aimed to investigate whether change in dispositional envy is related to change in self-esteem within the same time interval (i.e., *correlated change*) and whether change in self-esteem predicts later change in dispositional envy or vice versa (i.e., *prospective effects*).

1.1. Previous cross-sectional evidence of a link between dispositional envy and self-esteem

Envy is a comparison-based emotion that arises when a person realizes that someone else has something that the person longs for, strives for, or desires (Parrott & Smith, 1993; Smith & Kim, 2007). The experience of envy is unpleasant and can even be painful (Smith et al., 1996; Takahashi et al., 2009), and its expression is stigmatized (Miceli & Castelfranchi, 2007). Some people are more prone to envy than others, marking stable individual differences in a person's disposition toward envy (Erz & Rentzsch, 2022; Rentzsch & Gross, 2015; Smith et al., 1999). Although envy can result in a vast range of negative outcomes, including antisocial behavior (Behler et al., 2020), hostility (Rentzsch et al., 2015), and social undermining (Duffy et al., 2012), envy has also been shown to have positive effects, such as motivating people to improve themselves or increasing their performance (see Lange & Crusius, 2015; Van de Ven, 2017). Self-esteem, on the other hand, can be defined as the positivity of a person's self-evaluation (Baumeister, 1998;

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Coopersmith, 1967; Rosenberg, 1965). It has been associated with a myriad of different outcomes, including social interaction and relationships (Harris & Orth, 2020; Leary et al., 1995) as well as well-being and mental health (Orth et al., 2012; Sowislo & Orth, 2013; Stinson et al., 2008).

Both dispositional envy and self-esteem have been conceptualized as domain-specific trait constructs that vary within individuals and across comparison domains. Multidimensional models of self-esteem (Shavelson et al., 1976; see also Rentzsch et al., 2016, for an overview) assume that, in addition to the general positivity of a person's self-concept (i.e., global self-esteem), individuals hold domain-specific self-evaluations, such as feelings of self-worth in the social or physical domain. Despite a positive correlation between these domains (Rentzsch et al., 2022), individuals may experience domain-specific variations in their self-esteem levels. For example, a person might have high self-esteem in the performance domain ("I am satisfied with my performance at work") but may simultaneously feel insecure about their physical appearance ("I am ashamed of my body"). The same is true for a person's disposition toward envy, which can also vary between life domains (e.g., attraction and wealth; see Rentzsch & Gross, 2015). The importance of a domain-specific perspective is underpinned by theoretical accounts, such as the symmetry principle (Wittmann, 1988) and specificity-matching (McWilliams et al., 2013; Swann Jr et al., 2007), which stress the importance of symmetry between predictor and criterion. According to these accounts, a domain-specific outcome (e.g., a person's job performance) can be predicted more accurately by constructs belonging to the same domain (the person's performance self-esteem) compared with global constructs (the person's global self-esteem level; see also Marsh et al., 2006; Michel et al., 2022; Rentzsch & Gross, 2015).

Lay psychologists often assume that envy is a sign of low self-esteem. Indeed, from the early beginnings of envy research, it has been argued that envy can be seen as an attempt to protect one's self-esteem (Salovey & Rodin, 1984; Silver & Sabini, 1978; Sullivan, 1953). A similar argument has been made by psychoanalytical theorists who view envy as a *narcissistic injury* (Barth, 1988). Others have proposed that experiences of envy are destructive for a person's self-concept and are accompanied by feelings of inferiority (Foster, 1972; Heider, 1958). Moreover, emphasizing the importance of a domain-specific perspective, it has been argued that people are more likely to experience envy in comparison domains that are relevant for their self-concept (Salovey & Rodin, 1991). In line with these early accounts, the idea of a close relationship between envy and self-esteem has been incorporated into a conceptualization of dispositional envy by Smith et al. (1999), according to which dispositional envy is accompanied by a chronic sense of inferiority (see also Cohen-Charash & Mueller, 2007; Lange et al., 2018; Rentzsch & Gross, 2015).

These theoretical accounts are underpinned by robust cross-sectional evidence that people who are prone to envy tend to have low self-esteem, a finding that has held across different measures of dispositional envy and self-esteem (Rentzsch & Gross, 2015; Smith et al., 1999; Vrabel et al., 2018). Effect sizes were typically moderate to large. Similarly, dispositional envy has been shown to be related to vulnerable narcissism in previous research, a subtype of narcissism characterized by low self-esteem (Krizan & Johar, 2012). Importantly, evidence that dispositional envy is connected to low self-esteem can be found not only at the global level (i.e., for global dispositional envy and self-esteem) but also at the level of specific comparison domains (Rentzsch & Gross, 2015; see also Salovey & Rodin, 1991). For instance, people who are particularly insecure about their academic performance tend to envy others who are perceived as more intelligent. However, despite the convincing finding of a negative cross-sectional relationship between dispositional envy and self-esteem, open questions remain about how these two constructs influence each other across time.

1.2. The longitudinal interplay between dispositional envy and self-esteem

Not only have most early theoretical accounts assumed that envy is related low self-esteem at a given point in time, but they have also postulated that the two constructs are mutually dependent (e.g., Foster, 1972; Silver & Sabini, 1978). Such a reciprocal association should be reflected in the longitudinal interplay between dispositional envy and self-esteem, resulting in two ways in which the development of the two constructs might be intertwined.

First, it is possible that the two constructs change in unison (i.e., *correlated change*): When a person's self-esteem increases, their proclivity to experience envy goes down within the same time interval and vice versa. This may occur on the basis of ongoing bidirectional influences between the two constructs or when changes in dispositional envy and self-esteem are the result of the same causal factors or overarching developmental principles. For instance, there is longitudinal evidence that self-esteem decreases as a reaction to life events that are associated with loss of status (e.g., unemployment; Reitz et al., 2022; see also Mahadevan et al., 2019). As evolutionary psychology postulates that dispositional envy evolved as an indicator that one is being outperformed by others (DelPriore et al., 2012; Hill & Buss, 2008), it can be expected that such life events lead to increases in a person's tendency to experience envy in addition to decreases in their self-esteem, thereby causing negative correlated change. Moreover, previous research has shown that, whereas dispositional envy is negatively correlated with age (Henniger & Harris, 2015; Rentzsch & Gross, 2015), self-esteem increases from adolescence to middle adulthood (Orth & Robins, 2014). Provided that there are processes of personality maturation at work affecting both constructs (see maturity principle of personality development; Roberts et al., 2001, 2008), we can expect that correlated change will occur between dispositional envy and self-esteem.

Second, rather than nondirectional concordant development, there might be *prospective effects* between dispositional envy and self-esteem, implying that change in one construct has an impact on change in the other construct. For instance, often experiencing envy might decrease a person's self-esteem, or, by contrast, decreases in self-esteem might result in frequent experiences of envy. However, previous theoretical and empirical accounts have disagreed about the direction of influence between dispositional envy and self-esteem. On the one hand, self-esteem has been conceptualized as an antecedent of dispositional envy, as low self-esteem might increase a person's vulnerability to experiencing envy (Salovey & Rodin, 1984; Silver & Sabini, 1978). This notion is underpinned by previous research that has shown that people with low self-esteem are particularly prone to engaging in (upward) social comparisons (Gibbons & Buunk, 1999; Wayment & Taylor, 1995), which are a precondition for the experience of envy (Fiske, 2010; Smith et al., 1999; van de Ven & Zeelenberg, 2020; White et al., 2006). Further supporting this notion, a study with a South Korean sample found that low self-esteem prospectively predicted young women's envy of social media influencers, a relationship that was partially mediated by the frequency of social comparisons with influencers (Chae, 2018; see also Appel et al., 2015; Rentzsch et al., 2015). On the other hand, low self-esteem might be a consequence of dispositional envy, as frequently experiencing envy, a painful emotion that draws one's attention toward unfavorable upward comparisons, might pose a threat to a person's self-esteem (Barth, 1988; Foster, 1972). In line with this idea, a previous study viewed low self-esteem as a consequence of envy in the workplace, arguing that the experience of envy might lead employees to focus on their shortcomings, thereby causing distress and reducing the person's sense of self-worth (Thompson et al., 2016; see also Ng et al., 2021).

To sum up, previous conceptualizations of the association between dispositional envy and self-esteem lead to different predictions regarding their longitudinal interplay. However, given that almost all studies that have investigated the relationship between the two

constructs have relied primarily on cross-sectional data, the existing research does not allow us to disentangle correlated change and prospective effects; that is, it is not yet clear whether changes in dispositional envy come along with concurrent changes in self-esteem within the same time interval or whether one construct prospectively predicts change in the other construct. Similarly, the directionality of the association between dispositional envy and self-esteem remains unclear, as dispositional envy has been conceptualized as both an antecedent and a consequence of low self-esteem, meaning that (change in) self-esteem might prospectively predict change in dispositional envy or vice versa. Moreover, the longitudinal interplay has never been systematically examined within specific comparison domains. In order to close these gaps, the present research used longitudinal data assessing global and domain-specific dispositional envy and self-esteem across multiple measurement occasions.

1.3. Modeling the longitudinal interplay between dispositional envy and self-esteem via latent change models

Previous research has shown that, despite the relatively high temporal stability of dispositional envy and self-esteem, individuals exhibit significant differences in how these constructs change across time, with some people experiencing no change in their dispositional envy/self-esteem across time spans of several years and others experiencing increases or decreases (Erz & Rentzsch, 2022; Orth et al., 2010; Rentzsch & Schröder-Abé, 2022). In order to examine such individual differences in change in the two constructs in the present study, we drew on latent change models (*True Intraindividual Change Models* in Study 1 and *Latent Change Score models* in Study 2). In these models, change is measured directly via latent difference variables, which represent individual differences in true intraindividual change over time corrected for random measurement error (Steyer et al., 1997). Compared with other approaches to modeling individual differences in change across time (e.g.,

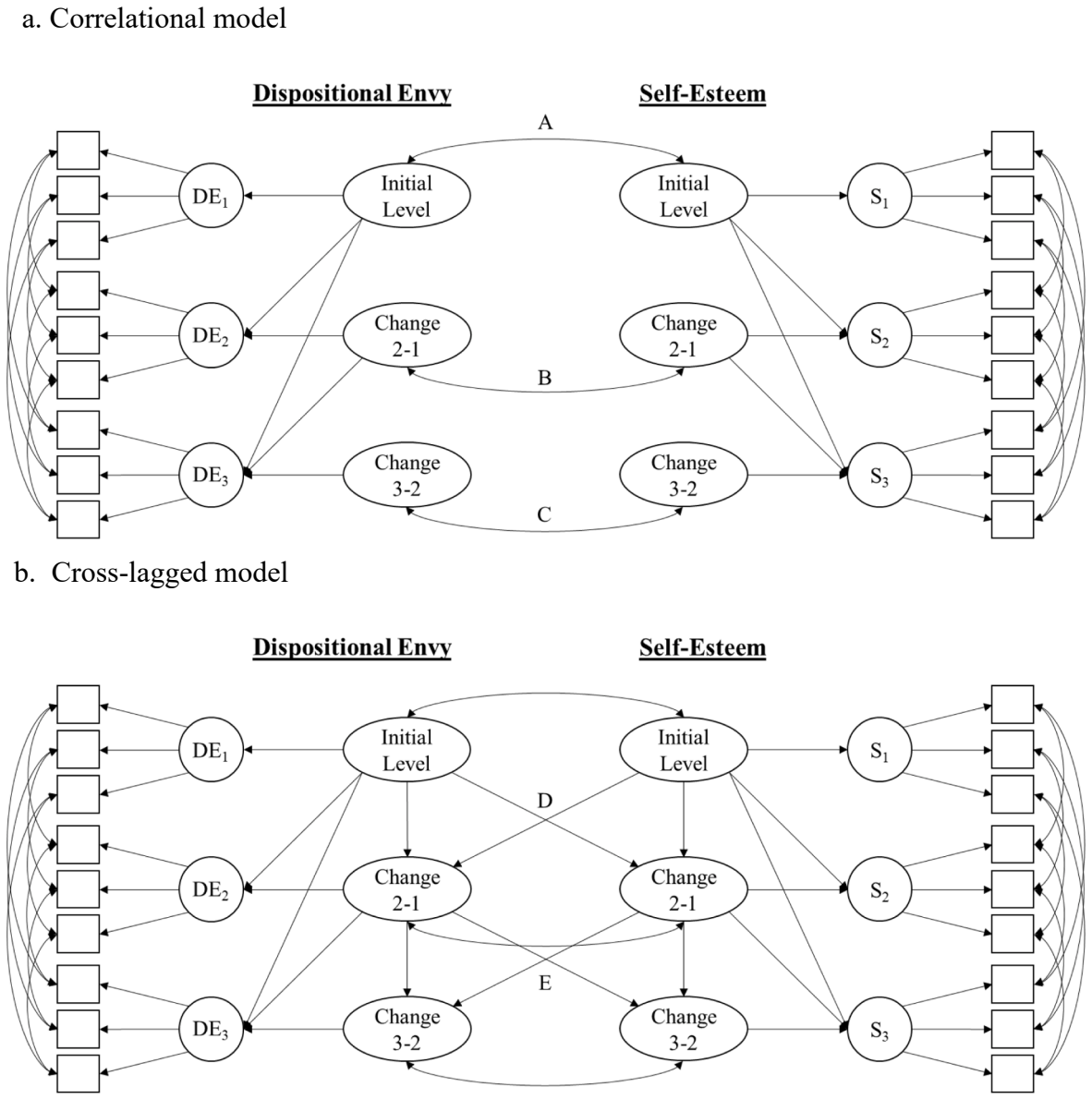


Fig. 1. *Bivariate True Intraindividual Change Model (Study 1).* 1a. Correlational model. 1b. Cross-lagged model. *Note.* DE = latent dispositional envy factors, S = latent self-esteem factors. A = initial level correlations (cross-sectional), B = correlated change between Time 1 and Time 2, C = correlated change between Time 2 and Time 3, D = *level on change* effects, E = *change on change* effects. A first set of models (1a) was purely correlational; in a second step, we added autoregressions and cross-lagged effects (1b).

latent growth curve models), latent change models are more flexible in the sense that they can be used even when change patterns do not follow a specific form (e.g., linear or quadratic change; Geiser, 2020). For the present research, we used bivariate models that combine the latent change models of dispositional envy and self-esteem into one parallel process model (McArdle, 2009; Steyer et al., 1997; see Fig. 1 for a schematic diagram of a bivariate True Intraindividual Change Model).

In order to investigate *correlated change*, we first specified purely correlational models (see Fig. 1a). In these models, correlated change (i.e., the correlation between the change factors; Paths B and C in Fig. 1a) represents the degree to which change in one construct is associated with change in the other construct within the same time interval ("When individuals decrease in dispositional envy, their self-esteem increases" and vice versa). For the investigation of *prospective effects* of dispositional envy on self-esteem or of self-esteem on dispositional envy, we then used models that included *cross-lagged effects* between variables across time points (see Fig. 1b). In the present research, we modeled two kinds of cross-lagged effects: *Level on change* effects (see the D paths in Fig. 1b) represent the effect of the initial level of one construct on prospective change in the other construct ("When individuals have low self-esteem, they will experience a subsequent increase in dispositional envy"). *Change on change* effects (see the E paths in Fig. 1b) represent the effect of change in one construct on later change in the other construct ("When individuals experience a decrease in dispositional envy, they will experience a subsequent increase in self-esteem").

Latent change models thus provide an excellent way of disentangling whether dispositional envy and self-esteem change in unison (i.e., *correlated change*) or whether self-esteem has an impact on later change in dispositional envy or vice versa (i.e., *prospective effects*). Moreover, they allow us to compare the prospective effect of self-esteem on dispositional envy with the effect of dispositional envy on self-esteem, thereby providing further evidence of whether change in self-esteem can be considered an antecedent or a consequence of change in dispositional envy.

1.4. The present research

Previous research on the association between dispositional envy and self-esteem has pointed to a longitudinal interplay between the two constructs. However, previous theoretical and empirical accounts have been inconsistent with regard to the exact nature of the longitudinal interplay, with some accounts indicating nondirected concordant development (i.e., correlated change) and others pointing to prospective effects. Similarly, whereas some studies have assumed that a person's self-esteem influences (dispositional) envy, others have suggested the opposite direction of effect (e.g., Chae, 2018; Foster, 1972; Silver & Sabini, 1978; Thompson et al., 2016). However, a major limitation of previous studies is that nearly all of them relied on cross-sectional data, with the exception of Chae (2018), who used a design with two measurement occasions but included only directional effects of self-esteem on envy and not the other way around. In order to systematically investigate the longitudinal flow between dispositional envy and self-esteem, we therefore used a longitudinal design that included concurrent effects and both directions of prospective effects.

The present research used two data sets in which dispositional envy and self-esteem were assessed at two or more measurement occasions, thereby allowing the systematic examination of correlated change and prospective effects. We had two research questions: First, we wanted to investigate whether changes in dispositional envy across time are accompanied by simultaneous self-esteem changes within the same time interval (i.e., *correlated change*). In light of the consistently large negative correlation between dispositional envy and self-esteem on the cross-sectional level as well as preliminary evidence of inverse developmental trends, we expected significant negative correlated change, meaning that intraindividual increases in self-esteem should be associated with intraindividual decreases in a person's level of dispositional envy within the same time interval and vice versa. Second, we aimed to investigate whether change in dispositional envy is an antecedent or a consequence of change in self-esteem. To our knowledge, no previous study has systematically investigated *prospective effects* between dispositional envy and self-esteem. As the existing literature provides arguments for both directions of effects, we aimed to conduct an exploratory investigation of whether a person's initial level or change in dispositional envy predicts later self-esteem change, vice versa, or both.

Furthermore, previous research has pointed to the importance of a domain-specific approach when investigating the association between dispositional envy and self-esteem (Michel et al., 2022; Rentzsch & Gross, 2015). In addition to the longitudinal interplay of global dispositional envy and self-esteem, we therefore aimed to investigate correlated change and prospective effects within specific social comparison domains (e.g., attraction and competence).

In the present research, we used data from two large-scale longitudinal studies. In Study 1, participants were followed across three measurement occasions with intervals between waves ranging from 2 to 4 years. Both dispositional envy and self-esteem were assessed with domain-specific measures, allowing us to investigate domain-specific associations between dispositional envy and self-esteem. In Study 2, we aimed to replicate our findings regarding correlated change and prospective effects of global dispositional envy and self-esteem by using data from a sample that was representative of the German population. Participants provided data on two measurement occasions with an overall time span of 6 years.

2. Study 1

The purpose of the first study was to examine correlated change and prospective effects between dispositional envy and self-esteem. In addition to examining global dispositional envy and self-esteem, we wanted to investigate longitudinal associations between specific domains of envy and self-esteem.

2.1. Method

The present study's methods and analyses were preregistered on the OSF (see https://osf.io/8aewb).[1] The preregistration document also includes a detailed overview of all measures at each time point. Analyses that deviate from the preregistered protocol are identified as such in the following.

[1] Both studies were preregistered. The preregistration of Study 1 was uploaded to the Open Science Framework on July 17, 2019 before data were collected for Time 3. Data from Time 2 had been collected but not analyzed prior to the preregistration. As the preregistration belongs to an overarching project, only some of the methods and analyses specified in the preregistration were used in the present paper. For Study 2, all hypotheses and analyses were specified prior to data collection as part of the associated study application for Time 2 and were preregistered on the OSF before the data from the second wave of measurement were available (i.e., before any longitudinal analyses could be performed). For Study 1, open science material including codebooks, data, and analysis code can be accessed at https://osf.io/5jvcx. For Study 2, the analysis code is available on the OSF (https://osf.io/5jvcx). We are not allowed to publicly share the data; however, researchers can apply for free data access via https://www.gesis.org/en/gesis-panel/data. The Study 2 codebook, wave reports, and study descriptions can be accessed via https://www.gesis.org/en/gesis-panel/documentation/.

Table 1
Sample Size and Demographics Across Waves (Study 1).

Wave	2013 (Time 1)	2017 (Time 2)	2019 (Time 3)
Sample size *n*	634	523	633
Age			
Mean (*SD*)	47.0 (12.4)	48.8 (13.7)	48.8 (14.5)
Range	18–88	19–78	18–81
Gender [a]			
Male (%)	190 (30.6 %)	177 (34.7 %)	190 (31.4 %)
Female (%)	431 (69.4 %)	333 (65.3 %)	415 (68.6 %)
Education [a]			
Main school (Hauptschule)	22 (3.5 %)	13 (2.5 %)	20 (3.3 %)
Middle school (Mittlere Reife)	142 (22.5 %)	100 (19.6 %)	106 (17.5 %)
Entrance qualification college of applied science (Fachhochschulreife)	71 (11.2 %)	56 (11.0 %)	61 (10.1 %)
High school degree (Abitur)	120 (19.0 %)	95 (18.6 %)	123 (20.3 %)
College/university degree	277 (43.8 %)	244 (47.8 %)	294 (48.6 %)
No degree	0	2 (0.4 %)	1 (0.2 %)

Note. Data from a fourth wave (2015) were omitted in line with the preregistered criterion of insufficient covariance coverage between waves.
[a] Sample sizes differ due to missing data.

2.1.1. Participants and procedure

Assessments were conducted as part of the SELF (Self-Evaluations Across Life) study (Rentzsch, 2021), which was approved by the ethics committee of the University of Bamberg.[2] Participants were recruited from the German population using a pool of volunteers for participation in lab research. The link for signing up was announced in regional and national media outlets. As an incentive, participants were offered personalized feedback on their self-esteem profile after participating in the study.

The participant pool was contacted in 2-year intervals beginning in 2013 and followed across 6 years. In this paper, we report results from three waves of data: 2013 (Time 1), 2017 (Time 2), and 2019 (Time 3). One further wave of data collected in 2015 was omitted due to preregistered criteria (covariance coverage between waves < 0.10 for dispositional envy). In each wave, participants who had completed previous waves and new participants were included in the study. All participants who provided data on dispositional envy or self-esteem on at least one measurement occasion were included in the analysis, resulting in an overall sample size of 1,254 participants.[3] The number of participants per measurement occasion ranged from 523 (in 2017) to 634 (in 2013). Of those participating at Time 1, $n = 208$ individuals also provided data at Time 2, and $n = 209$ participated at Time 3. Of the individuals who participated at Time 2, $n = 258$ also provided data on dispositional envy at Time 3. Table 1 presents detailed information on sample sizes and demographics.

2.1.2. Measures

We investigated correlated change and prospective effects between dispositional envy and self-esteem both at the global level and within specific social comparison domains. We therefore used domain-specific instruments to assess dispositional envy and self-esteem.

Domain-specific dispositional envy. Global and domain-specific dispositional envy were assessed with the Domain-Specific Envy Scale (DSES; Rentzsch & Gross, 2015). The DSES has exhibited good reliability and validity in adults (Crusius et al., 2021; Rentzsch et al., 2015; Rentzsch & Gross, 2015). The 15-item scale measuring global dispositional envy can be divided into three five-item subscales measuring dispositional envy with regard to attraction, competence, and wealth as broad social comparison domains. The items were formulated in such a way that they emphasize the subjective experience of an unpleasant feeling as a reaction to an upward comparison with another person.

- Global envy refers to an individual's general dispositional envy across different social comparison domains.
- Attraction envy refers to interpersonal and romantic attraction (being popular as a friend and relationship partner) as well as physical attraction (being good-looking).
- Competence envy refers to envy elicited by perceiving that others are more intelligent or creative.
- Wealth envy refers to envy that is triggered by the financial well-being of others (when others are able to buy better products or live in better neighborhoods).

Responses were rated on 7-point rating scales ranging from 1 (*not at all*) to 7 (*very much*). Reliability coefficients for the three envy domains as measured with Cronbach's alpha (α) ranged from .80 to .90 across time points, and the global scale had high reliability ($\alpha = .93$) at every time point.

Multidimensional self-esteem. To measure self-esteem, we used the Multidimensional Self-Esteem Scale (MSES; Schütz et al., 2016), an instrument that exhibits good reliability and validity in adult samples (Rentzsch et al., 2016). The MSES is the German adaptation of a scale created by Fleming and Courtney (1984) and includes six subscales: global self-esteem, social contact, social criticism, performance, physical appearance, and physical ability.

- Global self-esteem describes a person's global perceptions of self-worth, independent of any particular domain. High scorers have high general self-acceptance, high self-confidence, and positive self-evaluations.
- Social contact self-esteem refers to a person's social skills in the presence of others. High scorers are comfortable being in contact with others and are confident in their social skills.
- Social criticism self-esteem describes a person's confidence that others approve of them. High scorers are confident that they are accepted and positively evaluated by others.
- Performance self-esteem describes a person's confidence that their performances are good and that they exhibit competence in their occupation, job, or school.

[2] Data from the SELF study were analyzed and reported in the following papers: Rentzsch and Gross (2015; cross-sectional data on dispositional envy and self-esteem from Time 1), Erz and Rentzsch (2022; data on dispositional envy from Time 1-3), Rentzsch and Schröder-Abé (2018; data on self-esteem from Time 1), Rentzsch and Schröder-Abé (2022; data on self-esteem from Time 1-3), and Jung et al. (2022; data on narcissism and self-esteem from Time 1-3). Data on the longitudinal interplay of dispositional envy and self-esteem have not been reported in any previous paper.

[3] The planned sample size was 500 participants per wave based on considerations regarding the size and previous response rates of the participant pool. At the time of the preregistration, the participant pool contained about 2,000 e-mail addresses from volunteers. The response rate in the first two waves of data collection was around 25%.

- Physical appearance self-esteem refers to the evaluation of the appearance of one's body. High scorers evaluate themselves as physically attractive and are satisfied with their bodies.
- Physical ability self-esteem refers to the evaluation of one's abilities with respect to sports and physical coordination.

Each subscale consists of five to seven items. Responses on the 32 items were given on 7-point rating scales ranging from 1 (*not at all*) to 7 (*very much*) for items measuring intensity and from 1 (*never*) to 7 (*very much*) for items measuring frequency. Internal consistencies for the five self-esteem domains measured with Cronbach's alpha (α) ranged from .77 to .90, and global self-esteem had α values that ranged from .89 (Times 1 and 2) to .90 (Time 3).

Matching of envy and self-esteem domains. For the bivariate analyses within specific social comparison domains, we grouped the domains of dispositional envy and self-esteem according to their content (see also Rentzsch & Gross, 2015). Dispositional envy with regard to competence was grouped into the same domain as performance self-esteem because both refer to a person's intellectual abilities. As attraction envy includes aspects of popularity as well as physical attraction, this envy domain was matched with physical appearance self-esteem as well as the two social domains: social contact self-esteem and social criticism self-esteem. Domains of dispositional envy and self-esteem that did not have an equivalent in the respective other construct (e.g., wealth envy and physical ability self-esteem) were not included in the bivariate domain-specific analyses.

2.1.3. Analytic strategy

For all analyses, we used latent longitudinal analyses based on confirmatory factor models. In order to investigate global dispositional envy, a first-order measurement model representing the latent factor of dispositional envy and three manifest parcels as indicators (Little et al., 2002) was used. As preregistered, the internal-consistency approach was applied to create parcels (for a concise description of this approach, see Little et al., 2002, p. 167). In order to investigate global self-esteem as well as specific domains of self-esteem and dispositional envy, first-order measurement models for each of the six (i.e., one global and five domain-specific) subscales of the MSES (e.g., global self-esteem, performance self-esteem) and for the three domain-specific subscales of the DSES (i.e., attraction, competence, wealth) were established. Each factor model included three item parcels based on the balancing technique as recommended by Little et al. (2002, p. 166).

All models were estimated with Mplus Version 8.5 (Muthén & Muthén, 1998–2019) using full information maximum likelihood estimation (Enders, 2010). In accordance with our preregistration, model fit was assessed with the χ^2-test statistic, Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root-Mean-Square Residual (SRMR), with CFI $>$ .90, RMSEA $<$ .08, and SRMR $<$ .11 reflecting an acceptable fit to the data. The Bayesian Information Criterion (BIC) and Tucker-Lewis Index (TLI) are also reported. In accordance with the preregistration, we used $p < .05$ and 95 % confidence intervals.

The anonymized data and all scripts used for the analyses are available on the OSF (https://osf.io/5jvcx).

Measurement invariance. First, we tested for measurement invariance in dispositional envy and self-esteem across time. Establishing invariance is important to ensure that the relationship between the indicators and the latent factors did not change across time, which is a prerequisite for a meaningful comparison of latent factors at different measurement points.

Every measurement model of each of the measures of global and domain-specific dispositional envy and self-esteem was tested for invariance across the three measurement occasions. For each model, the three latent factors representing envy/self-esteem in the different waves of measurement (2013, 2017, and 2019) were allowed to correlate. All models were tested for configural, weak, strong, and strict factorial invariance by comparing a series of increasingly restrictive models against each other (Meredith, 1993). As preregistered and in accordance with Cheung and Rensvold (2002), a value of ΔCFI smaller than or equal to 0.01 between nested models was regarded as indicating a nonsignificant decrement in fit between the models. The measurement models used in the following analyses (i.e., the latent change models) were based on the level of invariance found in these tests.

In the weak invariance model, all factor loadings were constrained to be equal across time. In addition to this constraint, the intercepts of all indicators were constrained to be equal in the strong invariance model. In the strict invariance model, the residual variances were constrained to be equal in addition to the factor loadings and intercepts. In all models, we allowed the residuals of identical indicators to be correlated in order to account for the use of the same indicators across time (Bollen & Curran, 2006).

True Intraindividual Change Models. In order to investigate the longitudinal interplay of dispositional envy and self-esteem, we used bivariate True Intraindividual Change Models (TICMs; Steyer et al., 1997).[4] As a first step, we modeled change in dispositional envy and self-esteem separately. In these univariate TICMs, all latent envy/self-esteem factors loaded on an initial latent factor at Time 1. The latent difference factors were each measured by the latent factor of the respective time point and of all subsequent time points. All loadings were fixed to one. The intercepts of the reference indicators were set to zero to identify the latent means. The latent difference factors were allowed to correlate. The intercepts and variances of the latent envy and self-esteem factors were set to zero for purposes of identification. The means and variances of the latent difference factors were freely estimated. A significant latent difference factor mean indicates that the mean change between time points was significantly different from zero; a positive sign on the latent difference factor mean indicates that the latent scores of the respective construct increased between the respective time points. The variance of the latent difference factor reflects individual differences in the latent change scores, indicating interindividual differences in intraindividual change. All TICMs were based on the measurement models of the respective measures of dispositional envy or self-esteem.

To analyze correlated change and prospective effects between dispositional envy and self-esteem, we then specified bivariate models that simultaneously combined two TICMs: one for dispositional envy and one for self-esteem (see Fig. 1 for a schematic representation). For the analysis of *correlated change*, we first specified bivariate models that were purely correlational (see Model 1a in Fig. 1). In these models, the initial levels of dispositional envy and self-esteem were allowed to correlate (Path A), representing a cross-sectional correlation at baseline. Correlated change was modeled as the correlation between the change factors of dispositional envy and self-esteem within the same time interval (Paths B and C).

In an additional step, we included prospective effects of dispositional envy on self-esteem and vice versa as well as autoregressive effects of the initial levels/change factors on later change in the same construct (see Model 1b in Fig. 1). *Level on change* effects were modeled as cross-lagged paths between the initial level factors of dispositional envy/self-esteem on the latent difference factor indicating change between Time 1 and Time 2 in the respective other construct (D paths). To investigate whether change in self-esteem predicted later change in dispositional envy or vice versa, we added cross-lagged paths between the respective difference factors of neighboring time intervals, thus indicating a *change on change* effect (E paths).

[4] In line with the preregistration, we used bivariate True Intraindividual Change Models (TICM) to examine the longitudinal interplay of dispositional envy and self-esteem. However, the two-step procedure (i.e., the specification of merely a correlational model followed by a model with cross-lagged effects) was not preregistered as such.

Table 2
Model Fit Indices from Invariance Testing Across Time (Study 1).

Measures of Envy	χ^2	*df*	*p*	BIC	TLI	CFI	RMSEA	SRMR
Global Envy								
(Configural invariance)	19.10	15	.209	14546.44	0.997	0.999	0.015	0.020
(Weak invariance)	30.73	19	.043	14529.61	0.993	0.996	0.022	0.028
(Strong invariance)	39.68	25	.031	14495.88	0.993	0.995	0.022	0.028
(Strict invariance)	43.14	31	.072	14456.65	0.996	0.996	0.018	0.035
Attraction Envy								
(Configural invariance)	22.08	15	.106	16466.39	0.995	0.998	0.020	0.020
(Weak invariance)	26.08	19	.128	16441.94	0.996	0.998	0.017	0.024
(Strong invariance)	37.84	25	.048	16411.01	0.995	0.996	0.020	0.026
(Strict invariance)	47.98	31	.026	16378.47	0.994	0.995	0.021	0.027
Competence Envy								
(Configural invariance)	7.44	15	.944	17147.74	1.005	1.000	0.000	0.014
(Weak invariance)	14.23	19	.770	17126.07	1.002	1.000	0.000	0.020
(Strong invariance)	17.79	25	.851	17086.95	1.003	1.000	0.000	0.020
(Strict invariance)	20.31	31	.929	17046.79	1.003	1.000	0.000	0.021
Wealth Envy								
(Configural invariance)	32.99	15	.005	13308.11	0.986	0.994	0.031	0.023
(Weak invariance)	41.63	19	.002	13288.30	0.986	0.993	0.031	0.024
(Strong invariance)	48.67	25	.003	13252.65	0.989	0.992	0.028	0.024
(Partial strict invar.) [a]	78.63	30	<.001	13247.04	0.981	0.984	0.036	0.036
Global Self-Esteem								
(Configural invariance)	12.36	15	.652	14709.29	1.000	1.000	0.000	0.011
(Weak invariance)	17.08	19	.584	14685.48	1.000	1.000	0.000	0.025
(Strong invariance)	24.79	25	.474	14650.38	1.000	1.000	0.000	0.030
(Strict invariance)	25.43	31	.748	14490.13	1.000	1.000	0.000	0.029
Social Contact SE								
(Configural invariance)	24.67	15	.055	16294.29	0.994	0.998	0.023	0.018
(Weak invariance)	27.27	19	.098	16268.36	0.996	0.998	0.019	0.023
(Strong invariance)	34.15	25	.105	16232.43	0.997	0.998	0.017	0.027
(Strict invariance)	39.81	31	.133	16195.29	0.997	0.998	0.015	0.032
Social Criticism SE								
(Configural invariance)	26.47	15	.033	16953.71	0.992	0.997	0.025	0.023
(Weak invariance)	36.56	19	.009	16935.26	0.991	0.995	0.027	0.033
(Strong invariance)	46.51	25	.006	16902.41	0.991	0.994	0.026	0.043
(Strict invariance)	63.41	31	.001	16876.51	0.990	0.991	0.029	0.048
Performance Self-Esteem								
(Configural invariance)	17.89	15	.269	15502.69	0.998	0.999	0.012	0.019
(Weak invariance)	21.78	19	.295	15478.06	0.998	0.999	0.011	0.026
(Strong invariance)	24.90	25	.468	15438.40	1.000	1.000	0.000	0.029
(Strict invariance)	37.04	31	.210	15407.77	0.998	0.998	0.012	0.033
Physical Appearance SE								
(Configural invariance)	37.45	15	.001	16166.89	0.986	0.994	0.035	0.021
(Weak invariance)	42.31	19	.002	16143.22	0.988	0.994	0.031	0.026
(Strong invariance)	45.89	25	.007	16104.03	0.992	0.994	0.026	0.029
(Strict invariance)	56.21	31	.004	16071.57	0.992	0.993	0.026	0.033
Physical Ability SE								
(Configural invariance)	23.02	15	.084	18165.88	0.991	0.996	0.021	0.021
(Weak invariance)	23.10	19	.233	18137.45	0.997	0.998	0.013	0.022
(Strong invariance)	30.10	25	.221	18101.67	0.997	0.998	0.013	0.025
(Strict invariance)	40.12	31	.126	18068.91	0.995	0.996	0.015	0.031

Note. BIC = Bayesian Information Criterion, TLI = Tucker-Lewis Index, CFI = Comparative Fit Index, RMSEA = Root Mean Square Error of Approximation, SRMR = Standardized Root-Mean-Square Residual. N = 1,229–1,254 due to missing data.

[a] In the case of wealth envy, one residual variance was freed in order to achieve partial strict invariance.

2.2. Results

2.2.1. Measurement invariance and univariate analyses

As a first step, we tested all measures of dispositional envy and self-esteem for invariance across time (for a detailed overview of the results, see Table 2). Results indicated strict invariance for global dispositional envy and self-esteem with excellent fit for the strict invariance model (CFI = .996, RMSEA = .018, SRMR = .035 for global dispositional envy and CFI = 1, RMSEA = 0, SRMR = .011 for global self-esteem). Model fit indices revealed only a minimal drop in model fit when comparing the restrictive model with the less constrained models and thus supported structural consistency (i.e., the measurement models had similar factor structures over time). Moreover, analyses revealed strict invariance for all domain-specific measures of dispositional envy and self-esteem except for wealth envy, with CFIs for the strict invariance models ranging from .991 to 1 and RMSEAs ranging from 0 to .029 and only a minimal drop in model fit when constraints were imposed on the models. In the case of wealth envy, results indicated partial strict invariance after one residual variance was freed (CFI = .984; RMSEA = .036). In line with the preregistration, the following analyses were based on latent models with (partial) strict measurement invariance.

Before conducting the bivariate analyses of correlated change and prospective effects, we specified univariate TICMs in order to examine the mean-level change and the variance of the change in all measures of dispositional envy and self-esteem. In Table 3, we present the means and standard deviations of all measures of dispositional envy and self-esteem, as estimated in the univariate TICMs. The estimated intercorrelations between the latent factors of dispositional envy and self-esteem across time are presented in Table S-1 in the Supplement (see https://osf.io/5jvcx).

As can be seen in Table 3, the difference factor means were small and nonsignificant for almost all measures of dispositional envy and self-esteem, with the exception of the social self-esteem domains, which showed a significant (albeit small) increase in mean levels between Time

Table 3
Estimated Means, Standard Deviations, and Difference Factor Means and Variances Across Measurement Occasions (Study 1).

Measure	*M (SD)*			Difference Factor Mean		Difference Factor Variance	
	Time 1	Time 2	Time 3	Time 1 – Time 2	Time 2 – Time 3	Time 1 – Time 2	Time 2 – Time 3
Global Envy	2.68 (1.26)	2.64 (1.29)	2.63 (1.31)	0.05 [-0.15, 0.06], .397	0.00 [-0.10, 0.09], .940	0.67 [0.49, 0.85], <.001	0.61 [0.46, 0.76], <.001
Attraction Envy	2.60 (1.22)	2.53 (1.27)	2.51 (1.26)	0.07 [-0.17, 0.04], .219	0.02 [-0.12, 0.08], .696	0.68 [0.51, 0.86], <.001	0.62 [0.46, 0.78], <.001
Competence Envy	2.91 (1.34)	2.93 (1.40)	2.95 (1.38)	0.02 [-0.10, 0.14], .708	0.02 [-0.09, 0.13], .685	1.04 [0.79, 1.29], <.001	0.77 [0.59, 0.96], <.001
Wealth Envy	1.96 (1.12)	1.91 (0.91)	1.94 (1.15)	0.05 [-0.13, 0.04], .289	0.04 [-0.05, 0.12], .400	0.39 [0.27, 0.50], <.001	0.47 [0.35, 0.59], <.001
Global Self-Esteem	5.15 (1.07)	5.22 (1.09)	5.27 (1.08)	0.06 [-0.02, 0.15], .151	0.05 [-0.03, 0.13], .210	0.43 [0.30, 0.56], <.001	0.33 [0.24, 0.42], <.001
Social Contact SE	4.83 (1.44)	4.94 (1.44)	4.93 (1.43)	0.11 [0.01, 0.21], .026	0.01 [-0.11, 0.08], .770	0.42 [0.27, 0.57], <.001	0.53 [0.39, 0.67], <.001
Social Criticism SE	4.50 (1.27)	4.65 (1.27)	4.62 (1.32)	0.15 [0.04, 0.25], .006	0.02 [-0.12, 0.07], .609	0.60 [0.43, 0.78], <.001	0.49 [0.36, 0.63], <.001
Performance SE	4.93 (0.98)	4.97 (1.00)	4.97 (1.00)	0.04 [-0.05, 0.13], .353	0.00 [-0.08, 0.08], .961	0.56 [0.41, 0.70], <.001	0.34 [0.23, 0.44], <.001
Physical Appearance SE	4.46 (1.37)	4.46 (1.42)	4.46 (1.38)	0.00 [-0.11, 0.11], .952	0.00 [-0.10, 0.10], .979	0.78 [0.57, 1.00], <.001	0.52 [0.37, 0.67], <.001
Physical Ability SE	4.38 (0.97)	4.36 (1.03)	4.29 (1.02)	0.02 [-0.11, 0.07], .666	0.07 [-0.15, 0.01], .086	0.35 [0.21, 0.50], <.001	0.25 [0.13, 0.36], <.001

Note. Values represent difference factor means and variances from univariate True Intraindividual Change Models [95% confidence interval], *p* value. $N = 1{,}229$–$1{,}254$ due to missing data.

1 and Time 2. Most importantly, all measures of dispositional envy and self-esteem exhibited a significant variance in the change between measurement occasions ranging from 0.25 to 1.04 (all *ps* < .001). This finding indicates that participants showed significant differences in how much their dispositional envy and self-esteem scores changed between measurement occasions (i.e., interindividual differences in intra-individual change), an important precondition for the investigation of correlated change and prospective effects.

2.2.2. Correlated change and prospective effects

Global dispositional envy and self-esteem. The bivariate TICMs of global dispositional envy and self-esteem showed excellent model fit, with CFI = .995 and RMSEA = .016 for the correlational model and CFI = .993 and RMSEA = .017 for the cross-lagged model (i.e., the model including autoregressive effects and cross-lagged paths). Coefficients from the bivariate TICMs are displayed in Tables 4 (correlational models) and 5 (cross-lagged models).

We found that global dispositional envy and self-esteem were negatively associated at baseline (r = -.59, 95 % CI [-.65, -.53], p < .001). This result means that participants with lower self-esteem were more prone to experiencing envy. When looking at the correlated change (i.e., correlation between the latent factors representing change in global dispositional envy and self-esteem within the same time intervals), we again found negative associations (r = -.45, 95 % CI [-.62, -.29] for change between Time 1 and Time 2, and r = -.57, 95 % CI [-.71, -.42] for change between Time 2 and Time 3, all *ps* < .001). These findings indicate that participants who exhibited a stronger increase in self-esteem compared with others also showed a stronger decline in their dispositional envy levels within the same time interval.

When investigating prospective effects between dispositional envy and self-esteem, we did not find any significant cross-lagged *level on change* or *change on change* effects for the global constructs. Initial self-esteem levels did not predict change in dispositional envy (b = -0.13, 95 % CI [-0.29, 0.03], p = .110) or vice versa (b = -0.08, 95 % CI [-0.20,

Table 4
Correlated Change Between Dispositional Envy and Self-Esteem (Study 1).

Measures of Dispositional Envy and Self-Esteem	Initial Level Correlation	Correlated Change T1-T2	Correlated Change T2-T3
Global Envy and Global SE	.591 [-.651, .531]	.454 [-.616, .292]	.568 [-.712, .423]
Attraction Envy and Social Contact SE	.540 [-.602, .479]	.505 [-.677, .334]	.558 [-.705, .411]
Attraction Envy and Social Criticism SE	.741 [-.786, .697]	.627 [-.763, .492]	.746 [-.867, .624]
Attraction Envy and Physical Appearance SE	.523 [-.587, .459]	.441 [-.599, .283]	.750 [-.881, .619]
Competence Envy and Performance SE	.524 [-.588, .460]	.402 [-.550, .255]	.423 [-.592, .254]

Note. Cells present coefficients from bivariate True Intraindividual Change Model analyses [95 % confidence interval]. Domains of dispositional envy and self-esteem were matched according to their content. Initial level correlation = the correlation between the initial levels of dispositional envy and self-esteem; correlated change = the correlation between the latent change factors of dispositional envy and self-esteem. 95 % confidence intervals are included in parentheses. $N = 1{,}248$–$1{,}254$ due to missing data.
All *ps* < .001.

Table 5
Prospective Effects of Dispositional Envy and Self-Esteem (Study 1).

Measures of Dispositional Envy and Self-Esteem	Dispositional Envy → Self-Esteem		Self-Esteem → Dispositional Envy	
	$Level_{DE}$ – $Change_{SE}$	$Change_{DE}$ – $Change_{SE}$	$Level_{SE}$ – $Change_{DE}$	$Change_{SE}$ – $Change_{DE}$
Global Envy and Global SE	0.079[-0.199, 0.041], .197	0.027[-0.200, 0.147], .762	0.131[-0.291, 0.030], .110	0.047[-0.311, 0.218], .730
Attraction Envy and Social Contact SE	0.030[-0.164, 0.103], .655	0.055[-0.168, 0.277], .630	**−0.132 [-0.233, −0.031], .011**	0.017[-0.311, 0.278], .912
Attraction Envy and Social Criticism SE	0.121[-0.297, 0.055], .177	0.054[-0.201, 0.309], .679	0.062[-0.226, 0.101], .455	0.105[-0.382, 0.172], .458
Attraction Envy and Physical Appearance SE	0.040[-0.173, 0.094], .561	0.164[-0.025, 0.353], .089	0.021[-0.134, 0.091], .709	0.039[-0.170, 0.248], .716
Competence Envy and Performance SE	0.013[-0.080, 0.105], .784	0.026[-0.081, 0.132], .640	**−0.251 [-0.420, −0.082], .004**	**−0.287 [-0.516, −0.057], .014**

Note. Domains of dispositional envy and self-esteem were matched according to their content. Values represent unstandardized cross-lagged regression coefficients from bivariate True Intraindividual Change Model analyses [95 % confidence interval], *p* value. Bold values are statistically significant (α = .05). $N = 1{,}248$–$1{,}254$ due to missing data.

0.04], $p = .197$). Similarly, change in self-esteem within the first time interval did not predict later change in dispositional envy (b = -0.05, 95 % CI [-0.31, 0.22], $p = .730$) or vice versa (b = -0.03, 95 % CI [-0.20, 0.15], $p = .762$).

Dispositional envy and self-esteem domains. We then proceeded to examine correlated change and cross-lagged effects within dispositional envy and self-esteem domains that were matched on content. Model fit indices were good to excellent for the domain-specific bivariate TICMs (CFIs ranging from .964 to .995, RMSEAs ranging from 0 to .015). Supplementary analyses on the association between non-matching domains of dispositional envy and self-esteem can be found in Table S-3 in the Supplement (see https://osf.io/5jvcx).

In the correlational models, the corresponding dispositional envy and self-esteem domains were negatively correlated at baseline, with correlation coefficients ranging from r = -.52 for the cross-sectional association between competence envy and performance self-esteem to r = -.74 for attraction envy and social criticism self-esteem. Participants who were low in domain-specific self-esteem at Time 1 were therefore especially prone to experiencing dispositional envy in the same domain. Moreover, resembling our results on global envy and self-esteem, concurrent change in corresponding domains of dispositional envy and self-esteem was strongly negatively correlated, with coefficients ranging from r = -.40 to r = -.75 (see also Table 4). For example, participants who experienced a stronger increase in dispositional envy with regard to their competence across measurement occasions simultaneously experienced a stronger decrease in performance self-esteem than others.

As was the case for global dispositional envy and self-esteem, we did not find much evidence for cross-lagged *level on change* or *change on change* effects (see Table 5). However, we found a significant effect of the initial level of social contact self-esteem on change in attraction envy (b = -0.13, 95 % CI [-0.23, 0.03], $p = .011$). Conversely, the *level on change* effect of attraction envy on social contact self-esteem failed to reach significance (b = -0.03, 95 % CI [-0.16, 0.10], $p = .655$). This finding means that participants who started out with higher levels of social contact self-esteem than others also showed a larger decrease in attraction envy between Time 1 and Time 2 but not vice versa. Moreover, performance self-esteem had significant negative *level on change* (b = -0.25, 95 % CI [-0.42, 0.08], $p = .004$) and *change on change* (b = -0.29, 95 % CI [-0.52, 0.06], $p = .014$) effects on competence envy. Again, the effects of dispositional envy on self-esteem were nonsignificant (b = 0.01, 95 % CI [-0.08, 0.11], $p = .784$ for the *level on change* effect of competence envy on performance self-esteem and b = 0.03, 95 % CI [-0.08, 0.13], $p = .640$ for the *change on change* effect). Participants with higher initial levels of performance self-esteem therefore showed larger decreases in competence envy across the first time interval; and participants who showed larger increases in performance self-esteem between Time 1 and Time 2 later experienced a stronger decrease in dispositional envy with regard to competence than others. However, this was not true for the opposite direction of effects.

2.2.3. Summary

To sum up, the present study showed that, as expected, dispositional envy and self-esteem were strongly negatively correlated at the cross-sectional level, and increases in self-esteem were associated with concurrent decreases in dispositional envy (i.e., correlated change). Regarding prospective effects, there was no evidence of cross-lagged effects between global dispositional envy and self-esteem. However, within domains of dispositional envy and self-esteem, we found that levels or change in self-esteem predicted later change in dispositional envy but not the other way around.

3. Study 2

The purpose of Study 2 was to replicate the findings on the longitudinal interplay between global dispositional envy and self-esteem from Study 1 in a representative sample from the German population.

3.1. Method

The data for this study (GESIS, 2023) were collected as part of the GESIS panel, an open probability-based mixed-mode panel of the general population in Germany (Bosnjak et al., 2018). All hypotheses and analyses were preregistered (https://osf.io/k5yj8).[1]

3.1.1. Participants and procedure

The GESIS panel is an ongoing longitudinal panel study that provides researchers with the opportunity to collect data from a random sample that is representative of the German population. Data collection began in 2013, and new waves are conducted every 2 to 3 months. In the initial sampling process, a random sample was drawn from the German-speaking population living in Germany between the ages of 18 and 70 years, resulting in a starting cohort of almost 5,000 panelists (Bosnjak et al., 2018). To compensate for attrition, refreshment cohorts were drawn in 2016, 2018, and 2022. In these refreshment samples, there was no upper restriction for age (i.e., participants could be older than 70). In all waves, panelists can participate online or via mail. Participants were offered an incentive of 5 Euros. The codebook, wave reports, and study descriptions can be accessed via https://www.gesis.org/en/gesis-panel/documentation/.

For the present study, we used data from two waves of measurement where dispositional envy and self-esteem were assessed (Waves "cf" and "ja"). A total of 44 participants had to be excluded due to missing data on all dispositional envy and self-esteem variables. At Time 1 in December 2015/January 2016, 3,502 people participated in the survey. Six years later (Time 2, February to April 2022), the number of participants was 4,868. A total of n = 2,248 people participated at both measurement occasions. Whereas the Time 1 sample included only the first, original GESIS cohort, the Time 2 sample also included three refreshment samples (second to fourth cohorts). For our analyses, we included all participants who provided data at a minimum of one measurement occasion, resulting in an overall sample size of N = 6,134 participants.[5] Detailed information on sample size and demographics is presented in Table 6.

3.1.2. Measures

As in Study 1, global dispositional envy was measured with the Domain-Specific Envy Scale (DSES; Rentzsch & Gross, 2015). Cronbach's alpha (α) for the 15-item global scale was .93 at Time 1 and .94 at Time 2. To measure self-esteem, we used the Single-Item Self-Esteem Scale (SISE) developed by Robins et al. (2001; for the German translation, see von Collani & Herzberg, 2003). Participants were asked to indicate their agreement with the statement: "I have high self-esteem." Responses were given on a 5-point rating scale ranging from 1 (*does not apply at all*) to 5 (*fully applies*). The SISE has been shown to be a valid and reliable instrument for the assessment of self-esteem in German-speaking samples (Brailovskaia & Margraf, 2020) and was chosen due to limitations on the length of the questionnaire.

3.1.3. Analytic strategy

For reasons of comparability, we aimed to keep the analytic strategy equivalent to the analyses used in Study 1. Again, all scripts used for the analyses are available on the OSF (https://osf.io/5jvcx). We are not allowed to publicly share the data; however, researchers can apply for free data access via https://www.gesis.org/en/gesis-panel/data.

As in Study 1, we used latent longitudinal analyses based on confirmatory factor models for all analyses. The first-order measurement model of global dispositional envy was again composed of a latent envy factor measured with three manifest parcels that were created via the internal-consistency approach (Little et al., 2002). For self-esteem, we used a measurement model with one single-indicator latent variable per

[5] The sample size of Study 2 was determined by the GESIS panel.

Table 6
Sample Size and Demographics Across Waves (Study 2).

Wave	2015/2016 (Time 1)	2022 (Time 2)
Sample size *n*	3,502	4,868
Age [a,b]		
Mean (*SD*)	49.8 (14.2)	56.7 (14.5)
Range	21–73	27–79
Gender [b]		
Male (%)	1,598 (47.6 %)	2,358 (49.8 %)
Female (%)	1,757 (52.4 %)	2,373 (50.2 %)
Education		
Student	11 (0.3 %)	7 (0.1 %)
Main school (Hauptschule)	669 (19.1 %)	744 (15.3 %)
Middle school (Mittlere Reife)	1,154 (33.0 %)	1,602 (33.0 %)
Entrance qualification college of applied science (Fachhochschulreife)	415 (11.9 %)	632 (13.0 %)
High school degree (Abitur)	1,202 (34.3 %)	1,822 (37.5 %)
No degree	35 (1.0 %)	29 (0.6 %)
Other	16 (0.5 %)	19 (0.4 %)

Note. Sample sizes differ due to missing data.
[a] Age was computed by subtracting participants' year of birth from 2016 (Time 1) and 2022 (Time 2).
[b] Participants with inconsistent information regarding their year of birth or gender were excluded.

measurement occasion. Compared with manifest indicators, single-indicator latent variables have the advantage that they account for the unreliability of the single-item measure, which is included in the model by fixing the observed indicator's factor loading to 1 and its residual variance to a value a = Var(x) × (1-Rel), where Var(x) is the indicator's variance, and Rel is its estimated reliability (Brown, 2006). As a reliability estimate, we used the test–retest reliability of the German version of the SISE by Brailovskaia and Margraf (2020), which was $r = .72$.

All models were estimated with Mplus Version 8.5 (Muthén & Muthén, 1998–2019) and based on full information maximum likelihood estimation (Enders, 2010). For the assessment of model fit, we used the same analytic strategy as in Study 1. In accordance with the preregistration, we used $p < .05$ and 95 % confidence intervals for nondirectional hypotheses. For directional hypotheses, we used $p < .10$ and 90 % confidence intervals.

Again, dispositional envy was tested for *measurement invariance* across time. The invariance testing procedure was the same as described in Study 1. As strict invariance could be demonstrated, the measurement model of global dispositional envy in the following analyses (i.e., the latent change models) was based on the strict invariance model. For the one-item measure of self-esteem, invariance tests were not feasible.

To analyze correlated change and prospective effects of dispositional envy and self-esteem, we used *Latent Change Score* (*LCS*) models (McArdle & Hamagami, 2001; see also Kievit et al., 2018). These models include latent variables representing individual differences in true intraindividual change over time corrected for random measurement error (Steyer et al., 1997). These latent variables are equivalent to the latent difference variables from the TICMs that we used in Study 1. For the present study, we decided to use LCS models because they can be used with only two waves of data collection, whereas the TICMs need at least three measurement occasions to be identified due to the inclusion of an additional initial level factor.

As a first step, we again modeled change in dispositional envy and self-esteem separately. In the univariate LCS models, we introduced a latent difference factor representing change between the measurement occasions, which was measured by the latent envy/self-esteem factor at Time 2 with a factor loading fixed to 1. Moreover, the latent factor at Time 2 was regressed on the latent factor at Time 1 with a regression weight fixed to one and residual variance and intercept set to zero. These steps ensure that the latent change factor represents the change between Time 1 and Time 2. The mean and variance of the latent change factor were again freely estimated. A significant latent difference factor mean indicates that the mean change between time points is significantly different from zero; a positive sign on the latent difference factor mean indicates that the latent scores of dispositional envy/self-esteem increased between the respective time points. The variance of the latent difference factor reflects individual differences in the latent change scores, indicating interindividual differences in intraindividual change. The latent difference factor and the latent factor at Time 1 were allowed to correlate. For self-esteem, we used single-indicator latent variables, resulting in a just-identified model.

For the analysis of correlated change and cross-lagged *level on change* effects, we used bivariate LCS models (Kievit et al., 2018). In these models, we combined the univariate LCS models of dispositional envy and self-esteem into one model (see Fig. 2 for a schematic representation). As in Study 1, we first computed correlations between the initial levels of dispositional envy and self-esteem and between the latent difference factors of both measures (see Model 2a). In a second step, we added autoregressive and cross-lagged paths between the initial levels and change factors (Model 2b). Cross-lagged paths between the initial level of dispositional envy or self-esteem on change in the other construct are conceptually equivalent to the *level on change* effects investigated in Study 1. Because Study 2 had only two measurement occasions, it was not possible to examine cross-lagged *change on change* effects.

3.2. Results

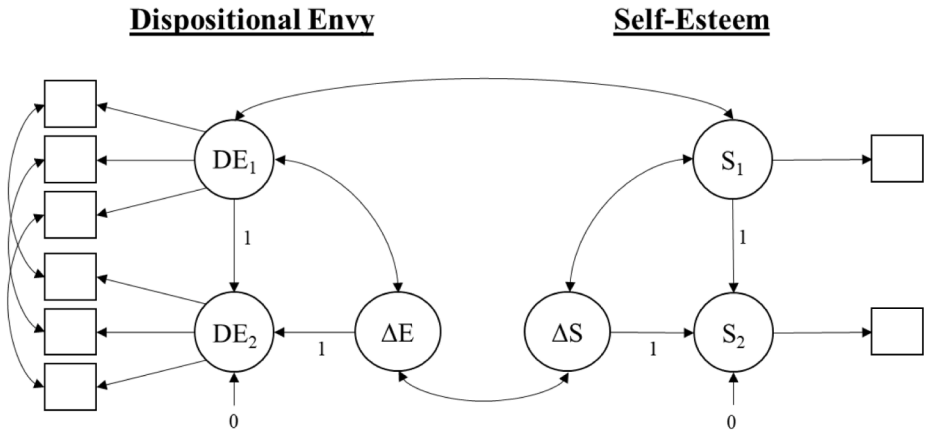
3.2.1. Measurement invariance and univariate analyses

As in Study 1, we first tested the measure of global dispositional envy for invariance across time (see also Table 7). Results indicated strict invariance with minimal drops in model fit when restrictions were introduced and an excellent fit for the strict invariance model (CFI = .992, RMSEA = .040, SRMR = .029). The following analyses were based on the latent model of global dispositional envy with strict measurement invariance. Invariance tests were not feasible for self-esteem due to the use of a single-item measure.

Before the bivariate analyses, we used univariate LCS models for global dispositional envy and self-esteem in order to separately examine the mean-level change and the variance of the change in both constructs. In Table 8, we present the means and standard deviations of dispositional envy and self-esteem as estimated in the univariate LCS models. The estimated intercorrelations between the latent factors of dispositional envy and self-esteem across time are presented in Table S-2 in the Supplement (see https://osf.io/5jvcx).

As can be seen in Table 8, both dispositional envy and self-esteem showed significant decreases in mean levels across time, representing small effects (latent Cohen's $d = -0.129$ for global dispositional envy and $d = -0.158$ for self-esteem). Moreover, the difference factors of dispositional envy and self-esteem exhibited significant variances ($S^2 = 0.69$

a. Correlational model



b. Cross-lagged model

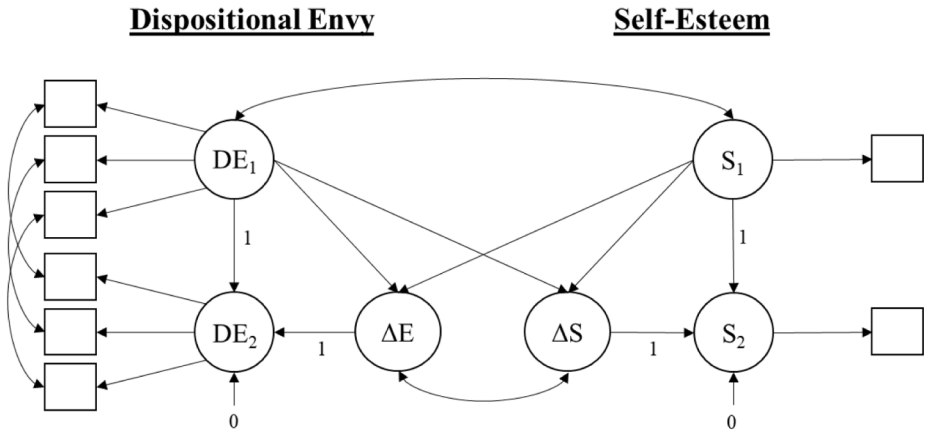


Fig. 2. *Bivariate Latent Change Score Model (Study 2).* 2a. Correlational model. 2b. Cross-lagged model. *Note.* DE = latent envy factors, S = latent self-esteem factors. A first set of models (2a) was purely correlational; in a second step, we added autoregressions and cross-lagged effects (2b).

Table 7
Model Fit Indices from Invariance Testing Across Time (Study 2).

Measures of Envy	χ^2	*df*	*p*	BIC	TLI	CFI	RMSEA	SRMR
Global Dispositional Envy								
(Configural invariance)	12.56	5	.028	59702.52	0.999	1.000	0.016	0.008
(Weak invariance)	19.35	7	.007	59691.86	0.998	0.999	0.017	0.011
(Strong invariance)	92.05	10	<.001	59738.40	0.993	0.995	0.037	0.033
(Strict invariance)	137.52	13	<.001	59757.71	0.991	0.992	0.040	0.029

Note. BIC = Bayesian Information Criterion, TLI = Tucker-Lewis Index, CFI = Comparative Fit Index, RMSEA = Root Mean Square Error of Approximation, SRMR = Standardized Root-Mean-Square Residual. N = 6,132.

Table 8
Estimated Means, Standard Deviations, and Difference Factor Means and Variances Across Measurement Occasions (Study 2).

Measure	*M (SD)*		Difference Factor Mean	Difference Factor Variance
	Time 1	Time 2		
Global Disp. Envy	2.18 (1.06)	2.04 (1.04)	0.14 [-0.17, 0.10], <.001	0.69 [0.64, 0.74], <.001
Self-Esteem	3.59 (0.80)	3.46 (0.84)	0.13 [-0.16, 0.10], <.001	0.36 [0.31, 0.41], <.001

Note. Values represent difference factor means and variances from univariate Latent Change Score models [95 % confidence interval], *p* value. N = 6,132 for global dispositional envy and N = 6,122 for self-esteem due to missing data.

and 0.36, *ps* < .001, respectively), indicating interindividual differences in intraindividual change.

3.2.2. Correlated change and prospective effects

The bivariate LCS models of global dispositional envy and self-esteem showed excellent model fits, with CFI = .996 and RMSEA = .025 for both the correlational and cross-lagged models. Replicating previous research and our findings from Study 1, we found that global dispositional envy and self-esteem were negatively associated at baseline (r = -.32, 95 % CI [-.35, .28], p < .001). This finding means that participants with lower self-esteem were more prone to experiencing envy. Moreover, in line with the preregistration and our findings from Study 1, change in dispositional envy and change in self-esteem were negatively correlated (r = -.19, 90 % CI [-.25, .13], p < .001). Again, this finding indicates that increases in self-esteem across time were associated with concurrent decreases in dispositional envy and vice versa.

When investigating prospective *level on change* effects between dispositional envy and self-esteem, we found that the initial level of self-esteem predicted subsequent change in dispositional envy (b = -0.07, 95 % CI [-0.12, 0.02], p = .010). Participants with lower initial levels of self-esteem experienced a more pronounced increase in dispositional envy across the 6 years of assessment compared with participants with higher self-esteem levels, even when the baseline level of dispositional envy was controlled for. However, there was no significant effect of the initial level of dispositional envy on change in self-esteem (b = -0.02, 95 % CI [-0.06, 0.01], p = .225).

3.2.3. Summary

In summary, in Study 2, we again found that global dispositional envy and self-esteem were negatively associated at baseline. Moreover, in line with our expectations, and replicating the findings from Study 1, we found evidence of correlated change between global dispositional envy and self-esteem, indicating that increases in self-esteem were associated with concurrent decreases in dispositional envy. Regarding prospective effects, we found a significant negative *level on change* effect of self-esteem on global dispositional envy. This finding means that the lower a person's self-esteem level was compared with others at baseline, the stronger was the increase in their level of dispositional envy between measurement occasions, but not the other way around.

4. Discussion

The aim of the present research was to investigate the longitudinal interplay of global and domain-specific dispositional envy and self-esteem. Correlated change and prospective effects between the two constructs were examined via latent change models, drawing on data from two large-scale longitudinal studies with a total sample size of more than 7,000 adult participants.

At the cross-sectional level, we found that participants who were more prone to envy tended to have lower self-esteem than others, as indicated by a negative correlation between dispositional envy and self-esteem in both studies. Whereas these findings replicate evidence from previous cross-sectional research (e.g., Rentzsch & Gross, 2015; Smith et al., 1999; Vrabel et al., 2018), they do not necessarily allow conclusions to be drawn about the longitudinal interplay between dispositional envy and self-esteem. In order to be able to empirically examine whether dispositional envy and self-esteem develop in unison and/or whether decreases in self-esteem lead to increases in dispositional envy or vice versa, we therefore used a longitudinal research design. In the following, we discuss the results of the longitudinal analyses in detail.

4.1. Change in dispositional envy is negatively related to change in self-esteem

Across both studies and in line with our expectations, we found that change in dispositional envy was negatively associated with change in self-esteem. This correlated change indicates that persons who experience a stronger increase in self-esteem compared with others in the sample also tend to decrease in their dispositional envy within the same time span. Crumbling self-esteem, on the other hand, seems to be associated with concomitant increases in dispositional envy. In addition to correlated change between global dispositional envy and self-esteem, we found evidence of correlated change within specific social comparison domains. This finding means that people who experience stronger increases in their self-confidence in the academic domain than others also tend to experience simultaneous decreases in their tendency to envy others who are perceived as more intelligent or creative. Moreover, people who grow more prone to envying others who are perceived as attractive or popular tend to suffer from simultaneous decreases in the self-esteem domains of social contact, social criticism, and physical appearance. A person's development of dispositional envy across the life span thus seems to be closely linked to their self-esteem development, both at the global level and within specific comparison domains.

Our results underpin the assumption that change in dispositional envy and self-esteem might be the consequence of similar overarching developmental principles or causal factors (e.g., third variables, life events, or genetic factors) that exercise an influence on both constructs. For instance, one reason for the close connection between change in dispositional envy and self-esteem might be normative developmental trends that affect both constructs. In line with the maturity principle (Roberts et al., 2001, 2008), many individuals may have experienced a decrease in dispositional envy and a simultaneous increase in self-esteem while they developed greater social maturity (i.e., the capacity to become a productive member of society). According to Social Investment Theory, a person's personality matures when they adopt new social roles, such as taking on a job, having a romantic relationship, or becoming a parent (Roberts et al., 2005). Thus, entering a romantic relationship, for example, may have had a positive effect on a person's self-esteem (see also Luciano & Orth, 2017), whereas at the same time, it may have reduced the frequency of upward comparisons in the romantic domain and therefore made a person less prone to experiencing envy in the present study. Similarly, given that starting a first job has been associated with slight increases in self-esteem (Reitz et al., 2020), the transition from university to work might have had the opposite effect on a person's disposition toward envy, as a regular salary might reduce a person's tendency to envy others' financial success. The experience of taking on new social roles might thus have had an opposing impact on the development of dispositional envy and self-esteem, resulting in the correlated change that we found in the present research.

Moreover, in line with previous reports on individual differences in personality maturation (Bleidorn, 2015; Roberts & Mroczek, 2008), we also found that not all individuals experienced the same degree of personality maturation. As indicated by the significant individual differences in intraindividual change, some participants underwent changes that were opposed to the normative developmental trend (e.g., decreases in self-esteem accompanied by increases in envy across young adulthood). These non-normative changes in dispositional envy and self-esteem might happen when an individual fails to adopt age-appropriate social roles or experiences stressful life events that interfere with developmental tasks. For instance, failing to have a romantic relationship in early adulthood is associated with declines in self-esteem (Lehnart et al., 2010) and might at the same time increase a person's tendency to envy others who have more romantic success. Moreover, stressful life events that are associated with declines in self-esteem (e.g., losing one's job; Reitz et al., 2022) might at the same time be related to increases in dispositional envy.

Our finding of a close association between envy and self-esteem development might also be explained by principles from evolutionary psychology. In this framework, envy and self-esteem have been viewed as emotional adaptations that enhance survival and reproductive success: envy by serving as a signal that one is being outperformed by others

in important domains (Hill & Buss, 2008) and self-esteem by working as a sort of gauge that monitors one's social inclusion or status (Leary et al., 1995; Mahadevan et al., 2019). Following this line of argument, particularly life events that have an impact on a person's social standing might have been prominent sources of change in both dispositional envy and self-esteem. For example, receiving a promotion or an award might have led some participants to experience increases in self-esteem. At the same time, such positive events might have decreased their tendency to be envious of others' success, thereby linking the developmental trajectories of dispositional envy and self-esteem.

Our results on correlated change between dispositional envy and self-esteem might also be explained by genetic and neurobiological factors affecting both constructs. For instance, there is evidence suggesting that similar neurocognitive mechanisms may play a role for envy and self-esteem, both of which have been associated with anterior cingulate cortex activation (Onoda et al., 2010; Takahashi et al., 2009). Processes of cerebral maturation in the anterior cingulate cortex, which might be genetically determined, might therefore be a neural substrate of (correlated) change in both dispositional envy and self-esteem.

Our results on correlated change might also be a consequence of state envy and low state self-esteem having a tendency to be activated in similar situations. As pointed out in the TESSERA framework (Wrzus & Roberts, 2017), states that are repeatedly activated together are likely to exhibit correlated change as daily experiences that are repeated across time accumulate and are incorporated into personality development. For instance, having a critical supervisor who often compares one's performance with one's colleagues might lead to repeated situations that simultaneously activate low state self-esteem and envy of one's colleagues who receive better feedback. With increasing time, repeatedly experiencing these states together might slowly accumulate into the correlated change found in the present study.

4.2. Does insecurity lead to envy?

We then proceeded to investigate whether change in dispositional envy or self-esteem could be predicted by the previous level of the other construct (i.e., prospective *level on change* effect) or by antecedent change in the other construct (i.e., prospective *change on change* effect). For the global constructs, we found a significantly negative *level on change* effect of self-esteem on dispositional envy in Study 2, indicating that participants who started out with lower self-esteem levels than others were more likely to experience a subsequent increase in their level of dispositional envy. In Study 1, the prospective effects of dispositional envy on self-esteem failed to reach significance for the global constructs. However, we found significant negative *level on change* and *change on change* effects of self-esteem on dispositional envy in the performance domain. These findings mean that when individuals had lower or more strongly decreasing self-esteem with respect to their job or school performance compared with others, they experienced a stronger subsequent increase in competence envy (i.e., the tendency to feel envious because others are perceived as more intelligent or creative). With regard to attraction envy, most domain-specific effects were nonsignificant except for a *level on change* effect of social contact self-esteem, indicating that participants who were particularly insecure about their social skills later experienced a greater increase in attraction envy. Across both samples and all measures, we did not find any evidence of prospective effects of dispositional envy on self-esteem.

Even though prospective effects do not necessarily allow conclusions about causality, their existence might hint at a causal flow between two constructs (Orth et al., 2021). In the overall picture (i.e., some evidence of prospective effects of self-esteem on dispositional envy but no evidence whatsoever of prospective effects of dispositional envy on self-esteem), our findings contradicted the notion of envy having a directional effect on self-esteem. If envy indeed were an antecedent of low self-esteem (e.g., Foster, 1972; Thompson et al., 2016), we should have found that changes in a person's dispositional envy had an impact on later change in self-esteem. This was not the case; however, there was preliminary evidence of a prospective effect of self-esteem on dispositional envy. Our finding is thus in line with lay psychological perceptions as well as previous theoretical conceptualizations of envy as a consequence of low self-esteem (Salovey & Rodin, 1984; Silver & Sabini, 1978; Sullivan, 1953).

The prospective effect of self-esteem on dispositional envy might operate via different mechanisms. For instance, high or increasing self-esteem might act as a buffer against the consequences of negative feedback (Brown, 2010), thereby making negative feedback less likely to elicit envy toward others who have received more positive feedback. Moreover, there is a large body of research showing that people high in self-esteem objectively show better performance and have more success in different life domains, including romantic relationships, school achievement, and job performance (Harris & Orth, 2020; Krauss & Orth, 2022; Orth & Robins, 2022; Valentine et al., 2004). Having success in turn might leave fewer opportunities for upward comparisons and thereby reduce dispositional envy. As reflected in our analyses, this mechanism seems to be especially important in the domain of competence/performance, where success and failure might be more visible and objectifiable than in other domains due to institutionalized feedback (e.g., via grades or performance reports).

Similarly, the prospective effects of self-esteem on dispositional envy found in the present study might be mediated by changes in social comparison orientation (i.e., the trait-like tendency to engage in social comparison with others). It has been shown by previous research that individuals with low self-esteem are particularly prone to making upward comparisons (Gibbons & Buunk, 1999; Wayment & Taylor, 1995) and that upward comparisons lead to envy (Alicke & Zell, 2008; White et al., 2006). Therefore, decreases in a person's level of self-esteem might make that person more likely to engage in upward comparisons, thereby making that person more susceptible to envy. For instance, students experiencing a drop in performance self-esteem after receiving a bad grade on an essay might start to compare their grades with their fellow students more often, resulting in frequent experiences of envy when others perform better.

4.3. Strengths, limitations, and directions for future research

To our knowledge, the present research is the first to empirically investigate the longitudinal interplay of dispositional envy and self-esteem. In terms of the strength of the present research, we want to highlight that we examined our research question in two large-scale samples, one of which was representative of the German population. Both studies were preregistered. We used established measures of dispositional envy and self-esteem with excellent psychometric properties and considered the domain-specificity of both constructs in addition to a global perspective. Moreover, our modeling approach allowed us to disentangle correlated change from prospective *level on change* and *change on change* effects, thereby providing nuanced insights into the longitudinal interplay of dispositional envy and self-esteem. As traditional cross-lagged models have been criticized for not adequately separating within-person from between-person effects and for not allowing the investigation of interindividual differences in intraindividual change (Hamaker et al., 2015; Mund & Nestler, 2019), we used bivariate latent change models where intraindividual change is represented more directly via latent difference factors.

However, the present study has some limitations. First, because our research design relied exclusively on correlational data, it allowed only limited conclusions about the causal flow between dispositional envy and self-esteem. The present paper can be seen as a first step toward establishing a causal link between dispositional envy and self-esteem. In the past, the investigation of cross-lagged effects in longitudinal designs has often been used to draw conclusions about causal effects (see Orth et al., 2021). Indeed, these designs are more informative about causality than mere cross-sectional correlations because they establish temporal

order. However, the present research has weaknesses with respect to causal inference, as there are a number of alternative explanations for our results that cannot be ruled out with our research design. For instance, it might be the case that change in both constructs is caused by the same life event but that changes in self-esteem manifest more quickly than changes in dispositional envy, leading to a significant cross-lagged effect without causal implications. Future research might approach this issue with the help of experimental designs or with observational studies that are carefully designed to control for the influence of third variables (e.g., by using directed acyclic graphs; Pearl, 1995). Assuming that the directional effect of self-esteem on dispositional envy holds across future studies, there are important implications that might be investigated in future research. As previous research has shown that envy mediates the relationship between self-esteem and hostility (Rentzsch et al., 2015), this effect might also emerge in the long term. Decreases in self-esteem might thus lead to an increase in the tendency to engage in hostile behavior, an effect that might be at least partially mediated by changes in dispositional envy. Moreover, with regard to psychotherapy, our research indicates that it might be worthwhile to include techniques that are aimed at building up self-esteem, when a patient's goal is to reduce envy (see Leahy, 2021). Psychotherapy research might thus investigate whether self-esteem training is effective for reducing envy.

Second, we had to rely on a one-item measure of self-esteem in Study 2 due to restraints on the length of the questionnaire. This measure might account for why effect sizes for the cross-sectional correlation and correlated change were slightly smaller in Study 2 than in Study 1. Even though we used latent self-esteem variables that were adjusted for the reliability of the single-item scale, the self-esteem factors in Study 2 might have included more unsystematic variance. Another reason for differences between studies might be the COVID-19 pandemic, which took place during the measurement interval of Study 2. As a severely disruptive life event, the pandemic might have caused some individuals' levels of dispositional envy and self-esteem to change in unusual ways, thereby diminishing the correlated change. This explanation is underpinned by the unexpected and rather unusual decrease in the mean level of self-esteem found in Study 2.

Third, although our research shows that the development of dispositional envy is closely connected to self-esteem development, mechanisms guiding the longitudinal interplay between these two constructs remain unclear. Whereas we referred to personality maturation and life events as possible explanations for correlated change, future research should examine the simultaneous impact of life events and role transitions on both constructs (e.g., a pay raise, retirement, or a new relationship). Moreover, as both constructs have been connected to frequent upward comparisons, the role that social comparison orientation plays in the development of dispositional envy and self-esteem should be investigated. For instance, low self-esteem might lead to high levels of dispositional envy by increasing a person's social comparison orientation.

Forth, with time intervals between measurement occasions ranging from 2 to 6 years, the present research investigated the interplay of dispositional envy and self-esteem at the trait level. Given previous evidence indicating that changes in dispositional envy and self-esteem unfold rather slowly (Erz & Rentzsch, 2022; Rentzsch & Schröder-Abé, 2022; Wagner et al., 2023), we chose time intervals of several years in order to investigate correlated change and prospective effects. However, correlated change and directional effects between envy and self-esteem might appear not only at the trait level but also at the state level if smaller time intervals are investigated. For instance, a person's momentary loss of self-esteem following a failure in their everyday life might instantly lead to feelings of state envy directed at another person who is more successful. Future research should investigate the short-term dynamics of envy and self-esteem, for instance, by using state measures of envy and self-esteem in an experience sampling or daily diary study (see Diwan et al., 2023, for a recent investigation of the short-term dynamics of self-esteem and pride). Moreover, whereas the present research relied on adult samples, it might be interesting to investigate the relationship between the developmental trajectories of dispositional envy and self-esteem during developmental stages in which personality might be especially susceptible to change (e.g., adolescence and old age). Similarly, future research should investigate the longitudinal interplay of dispositional envy and self-esteem in childhood, when stable individual differences in these two constructs first emerge.

Last, as both studies relied on German samples, our findings may only be generalizable to Western populations. This might be especially true for the content of the envy/self-esteem domains, which might be subject to culture-specific influences on the importance of social comparisons in specific life domains. Future studies should therefore investigate associations between dispositional envy and self-esteem in different cultural contexts.

4.4. Conclusion

Even though theoretical accounts have pointed to a close association between envy and self-esteem for many decades, the longitudinal interplay between the two constructs has never been investigated. The present study extends prior research on the association between dispositional envy and self-esteem by examining these relationships longitudinally across 6 years of assessment. Our results from two different samples indicate that dispositional envy and self-esteem change in concert, such that intraindividual increases in dispositional envy are accompanied by decreases in self-esteem and vice versa. Moreover, there was preliminary evidence of prospective effects of self-esteem on dispositional envy, suggesting a possible causal flow between the two constructs. By showing that insecurity might indeed lead to envy, our findings advance the understanding of the complex interplay between dispositional envy and self-esteem.

CRediT authorship contribution statement

Elina Erz: Writing – original draft, Formal analysis, Conceptualization. **Katrin Rentzsch:** Writing – review & editing, Supervision, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The anonymized data from Study 1 are available on the OSF (https://osf.io/5jvcx). Data from Study 2 can be accessed via the GESIS panel (https://www.gesis.org/en/gesis-panel/data).

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