Schmidt, Andrea; Dirk, Judith; Neubauer, A. B.; Schmiedek, Florian

Evaluating sociometer theory in children's everyday lives. Inclusion, but not exclusion by peers at school is related to within-day change in self-esteem

formal und inhaltlich überarbeitete Version der Originalveröffentlichung in:
formally and content revised edition of the original source in:
European journal of personality 35 (2021) 5, S. 736-753, 10.1177/0890207020962328

Evaluating Sociometer Theory in Children's Everyday Lives: Inclusion, but not Exclusion by Peers at School is Related to Within-Day Change in Self-Esteem

Andrea Schmidt[1], Judith Dirk[1], Andreas B. Neubauer[1], & Florian Schmiedek[1,2]

[1] DIPF | Leibniz Institute for Research and Information in Education, Frankfurt a. M., Germany, and Center for Research on Individual Development and Adaptive Education of Children at Risk (IDeA), Frankfurt a. M., Germany

[2] Goethe-University, Frankfurt a. M., Germany

Author Note

The SASCHA study is a project at the IDeA (Individual Development and Adaptive Education of Children at Risk) Center in Frankfurt am Main, Germany, and is funded by the German Research Foundation (DFG; Deutsche Forschungsgemeinschaft; Grant SCHM 2411/9-1). Hypotheses and analyses of Study 3 of the present work were preregistered (https://osf.io/a6qw8) before the start of Study 2.

Correspondence concerning this article should be addressed to Andrea Schmidt, DIPF | Leibniz Institute for Research and Information in Education, and Center for Research on Individual Development and Adaptive Education of Children at Risk (IDeA), Rostocker Straße 6, 60323 Frankfurt a. M., Germany. E-mail: andrea.schmidt@dipf.de. Tel: +49 69 24708-159. The mailing address applies to all authors.

Conflict of Interest: None

We would like to thank Aamir Sajjad, Heiko Rölke, and the Technology-Based Assessment Group at the DIPF for developing and providing the software we used to assess the children's experiences and performance via smartphones. We further owe special thanks

to Michaela Menstell, Anna-Maria Grimm, Elena Galeano Weber, and a team of highly committed student assistants for their important roles in conducting the SASCHA project.

Abstract

Sociometer theory proposes that a person's self-esteem is a permanent monitor of perceived social inclusion and exclusion in a given situation. Despite this within-person perspective, respective research in children's everyday lives is lacking. In three intensive longitudinal studies, we examined whether children's self-esteem was associated with social inclusion and exclusion by peers at school. Based on sociometer theory, we expected social inclusion to positively predict self-esteem and social exclusion to negatively predict self-esteem on within- and between-person levels. Children aged 9-12 years reported state self-esteem twice per day (morning and evening) and social inclusion and exclusion once per day for two (Study 1) and four weeks (Studies 2-3). Consistently across studies, we found that social inclusion positively predicted evening self-esteem on within- and between-person levels. By contrast, social exclusion was not associated with evening self-esteem on the within-person level. On the between-person level, social exclusion was negatively linked to evening self-esteem only in Study 1. Multilevel latent change score models revealed that children's self-esteem changed from mornings (before school) to evenings (after school) depending on their perceived daily social inclusion, but not exclusion. The findings are discussed in light of sociometer theory and the bad-is-stronger-than-good phenomenon.

Keywords: self-esteem, relatedness, school context, ambulatory assessment, within-person latent change score model

Evaluating Sociometer Theory in Children's Everyday Lives:

Inclusion, but not Exclusion by Peers at School is Related to Within-Day Change in Self-Esteem

Global self-esteem refers to a person's subjective and overall evaluation of his or her value (Rosenberg, 1965) and is considered to represent the affective-evaluative dimension of self-concept (Mann et al., 2004; Schauder, 2012). People with high self-esteem are satisfied with themselves and like who they are. Thus, they possess a favorable view of themselves, whereas people with low self-esteem possess unfavorable self-views and believe that they are not valuable or likeable (Rosenberg, 1965). Empirical research has shown that self-esteem is positively associated with a variety of well-being outcomes such as happiness (e.g., Furnham & Cheng, 2000) or life and job satisfaction (e.g., Campbell, 1981; Diener & Diener, 1995; Orth et al., 2012) and negatively related to anxiety, internalizing behavior, neuroticism (e.g., Muris et al., 2003), and depression (e.g., Muris et al., 2003; Rosenberg, 1965; Sowislo & Orth, 2013). The apparent importance of self-esteem provokes the question of what might influence it.

Sociometer theory proposes that self-esteem serves as a permanent monitor of perceived social inclusion and exclusion (Leary & Baumeister, 2000; Leary et al., 1995). Thereby, Leary et al. (1995) referred to a situational level, with high self-esteem in situations when people feel socially included and liked, and low self-esteem in situations they feel excluded or ostracized. A large body of research with adults generally has supported the claims of sociometer theory (e.g., Denissen et al., 2008; Gerber & Wheeler, 2009; Nezlek, 2005), whereas corresponding research with children is scarce. However, the time period from middle childhood to early adolescence represents an important period to study with regard to sociometer theory: Whereas younger children show only small fluctuations in self-esteem and overall report an unrealistically high level of self-esteem (Harter, 2012), starting

in middle to late childhood, children's self-esteem becomes more realistic, but also more susceptible to the influence of external feedback (Chung et al., 2017; Harter, 2012; Robins & Trzesniewski, 2005). Additionally, during this developmental period children increasingly spend time with their peers at school and their concern about peer acceptance rises (Rubin et al., 2006). Therefore, it is highly relevant to investigate whether children in this age already respond to social cues signalizing peer inclusion (exclusion) with increases (declines) in their state self-esteem (Eccles, 1999; Rubin et al., 2006). The present research addresses these questions by examining associations between state self-esteem and perceived social inclusion and exclusion by peers at school in children aged 9 to 12 in three intensive longitudinal studies.

State and Trait Components of Self-Esteem

More than 30 years ago and challenging the – by then – widespread assumption that self-esteem represents a relatively steady and trait-like personality characteristic (e.g., Rosenberg, 1965), self-esteem was found to be much less stable than personality traits, for instance, and to be susceptible to environmental influences (Conley, 1984). Furthermore, evidence for self-esteem fluctuations on short timescales was provided, demonstrating that self-esteem constituted an enduring quality only for 29% of adolescents who showed no fluctuations in self-esteem across multiple daily assessments over one week (Savin-Williams & Demo, 1983). More recent evidence indicates that self-esteem is best recognized as a construct comprising both stable, trait-like components and fluctuating, state-like components (Alessandri et al., 2016; Anusic & Schimmack, 2016).

The trait-like components are considered to reflect general feelings about one's worth, whereas the state components represent a person's evaluation of the self at a particular time in a specific context (Brown & Marshall, 2006; Leary et al., 1995; Leary & Baumeister, 2000). In the present work, we focus on within-person fluctuations in self-esteem. The

fluctuating nature of self-esteem underlines its situation- and context-dependency and raises the question of which situational experiences are causing the ups and downs in self-esteem.

What Influences Self-Esteem? Sociometer Theory and the Importance of Belongingness

Sociometer theory provides a framework for understanding change in self-esteem by proposing a psychological process underlying self-esteem fluctuations (Leary et al., 1995; Leary & Baumeister, 2000; Poorthuis et al., 2014). According to this theory, the function of self-esteem is to permanently monitor the fulfillment of the basic psychological need to belong (Leary et al., 1995). This innate need represents a fundamental human motivation and refers to the desire to feel related and connected to others (Baumeister & Leary, 1995; Deci & Ryan, 2000). In the literature, it has been described as the *need to belong* by Baumeister and Leary (1995) or, somewhat relatedly, as the *need for relatedness* by Deci and Ryan (2000) in self-determination theory. Sociometer theory refers to perceived *social inclusion* and *social exclusion* as the central predictors of self-esteem fluctuations (Leary et al., 1995), two concepts that are similar to *relatedness satisfaction* and *relatedness frustration (or dissatisfaction)* discussed within self-determination theory (Deci & Ryan, 2000). To remain consistent with the terminology used by sociometer theory, we will refer to perceived social inclusion and exclusion in this work. Following sociometer theory, self-esteem represents a psychological mechanism continuously screening the social environment for cues relevant to one's interpersonal inclusion and exclusion (Denissen et al., 2008; Leary & Baumeister, 2000). As part of a regulatory system, the sociometer responds to these cues and, if required, motivates behavior to re-establish social inclusion (Leary & Baumeister, 2000; Leary & Guadagno, 2011). Thus, according to sociometer theory, the state part of self-esteem reflects the immediate response to perceived interpersonal feedback in a given situation, while the trait part is considered to result from past experiences and to represent the resting position of the sociometer when no interpersonal feedback is perceived (Leary & Guadagno, 2011).

Taking together, both a between-person and a within-person perspective is needed in order to adequately investigate the claims of sociometer theory (Leary & Baumeister, 2000).

With regard to the within-person perspective, previous research revealed inconsistent findings on sociometer theory. For instance, a meta-analysis on experimental research regarding interpersonal rejection provided evidence supporting sociometer theory on a within-person level, as social rejection exhibited moderate effects on people's self-esteem (Gerber & Wheeler, 2009). Contemporaneously, a meta-analysis including interpersonal acceptance besides rejection showed that rejection did not lead to a decrease in self-esteem compared to a neutral control group (Blackhart et al., 2009). Supporting sociometer theory, the authors found social acceptance to be associated with a positive shift in self-esteem. Yet, the results stand in contrast to the bad-is-stronger-than-good phenomenon, which argues that negative events elicit stronger effects than positive events (Baumeister et al., 2001). In this regard, Blackhart et al. (2009) suggested that either self-esteem constitutes an exception to this phenomenon or that defensive processes following rejection have diminished the effect of rejection on self-esteem. However, both reported meta-analyses comprise laboratory studies[1], leaving unknown whether the same pattern of findings would emerge when assessing real-life social inclusion or exclusion.

Obliterating this limitation, some studies were conducted in people's everyday lives. For example, daily relationship quality (e.g., feeling important and respected) was found to be associated with higher state self-esteem in a study spanning 25 days (Denissen et al., 2008). Across multiple studies, college students' daily positive and negative social events (e.g., "went out to eat with a friend" and "had plans fall through to spend time with someone special") covaried with their daily self-esteem in the expected directions (Nezlek, 2005).

[1] The meta-analysis by Blackhart et al. (2009) also included real-world studies that were analyzed separately. However, these studies are not presented here, as they did not examine within-person associations, but were of cross-sectional and correlational nature (e.g., correlations between self- or peer-reported social acceptance and trait self-esteem).

Furthermore, daily relatedness satisfaction (e.g., "Today I felt close and connected with other people who are important to me") was positively associated with daily self-esteem (Heppner et al., 2008). However, the researchers did not include relatedness frustration as a measure of social exclusion, leaving unclear whether social inclusion and exclusion predict self-esteem over and above each other.

To sum up, there is empirical evidence supporting sociometer theory in adult populations (Denissen et al., 2008; Gerber & Wheeler, 2009; Heppner et al., 2008; Nezlek, 2005). However, there are also some inconsistencies in previous research regarding the issue if inclusion increases self-esteem, exclusion decreases self-esteem, or both. Furthermore, compared to adulthood, intensive longitudinal research on interpersonal relations and self-esteem in middle to late childhood is scarce, although this age might represent a critical period for the long-term development of self-esteem (Chung et al., 2017; Harter, 2012; Robins & Trzesniewski, 2005).

Research with Children

Research on the development of self-esteem has shown that young children up until 8 years are able to judge their abilities in particular areas (i.e., domain-specific self-concept), yet cognitive limitations likely impede them from forming the higher-order concept of a global self-esteem (Harter, 2012). During early and middle childhood, children possess an unrealistically high self-esteem, as they are unable to differentiate the ideal self from the actual self (Harter, 2012; Thomaes et al., 2017). It has been argued that such a positivity bias may have a protective and adaptive function in that it prevents children from feeling helpless and in this way contributes to healthy child development (Thomaes et al., 2017). As children mature cognitively and begin to grasp the concept of an affectively laden self-evaluation, they begin to adjust their self-views according to external feedback, leading to more accurate self-evaluations (Chung et al., 2017; Harter, 2012; Leary & Baumeister, 2000; Robins

& Trzesniewski, 2005). At about the same time, when children enter school, they spend more and more time with peers outside parental supervision and become increasingly concerned about being accepted and liked by peers (Eccles, 1999; Erikson, 1968; Rubin et al., 2006). Continuing on to late childhood and early adolescence, interactions with peers become ever-more central for children (Eccles, 1999; Rubin et al., 2006). Since children spend a lot of time at school, their classmates represent one of the most important peer groups (Rubin et al., 2006; Ryan & Deci, 2000a). Defined as a period of change in how children see themselves and those surrounding them, and in which the importance of peer interactions increases, the time from middle childhood to early adolescence is especially interesting for studying the claims of sociometer theory on a day-to-day basis (Eccles, 1999; Rubin et al., 2006).

Despite its undeniable relevance, within-person research on how children's perceived social inclusion and exclusion and their state self-esteem are related has been conducted in only a few studies so far. For instance, within-person increases in social inclusion (i.e., social support) were found to be associated with increases in self-esteem (Magro et al., 2019; Wagner et al., 2018). In an experimental study with preadolescents (about 11 years old) who received (bogus) feedback on their personal internet profiles, peer disapproval decreased state self-esteem and peer approval increased state self-esteem, a finding supporting sociometer theory (Thomaes et al., 2010). Furthermore, daily social encounters at school were related to lower levels of state self-esteem across five days in fifth graders (Reynolds & Repetti, 2008): Children reporting more peer problems showed a shift toward lowered self-esteem from the mornings before school to the afternoons at school. However, these studies were limited in that they did not include real-life interpersonal experiences (Thomaes et al., 2010), targeted longitudinal change rather than within-person associations (i.e., several years; Magro et al., 2019; Wagner et al., 2018), or examined between- rather than within-person associations between peer problems and self-esteem (Reynolds & Repetti, 2008). Summing up, to our

knowledge, there is no study that has examined the effects of both perceived social inclusion and exclusion on state self-esteem in the everyday life of children in middle to late childhood.

The Current Research

Do children in middle childhood already show fluctuations in their state self-esteem or is it stable at an unrealistically high level? Does children's state self-esteem already depend upon perceived social inclusion and exclusion, that is, upon positive and negative interpersonal feedback or do they show a positivity bias and only respond to positive events? Or might it be the other way around in that children only or more strongly respond to negative events, as suggested by the bad-is-stronger-than-good phenomenon (see Baumeister et al., 2001)? The present work aims at addressing these questions, extending previous research on the association between social relationships and self-esteem in four major ways. First, the majority of existing studies conducted in this field examined adolescent or adult populations. The present work extends our knowledge of the interplay between perceived social inclusion and exclusion by peers at school and self-esteem in children aged 9 to 12 years. Second, although there exist studies indicating that children experiencing negative peer interactions show lower self-esteem (e.g., peer victimization being negatively correlated with self-esteem; Hawker & Boulton, 2000; Tsaousis, 2016), research examining this relation on a within-person level is lacking. To address this gap, we conducted three intensive longitudinal studies of two to four weeks duration with two assessments of self-esteem per day. Third, studies approaching the relation between social experiences and self-esteem have focused on either positive or negative peer experiences (e.g., social support, victimization). From our point of view, it is essential to consider both perceived social inclusion and social exclusion in order to test their unique contributions to self-esteem. And fourth, we aimed at investigating not only concurrent relationships between the constructs, but explicit changes in self-esteem as a function of daily peer experiences. We expected that children's self-esteem

would increase or drop from morning to evening in accordance to perceived inclusion and exclusion at school. We expected that children's state self-esteem shows positive shifts from mornings to evenings on days when they felt more included at school than usually, and that it shows negative shifts on days when they felt more excluded at school than usually.

Method

The SASCHA (Social and Academic School transition CHAllenges) project was approved by the ethics committee of the German Psychological Society (DGPs). Data of the three studies presented in the current work and analyses scripts to reproduce the main analyses reported are openly accessible (https://osf.io/rf2pq/). The full data collected within the SASCHA project will be made publicly available in cooperation with the Public Open Science Institute ZPID, Leibniz Institute for Psychology Information. A detailed study protocol for Studies 2-3 can be found here: https://osf.io/yvfpj/. Data of the three samples presented in this work have also been used in Schmidt, Neubauer, et al., 2020, who investigated between- and within-person associations among social inclusion/exclusion and positive affect and negative affect. Schmidt, Dirk, et al., 2020 used the sample presented as Study 3 in the current work to longitudinally predict affective well-being, school-related well-being, and psychological (mal-)adjustment by aggregates of everyday social inclusion/exclusion[2].

Participants

Study 1

A total of 119 children (63 boys) aged 9 to 12 (M = 10.42 years, SD = 0.83) and attending either an elementary or a secondary school in Frankfurt am Main, Germany, participated in the study. Nineteen children attended Grade 4 (16%), 54 children attended

[2] Note that social inclusion and exclusion were labelled relatedness satisfaction and frustration in these two prior publications.

Grade 5 (45.4%), and 46 children attended Grade 6 (38.7%). German (alone or in combination with another language) was the native language of 78 children (65.6%). The distribution of current employment status of mothers/fathers was: no employment: 18.5%/2.5%, part-time employed: 55.5%/6.7%, full-time employed: 23.5%/82.4%, no information: 2.5%/8.4%.

Study 2

There participated 90 children (41 boys) from Grade 4 of two elementary schools (School 1: 44 children; School 2: 46 children) in Hessen, Germany. After headmasters and teachers consented to participate, we approached children and their parents in the six participating classes. The participation rates of all children invited to take part in the study were 64.7% at School 1 and 76.7% at School 2. Children were between 9 and 11 years old (M = 9.83 years, SD = 0.50). German (alone or in combination with another language) was the native language of 68 children (75.6%). The distribution of the current employment status of mothers/fathers was: no employment: 17.8%/4.4%, part-time employed: 64.4%/3.3%, full-time employed: 10.0%/80.0%, no information: 7.8%/12.2%.

Study 3

One-hundred and eight children (48 boys) from Grade 5 of a secondary school (Gymnasium) in Hessen, Germany, participated in this study. The participation rate of all children invited to take part in the study was 60%. Children were between 9 and 11 years old (M = 10.11 years, SD = 0.44). German (alone or in combination with another language) was the native language of 90 children (83.3%). The distribution of the current employment status of mothers/fathers was: no employment: 19.4%/2.8%, part-time employed: 63.9%/3.7%, full-time employed: 15.7%/93.5%, no information: 0.9%/0%.

Procedure

Data of the three studies presented in this work were collected as part of the SASCHA project, which investigated social and academic challenges of secondary school transition. Study 1 was a pilot study, while Studies 2-3 refer to two main measurement bursts before (Study 2) and after (Study 3) the transition to secondary school. This project was planned as a longitudinal study with the same children participating in Study 2 and Study 3. However, due to logistic reasons and a short-noticed cancellation of participation of one school, there were only four children participating in both measurement bursts. Hence, the two bursts are presented separately in the present work (i.e., as Study 2 and Study 3). We preregistered Study 3 (see https://osf.io/a6qw8) based on the findings of Study 1 and before the start of data collection of Study 2 (the preregistration referred to Study 3, as we expected a larger number of participating children in Study 3 compared to Study 2).

All studies presented in the current work consisted of an intensive longitudinal design across two weeks (Study 1) and four weeks (Studies 2-3), with two (Study 1) and four (Studies 2-3) assessments per day. In all studies, the project was presented in classes and children received written study information. Parents and children voluntarily subscribed for participation and provided written informed consent. In each study, there was a pre-test session taking place in participating schools, during which children were shown how to operate the research smartphones and how to respond to the items. Smartphones were provided to all participating children for the duration of the study. Our application was the only accessible function on these smartphones and children could not use these devices for any purposes other than the study aims. Children kept the smartphones over the course of the study (either two or four weeks). In Study 1, there were two sessions each day, one in the mornings before school (6:30 am-9:00 am) and one in the evenings after school (4:00 pm-7:00 pm). In Studies 2-3, there were four daily sessions at slightly different times because of

varying times of school beginnings and recesses at the participating schools. In Study 2 (Study 3), the morning assessment took place before school between 6:45-7:50 am in School 1 and 6:45-8:05 am in School 2 (6:00-7:50 am), the school assessment was scheduled at 9:30 am in School 1 and 10:15 am in School 2 (9:50 am), the afternoon session took place between 3:00-5:15 pm (3:00-5:15 pm or 4:00-5:45 pm on longer school days), and the evening session was scheduled between 6:30-8:30 pm. To indicate the beginning of the morning session, smartphones vibrated but did not ring in Study 1. In Studies 2-3, the smartphones' screens turned on, but they did not ring or vibrate in order to reduce disturbance of children's mornings. At school (second session in Studies 2-3), smartphones vibrated and in the afternoons and evenings, smartphones rang and vibrated to indicate session start. Children could start the morning, afternoon, and evening sessions at any point within the given time windows. Completing the morning session took approximately 5-10 minutes, while completing the other sessions took approximately 10-15 minutes. We collected data on children's momentary self-esteem in the mornings and evenings and on their perceived social inclusion and exclusion in the evenings only. Children participated on a voluntary basis and could cancel their participation at any time without giving a reason. During the course of the study, we provided a telephone hotline for any concerns. Children received a gift coupon as a reward for their participation.

Measures

All items were answered on a 5-point Likert scale with endpoints of 1 ("not at all true") and 5 ("completely true"). Descriptive statistics and reliability estimates for all measures are presented in Table 1.

Daily Perceived Social Inclusion and Exclusion

Every evening, children indicated their perceived social inclusion and exclusion at school using four items each starting with "Today…" (inclusion: "I got along well with the

kids in my class", "the kids in my class payed attention to me", "I felt like the kids in my class liked me", "I liked playing with the kids in my class"; exclusion: "I fought with someone in my class.", "someone in my class excluded me", "someone in my class was mean to me", "someone in my class picked on me"). Daily social inclusion and exclusion were operationalized as the mean response across the four items, respectively. The items were used in previous studies (see Schmidt et al., 2019; Schmidt, Dirk, et al., 2020; Schmidt, Neubauer, et al., 2020). Evidence for convergent and divergent validity of these scales can be found in these papers, demonstrating the psychometric separation of social inclusion and exclusion[3] and showing differential effects on positive and negative outcomes.

Momentary Self-Esteem

Children reported their momentary self-esteem twice daily, once in the mornings before school and once in the evenings. The items were developed in Study 1 by selecting established self-esteem items (Arens, Yeung, Craven, & Hasselhorn, 2013; Schöne & Stiensmeier-Pelster, 2016) and adapting them to the assessment of elementary school children's momentary self-esteem. In all analyses, momentary self-esteem was operationalized as the mean response across the four items. The wording of each item is presented in the Supplemental Material S1.

Plan of Analyses

The data constituted a multilevel structure in which we treated daily repeated measures (Level 1) as nested within children (Level 2). We applied a conventional alpha level of .05 to all tests of statistical significance. In Step 1, we conducted multilevel confirmatory factor analyses (MCFAs) using Mplus Version 8 (Muthén & Muthén, 1998-2017) in order to test whether the four self-esteem items represented one factor. We evaluated the model fit of one-factor models using the root mean square error of approximation

[3] Note that the scales are called relatedness satisfaction and frustration in this work.

(RMSEA), the comparative fit index (CFI), and the standardized root mean square residual (SRMR). The latter index was estimated separately for the within- and the between-part. For these fit indices, we applied conventional cut-off criteria of .90 or higher (CFI) and .08 or less (RMSEA and SRMR) as indication of acceptable model fit. We used the robust maximum likelihood estimator (MLR; the default for MCFA in Mplus). As Step 2, we investigated whether measurement invariance across morning and evening assessments of self-esteem was tenable. Model comparison tests for measurement invariance were conducted separately at the within- and between-person level and the best fitting model at each level was used in the final analyses. Nested models were compared with likelihood ratio tests, which (since we used the MLR estimator) were adjusted by a scaling correction factor (Yuan & Bentler, 2000). Insignificant likelihood ratio tests indicated that the more restrictive model did not fit the data worse than the less restrictive model, that is, the higher level of measurement invariance was considered tenable. As Step 3, we conducted manifest multilevel models (MLMs) with repeated measures on Level 1 and children on Level 2 to examine whether social inclusion and exclusion were associated with evening self-esteem on both the within- and between-person level. We used the nlme package (Pinheiro, Bates, DebRoy, Sakar, & R Core Team, 2019) of the statistical software R for Windows, version 3.5.1 (R Core Team, 2017) and maximum likelihood estimation. Significance of fixed effects was evaluated using the package's default estimation of degrees of freedom, while significance of random effects was tested with likelihood ratio tests. Thus, we compared the fit of a model containing the random variance to the fit of a model that did not include the random variance. Random effects were allowed to covary freely (i.e., unstructured G matrix) and intercept and slopes were allowed to vary between children. We computed individual person-mean variables of social inclusion and exclusion, respectively. These represented the average values aggregated across all repeated measures. We then centered these person means at the grand mean (i.e.,

the average value across all assessments and all participants). These grand-mean centered person means were used as predictors on Level 2. On Level 1, daily social inclusion and exclusion were centered at the person means, referring to the daily deviation of each child from his or her individual mean on the respective construct. This procedure allowed for the separate investigation of between- and within-person effects of social inclusion and exclusion on children's self-esteem (Wang & Maxwell, 2015):

Level 1 (within children)

$$\text{Self-esteem}_{dj} = \beta_{0j} + \beta_{1j}*\text{inclusion}_{dj} + \beta_{2j}*\text{exclusion}_{dj} + \varepsilon_{dj} \quad (1)$$

Level 2 (across children)

$$\beta_{0j} = \gamma_{00} + \gamma_{01}*\text{inclusion}_{j} + \gamma_{02}*\text{exclusion}_{j} + \upsilon_{0j} \quad (2)$$

$$\beta_{1j} = \gamma_{10} + \upsilon_{1j} \quad (3)$$

$$\beta_{2j} = \gamma_{20} + \upsilon_{2j} \quad (4)$$

d = day; *j* = child; self-esteem = self-esteem assessed in the evening

In Step 4, we predicted change in self-esteem across the day from social inclusion and exclusion. For this purpose, we first set up a multilevel latent change score model (LCSM) for self-esteem (see Figure 1 for a graphical representation of this model). In this model, change in self-esteem from mornings to evenings was modeled as a latent variable by conceptualizing evening self-esteem as the sum of morning self-esteem and a latent change variable (ΔSE, reflecting change in self-esteem from mornings to evenings; see Figure 1). LCSMs have been developed for longitudinal analyses (see e.g., McArdle, 2009). In these models, true variability in change (i.e., free of measurement error) is estimated, circumventing prevailing claims of unreliability of change scores when using manifest difference scores (Cronbach & Furby, 1970; but see Rogosa & Willett, 1983 for a counterargument). In the present application, change in self-esteem from morning to evening sessions is modeled both on the within-person level and on the between-person level. On the

within-person level, the variance of ΔSE captures across-day variability of within-day change in self-esteem, representing day-to-day fluctuations in change in self-esteem. That is, for the same individual, change in self-esteem from morning to evening is assumed to vary from day to day. On the between-person level, this latent difference score captures stable inter-individual differences in morning-to-evening change in self-esteem. That is, this variability represents differences between children who consistently show stronger increases or decreases in self-esteem throughout the day. We entered social inclusion and exclusion as predictors of these change variables on both the within- and between-person level (see Figure 2, for a graphical representation of the structural model). Social inclusion and exclusion were entered as latent variables (composed by four indicators each) on both levels. Recent work (Schmidt, Neubauer, et al., 2020) showed that this factor structure represented social inclusion and exclusion well on both levels of analysis.

For Study 3, the following analyses were preregistered (see https://osf.io/a6qw8): the MCFA, examining the factor structure of the self-esteem items on the between- and within-person level; the MLMs predicting self-esteem in the evening from daily social inclusion and exclusion; the multilevel LCSMs, including tests of measurement invariance; and the prediction of within-day change in self-esteem from daily social inclusion and exclusion. These analyses were all conducted as preregistered. We had preregistered one additional set of analyses (exploring inter-individual differences in the multilevel LCSM) that could not be conducted as we had originally planned (see the Results Predicting Within-Day Change in Self-Esteem, for elaborations).

Please insert Figure 1 here.

Please insert Figure 2 here.

Results

Descriptive Statistics

Percentages of available data, descriptive statistics, and reliabilities estimated as McDonald's ω (see Geldhof, Preacher, & Zyphur, 2014) of self-esteem, social inclusion, and social exclusion are presented in Table 1. Reliabilities were acceptable and ranged from .71-.91 on the within-person level and from .89-.99 on the between-person level. The intraclass correlation (ICC; proportion of variance resulting from between-person differences) ranged from .38-.56 and indicated that children showed substantial within-person fluctuations on all measures. Correlations of self-esteem, social inclusion, and social exclusion on the within- and between-person level can be found in the Supplemental Material S1.

Trend Analyses

We performed trend analyses, in which self-esteem, social inclusion, and social exclusion, respectively, were predicted by a fixed and random time trend (i.e., a variable counting study days). In Study 1, there were no significant fixed effects (morning self-esteem: $b = 0.00$, $p = .87$; evening self-esteem: $b = -0.00$, $p = .71$; inclusion: $b = -0.01$, $p = .34$; exclusion: $b = 0.01$, $p = .51$), but significant random effects (morning self-esteem: $\chi^2(2) = 37.75$, $p < .001$; evening self-esteem: $\chi^2(2) = 50.71$, $p < .001$; inclusion: $\chi^2(2) = 94.07$, $p < .001$; exclusion: $\chi^2(2) = 24.11$, $p < .001$). Thus, children's self-esteem, social inclusion, and social exclusion did not decrease or increase on average across the study, but there were reliable differences between children in all these within-person trends across time.

In Studies 2-3, trend analyses showed significant fixed effects on all variables of interest (*Study 2*, morning self-esteem: $b = -0.01$, $p = .03$; evening self-esteem: $b = -0.02$, $p = .01$; inclusion: $b = -0.02$, $p = .01$; exclusion: $b = 0.02$, $p = .01$; *Study 3*, morning self-esteem: $b = -0.02$, $p < .001$; evening self-esteem: $b = -0.02$, $p = .003$; inclusion: $b = -0.02$, $p = .002$; exclusion: $b = 0.01$, $p = .01$). There were significant random effects as well (*Study 2*,

morning self-esteem: $\chi^2(2) = 105.30$, $p < .001$; evening self-esteem: $\chi^2(2) = 116.99$, $p < .001$; inclusion: $\chi^2(2) = 163.60$, $p < .001$; exclusion: $\chi^2(2) = 77.83$, $p < .001$; *Study 3*, morning self-esteem: $\chi^2(2) = 251.12$, $p < .001$; evening self-esteem: $\chi^2(2) = 168.00$, $p < .001$; inclusion: $\chi^2(2) = 286.17$, $p < .001$; exclusion: $\chi^2(2) = 77.47$, $p < .001$). Thus, children's self-esteem and social inclusion on average slightly decreased over the course of the studies, whereas their social exclusion slightly increased. However, children also varied significantly from each other in all these trends.

Factor Analyses

We conducted MCFAs to test whether the four self-esteem items represented one factor in the morning and in the evening, respectively (*Step 1*). In all studies, the data fitted the two-factor model on the within- and between-person level well. Factor loadings and fit indices of MCFAs are provided in the Supplemental Material S2-S3. The latent factors representing morning self-esteem and evening self-esteem were significantly positively correlated on both levels (*Study 1*, within: $r = .30$, $p < .001$; between: $r = .96$, $p < .001$; *Study 2*, within: $r = .31$, $p < .001$; between: $r = .99$, $p < .001$; *Study 3*, within: $r = .34$, $p < .001$; between: $r = .95$, $p < .001$).

Measurement Invariance

As a prerequisite for further analyses, we tested for measurement invariance across the morning and evening assessments of self-esteem (*Step 2*). Model fit of all two-factor models with different levels of invariance are presented in the Supplemental Material S4, while results on model comparisons are shown in the Supplemental Material S5. In Studies 1-2, findings suggested that the assumption of strict measurement was tenable on both the within- and between-person level. Thus, using the same items to measure the constructs across both assessments, factor loadings, item intercepts, and residual variances could be constrained to be equivalent. The fit of the final models (strict invariance on both levels) was

satisfactory (*Study 1*, $\chi^2(55) = 300.37$, RMSEA = .06, CFI = .91, $SRMR_{within} = .04$, $SRMR_{between} = .06$, AIC = 22,073.46, BIC = 22,199.49; *Study 2*, $\chi^2(55) = 281.99$, RMSEA = .06, CFI = .90, $SRMR_{within} = .04$, $SRMR_{between} = .07$, AIC = 23,548.31, BIC = 23,677.68). In Study 3, the assumption of weak measurement invariance across morning and evening self-esteem was not tenable on both levels as indicated by significant likelihood ratio tests. We followed our preregistration and therefore assumed configural measurement invariance. The fit of the model with configural measurement invariance on the within- and between-person level was satisfactory, $\chi^2(38) = 235.14$, RMSEA = .05, CFI = .95, $SRMR_{within} = .02$, $SRMR_{between} = .03$, AIC = 32,760.60, BIC = 32,994.84.

Please insert Table 1 here.

Predicting Evening Self-Esteem

Table 2 shows the results of the model predicting evening self-esteem by social inclusion and exclusion. In all studies, higher social inclusion was significantly linked to higher self-esteem on the within- and between-person level. In Study 1, higher social exclusion was significantly associated with lower self-esteem only on the between-person level, but not on the within-person level. In Studies 2-3, social exclusion did not significantly predict self-esteem on either level. In all studies, significant random effects indicated that children differed reliably in the strength of the within-person associations between social inclusion and self-esteem as well as between social exclusion and self-esteem. Sensitivity analyses controlling for fixed and random linear time trends did not yield a different pattern of significant results (see Supplemental Material S6). As preregistered, we conducted secondary analyses with data of Study 3 excluding the four children that had already participated in Study 2. There were no changes in the pattern of fixed or random effects. In

order to account for the data structure of children being nested in classes in Studies 2-3[4], we conducted two-level models including class membership as a fixed effect (using class dummy variables for the six classes, respectively) to account for potential systematic mean differences between classes. These analyses revealed the same pattern of significant results in both studies.

Please insert Table 2 here.

Predicting Within-Day Change in Self-Esteem

Table 3 shows the prediction of change in self-esteem from mornings to evenings by social inclusion and exclusion (see Figure 2, for a graphical illustration of the model). In all studies, higher social inclusion was related to an increase in self-esteem from mornings to evenings on the within-person level. However, daily social exclusion was not associated with change in self-esteem. On the between-person level, neither social inclusion nor exclusion significantly predicted average change in self-esteem, most likely owed to the strong stability of morning and evening self-esteem on the between-person level ($r > .94$). We performed secondary analyses including a fixed and random time trend. There were no changes in significances of the effects of social inclusion or exclusion on self-esteem on either level in either study (see Supplemental Material S7). Preregistered secondary analyses with data of Study 3, excluding the four children who had already participated in Study 2 revealed a significant positive between-person effect of social inclusion on self-esteem change ($b = 0.24$, $p = .047$), which remained significant after controlling for time trends ($b = 0.30$, $p = .03$).

Please insert Table 3 here.

For Study 3, we had preregistered to examine random effects in the LCSMs. The inclusion of random slopes in the reported models was not possible as originally planned in

[4] In Study 1, data on class membership was not collected, and therefore these sensitivity analyses were conducted with data of Studies 2 and 3 only.

the preregistration since random slopes for latent predictors cannot be estimated using the MLR estimator. Therefore, to examine the random effects in the multilevel LCSMs and to test if including random effects changed the conclusions drawn for the fixed effects, we deviated from our preregistration and used the Bayesian estimator in Mplus (which allows random slopes for latent predictors). We used two chains, 5000 iterations (with 50% burn-in), a thinning of 100, and the Mplus default (non-informative) priors. The model converged with a maximal potential scale reduction (PSR) of 1.001. We deemed parameters to be statistically meaningful when their 95% credible interval did not include zero. We found that on the within-person level, higher social inclusion predicted an increase in self-esteem, but that social exclusion did not (see Table 4); hence, including random effects did not change the pattern of results. On the between-person level, neither social inclusion nor exclusion significantly predicted average change in self-esteem. The standard deviation of the random effect of social inclusion on change in self-esteem (i.e., 0.55, the square roots of the random variance presented in Table 4) was larger than the absolute value of the corresponding fixed effect (i.e., 0.43), indicating that the range of between-person heterogeneity in the within-person effect of social inclusion on self-esteem was substantial. The pattern of significant findings did not change when including fixed and random time trends (see Supplemental Material S8), when excluding the four children who had already participated in Study 2, or when assuming strict measurement invariance across morning and evening assessment as tenable.

Please insert Table 4 here.

Additional Analyses

For Study 3, we had preregistered that we would use the likelihood ratio test only in order to determine the level of measurement invariance. However, using LCSMs requires strong or strict invariance. Since the model assuming strict invariance on both levels yielded

adequate fit as judged by the criteria we had defined (RMSEA = .04; CFI = .95; $SRMR_{within}$ = .03; $SRMR_{between}$ = .04), we re-ran all the multilevel LCSMs under the assumption of strict measurement invariance. Results were virtually identical to the models assuming configural measurement invariance (see Tables 3 and 4; strict MI).

Exploratory Analyses

We performed further exploratory analyses across the combined sample of Studies 1-3 (N = 317, 152 boys) reported in the present work. Tests of measurement invariance of social inclusion and exclusion across the three studies indicated that the assumption of strong measurement invariance was tenable (see Schmidt, Neubauer, et al., 2020).

Person-Level Moderators of the Links Between Social Inclusion/Exclusion and Self-Esteem

The following potential moderator variables were examined: Age, gender, average self-esteem, average social inclusion, and average social exclusion (continuous moderators were centered on the grand mean for these analyses). The detailed results can be found in the Supplemental Material S9. A significant main effect of age showed that self-esteem decreased significantly with increasing age (b = -0.12, p = .02). Moderator effects indicated that the positive effect of daily social inclusion on evening self-esteem was weaker for children with high average self-esteem (b = -0.07, p = .03) and for children with high average social inclusion (b = -0.16, p < .001). In all models, the between- and within-person effects of social inclusion on self-esteem were significant, while the between- and within-person effects of social exclusion on self-esteem were insignificant.

Morning Self-Esteem Predicting Social Inclusion and Exclusion

We investigated whether self-esteem assessed in the mornings before school prospectively predicted perceived social inclusion and exclusion at school. We found that children who reported higher self-esteem in the mornings on average experienced higher

social inclusion (b = 0.58, p < .001) and lower social exclusion (b = -0.20, p = .02) at school. Furthermore, on days when children reported higher morning self-esteem than usually, they experienced higher social inclusion (b = 0.27, p < .001), but they did not experience lower social exclusion (b = 0.01, p = .77).

Post-Hoc Power Analysis

In order to examine whether the insignificant effect of social exclusion on self-esteem might have resulted from low statistical power, we conducted a post-hoc power analysis using Monte Carlo simulations assuming small unique effects of both social inclusion and exclusion on day-to-day fluctuations in within-day change in self-esteem (accounting for 1% of the within-person variance in within-day change in the LCSM). Power to detect these small incremental effects was 81.0 - 85.0% (Study 1), 90.0 - 93.5% (Study 2), and 97.0 - 99.0% (Study 3). Additionally, we predicted evening self-esteem in the combined sample across the three studies, revealing the same pattern of results as in the single studies, which suggests that findings were likely not caused by insufficient power.

General Discussion

Findings across three ambulatory assessment studies indicate that for children between 9 and 12 years (a) days with higher perceived social inclusion are days with larger increases in self-esteem from mornings to evenings and higher levels of self-esteem in the evenings, (b) children who experience higher social inclusion on average also report higher average self-esteem, but do not show a stronger average increase in self-esteem from mornings to evenings, and (c) the "dark side" of peer relationships (Ryan & Deci, 2000b; Schmidt, Neubauer, et al., 2020), that is social exclusion, did not have a unique impact on level or change in self-esteem beyond social inclusion on either the within- or between-person level.

Findings and Implications

The self-esteem items we developed assessed self-esteem and variations on this construct reliably in children aged 9 to 12. On average, children reported a relatively high level of self-esteem; however, they showed within-person fluctuations, indicating that their self-evaluations varied from day to day. On the between-person level, we consistently found positive effects of social inclusion on evening self-esteem. By contrast, only in one of three studies we found significant between-person effects of social exclusion on evening self-esteem. Thus, children who felt more integrated and liked in their classes on average held more favorable self-views, whereas there was no consistent evidence that children who felt picked on or excluded at school reported lower average levels of self-esteem. On the within-person level, we consistently found that daily social inclusion at school was positively linked to self-esteem in the evenings, whereas we did not find unique effects of social exclusion on evening self-esteem. Hence, when children felt more included and liked at school than usually and when they had a better time with their classmates than on average days, they felt better about themselves, liked themselves more, and were prouder of themselves in the evenings. By contrast, feeling teased or picked on, or fighting with a peer at school was not associated with how children felt about themselves on a day-to-day basis.

However, we found differences between children in both within-person associations across all studies, indicating that children varied in the intensity of their links between self-esteem and social inclusion and exclusion. Hence, our data suggest that, for some children, social exclusion was linked to lowered self-esteem in the evenings. Aiming at explaining this inter-individual variance, we conducted exploratory analyses to test if these differences were related to children's age, gender, average inclusion / exclusion, and average self-esteem. Results showed that daily self-esteem was less strongly associated with daily social inclusion for children with usually high social inclusion or with generally high self-esteem. Likewise,

the results suggest that for children who usually feel only little included and who have low self-esteem, daily self-evaluations were more strongly related to perceived social inclusion by classmates. These findings are consistent with the previously described satiation / sensitization effect (Schmidt, Neubauer, et al., 2020; see also Baumeister & Leary, 1995), indicating that children with high (low) average social inclusion showed weaker (stronger) relations between daily social inclusion and positive affect and that children with low (high) average social exclusion showed weaker (stronger) relations between daily social exclusion and negative affect. The results reported here suggest that the daily self-views of children with trait-like predispositions to low social inclusion or low self-esteem depend more on their daily perceived social inclusion than the daily self-views of children with average levels of these dispositions. We note, however, that only two out of ten interaction effects were statistically significant. We hasten to add that these analyses were exploratory and results of these moderator analyses should therefore be interpreted very carefully.

We applied LCSMs in order to examine whether children's self-esteem changed across the day as a function of their perceived social inclusion and exclusion at school. On the between-person level, we found a positive effect of social inclusion only in some control analyses. In the main analyses, feeling included or excluded was not significantly related to average changes in self-esteem across the day. On the within-person level, our analyses revealed that on days when children felt more related to their peers than usually, they showed a positive shift in self-esteem. Thus, when children felt more included at school and enjoyed playing with their classmates more than they did usually, their self-appraisals improved from mornings to evenings. However, we did not find perceived peer exclusion to predict within-day changes in self-esteem. Hence, feeling picked on and excluded at school or fighting with a classmate was not associated with changes in how children felt about themselves.

These findings remained robust across a variety of alterations in our modeling approach, including controlling for fixed and random time trends across the observation period.

Finding that how children judged themselves in the evening depended on their perceived social inclusion at school implicates that positive experiences with classmates have the potential to foster daily positive self-evaluations already in middle childhood. Thus, in accordance with sociometer theory (Leary et al., 1995), children's self-esteem served as a mirror of their subjective social inclusion. Assuming a person's trait self-esteem to represent the accumulation of all self-evaluations at the state level, this implicates that trait self-esteem emerges out of the everyday experiences of social inclusion. Furthermore, this suggests that positive peer relationships might, in the long run, contribute to high trait self-esteem. Given the predictive importance of high self-esteem for later mental and physical health as well as academic achievement and economic prospects (Trzesniewski et al., 2006; Valentine et al., 2004), the current findings highlight the relevance of feeling socially included and liked at school for children's overall well-being, healthy development, and academic success.

Additional analyses revealed that on mornings when children reported higher self-esteem than usually, they indicated higher social inclusion by peers later that day, but they did not experience lower social exclusion. This suggests that self-esteem and social inclusion might mutually influence each other, with feeling liked by others leading to higher self-esteem and being more satisfied with oneself resulting in more positive interactions with peers.

Is Good Stronger Than Bad?

At first glance, our findings suggest that in the present context, good might be stronger than bad since it was social inclusion (but not exclusion) that predicted self-esteem (see Sedikides & Skowronski, 2020, for similar evidence in human memory). The current

results do not completely support sociometer theory, which proposes that social inclusion and exclusion both contribute to one's self-esteem (Leary & Baumeister, 2000). Consequently, our findings are not in line with the meta-analysis by Gerber and Wheeler (2009), who found support for sociometer theory. Likewise, our findings do not fit the results reported by Reynolds and Repetti (2008) who found that children experiencing peer problems at school, on average, showed decreases in self-esteem from mornings to afternoons. Yet, they are consistent with the meta-analysis by Blackhart et al. (2009) who concluded that social acceptance, but not rejection was associated with self-esteem, and with findings by Reitz et al. (2016), who found social acceptance but not rejection to prospectively predict self-esteem in children. However, the meta-analyses included only experimental research and examined people of all ages, and Reynolds and Repetti (2008) as well as Reitz et al. (2016) investigated between-person differences only, whereas our findings (additionally) referred to the within-person level of the everyday lives of children. Furthermore, Reynolds and Repetti (2008) measured children's self-esteem in the mornings at home and in the afternoons at school. This difference in contexts might have blurred the results, in that differences in self-esteem solely resulted from the differences in contexts. In order to overcome this limitation, we assessed self-esteem in the mornings and in the evenings within the same context, that is, at home.

However, there are several alternative explanations for our findings other than a reversed pattern of the bad-is-stronger-than-good phenomenon (see Baumeister et al., 2001). For instance, our findings that self-esteem was associated with social inclusion, but not with exclusion might indicate that children between 9 and 12 years of age still show a positivity bias in that they only responded to self-enhancing cues, resulting in very positive and robust self-views (Harter, 2012; Thomaes et al., 2017). Despite being limited in variance (range 9 to 12 years), the present data revealed some support for this post-hoc explanation, as self-esteem

was somewhat lower in older children. However, we did not find the effects of social inclusion or exclusion on self-esteem to become stronger (or weaker) with increasing age. Although the literature suggests that the positivity bias attenuates as children grow older, some kind of positivity proneness seems to persist into adulthood, as in general, people of all ages possess rather favorable self-views (above the averages of self-esteem scales; see Baumeister et al., 1989). Baumeister et al. (2001) concluded that this positivity of self-appraisals "reflects the combined motivational effects of self-protection (avoiding the bad) and self-enhancement (embracing the good)" (p. 351) and that "people are more strongly motivated to avoid bad views of self than to claim good ones" (p. 351). Our data suggest that this strong motivation to avoid seeing oneself unfavorably might already exist in childhood. In the current work, it might have prompted children to immediately start coping with the negative peer experiences at school in order to re-establish their positive self-views. Fitting in with that, Leary and Baumeister (2000) stated that the function of self-esteem is not only to monitor the perceived social status, but also to respond to cues signalizing interpersonal exclusion. This supports the view that, in the present studies, children who got excluded at school might have reacted with (immediate) decreases in state self-esteem, but that they also immediately responded to this cue by starting to cope with it. As we assessed self-esteem some hours after children's school day had ended, it is possible that children had already effectively coped with the negative peer experiences (Dubow & Tisak, 1989), resulting in a restored self-esteem level in the evenings.

Another possible reason for the insignificant effect of social exclusion might be the operationalization of self-esteem. The dimensionality of self-esteem has been addressed in prior research (Huang & Dong, 2012; Marsh et al., 2010). The probably most widely used measure is the Rosenberg Self-Esteem Scale (Rosenberg, 1965), assessing self-esteem with five positively worded items and five negatively worded items. In a meta-analysis on the

factor structure of this scale, Huang and Dong (2012) found support for a two-factor structure of self-esteem in accordance with the wording of the items (positive vs. negative). However, the authors emphasized that the consideration of these two factors as separate constructs may not be worthwhile "unless they have different correlates" (p. 136). In our studies, we used positively worded items to measure self-esteem and we found significant associations with positive peer experiences. Future studies should examine whether negative peer experiences might be linked to a negative side of self-esteem that was not assessed in the present studies, as related research has found such differential effects between social inclusion and exclusion with positive and negative affect, for instance (Bartholomew et al., 2011; Schmidt et al., 2019; Schmidt, Dirk, et al., 2020; Schmidt, Neubauer, et al., 2020). Identifying different antecedents of a positive and a negative side of self-evaluations would demonstrate the necessity to distinguish two factors, as suggested by Huang and Dong (2012).

Inter-individual differences in the within-person associations between social exclusion and self-esteem in the present studies suggest that, for some children, negative peer experiences at school might actually be accompanied by lowered self-esteem. Thus, our findings suggest that children might differ in the effectiveness of recovering from negative school experiences hours later. Notably, such differences in recovery might be related to maladjustment and health problems (Clarke, 2006; Zimmer-Gembeck & Skinner, 2016). Related to this, it is possible that protective factors such as friendship quality or social support buffered children against the deleterious effects of peer rejection at school (e.g., Hodges et al., 1999; Šmigelskas et al., 2018). For instance, children who have experienced rejection at school might compensate for their perceived exclusion by meeting their friends in the afternoons, which could have restored their self-esteem.

Another possible explanation for social exclusion to not be associated with self-esteem in the current studies might be that the "bad" (i.e., social exclusion) in our samples

was not bad enough. The present study setting might be one potential reason for children reporting rather low levels of social exclusion, which might explain why it was not associated with self-esteem. In contrast to experimental settings, children in real life can – to a certain degree – select and avoid specific situations. As such, children might avoid to get into situations, in which they expect to be socially excluded by peers. However, low values on measures of social exclusion are common in children (see Lehman & Repetti, 2007; Reynolds & Repetti, 2008; van der Kaap-Deeder et al., 2017) and there was substantial within-child variability on this construct in the current studies. Furthermore, in another study using the same social inclusion and exclusion items, we found that daily social exclusion was associated with negative affect, suggesting that the fluctuations in social exclusion can meaningfully predict other constructs (Schmidt, Neubauer, et al., 2020).

Another factor that might play a role in the present matter is children's attribution of negative peer experiences as external or internal (Leary & Guadagno, 2011). Attributing the cause for a negative event as internal might be more important than the exposure to a negative event itself: That is, self-esteem should only be affected by social exclusion when children interpret it, at least to some part, as a result of personal behavior. In contrast, self-esteem should be unaffected when children believe the rejection occurred completely independent of personal behavior (Leary et al., 1995; Leary & Guadagno, 2011). In the present studies, children's self-evaluations possibly were not associated with them feeling rejected at school when they believed that this exclusion had nothing to do with them as a person (Leary et al., 1995; Leary & Guadagno, 2011). Moreover, during middle childhood and early adolescence, children begin to develop a sense of social identity and form cliques consisting of peers who mutually identify with each other and oftentimes share common goals or opinions (Brown & Larson, 2009; Erikson, 1968). In the present studies, we did not ask children who they fought with or by whom they felt excluded. Therefore, it is possible

that the developmental identity process had already started and that children's self-views were unrelated to social exclusion, when it came from someone they did not usually associate or identify with. For example, an athletic boy being part of the "jocks" might not feel bad about himself when arguing with or being excluded by someone belonging to the group of "nerds".

To sum up, we consistently found feeling liked by classmates, having a good time with them, and receiving their attention to be associated with more positive self-views on an average and a daily level. Thus, our findings underline the importance of children to feel included and accepted at school for their feelings of themselves being worthy and likeable. Although we did not find feelings of social exclusion to be associated with children's self-esteem, we do not argue that good is stronger than bad in the present context, as we elaborated numerous other possible explanations for this finding. We rather aim at emphasizing the power of the good in promoting well-being, which might be worth targeting in interventions intending to enhance children's self-esteem. However, interventions should not aim at increasing self-esteem by all means, as previous research shows that high self-esteem can be maladaptive for interpersonal relationships. For example, exaggerated feelings of superiority and uniqueness may remind of narcissistic traits (which are characterized by high levels of self-esteem; Geukes et al., 2017; Rhodewalt & Morf, 1995) and may be perceived as inadequate by peers.

Limitations and Future Directions

When interpreting the findings of the present work, a number of limitations need to be considered. First, we only asked children whether a classmate excluded them or whether they argued with someone. It would have been interesting to additionally assess who they fought with, for instance. This way, it would have been possible to disentangle the effects of social rejection coming from a close friend from those coming from a distant classmate they do not

usually associate with. Future studies should add conditional questions aiming at the assessment of the closeness of the peer a child argued with and how important the argument was for the individual child. Related to this, a second limitation is that we focused on children's social experiences with peers at school. Assessing children's peer experiences in the out-of-school context would have enabled us to explore potential compensatory or buffer effects of positive social encounters in the afternoons on children's self-esteem. Third, we relied on self-reports of social inclusion and exclusion, which might be affected by social desirability in that children did not want to admit that they got excluded or teased at school. Future studies might include peer-reported measures on children's social acceptance, such as a sociometric status assessment allowing for the construction of social networks of all children (see Coie & Dodge, 1983). Fourth, we assessed children's state self-esteem and their social inclusion and exclusion in the evenings, several hours after school. Therefore, we do not know what happened between the end of the school day and the evening assessment. For instance, on days when children experienced social exclusion at school, effective coping and compensatory activities taking place during this afternoon time window might have restored children's self-esteem, so that we did not find significant effects of social exclusion in the evenings anymore. Moreover, the items children responded to in the evenings referred to the school context, which is why we cannot preclude that recall biases might have influenced children's responses to the items. Although our evening assessments still represent the common temporal resolution of all daily diary studies, assessment of the constructs more close in time to the end of the school day, but in the same context it was assessed in the mornings (i.e., at home), should be considered in future research. Fifth, causal directions of effects cannot be inferred from the analyses we conducted. Thus, we cannot conclude that children felt better about themselves in the evenings, because they felt socially included at school. Relatedly, exploratory analyses suggested a reciprocal relation among social inclusion

and self-esteem, in that high self-esteem in the morning was associated with higher perceived inclusion at school, possibly through more persistent and consequently more successful attempts to socially approach classmates (see also Reitz et al., 2016). Furthermore, we cannot preclude that any (day-level) third variables we did not account for might have influenced the associations between social inclusion/exclusion and self-esteem.

Summing up, further research on short-term associations between interpersonal relations and self-esteem in children is needed. Trait self-esteem reflects general feelings about oneself that represent the sum of all previous state self-evaluations (Leary & Baumeister, 2000). Considering one's state self-esteem to represent a mirror of one's social status (Leary et al., 1995), a person's trait self-esteem refers to the accumulation of his or her social experiences. Based on the idea that within-person associations pave the way to long-term outcomes (see Hollenstein et al., 2013; Hutteman et al., 2015; Wichers, 2014), examining the daily links between self-esteem and social experiences during a time in which the sense of self-esteem emerges and begins to adjust according to social feedback is of particular importance (Harter, 2012). It can deepen our understanding of the everyday processes that, in the long run, contribute to either adjustment and well-being, or maladjustment and psychopathology by shaping trait self-esteem (Sowislo & Orth, 2013; Trzesniewski et al., 2006).

References

Alessandri, G., Zuffianò, A., Vecchione, M., Donnellan, B. M., Tisak, J. (2016). Evaluating the temporal structure and correlates of daily self-esteem using a trait state error framework (TSE). *Self and Identity, 15*(4), 394–412. https://doi.org/10.1080/15298868.2015.1137223

Anusic, I. & Schimmack, U. (2016). Stability and change of personality traits, self-esteem, and well-being: Introducing the meta-analytic stability and change model of retest correlations. *Journal of Personality and Social Psychology, 110*(5), 766–781. http://dx.doi.org/10.1037/pspp0000066

Arens, A. K., Yeung, A. S., Craven, R. G., & Hasselhorn, M. (2013). A short German version of the Self Description Questionnaire I: Theoretical and empirical comparability. *International Journal of Research & Method in Education*, *36*(4), 415–438. https://doi.org/10.1080/1743727X.2012.710503

Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., Bosch, J. A., & Thøgersen-Ntoumani, C. (2011). Self-determination theory and diminished functioning: The role of interpersonal control and psychological need thwarting. *Personality and Social Psychology Bulletin*, *37*(11), 1459–1473. https://doi.org/10.1177/0146167211413125

Baumeister, R. F., Bratslavsky, E., Finkenauer, C., & Vohs, K. D. (2001). Bad is stronger than good. *Review of General Psychology*, *5*(4), 323–370. https://doi.org/10.1037/1089-2680.5.4.323

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, *117*(3), 497–529. https://doi.org/10.1037/0033-2909.117.3.497

Baumeister, R. F., Tice, D. M., & Hutton, D. G. (1989). Self-presentational motivations and personality differences in self-esteem. *Journal of Personality*, *57*(3), 547–579. https://doi.org/10.1111/j.1467-6494.1989.tb02384.x

Blackhart, G. C., Nelson, B. C., Knowles, M. L., & Baumeister, R. F. (2009). Rejection elicits emotional reactions but neither causes immediate distress nor lowers self-esteem: A meta-analytic review of 192 studies on social exclusion. *Personality and Social Psychology Review*, *13*(4), 269–309. https://doi.org/10.1177/1088868309346065

Brown, B. B., & Larson, J. (2009). Peer relationships in adolescence. In R. M. Lerner & L. D. Steinberg (Eds.), *Handbook of adolescent psychology* (2nd ed., pp. 74–103). Hoboken, NJ: Wiley.

Brown, J. D., & Marshall, M. A. (2006). The three faces of self-esteem. In M. H. Kernis (Ed.), *Self-esteem issues and answers: A sourcebook of current perspectives* (pp. 4–9). New York, NY: Psychology Press.

Campbell, A. (1981). *The sense of well-being in America: Recent patterns and trends*. New York: McGraw-Hill.

Chung, J. M., Hutteman, R., van Aken, M. A.G., & Denissen, J. J.A. (2017). High, low, and in between: Self-esteem development from middle childhood to young adulthood. *Journal of Research in Personality*, *70*, 122–133. https://doi.org/10.1016/j.jrp.2017.07.001

Clarke, A. T. (2006). Coping with interpersonal stress and psychosocial health among children and adolescents: A meta-analysis. *Journal of Youth and Adolescence*, *35*(1), 10–23. https://doi.org/10.1007/s10964-005-9001-x

Coie, J. D., & Dodge, K. A. (1983). Continuities and change in children's social status: A five-year longitudinal study. *Merrill-Palmer Quarterly*, *29*(3), 261–282.

Conley, J. J. (1984). The hierarchy of consistency: A review and model of longitudinal findings on adult individual differences in intelligence, personality and self-opinion. *Personality and Individual Differences*, *5*(1), 11–25. https://doi.org/10.1016/0191-8869(84)90133-8

Cooley, C. H. (1902). *Human nature and the social order*. New York, NY: Charles Scribners Sons.

Cronbach, L. J., & Furby, L. (1970). How we should measure "change": Or should we? *Psychological Bulletin*, *74*(1), 68–80. https://doi.org/10.1037/h0029382

Deci, E. L., & Ryan, R. M. (2000). The "What" and "Why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01

Denissen, J. J. A., Penke, L., Schmitt, D. P., & van Aken, M. A. G. (2008). Self-esteem reactions to social interactions: Evidence for sociometer mechanisms across days, people, and nations. *Journal of Personality and Social Psychology*, *95*(1), 181–196. https://doi.org/10.1037/0022-3514.95.1.181

Diener, E., & Diener, M. (1995). Cross-cultural correlates of life satisfaction and self-esteem. *Journal of Personality and Social Psychology*, *68*(4), 653–663. https://doi.org/10.1037/0022-3514.68.4.653

Dubow, E. F., & Tisak, J. (1989). The relation between stressful life events and adjustment in elementary school children: The role of social support and social problem-solving skills. *Child Development*, *60*(6), 1412–1423. https://doi.org/10.2307/1130931

Eccles, J. S. (1999). The development of children ages 6 to 14. *Future of Children*, *9*(2), 30–42. https://doi.org/10.2307/1602703

Erikson, E. H. (1968). *Identity: Youth and crisis*. New York, NY: Norton.

Furnham, A., & Cheng, H. (2000). Lay theories of happiness. *Journal of Happiness Studies*, *1*(2), 227–246. https://doi.org/10.1023/A:1010027611587

Geldhof, G. J., Preacher, K. J., & Zyphur, M. J. (2014). Reliability estimation in a multilevel confirmatory factor analysis framework. *Psychological Methods*, *19*(1), 72–91. https://doi.org/10.1037/a0032138

Gerber, J., & Wheeler, L. (2009). On being rejected: A meta-analysis of experimental research on rejection. *Perspectives on Psychological Science: A Journal of the Association for Psychological Science*, *4*(5), 468–488.

Geukes, K., Nestler, S., Hutteman, R., Dufner, M., Küfner, A. C. P., Egloff, B., . . . Back, M. D. (2017). Puffed-up but shaky selves: State self-esteem level and variability in narcissists. *Journal of Personality and Social Psychology*, *112*(5), 769–786. https://doi.org/10.1037/pspp0000093

Harter, S. (2012). *The construction of the self: Developmental and sociocultural foundations* (2nd ed.). New York, NY: Guilford Press.

Hawker, D. S. J., & Boulton, M. J. (2000). Twenty years' research on peer victimization and psychosocial maladjustment: A meta-analytic review of cross-sectional studies. *Journal of Child Psychology and Psychiatry*, *41*(4), 441–455. https://doi.org/10.1111/1469-7610.00629

Heppner, W. L., Kernis, M. H., Nezlek, J. B., Foster, J., Lakey, C. E., & Goldman, B. M. (2008). Within-person relationships among daily self-esteem, need satisfaction, and authenticity. *Psychological Science*, *19*(11), 1140–1145. https://doi.org/10.1111/j.1467-9280.2008.02215.x

Hodges, E. V. E., Boivin, M., Vitaro, F., & Bukowski, W. M. (1999). The power of friendship: Protection against an escalating cycle of peer victimization. *Developmental Psychology*, *35*(1), 94–101. https://doi.org/10.1037/0012-1649.35.1.94

Hollenstein, T., Lichtwarck-Aschoff, A., & Potworowski, G. (2013). A model of socioemotional flexibility at three time scales. *Emotion Review*, *5*(4), 397–405. https://doi.org/10.1177/1754073913484181

Huang, C., & Dong, N. (2012). Factor structures of the Rosenberg Self-Esteem Scale. *European Journal of Psychological Assessment*, *28*(2), 132–138. https://doi.org/10.1027/1015-5759/a000101

Hutteman, R., Nestler, S., Wagner, J., Egloff, B., & Back, M. D. (2015). Wherever I may roam: Processes of self-esteem development from adolescence to emerging adulthood in the context of international student exchange. *Journal of Personality and Social Psychology*, *108*(5), 767–783. https://doi.org/10.1037/pspp0000015

Leary, M. R., & Baumeister, R. F. (2000). The nature and function of self-esteem: Sociometer theory. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (pp. 1–62). San Diego, CA: Academic Press. https://doi.org/10.1016/S0065-2601(00)80003-9

Leary, M. R., & Guadagno, J. (2011). The sociometer, self-esteem, and the regulation of interpersonal behavior. In K. D. Vohs & R. F. Baumeister (Eds.), *Handbook of self-reagulation: Research, theory, and applications* (pp. 339–354). New York, NY: Guilford Press.

Leary, M. R., Tambor, E. S., Terdal, S. K., & Downs, D. L. (1995). Self-esteem as an interpersonal monitor: The sociometer hypothesis. *Journal of Personality and Social Psychology*, *68*(3), 518–530.

Lehman, B. J., & Repetti, R. L. (2007). Bad days don't end when the school bell rings: The lingering effects of negative school events on children's mood, self-esteem, and perceptions of parent-child interaction. *Social Development*, *16*(3), 596–618. https://doi.org/10.1111/j.1467-9507.2007.00398.x

Magro, S. W., Utesch, T., Dreiskämpfer, D., Wagner, J. (2019). Self-esteem development in middle childhood: Support for sociometer theory. *International Journal of Behavioral Development, 43*(2), 118–127. https://doi.org/10.1177/0165025418802462

Mann, M., Hosman, C. M. H., Schaalma, H. P., & Vries, N. K. de (2004). Self-esteem in a broad-spectrum approach for mental health promotion. *Health Education Research*, *19*(4), 357–372. https://doi.org/10.1093/her/cyg041

Marsh, H. W., Scalas, L. F., & Nagengast, B. (2010). Longitudinal tests of competing factor structures for the Rosenberg Self-Esteem Scale: Traits, ephemeral artifacts, and stable response styles. *Psychological Assessment*, *22*(2), 366–381. https://doi.org/10.1037/a0019225

McArdle, J. J. (2009). Latent variable modeling of differences and changes with longitudinal data. *Annual Review of Psychology*, *60*, 577–605. https://doi.org/10.1146/annurev.psych.60.110707.163612

Muris, P., Meesters, C., & Fijen, P. (2003). The self-perception profile for children: Further evidence for its factor structure, reliability, and validity. *Personality and Individual Differences*, *35*(8), 1791–1802. https://doi.org/10.1016/S0191-8869(03)00004-7

Muthén, L. K., & Muthén, B. O. (1998-2017). *Mplus user's guide* (8th ed.). Los Angeles, CA: Authors.

Nezlek, J. B. (2005). Distinguishing affective and non-affective reactions to daily events. *Journal of Personality*, *73*(6), 1539–1568. https://doi.org/10.1111/j.1467-6494.2005.00358.x

Orth, U., Robins, R. W., & Widaman, K. F. (2012). Life-span development of self-esteem and its effects on important life outcomes. *Journal of Personality and Social Psychology*, *102*(6), 1271–1288. https://doi.org/10.1037/a0025558

Pinheiro, J., Bates, D., DebRoy, S., Sakar, D., & R Core Team (2019). *nlme: Linear and nonlinear mixed effects models.*

Poorthuis, A. M. G., Thomaes, S., van Aken, M. A. G., Denissen, J. J. A., & Orobio de Castro, B. (2014). Dashed hopes, dashed selves? A sociometer perspective on self-esteem change across the transition to secondary school. *Social Development*, *16*, 770–783. https://doi.org/10.1111/sode.12075

R Core Team (2017). R: A language and environment for statistical computing [Computer software]. Vienna, Austria. Retrieved from https://www.R-project.org/

Reitz, A. K., Motti-Stefanidi, Asendorpf, J. B. (2016). Me, us, and them: Testing sociometer theory in a socially diverse real-life context. *Journal of Personality and Social Psychology, 110*(6), 908–920. http://dx.doi.org/10.1037/pspp0000073

Reynolds, B. M., & Repetti, R. L. (2008). Contextual variations in negative mood and state self-esteem. *The Journal of Early Adolescence*, *28*(3), 405–427. https://doi.org/10.1177/0272431608316598

Rhodewalt, F., & Morf, C. C. (1995). Self and interpersonal correlates of the narcissistic personality inventory: A review and new findings. *Journal of Research in Personality*, *29*(1), 1–23. https://doi.org/10.1006/jrpe.1995.1001

Robins, R. W., & Trzesniewski, K. H. (2005). Self-esteem development across the lifespan. *Current Directions in Psychological Science*, *14*(3), 158–162.

Rogosa, D. R., & Willett, J. B. (1983). Demonstrating the reliability of the difference score in the measurement of change. *Journal of Educational Measurement*, *20*(4), 335–343. https://doi.org/10.1111/j.1745-3984.1983.tb00211.x

Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.

Rubin, K. H., Bukowski, W., & Parker, J. G. (2006). Peer interactions, relationships, and groups. In N. Eisenberg & W. Damon (Eds.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development* (6th ed., pp. 571–645). New York, NY: Wiley.

Ryan, R. M., & Deci, E. L. (2000a). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*(1), 68–78. https://doi.org/10.1037/0003-066X.55.1.68

Ryan, R. M., & Deci, E. L. (2000b). The darker and brighter sides of human existence: Basic psychological needs as a unifying concept. *Psychological Inquiry*, *11*(4), 319–338. https://doi.org/10.1207/S15327965PLI1104_03

Savin-Williams, R. C., & Demo, D. H. (1983). Situational and transituational determinants of adolescent self-feelings. *Journal of Personality and Social Psychology*, *44*(4), 824–833. https://doi.org/10.1037/0022-3514.44.4.824

Schauder, T. (2012). Zur Entwicklung des Selbstwertgefühls von Kindern und Jugendlichen in Deutschland zwischen 1989 und 2009. *Praxis der Kinderpsychologie und Kinderpsychiatrie*, *61*, 198–213.

Schmidt, A., Dirk, J., & Schmiedek, F. (2019). The importance of peer relatedness at school for affective well-being in children: Between- and within-person associations. *Social Development, 28*, 873–892. https://doi.org/10.1111/sode.12379

Schmidt, A., Dirk, J., & Schmiedek, F. (2020, August 13). The power of everyday peer relatedness in predicting subjective well-being and adjustment after secondary school transition. https://doi.org/10.31234/osf.io/ef9ch

Schmidt, A., Neubauer, A. B., Dirk, J., & Schmiedek, F. (2020). The bright and the dark side of peer relationships: Differential effects of relatedness satisfaction and frustration at school on affective well-being in children's daily lives. *Developmental Psychology, 56*, 1532-1546. https://doi.org/10.1037/dev0000997.

Schöne, C., & Stiensmeier-Pelster, J. (2016). *Das Selbstwertinventar für Kinder und Jugendliche - SEKJ*. Göttingen: Hogrefe.

Sedikides, C., & Skowronski, J. J. (2020). In human memory, good can be stronger than bad. *Current Directions in Psychological Science*, *49*, 1–6. https://doi.org/10.1177/0963721419896363

Šmigelskas, K., Vaičiūnas, T., Lukoševičiūtė, J., Malinowska-Cieślik, M., Melkumova, M., Movsesyan, E., & Zaborskis, A. (2018). Sufficient social support as a possible preventive factor against fighting and bullying in school children. *International Journal of Environmental Research and Public Health*, *15.* https://doi.org/10.3390/ijerph15050870

Sowislo, J. F., & Orth, U. (2013). Does low self-esteem predict depression and anxiety? A meta-analysis of longitudinal studies. *Psychological Bulletin*, *139*, 213–240. https://doi.org/10.1037/a0028931

Thomaes, S., Brummelman, E., & Sedikides, C. (2017). Why most children think well of themselves. *Child Development*, *88*, 1873–1884. https://doi.org/10.1111/cdev.12937

Thomaes, S., Reijntjes, A., Castro, B. O. de, Bushman, B. J., Poorthuis, A., & Telch, M. J. (2010). I like me if you like me: On the interpersonal modulation and regulation of preadolescents' state selt-esteem. *Child Development*, *81*, 811–825.

Trzesniewski, K. H., Donnellan, M. B., Moffitt, T. E., Robins, R. W., Poulton, R., & Caspi, A. (2006). Low self-esteem during adolescence predicts poor health, criminal behavior, and limited economic prospects during adulthood. *Developmental Psychology*, *42*, 381–390. https://doi.org/10.1037/0012-1649.42.2.381

Trzesniewski, K. H., Donnellan, M. B., & Robins, R. W. (2003). Stability of self-esteem across the life span. *Journal of Personality and Social Psychology*, *84*, 205–220. https://doi.org/10.1037/0022-3514.84.1.205

Tsaousis, I. (2016). The relationship of self-esteem to bullying perpetration and peer victimization among schoolchildren and adolescents: A meta-analytic review. *Aggression and Violent Behavior*, *31*, 186–199. https://doi.org/10.1016/j.avb.2016.09.005

Valentine, J. C., DuBois, D. L., & Cooper, H. (2004). The relation between self-beliefs and academic achievement: A meta-analytic review. *Educational Psychologist*, *39*(2), 111–133. https://doi.org/10.1207/s15326985ep3902_3

van der Kaap-Deeder, J., Vansteenkiste, M., Soenens, B., & Mabbe, E. (2017). Children's daily well-being: The role of mothers', teachers', and siblings' autonomy support and psychological control. *Developmental Psychology*, *53*, 237–251. https://doi.org/10.1037/dev0000218

Wagner, J., Lüdtke, O., Robitzsch, A., Göllner, R., & Trautwein, U. (2018). Self-esteem development in the school context: The roles of intrapersonal and interpersonal social predictors. *Journal of Personality*, *86*, 481–497. https://doi.org/10.1111/jopy.12330

Wang, L., & Maxwell, S. E. (2015). On disaggregating between-person and within-person effects with longitudinal data using multilevel models. *Psychological Methods*, *20*, 63–83. https://doi.org/10.1037/met0000030

Wichers, M. (2014). The dynamic nature of depression: A new micro-level perspective of mental disorder that meets current challenges. *Psychological Medicine*, *44*, 1349–1360. https://doi.org/10.1017/S0033291713001979

Xu, R. (2003). Measuring explained variation in linear mixed effects models. *Statistics in Medicine*, *22*, 3527–3541. doi:10.1002/sim.1572

Yuan, K.-H., & Bentler, P. M. (2000). Three likelihood-based methods for mean and covariance structure analysis with nonnormal missing data. *Sociological Methodology*, *30*, 165–200. https://doi.org/10.1111/0081-1750.00078

Zimmer-Gembeck, M., & Skinner, E. A. (2016). The development of coping: Implications for psychopathology and resilience. In D. Cicchetti (Ed.), *Developmental psychopathology* (pp. 1–61). Hoboken, NJ: John Wiley & Sons, Inc.

Table 1

Descriptive Statistics of Self-Esteem, Social Inclusion, and Social Exclusion in Studies 1-3

Variable	Session	% data available	*M* (*SD*)	*M* ISD (*SD*)	ICC	ω within/ between
		Study 1				
Self-esteem (mean of four items)	Morning	92.4	3.78 (1.09)	0.69 (0.40)	.49	.81/.96
	Evening	86.9	3.86 (1.14)	0.75 (0.47)	.44	.85/.97
Social inclusion (mean of four items)	Evening	86.3	3.95 (0.98)	0.67 (0.34)	.43	.71/.89
Social exclusion (mean of four items)	Evening	86.7	1.75 (1.09)	0.73 (0.47)	.38	.79/.97
		Study 2				
Self-esteem (mean of four items)	Morning	74.0	3.93 (1.25)	0.64 (0.42)	.56	.86/.95
	Evening	70.1	3.87 (1.32)	0.83 (0.50)	.45	.89/.95
Social inclusion (mean of four items)	Evening	69.8	3.84 (1.29)	0.85 (0.51)	.41	.86/.94
Social exclusion (mean of four items)	Evening	69.6	2.07 (1.39)	0.93 (0.56)	.43	.87/.99
		Study 3				
Self-esteem (mean of four items)	Morning	85.5	3.98 (1.21)	0.80 (0.48)	.45	.91/.98
	Evening	78.0	3.90 (1.30)	0.81 (0.51)	.46	.90/.98
Social inclusion (mean of four items)	Evening	78.2	3.96 (1.16)	0.75 (0.46)	.45	.83/.97
Social exclusion (mean of four items)	Evening	78.5	2.09 (1.37)	0.95 (0.51)	.43	.90/.99

Note. ICC = intraclass correlation (the proportion of between-person variance to total variance); *M* ISD = mean intraindividual standard deviation. Reliability was estimated using McDonald's ω (Geldhof et al., 2014).

Table 2

Results of Multilevel Models Predicting Children's State Self-Esteem in the Evenings by Social Inclusion and Exclusion

Effect	Study 1			Study 2			Study 3		
	Fixed effects								
	b	95% CI	*p*	*b*	95% CI	*p*	*b*	95% CI	*p*
Intercept	3.84	[3.72, 3.96]	< .001	3.87	[3.76, 3.98]	< .001	3.87	[3.76, 3.97]	< .001
Between-person effects									
Average social inclusion	0.62	[0.44, 0.79]	< .001	0.88	[0.76, 1.00]	< .001	0.90	[0.78, 1.03]	< .001
Average social exclusion	-0.18	[-0.34, -0.02]	.033	0.01	[-0.09, 0.12]	.801	-0.08	[-0.19, 0.02]	.128
Within-person effects									
Daily social inclusion	0.30	[0.20, 0.40]	< .001	0.42	[0.33, 0.51]	< .001	0.43	[0.34, 0.52]	< .001
Daily social exclusion	-0.06	[-0.14, 0.02]	.131	0.03	[-0.03, 0.09]	.324	0.01	[-0.04, 0.06]	.640
	Variances of random effects								
Intercept	0.38			0.22			0.26		
Daily social inclusion	0.12			0.08			0.12		
Daily social exclusion	0.05			0.02			0.02		
Residual variance	0.55			0.66			0.61		
	Deviance differences								
	χ^2 (*df*)		*p*	χ^2 (*df*)		*p*	χ^2 (*df*)		*p*
Random daily social inclusion effect = 0	43.69 (3)		< .001	59.59 (3)		< .001	123.68 (3)		< .001

Random daily social exclusion effect = 0	16.11 (3)	.001	13.64 (3)	.003	15.10 (3)	.002
Pseudo R^2	.25		.31		.32	

Note. In Study 1 (Study 2, Study 3), data of 118 (90, 108) children and a total of 1016 (1145, 1668) observations were included in the analyses. Pseudo-R^2 was calculated for Level-1 according to Xu (2003) as pseudo-$R^2 = 1 - \sigma^2_1/\sigma^2_0$ where σ^2_1 is the Level-1 residual variance in the model with predictors and σ^2_0 is the Level-1 residual variance in a model without any predictors (empty model). *df* = degrees of freedom; CI = confidence interval.

Table 3

Results of Latent Change Score Models Predicting Within-Day Change in Self-Esteem by Social Inclusion and Exclusion

Effect	Study 1			Study 2			Study 3					
		Strict MI			Strict MI			Configural MI			Strict MI	
	b	95% CI	*p*	*b*	95% CI	*p*	*b*	95% CI	*p*	*b*	95% CI	*p*
Between-person effects												
Average social inclusion	0.19	[-0.00, 0.38]	.051	0.24	[-0.05, 0.54]	.106	0.20	[-0.05, 0.45]	.123	0.17	[-0.07, 0.42]	.169
Average social exclusion	-0.06	[-0.21, 0.10]	.473	-0.05	[-0.12, 0.02]	.170	0.00	[-0.08, 0.09]	.925	-0.01	[-0.09, 0.07]	.751
Within-person effects												
Daily social inclusion	0.46	[0.28, 0.65]	<.001	0.46	[0.33, 0.59]	<.001	0.52	[0.38, 0.66]	<.001	0.53	[0.39, 0.66]	<.001
Daily social exclusion	-0.04	[-0.15, 0.07]	.466	0.03	[-0.03, 0.10]	.330	0.04	[-0.02, 0.10]	.168	0.04	[-0.02, 0.10]	.185
Level-1 R^2		.37			.40			.43			.42	

Note. In Study 1 (Study 2, Study 3), data of 119 (90, 108) children and a total of 1143 (1306, 1954) observations were included in the analyses.

MI = measurement invariance; CI = confidence interval.

Table 4

Results of Latent Change Score Models Predicting Within-Day Change in Self-Esteem by Social Inclusion and Exclusion in Study 3 Including Random Effects

	Study 3			
	Configural MI		Strict MI	
	Fixed effects			
	b	95% Credible interval	*b*	95% Credible interval
Between-person effects				
Average social inclusion	0.21	[-0.04, 0.47]	0.20	[-0.06, 0.46]
Average social exclusion	0.01	[-0.08, 0.09]	-0.00	[-0.09, 0.08]
Within-person effects				
Daily social inclusion	0.43	[0.29, 0.57]	0.44	[0.29, 0.58]
Daily social exclusion	0.00	[-0.07, 0.07]	-0.00	[-0.07, 0.07]
	Random effects			
	Variance	95% Credible interval	Variance	95% Credible interval
Intercept	0.05	[0.02, 0.10]	0.05	[0.02, 0.10]
Daily social inclusion	0.30	[0.18, 0.48]	0.30	[0.18, 0.48]
Daily social exclusion	0.04	[0.02, 0.09]	0.05	[0.02, 0.09]
Residual variance	0.43	[0.38, 0.49]	0.44	[0.39, 0.49]

Note. Data of 108 children and a total of 1954 observations were included in the analyses. MI = measurement invariance.