Children in Transition:

Challenges and Opportunities in Adjusting to Secondary School

Astrid Poorthuis

ISBN: 978-90-393-5876-4

Cover photo by Kick Smeets / Hollandse Hoogte
Printed by Ridderprint, Ridderkerk, the Netherlands

Children in Transition:

Challenges and Opportunities in Adjusting to Secondary School

Kinderen in Transitie:

Moeilijkheden en Mogelijkheden Tijdens de Overgang naar de Middelbare School

(met een samenvatting in het Nederlands)

Proefschrift

ter verkrijging van de graad van doctor aan de Universiteit Utrecht
op gezag van de rector magnificus, prof.dr. G. J. van der Zwaan,
ingevolge het besluit van het college voor promoties in het openbaar te verdedigen
op dinsdag 4 december 2012 des middags te 12.45 uur

door

Astrid Maria Geertruida Poorthuis

geboren op 26 augustus 1983
te Utrecht

Promotoren: Prof. dr. M. A. G. van Aken
Prof. dr. B. Orobio de Castro
Prof. dr. J. J. A. Denissen

Co-promotor: Dr. S. C. E. Thomaes

Manuscriptcommissie

Prof. dr. S. J. T. Branje (Universiteit Utrecht)

Prof. dr. A. H. N. Cillessen (Radboud Universiteit Nijmegen)

Prof. dr. M. Deković (Universiteit Utrecht)

Prof. dr. J. Juvonen (University of California, Los Angeles)

Prof. dr. P. M. Westenberg (Universiteit Leiden)

Contents

Chapter 1

General Introduction

The transition from primary to secondary school

During their lives, people go through several life course transitions, including the transition to primary school, the transition from school to work, becoming a parent, and going into retirement. Transitions involve relatively abrupt environmental change and the encounter of new people, roles and tasks (Caspi & Moffitt, 1993). How do people cope with these changes? The accentuation model (Caspi & Moffit, 1993) posits that people tend to invoke their most characteristic patterns of behavior when they enter new, ambiguous, and uncertain situations. As a result, individual differences are likely to be accentuated during life-course transitions. Thus, transitions offer a unique opportunity to study the effects of individual differences on subsequent adjustment.

One important life course transition among children is the transition from primary school to secondary school. Every year, about 200,000 children in the Netherlands—and many more around the globe—experience this major life event (Statistics Netherlands, 2012), which brings along a myriad of social and academic changes. From their relatively small primary schools, students make the transition to larger, academically tracked secondary schools where they have many different teachers and change classes every hour. Academic demands are usually higher in secondary school: higher levels of self-motivation and planning are required, for example when making homework (Rudolph, Lambert, Clark, & Kurlakowsky, 2001). There is also an increased emphasis on grades, and grading becomes stricter than in primary school (Barber & Olsen, 2004; Eccles et al., 1993; Eccles & Midgley, 1989; Harter, Rumbaugh Whitesell, & Kowalski, 1992). At the same time, the transition to secondary school brings large social changes. Children enter a new peer group, which requires them to establish new peer bonds and find their position in a newly formed social hierarchy. Furthermore, interactions with familiar peers become less frequent and old friendships often dissolve (e.g., Berndt, Hawkins, & Jiao, 1999; Hardy, Bukowski, & Sippola, 2002). In short, children enter a novel environment where they have to cope with a multitude of academic and social challenges.

It is not surprising, then, that the transition to secondary school is a meaningful and psychologically salient event for children (and their parents), that occupies their minds (Sirsch, 2003). The majority of children have positive expectations regarding their

social and academic functioning in their new school, but at the same time many children also worry about the academic and social changes that lie ahead of them (Akos & Galassi, 2004; Berndt & Mekos, 1995; Sirsch, 2003). Indeed, many children experience the transition to secondary school as stressful (Berndt et al., 1999; Pellegrini & Bartini, 2000).

Initially, research focused mainly on the risks associated with the secondary school transition and studied mean level decreases in children's academic, social, and psychological adjustment after entering secondary school (e.g., Simmons & Blyth, 1987; Eccles & Midgley, 1989; Wigfield, Eccles, Mac Iver, Reuman, & Midgley, 1991). However, in the large body of research that followed these seminal early studies, findings were often inconsistent. For example, whereas some studies found that, on average, children's self-esteem decreases following the school transition (e.g., Seidman, Allen, Aber, Mitchel, & Feinman, 1994; Simmons & Blyth, 1987; Wigfield et al., 1991), other studies found no such evidence (e.g., Crockett, Petersen, Graber, Schulenberg, & Ebata, 1989; Hirsch & Rapkin, 1987), or even found that children's self-esteem slightly increases following the transition (e.g., Barber & Olsen, 2004; Nottelmann, 1987).

One plausible reason for these inconsistent findings may be that there are pronounced individual differences in how children experience the transition from primary school to secondary school (e.g., Rudolph et al., 2001). Whereas subsets of children experience decreases in academic, social, and psychological adjustment, others manage to uphold or even enhance their previously held levels of adjustment across the school transition. Besides, even in cases when normative decreases across the school transition are consistently found, such as for school engagement (e.g., Eccles et al., 1993; Fredricks & Eccles, 2002), decreasing trajectories are by no means universal. Some students uphold their school engagement while making the transition to secondary school (Li & Lerner, 2011).

An individual differences approach

To date, there is relatively little attention in the school transition literature for child characteristics that can account for differences in adjustment. This is unfortunate, because individual differences between children may be especially relevant for

adjustment after the secondary school transition. According to the accentuation model (Caspi & Moffitt, 1993), individual differences between children will be especially salient during life-course transitions. In a novel and unpredictable environment like their new school, many children experience uncertainty and ambiguity about the criteria for academic and social success (Caspi & Moffit, 1993; Rudolph et al., 2001). In such novel environments children often fall back on their most familiar and characteristic patterns of behavior (Caspi & Moffitt, 1993). Thus, it may be especially important to use an individual differences approach when studying academic, social, and psychological adjustment across the secondary school transition.

For researchers, the transition from primary to secondary school provides a unique opportunity to study the effects of child characteristics on adaptation to a new environment. In the normal course of events, many indices of children's social and academic functioning are relatively stable throughout primary school (e.g., Berndt & Hoyle, 1985; Guay, Marsh, & Boivin, 2003; Jiang & Cillessen, 2005; Skinner, Furrer, Marchand, & Kindermann, 2008). In the social domain, when relations or reputations have been formed, they more often endure than that they radically change (e.g., Jiang & Cillessen, 2005; Hymel, Wagner, & Butler, 1990). In the academic domain, children generally know what is expected from them and how competent they are compared to classmates (e.g., Guay et al., 2003). Only when the environment changes, individual differences in accommodating to these changes become telling. The transition from primary to secondary school demands new behavior from children in both the social domain (e.g., establishing new peer relations) and the academic domain (e.g., handling higher academic demands). Thus, the secondary school transition enables researchers to study the effect of child characteristics on the development of new behaviors and processes of adjustment.

Aim of the present dissertation

The aim of the present dissertation is to better understand how children differ in their social, academic, and psychological adjustment following a major transition in their lives, the transition from primary to secondary school. To this end, a longitudinal study was conducted with one wave of data collection before the secondary school transition

and four waves of data collection in the first year after the secondary school transition. Table 1 provides an overview of the studies in this dissertation.

Table 1. Overview of Studies in this Dissertation

Study	Waves	Adjustment	Predictors	Moderators
Personality in action: Can brief behavioral personality tests predict children's academic and social adjustment across the transition to secondary school?	1 & 5	School achievement and social acceptance	•Conscientiousness and agreeableness (both self-report and behavioral measures) •Prior levels of school achievement and social acceptance	-
Prosocial tendencies predict friendship quality, but not for popular children	1	Friendship quality	•Prosocial tendencies (agreeableness), both a self-report and a behavioral measure	•Popularity
Dashed hopes, dashed selves? A sociometer perspective on self-esteem change across the transition to secondary school	1, 2, & 3	Self-esteem	•Expected and experienced social acceptance •Prior levels of self-esteem	•Neuroticism
Do grades shape students' school engagement? The psychological consequences of report cards at the beginning of secondary school	2, 3, & 4	School engagement	•Report card grades •Positive and negative affective reactions to grades (mediators) •Prior levels of school engagement	•Gender •Performance norms

We studied a variety of pre-transitional individual differences between children, including their personality traits and expectations regarding secondary school. We also took critical post-transitional experiences into account, including acceptance by the new peer group and receiving grades. In several studies we considered moderators of the links between child characteristics and adjustment. We did not adopt a cumulative risk approach, aiming at 'explaining' as much variance in social or academic adjustment as possible. Instead, in each study we zoomed in on specific child characteristics and we used the school transition to test specific theories pertinent to the form of adjustment at hand. This approach allows us to gain a more in-depth understanding of the psychological mechanisms underlying individual differences in adjustment to the transition to secondary school. In all longitudinal studies we controlled for prior levels of adjustment, allowing us to evaluate the extent to which child characteristics actually predict *change* in adjustment over time.

Research design

A five-wave short-term longitudinal study was conducted across the transition from primary to secondary school (see Table 2). The first wave of data-collection took place before the transition to secondary school, in the spring semester of sixth grade. The second wave took place only two to three weeks after the transition into secondary school (i.e., September). This allowed us to study children's initial adjustment in response to a new environment. The other three waves of data-collection took place three-monthly in the first year of secondary school (i.e., in December, March and June), allowing us to study relatively short-term changes in adjustment within the school year.

A variety of measures from different sources of information were used (see Appendix for an overview of all measures and informants). At all time points, both self-report questionnaires (e.g., Big Five personality, narcissism, self-esteem, school engagement, and friendship quality) and peer rating measures (e.g., social acceptance, popularity, academic reputation, and aggression) were administered. In addition, information on children's school achievement was obtained from official school records. Furthermore, newly developed brief behavioral personality tests measuring children's tendencies to behave in conscientious and agreeable ways were administered at Wave

1. To date, personality research has mainly relied on self-report measures and actual behavior has rarely been studied (Baumeister, Vohs, & Funder, 2007; Furr, 2009). Compared to self-report measures, our new behavioral personality tests are less likely to be influenced by participants' limited self-knowledge or impression management predispositions and thus provide a valuable alternative approach to assess personality.

Table 2. Overview of the Data-Collection

	Wave 1 Spring 2009	*School transition*	**Wave 2** Sep 2009	**Wave 3** Dec 2009	**Wave 4** Mar 2010	**Wave 5** Jun 2010
•Self-report questionnaires	X		X	X	X	X
•Peer-ratings and nominations	X		X	X	X	X
•Standardized achievement test score (Cito)	X		X[a]			
•Report card grades				X		X
•Behavioral personality tests	X					
•Parent-report questionnaires[b]			X			

[a] For children who started participating in the study in secondary school, their achievement test score was obtained at wave 2.

[b] Not reported in this dissertation

Research sample

As a result of the Dutch academic tracking system and free choice of school for students and their parents, following students across the transition from primary to secondary school can be challenging. Students from a single primary school usually transition into about four to seven secondary schools. Most secondary schools get students from around 50 primary schools. Therefore, we first recruited secondary schools within a single town, and subsequently the primary schools from which these secondary schools received their students.

Four secondary schools within Gorinchem, an average-sized town (35.000 inhabitants) in the middle of the Netherlands, were willing to participate in the study. Together, these four schools get the majority of students in this town who transition into secondary school. After secondary schools consented to participate, all 12 primary

schools in town were asked to participate in the study. Of these 12 primary schools, nine schools (19 sixth-grade classrooms) agreed to participate. Furthermore, primary schools in the surrounding communities were recruited when at least five of their students had applied for the participating secondary schools. Out of 17 schools, 13 schools (15 sixth-grade classrooms) agreed to participate. In participating primary schools, 651 children attended sixth grade. Active parental consent was obtained for 75% of them (485 children). When sixth-graders formed a combined class with fifth-graders, these children were included in the study to provide peer ratings.

From this initial sample, 322 children (66%) continued to participate in the study after they transitioned into one of the four secondary schools that participated in the study. Their new classmates in secondary school (*N* = 293) were also recruited for the study. Sixty-five percent of them (N = 189) obtained parental consent. In sum, the primary school sample consisted of 487 children, the secondary school sample consisted of 511 children and the transition sample (i.e., the sample that included students who participated both in primary and in secondary school) consisted of 322 children (see Figure 1).

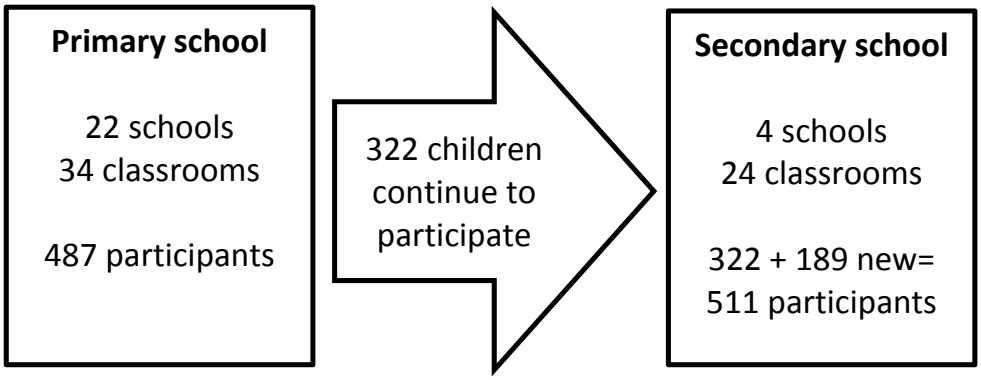

Figure 1. Participation in the study.

Participants in the transition sample (53% girls) were on average 12.2 years old (*SD* = 0.45) at the start of the study, and 12.6 years old when they transitioned into secondary school. Most participants (77%) were of Dutch origin; 4% of Moroccan origin; 3% of Turkish origin; others were mainly of mixed cultural/ethnic origin. These figures are similar to the cultural or ethnical diversity in the Netherlands (80% of inhabitants of the Netherlands are of Dutch origin, 2% of Moroccan origin and 2% of Turkish origin;

Statistics Netherlands, 2009). Participants' academic track in secondary school ranged from pre-vocational training, practice oriented level (i.e., VMBO basisberoepsgerichte & kaderberoepsgerichte leerweg) to pre-university training (i.e., VWO; see Table 3).

Table 3. Participants Classified by Academic Track in Secondary School

Academic track	Transition sample (*N* = 322)	Secondary school sample (*N* = 511)
Pre-vocational training, practice oriented level (VMBO basisberoepsgerichte & kaderberoepsgerichte leerweg)	9%	10%
Pre-vocational training, theory oriented level (VMBO gemengde & theoretische leerweg)	30%	29%
Combined prevocational training, theory oriented (VMBO-t) and senior general secondary education (HAVO)	14%	12%
Combined senior general secondary education (HAVO) and pre-university training (VWO)	30%	34%
Pre-university training (VWO)	17%	15%

Attrition analyses were conducted to compare participants who stayed in the study across the secondary school transition with those who only participated in primary school, using all measures in primary school. Because of the large number of analyses (i.e., 27 t-tests) a Bonferroni correction was applied, setting the alpha level at (0.05/27=) .0019. T-tests revealed that there were no differences between the groups on the bulk of measures, such as Big Five personality traits, narcissism, school engagement, self-esteem, social acceptance, popularity, friendship quality, and achievement test score. The single difference between the two groups was found for academic expectations: children who stayed in the study across the secondary school transition had slightly higher academic expectations than those who participated only in primary school, $t(269,3) = -3.24$, $p < .001$, $d = -0.32$.

Outline of the dissertation

The aim of C*hapter 2* was to understand individual differences in changes in academic achievement and social acceptance across the transition to secondary school by studying children's Big Five personality traits of conscientiousness and agreeableness. To date, personality research has mainly relied on self-report measures (Robins, Tracy, & Sherman, 2007), which have important strengths (e.g., they provide access to information on behavior in a wide range of situations), but also several limitations (e.g., the quality of information they provide may suffer from respondents' limited self-knowledge, or impression management predispositions; Paulhus & Vazire, 2007). Clearly, additional methods assessing personality traits are needed. We developed two brief behavioral personality tests, measuring conscientiousness and agreeableness in standardized situations that were theorized to be diagnostic for the particular trait (Denissen & Penke, 2008; Tellegen, 1991). We tested the additive predictive value of these behavioral personality tests on changes in academic and social adjustment across the transition to secondary school above and beyond self-reported personality.

In *Chapter 3*, we studied the cross-sectional link between children's prosocial tendencies (i.e., agreeableness) and their perceived friendship quality within the context of children's social roles in the larger peer group—their popular status. Although the importance of the joint study of friendship and group processes is generally acknowledged, empirical studies doing so are rare to date (Rubin, Bukowski, & Parker, 2006). According to classical equity theory, people seek to maintain equity, or a just balance in social provisions, in their relationships (Adams, 1965). Because prosocial children have much to offer to their friends in terms of social provisions (e.g., instrumental aid, emotional support), they are likely to obtain many social provisions in return and this should result in high levels of perceived friendship quality. Yet, children value more in their friendships than prosocial behavior alone. They also attach great importance to being popular (LaFontana & Cillessen, 2010), and they have a preference for associating with popular peers (Hawley, Little, & Card, 2007). Popular children have many characteristics that make them attractive to be friends with: they are influential and visible (Cillessen, 2011), and mere association with popular peers raises a child's status (Marks, Cillessen, & Crick, 2012). Thus, popular children's friends may well be

motivated to maintain their friendship regardless of whether their popular friend behaves in prosocial ways. We predicted that prosocial tendencies would be less strongly related to perceived friendship quality for popular children, because these children have multiple other resources and qualities that make them attractive to be friends with.

The aim of *Chapter 4* was to understand individual differences in self-esteem change across the transition to secondary school. We propose that sociometer theory (Leary & Baumeister, 2000) can be used to explain these individual differences. Sociometer theory posits that self-esteem functions as a gauge of social acceptance—monitoring and responding to changes in how much one is valued and accepted by others. At the end of primary school, children have expectations on how much they will be accepted by their future secondary school classmates. In secondary school, these expectations will be confronted with the reality of a new peer group. We predicted that self-esteem change would depend on the discrepancies between expected and actually experienced social acceptance. We predicted self-esteem increases when children's experienced social acceptance in secondary school was higher than expected, and conversely, self-esteem decreases when children's experiences failed to meet expectations of social acceptance. Some children's self-esteem may be more sensitive to changes in social acceptance than others', depending on their personality traits. Our second prediction was that the self-esteem of children high on the Big Five trait of neuroticism would be particularly reactive to discrepancies between expected and actual social acceptance.

The aim of *Chapter 5* was to understand individual differences in changes in school engagement over the course of the first semester in secondary school. We propose that these individual differences can be partly understood by examining the psychological impact of the grades that students receive. Receiving grades is a meaningful event for students, which can elicit a range of positive and negative affective reactions (e.g., Goldstein & Strube, 1994). These affective reactions may in turn predict changes in school engagement. Positive affect is theorized to be part of a larger motivational system of approach tendencies (Watson, Wiese, Vaidya, & Tellegen 1999). Thus, we expected that the positive affective reactions induced by high grades would facilitate school engagement. In contrast, negative affect associated with low grades is

part of a larger motivational system of withdrawal tendencies (Watson et al., 1999). Hence, students are likely to disengage from their school work when experiencing negative affect. Importantly, students do not receive their grades in a social vacuum, but are likely to compare their performance to the performance of their classmates (Pulfrey, Buchs, & Butera, 2011). Thus, we included students' perceptions of performance norms as a moderator in the study. We predicted that higher performance norms would strengthen the link between students' grades and their affective reactions. We also explored whether the link between students' grades and their affective reactions was stronger for boys or for girls. Finally, *Chapter 6* summarizes and draws conclusions from the findings presented in this thesis.

Chapter 2

Personality in Action: Can Brief Behavioral Personality Tests Predict Children's Academic and Social Adjustment Across the Transition to Secondary School?

Astrid M. G. Poorthuis, Sander Thomaes, Jaap J. A. Denissen,
Marcel A. G. van Aken, & Bram Orobio de Castro

Manuscript submitted for publication

Abstract

Personality research has mainly relied on self-report measures, and actual behavior has rarely been studied. In the present study brief behavioral personality tests were developed to measure behavior that is prototypical for the Big Five traits of conscientiousness and agreeableness. A longitudinal study (*N* = 322; mean age = 12.2 years) examined the predictive value of these newly developed personality tests on changes in academic and social adjustment across the transition to secondary school. Conscientiousness and agreeableness were measured before the transition to secondary school using both the behavioral personality tests and a self-report questionnaire. Academic achievement and social acceptance were measured both pre- and post-transition. The behavioral test of conscientiousness predicted changes in children's school achievement across the transition to secondary school, above and beyond self-reported conscientiousness. Similarly, the behavioral test of agreeableness predicted change in social acceptance, whereas self-reported agreeableness did not. Behavioral personality tests index unique aspects of children's behavioral dispositions that are not fully captured by traditional self-report personality questionnaires, and have predictive power over time.

Introduction

From a young age, children show pronounced individual differences in their behavior at school and among peers. Some children tend to persist in their schoolwork, whereas others are easily distracted. Some children tend to be kind and helpful towards peers, whereas others behave in more selfish ways. These behaviors are often assumed to reflect underlying personality dispositions (Shiner & Caspi, 2003). It is also through specific behaviors such as these that personality traits may impact on individuals' adjustment, for example in the academic or social domain (Furr, 2009). Surprisingly though, actual, observable behavior has rarely been studied in personality research, despite several calls to do so (e.g., Baumeister, Vohs, & Funder, 2007; Furr, 2009). Instead, personality researchers have typically relied on self-report questionnaire measures rather than on behavioral measures.

The aim of the present study was to develop standardized situations to measure "personality in action"—to measure behavior that is prototypical for (some of the) Big Five personality traits. As a rigorous test of predictive value, we examined how children's functioning on these brief personality tests is predictive—even above and beyond self-report measures of personality—of changes in their academic and social adjustment across a key transition in children's social and academic lives: the transition from primary to secondary school.

Measuring personality

The usual way to measure personality traits in personality research is by using self-report questionnaires (Robins, Tracy, & Sherman, 2007). For example, a typical item for the Big Five trait of agreeableness is: "I see myself as someone who is helpful and unselfish with others" (John & Srivastava, 1999). Self-report questionnaires have a number of important strengths (Paulhus & Vazire, 2007). First, people have access to information on their own behaviors in a wide range of situations, more than researchers could possibly observe. Second, whereas people themselves have access to their thoughts and feelings, others do not. Third, self-reports are efficient and inexpensive (Furr, 2009; Paulhus & Vazire, 2007). Unfortunately, however, self-reports have several limitations as well. First, people have limited self-knowledge. Because of memory lapses and other cognitive biases, people's self-views of their attributes and traits are not always accurate reflections of their actual behavior (e.g., Baumeister et al., 2007; Furr, 2009; Paulhus & Vazire, 2007). Second, people are prone to use impression management strategies, such as socially desirable responding, when completing self-report questionnaires (Paulhus & Vazire, 2007).

Clearly, additional methods assessing personality traits are needed. One promising methodology is the use of behavioral personality tests to measure actual behavior in highly standardized situations (Proyer & Häusler, 2007). Behavioral personality tests are free from the limitations that plague self-report measures. They do not require introspection or self-knowledge, and because participants are unaware of the objective of the test, impression management is unlikely (Cattell, 1958; Kline & Cooper, 1984; Proyer & Häusler, 2007). Of course, by their nature, behavioral personality tests necessarily measure behavior in a specific situation, and do not capture

the broad range of behaviors (and associated thoughts and feelings) that are captured by self-report questionnaires. Clearly, behavioral personality tests cannot replace self-report measures, but with others (Proyer & Häusler, 2007; Rubio, Hernández, Zaldívar, Márquez, & Santacreu, 2010) we propose that they complement them in important ways.

Five decades ago, Raymond Cattell was the first to develop behavioral personality tests (e.g., Cattell & Warburton, 1967). He developed an extensive collection of standardized tasks to measure various personality traits, ranging from 'narcissistic ego' to 'realism' to 'lack of will' (Cattell & Warburton, 1967). Probably because it was time intensive to administer these behavioral personality tests, for a long time, his work was rarely followed (Kline & Cooper, 1984; Proyer & Häusler, 2007), with a few notable exceptions in research with young children, including the well-known marshmallow test (Mischel, Yuichi, & Peake, 1988) as well as tasks to measure effortful control (Kochanska, Murray, & Harlan, 2000). With the development of computer technology, assessing personality using standardized tests became easier and somewhat more common (e.g., Dislich, Zinkernagel, Ortner, & Schmitt, 2010; Proyer & Häusler, 2007). To date, however, there are no computerized behavioral personality tests for Big Five personality traits.

Personality and life course transitions

According to the accentuation theory (Caspi and Moffit, 1993), individual differences in personality characteristics will be accentuated, and become more manifest, during life-course transitions such as the transition from primary to secondary school. This transition brings along academic and social challenges, such as adapting to higher academic demands and fitting in to a new peer group. In such novel, unpredictable situations, individuals often fall back on their most familiar and characteristic patterns of behavior (Caspi & Moffitt, 1993). Thus, it may be especially relevant to study children's personality traits as predictors of academic and social adjustment across a major transition in their lives—the transition to secondary school. To date, however, the role of personality in children's adjustment after the transition to secondary school has rarely been studied. We will focus on the Big Five trait of conscientiousness as predictor of academic achievement and the Big Five trait of agreeableness as predictor of social adjustment.

Conscientiousness and agreeableness

Conscientiousness reflects people's tendency to persist in goal pursuit (Denissen & Penke, 2008). Conscientious children are responsible, attentive, persistent, and orderly (Shiner & Caspi, 2003). Thus, it is not surprising that of all Big Five traits conscientiousness has been linked most consistently to academic achievement (e.g., Asendorpf & van Aken, 2003; de Raad & Schouwenburg, 1996; Noftle & Robins, 2007; Poropat, 2009). Conscientiousness is associated with higher academic achievement, even when intelligence is taken into account (e.g., Heaven & Ciarrochi, 2012; Laidra, Pullman, & Allik, 2007). One meta-analysis found that the association between conscientiousness and academic achievement (r = .22) was even similar in magnitude to the association between intelligence and academic achievement (r = .25; Poropat, 2009). In the present study, we therefore focus on conscientiousness as a predictor of academic achievement across the transition from primary to secondary school.

Agreeableness reflects people's tendency to display altruistic behaviors (Denissen & Penke, 2008), such as being cooperative, helpful, kind, and empathic (Shiner & Caspi, 2003). These characteristics are often valued by others and make agreeable children attractive social partners (Jensen-Campbell, Adams, et al. 2002; Poorthuis, Thomaes, Denissen, van Aken, & Orobio de Castro, 2012). Adolescents high on agreeableness tend to be well-liked and accepted by peers (Jensen-Campbell, Adams, et al., 2002; Scholte, van Aken, & van Lieshout, 1997; van der Linden, Scholte, Cillessen, te Nijenhuis, & Segers, 2010) and they have more reciprocal friendships than adolescents who are low on agreeableness (Jensen-Campbell, Adams et al., 2002). In this study, we focus on agreeableness as a predictor of social acceptance across the transition from primary to secondary school.

Designing behavioral personality tests for conscientiousness and agreeableness

Two considerations guided our approach in designing behavioral personality tests for conscientiousness and agreeableness. First, some situations are more 'diagnostic' for a particular personality trait than other situations (Tellegen, 1991). Denissen and Penke (2008) defined personality traits as individual differences in people's reactions to *circumscribed situational characteristics*. We used their theoretical framework as guidance in designing tasks to measure conscientiousness and

agreeableness (as detailed below). Second, to maximize ecological validity we designed tasks that are similar to situations that children encounter in real-life after the secondary school transition. Much like the secondary school transition brings children in a new environment, our behavioral personality tests also bring children in a new environment in which there is no clear information on how to behave adaptively (see Caspi & Moffitt, 1993).

Conscientiousness reflects individual differences in the tenacity of goal pursuit *under distracting circumstances* (Denissen & Penke, 2008). Accordingly, we designed a computerized task in which children were distracted from their original assignment by entertaining video clips that popped up on screen. Children's tenacity of goal pursuit was indexed by the number of video clips they clicked away to be able to continue working on the assignment. This situation was designed to resemble situations children encounter after the secondary school transition, such as when they are doing their homework while at the same time they can do more entertaining activities on the Internet.

Agreeableness reflects individual differences in the tendency to display altruistic behavior *when limited resources (e.g., time) are available* (Denissen & Penke, 2008). Accordingly, we designed a computerized task in which children could help other children by responding to their e-mails containing requests for help, at the cost of spending time on an assignment, having a break, or playing a computer game. Children's tendency to act altruistically was indexed by the quality of the help they gave others. This situation resembles situations children regularly encounter after the secondary school transition, for example when they receive requests for assistance from peers through social media while playing a computer game.

Present study

The aim of the present study was to examine whether behavioral tests of personality can predict academic and social adjustment after the transition from primary to secondary school above and beyond self-report measures of personality and prior levels of adjustment. We developed computerized tasks to measure typical behaviors in highly standardized situations. We focused on conscientiousness as a predictor of academic adjustment (i.e., school achievement) and agreeableness as a predictor of

social adjustment (i.e., social acceptance in the new peer group). First, we hypothesized that the behavioral test of conscientiousness would predict school achievement in secondary school, even when controlling for prior levels of school achievement and self-reported conscientiousness. Second, we hypothesized that the behavioral test of agreeableness would predict social acceptance rated by peers, even when controlling for prior levels of social acceptance and self-reported agreeableness.

Method

Participants

In the spring semester of Grade 6 (the final year of primary school in the Dutch school system), 487 children were recruited from 22 primary schools serving middle-class communities in the Netherlands. From this initial sample, 322 children (66%) continued to participate in the study after they transitioned into one of the four secondary schools that participated in the study (i.e., Time 2). The rest of the initial sample went to secondary schools that did not participate in the study. New non-participating classmates in secondary school (N = 189) also provided ratings of participants' social acceptance. Participants' (47% boys) age ranged from 11 to 14 years (M = 12.2, SD = 0.44) at the start of the study. Most participants were of Dutch origin (78%); others mainly were of mixed cultural/ethnical origin. Informed parental consent was obtained for all participants (consent rates ranged between schools from 50% to 100%; M consent rate = 80%).

Procedure

At Time 1 (i.e., spring semester before the secondary school transition) participants worked on a series of assignments designed to measure their personality traits of conscientiousness and agreeableness. Participants were tested in a quiet room at their school by female research assistants. They were told that they were participating in a study on children's information processing during computer tasks. Task instructions were provided both on screen and through headphones. First, participants logged onto the study website where they allegedly interacted with other participants

from different schools and different ages. In reality, participants worked on offline computers.

The first assignment—designed to measure conscientiousness—required participants to select groups of four dots from rows consisting of groups of three, four, and five dots (based on the Bourdon-Vos test; de Jong & Das-Smaal, 1993; Vos, 1988). Participants were instructed to work as fast as they could without making mistakes (e.g., omitting a four-dot group). After 4 minutes there was a short break in the study. At that moment participants received the following instructions: "You will have to do the assignment once again. We understand that this task is rather boring. Therefore, some short video clips will serve as a diversion. You can close these video clips if you want to continue working on the assignment."

Every 50 seconds a pop-up screen covered the assignment and a video clip was started. The clips were selected from a pilot study for their entertaining value (e.g., animal tricks, cartoons, sports bloopers). Participants could either click to close the screen and continue working on the assignment (i.e., indicating higher levels of conscientiousness, see measures section) or watch the clip. In total, four video clips popped up that could last for a maximum of 20 seconds each, with 50-second intervals during which participants worked on the assignment.

The second assignment was designed to measure agreeableness. The assignment required participants to solve puzzles within limited time by moving pieces of different shapes and sizes to the right place in a silhouette (e.g., of a rabbit or a bird). They were relatively easy to solve for children this age. Participants were informed that these assignments were difficult to complete for the youngest children participating in the study, and that these young children were therefore allowed to ask other users for help via e-mail. Participants were told they could choose either to help the other child or not. To maximize situational generalizability, our procedure assessed agreeableness in three different contexts pertaining to different costs for helping: helping at the cost of one's own performance on the assignment; helping at no cost; and helping at the cost of one's involvement in a fun computer game.

To measure helping at a cost to performance, participants received four (bogus) e-mails from younger participants (e.g., "I don't know how to solve the first puzzle. How should I create the ears of the rabbit?"), while they were working on the assignment.

The e-mails appeared as a large pop-up screen and contained two buttons: “CLOSE SCREEN” and “SEND MESSAGE”. Thus, participants could choose to either click to close the screen and continue working on the puzzle (coded as “no” helping behavior) or to write a message and send it (the content of the message was coded as “no”, “some”, or “much” helping behavior; see measures section). Children only received questions concerning puzzles they already solved themselves.

Next, to assess helping at no cost to performance, when participants had completed the puzzles they received the following instruction: “You finished this task. Other users are still working. Please wait…. If you wish, you may help other children by responding to their e-mails.” While waiting, participants received four e-mails with questions about the puzzles.

Finally, to assess helping at the cost of involvement in a fun game, participants were told that they could play a computer game during a break in the study and that if they wished they could help other children who were still working on the puzzles by responding to their e-mails. While playing a computer game, they obtained four e-mails with questions concerning the puzzles.

Next, participants completed self-report measures of conscientiousness and agreeableness in their classes. Finally, participants were fully debriefed. They were informed that the e-mails they received were fictitious. They were also informed about the study purposes, and the need for deception. One year later, at the end of the first year in secondary school, participants’ social acceptance was rated by peers and participants’ school achievement was retrieved from official school records.

Measures

Behavioral measures of conscientiousness. The number of times participants clicked to close the popped-up video clip to continue working on the initial assignment was taken as an indicator of conscientiousness. Scores ranged from 0 (= lowest conscientiousness score) to 4 (= highest consciousness score).

Because the rationale underlying our behavioral test of conscientiousness implies that it is only diagnostic for children who actually perceive the video clips as entertaining, we conducted a pilot study to select clips that were actually entertaining for children this age. Twenty-five children (*M* age = 11.3; *SD* = 0.76; 56% girls) evaluated

21 short video clips (of about 20 seconds each) with varying content (e.g., cartoons, sports bloopers, animal tricks, dancing, and acrobatics). They rated how entertaining they thought these clips were on a 10-point scale (1 = *extremely boring;* 10 = *extremely entertaining*). Mean ratings ranged from 4.1 to 8.4. Four clips that received the highest ratings were selected for the study (means ranged from 7.9 to 8.4, with standard deviations ranging from 1.4 to 1.8).

Furthermore, upon completion of the tasks, participants were asked to rate how much they had desired to watch the video clips (1 = *not al all;* 7 = *very much*). Seventeen percent of participants scored 3 or lower, indicating that for them the video clips failed to be entertaining distracters. Therefore, these participants were removed from analyses.

Behavioral measure of agreeableness. The quality of participants' helping behavior during the tasks was rated by the first author and a research assistant for each of the responses to the 12 e-mails. For each response, a score of 0 was given when participants provided no help at all, for example when they did not write anything or when they provided no suggestion to solve the puzzle (e.g., "Sorry, I am busy right now"). A score of 1 was given when participants provided "some help", for example when they provided encouragement (e.g., "Just try all the pieces, then you will succeed") or general instructions that would not directly help the other child to solve the puzzle (e.g., "Try to look carefully at the shape of the pieces"). A score of 2 was given when participants provided "much help", for example when they indicated where a particular puzzle piece should be placed (e.g., "The big triangle is the bird's wing") or provided other help that would have directly allowed the other child to solve the puzzle. Inter-rater reliability (kappa) for each of the 12 responses ranged from .82 to 1.00 (M = .92).

The measures of helping behavior in the three situational contexts were significantly correlated (correlations were r = .41, r = .45, and r = .58, all ps < .01) and showed very similar associations with the other study variables. Therefore, an aggregate score for helping behavior was computed from responses to all twelve e-mails (Cronbach's alpha = .84), with higher scores indicating more helping behavior.

The amount of helping behavior differed between situational contexts. A one-way repeated measures ANOVA showed that children's helping behavior in the performance context (M = 0.67; SD = 0.57), the no cost context (M = 1.21; SD =0.47) and

the entertainment context (M = 0.78; SD = 0.56) differed significantly, $F(2, 317) = 194.5$, $p < .001$. Not surprisingly, contrasts revealed that helping behavior in the no cost context was significantly higher than in the entertainment context, $F(1, 318) = 256.3$, $p < .001$. In addition, helping in the entertainment context was significantly higher than in the performance context, $F(1, 318) = 10.83$, $p < .01$.

Self-reported personality. The Big Five traits of conscientiousness and agreeableness were measured using the Big Five Inventory (John & Srivastava, 1999; translated into Dutch by Denissen, Geenen, Van Aken, Gosling, & Potter, 2008). The conscientiousness subscale consists of 9 items (sample item: "I see myself as someone who makes plans and follows through with them."). The agreeableness subscale consists of 9 items (sample item: "I see myself as someone who is helpful and unselfish with others."). Participants rated their agreement with the statements on a 5-point Likert scale (1 = *disagree strongly*; 5 = *agree strongly*). Negative items were recoded, and mean conscientiousness and agreeableness scores were computed (Cronbach's alpha = .75 and .63, respectively), with higher scores indicating higher levels of conscientiousness and agreeableness.

Social acceptance. Social acceptance was measured at the end of primary school and at the end of the first year in secondary school using standard peer rating procedures (Schwartz, Hopmeyer Gorman, Nakamoto, & McKay, 2006). Participants received a class roster and indicated how much they liked each of their classmates. Ratings were provided on a five-point scale (1 = *don't like at all;* 5 = *like a lot*). Based on these ratings, a mean acceptance score was computed for each participant with higher scores indicating higher levels of social acceptance.

School achievement. At the end of primary school, school achievement was indexed by students' performance on a standardized achievement test, which is administered to most children in the Netherlands at the end of Grade 6. After the transition to secondary school, children are graded relative to others in their academic track. Therefore, performance scores in primary school were standardized within academic track. At the end of the first year in secondary school, school achievement was indexed by students' mean report card grades, which were retrieved from school records. In the Dutch school system, grades range from 1 (extremely low) to 10

(extremely high). A mean score was computed across the six main academic subjects (i.e., Dutch, English, Math, Biology, History, and Geography). Cronbach's alpha was .75.

Results

Correlations and gender differences

Table 1 shows the correlations between the study variables. Neither for conscientiousness, nor for agreeableness, the behavioral measure and the self-report measure were significantly correlated. An unexpected positive correlation between the behavioral measure of agreeableness (i.e., helping others in response to e-mails) and self-reported conscientiousness was found.

Table 1. Means, Standard Deviations, and Intercorrelations for the Study Variables

	M	*SD*	1	2	3	4	5	6	7
1. Behavioral conscientiousness	1.31	1.37	_						
2. Behavioral agreeableness	0.90	0.42	-.16**	_					
3.Self-reported conscientiousness	3.43	0.61	.11	.16*	_				
4. Self-reported agreeableness	3.82	0.50	.01	.07	.38**	_			
5. School achievement (Time 1)	0	1.00	.02	.03	.08	-.04	_		
6. School achievement (Time 2)	6.74	0.72	.14*	.16**	.19**	.16**	.24**	_	
7. Social acceptance (Time 1)	3.42	0.47	-.01	.04	.00	.12*	-.03	.10	_
8. Social acceptance (Time 2)	3.27	0.49	.03	.13*	-.02	.04	-.07	.12	.41**

Note. * $p < .05$, ** $p < .01$

Girls showed more helping behavior in response to e-mails than boys, $t(314) = -2.32$, $p < .05$, $d = -0.26$. Girls also reported higher levels of conscientiousness and agreeableness, $t(320) = -3.52$, $p < .01$, $d = -0.39$ and $t(320) = -4.35$, $p < 01$, $d = -0.49$, respectively. On average, girls received higher report card grades in secondary school,

$t(318) = -4.50$, $p < .01$, $d = -0.50$. No gender differences were found for the behavioral test of conscientiousness, academic achievement in primary school, and social acceptance (all *p*s > .13). Because gender did not interact with any of the personality variables in predicting academic achievement or social acceptance, it was dropped from further analyses.

Conscientiousness and school achievement

Hierarchical regression analyses were conducted to examine whether a behavioral test of conscientiousness (i.e., discarding distracting video clips to continue working on the original assignment) would improve the prediction of school achievement after the secondary school transition above and beyond prior school achievement and traditional self-reported conscientiousness.

School achievement at Time 2 was entered as the dependent variable. School achievement at Time 1 was entered as predictor variable in Step 1 of the analysis, self-reported conscientiousness was entered in Step 2, and the behavioral test of conscientiousness was entered in Step 3. The analysis revealed that prior achievement and self-reported conscientiousness predicted school achievement (see Table 2). A main effect for the behavioral measure of conscientiousness was also found, indicating that even beyond the prediction of self-reported conscientiousness, behaviorally observed conscientiousness predicted increased school performance across the secondary school transition.

Table 2. Hierarchical Regression Analysis Summary for School Achievement and Conscientiousness (Time 1) Predicting School Achievement (Time 2) Across the Transition to Secondary School

		School achievement (Time 2)			
	Predictors (Time 1)	ΔR^2	*B*	*SE*	β
Step 1	School achievement	.08**	0.20	0.04	.28**
Step 2	Self-reported conscientiousness	.03**	0.19	0.07	.16**
Step 3	Behavioral test of conscientiousness: discarding distracting video clips	.02*	0.07	0.03	.13*

Note. * $p < .05$; ** $p < .001$

Agreeableness and social adjustment

Hierarchical regression analyses were conducted to examine whether a behavioral test of agreeableness (i.e., helping in response to e-mails) would improve the prediction of social acceptance by peers after the secondary school transition above and beyond prior levels of social acceptance and traditional self-reported agreeableness. Social acceptance at Time 2 was entered as the dependent variable. Social acceptance at Time 1 was entered as predictor variable in Step 1 of the analysis, self-reported agreeableness was entered in Step 2, and the behavioral test of agreeableness was entered in Step 3. The analysis revealed a main effect for social acceptance (see Table 3). Importantly, behaviorally observed but not self-reported agreeableness predicted increased social acceptance after the secondary school transition, again emphasizing the added value of behavioral personality tests at predicting children's cross-transition adjustment.

Table 3. Hierarchical Regression Analysis Summary for Social Acceptance and Agreeableness (Time 1) Predicting Social Acceptance Across the Transition to Secondary School.

		Social acceptance (Time 2)			
	Predictors (Time 1)	ΔR^2	*B*	*SE*	β
Step 1	Social acceptance	.18**	0.44	0.06	.42**
Step 2	Self-reported agreeableness	.00	0.00	0.05	.00
Step 3	Behavioral test of agreeableness: helping in response to e-mails	.01*	0.13	0.06	.11*

Note. * $p < .05$; ** $p < .001$

Discussion

Can brief behavioral personality tests predict children's academic and social adjustment across the transition to secondary school? Our study shows they can. A newly developed task designed to measure conscientiousness "in action" predicted change in children's school achievement across the transition to secondary school, above and beyond self-reported conscientiousness. Similarly, a task designed to measure agreeableness in action predicted change in social acceptance across the transition to secondary school, whereas self-reported agreeableness did not. Thus, behavioral personality tests index unique aspects of children's behavioral dispositions

that are not fully captured by traditional self-report personality questionnaires, and that have predictive power over time.

How is it possible that a snap-shot of children's tendency to behave in conscientious ways—observing whether children discard distracting video clips during an assignment or not—can predict a real-life, important outcome such as report card grades a year later? First, we carefully designed the behavioral personality test to measure behavior theorized to be at the core of the personality trait of conscientiousness: children's tenacity of goal pursuit under distracting circumstances (Denissen & Penke, 2008). The same goes for the behavioral test of agreeableness—observing whether children help other children at the cost of time spent on other valued activities—which reflects a theoretical conceptualization of agreeableness as a tendency to display altruistic behavior when limited resources are available (Denissen & Penke, 2008).

Second, prior behavior often is a good predictor of future behavior. How children behave in a behavioral personality test will likely be similar to how they behave in similar real-life situations in the future. We sought to create task situations that are similar to the kind of academic and social situations that children encounter in their lives at school on a regular basis. The effects of children's behavior in these task situations may accumulate over time, and eventually contribute to change in school achievement or social acceptance.

It should be noted that the effects of behavioral tests on adjustment were modest in size. Still, they were similar to (in the case of conscientiousness) or even larger (in the case of agreeableness) than the effects of self-reported personality. Notably, self-reported agreeableness did not significantly predict social acceptance across the secondary school transition. One prior study also found limited support for a longitudinal link between self-reported agreeableness and social acceptance (Ciarrochi & Heaven, 2009). However, consistent with prior research (Jensen-Campbell, Adams, et al., 2002; Scholte et al., 1997; van der Linden et al., 2010), we did find a cross-sectional association between self-reported agreeableness and social acceptance.

Although not the focus of our study, it is interesting to note that, consistent with prior research (e.g., Hair & Graziano, 2003; Laidra et al., 2007; Poropat, 2009), there was a positive association between children's level of agreeableness and their school

achievement. As suggested by others, it is possible that agreeable children may be more inclined to cooperate with their teachers, which subsequently facilitates learning and achievement (Poropat, 2009). Indeed, one study showed that teacher-rated positive classroom behavior mediated the link between agreeableness in middle school and academic adjustment in high school (Hair & Graziano, 2003).

The behavioral tests measured different aspects of personality than the self-report questionnaires. There was no correlation between the self-report and behavioral measures of conscientiousness; the same was true for agreeableness. This is not unusual. Broad constructs such as the Big Five personality traits tend to be related more consistently to measures of actual behavior when such behavior is aggregated over a range of situations (Back, Schmukle, & Egloff, 2009; Epstein, 1983). Thus, higher convergence between self-report and behavioral measures can be expected when using multiple behavioral tests for each personality trait. Notably, there was a correlation between the behavioral test of agreeableness and self-reported conscientiousness. Specific characteristics of the task may account for this association: for example, the thoroughness of children's responses when helping the other child (i.e., an indicator of conscientiousness) resulted in higher helping scores.

As often found when using self-report measures of personality (e.g., Hair & Graziano, 2003; Heaven & Ciarrochi, 2012), there was a moderate, positive correlation between agreeableness and conscientiousness (r = .38). This correlation can be explained in terms of a shared temperamental origin (i.e., effortful control; Ahadi & Rothbart, 1994; Jensen-Campbell, Rosselli, et al., 2002). It may also in part reflect people's tendency to respond in socially desirable ways, as both conscientiousness and agreeableness are desirable and valued characteristics (Wood & Wortman, 2012). In contrast, for the behavioral personality tests—impervious to social desirable responding—there was a modest, negative correlation between conscientiousness and agreeableness. Both tasks required participants to choose between looking at a pop-up screen and discarding it. Whereas discarding pop-up screens in the first task indicates high conscientiousness (i.e., because participants continue working on the original assignment), in the second task it indicates low agreeableness (i.e., because participants decide not to help the other child). Thus, characteristics specific to the measure that is used may be partially responsible for the opposite correlations between

conscientiousness and agreeableness for the self-report questionnaire and the behavioral tests.

Our study contributes to the literature in several ways. First, we designed new behavioral personality tests as an alternative, complementary means to assess personality. Unlike self-report measures, these new measures are not biased by participants' limited self-knowledge or impression management predispositions. Both self-reported and observed personality contributed in unique ways to children's adjustment.

Second, we studied the effects of children's personality in response to a major life event—the transition from primary to secondary school. Personality differences are theorized to have their largest impact during such transitions to new environments where new routines have to yet to be established (Caspi & Moffitt, 1993), yet our study is among the first to actually examine the impact of personality during a transition.

Third, this study provided a particularly stringent test of the effects of personality on adjustment. The adjustment variables were indexed by other sources of information (i.e., school records and peer ratings) than the personality variables (i.e., self-report and behavioral tests), and we controlled for prior levels of social and academic adjustment in our analyses.

A number of limitations should also be noted. First, it is clear that there are multiple factors that determine academic achievement (e.g., intelligence, feelings of academic competence, teacher-student relationship) and social acceptance (e.g., physical attractiveness, feelings of social competence, dominance) that were not measured in the present study. This may have contributed to our relatively modest effect sizes (Ahadi & Diener, 1989; Noftle & Robins, 2007).

Second, we chose to focus on developing behavioral tests for conscientiousness and agreeableness, because these personality traits have been linked most consistently to children's academic and social adjustment, respectively (e.g., Poropat, 2009; Jensen-Campbell, Adams, et al., 2002). Of course, this is not to say that the other Big Five traits are of no importance to academic and social adjustment. Indeed, some studies have found associations between openness to experience and academic adjustment (e.g., Hair & Graziano, 2003; Laidra et al., 2007). Furthermore, extraversion has been linked to

social adjustment (e.g., Scholte et al., 1997; van der Linden et al., 2010). Future research should aim at developing brief behavioral personality tests for other Big Five traits.

Conclusion

The transition from primary to secondary school is a major life change for children, requiring them to adapt to a new environment. Children's academic achievement and social acceptance after the secondary school transition can be predicted by observing children briefly in standardized situations when they are still in primary school. To be sure, our research was designed as an initial test of the potential effectiveness of behavioral tests of agreeableness and conscientiousness, not to formally test the merit of these tests as a ready-to-use diagnostic tool. Eventually, however, tests such as the ones we developed might be used to identify vulnerable children who may need extra guidance when transitioning into secondary school.

Chapter 3

Prosocial Tendencies Predict Friendship Quality, but not for Popular Children

Astrid M. G. Poorthuis, Sander Thomaes, Jaap J. A. Denissen,
Marcel A. G. van Aken, & Bram Orobio de Castro

Journal of Experimental Child Psychology (2012), 112, 378-388.

Abstract

Is prosocial behavior a prerequisite for having good-quality friendships? This study (*N* = 477, mean age = 12.2 years) examined whether the link between children's prosocial tendencies and their perceived friendship quality was dependent upon children's level of popularity in the peer group. Children's prosocial tendencies were assessed both as observed behavior in a standardized setting and as a self-reported predisposition to act in prosocial ways. Across measures, the results showed that prosocial tendencies are associated with higher perceived friendship quality among nonpopular children (i.e., children holding average or lower levels of popularity), but not among popular children. Thus, even if they lack prosocial qualities, popular children are still able to hold good-quality friendships. Popular children may have other compensating characteristics, such as popularity by association, that make them attractive for peers to be friends with.

Introduction

Prosocial behavior—behavior intended to benefit other people—plays an important role in our social lives (Eisenberg, Fabes, & Spinrad, 2006). If humans were unable to show prosocial behaviors such as helping, sharing, and cooperating, it would be difficult to live in social groups, as humans do from the minute they are born. Nevertheless, children show pronounced individual differences in their tendencies to act in prosocial ways (e.g., Eisenberg et al., 1999; 2006). These individual differences are likely to be consequential for the quality of their interpersonal relationships and their peer relationships in particular. Because prosocial behaviors benefit other people, it seems plausible to assume that these behaviors will typically be valued and rewarded by others (Asher & McDonald, 2009). Indeed, numerous studies have shown that prosocial children are better liked and accepted by their peers than less prosocial children (e.g., Asher & McDonald, 2009; Coie, Dodge, & Kupersmidt, 1990; Newcomb, Bukowski, & Pattee, 1993; Rubin, Bukowski, & Parker, 2006).

Perhaps surprisingly, then, relatively little is known about how children's prosocial tendencies relate to the quality of the *friendships* they hold. Friendships are a quintessential part of children's social lives, satisfying basic needs of companionship,

intimacy, and affection (Buhrmester, 1996; Furman & Collins, 2009). Friendships are dyadic, mutually rewarding bonds between children. They are defined by reciprocity: Peer bonds can be called friendships when both children gain benefits, or "social provisions" (e.g., intimacy, affection), from them (Bukowski, Newcomb, & Hartup, 1996). Such reciprocity is what distinguishes friendships from other peer bonds. The degree to which children obtain social provisions from a particular friendship is reflected in how they perceive the quality of that friendship (Furman & Buhrmester, 1992).

How may children's prosocial tendencies be related to the quality of their friendships? According to the classical equity theory (Adams, 1965; Walster, Berscheid, & Walster, 1976), people seek to maintain equity, or a just balance in provisions, in their relationships. In an equitable relationship, both partners receive commensurate benefits from the relationship relative to the contributions they invest. Because prosocial children have much to offer to their friend in terms of social provisions (e.g., instrumental aid, emotional support), they are likely to obtain many social provisions in return, and this should result in high levels of perceived friendship quality. Supporting that view, research shows that prosocial children's friendships are of higher quality than those of less prosocial children (Cillessen, Jiang, West, & Laszkowski, 2005; McDonald, Wang, Menzer, Rubin, & Booth-LaForce, 2011; Markiewicz, Doyle, & Brendgen, 2001).

Yet there is more for children to value in their friendships than their friend's prosocial behavior alone. Children also attach great importance to being popular, especially during late childhood and adolescence (LaFontana & Cillessen, 2010), and so they typically prefer to associate with children high in popularity (with popularity defined as peer status based on prestige and visibility in the peer group, also referred to as *perceived* popularity; Cillessen, 2011). Popular children have many characteristics that make them attractive to be friends with. They tend to have fun and exciting social lives, they engage in many cross-gender interactions, they are socially powerful and visible, and they typically get much attention from teachers and classmates (Adler & Adler, 1998; Cillessen, 2011; Closson, 2009; Hawley, Little, & Card, 2007; Vaillancourt & Hymel, 2006). Because peer status is contagious and mere association with a popular peer raises a child's status (Dijkstra, Cillessen, Lindenberg & Veenstra, 2010; Marks, Cillessen, & Crick, 2011; cf. "basking in reflected glory effect", Cialdini et al., 1976), it is not surprising that many children want to be friends with popular peers (Eder, 1985; Hawley

et al., 2007). In fact, it may have so many benefits for children to befriend popular peers that they will require relatively little in return from such friendships in terms of reciprocated prosocial behavior. Thus, it is possible that popular children are able to attain good-quality friendships even when they show relatively low levels of prosocial behavior. Nonpopular children, by contrast, have less to offer in terms of "popularity by association", and so it may be more important for them to show prosocial behavior to attain good-quality friendship—"you scratch my back and I'll scratch yours."

The few studies that were conducted in this area of research found positive correlations between popularity and friendship quality both in children and in adolescents (Litwack, Wargo Aikins, & Cillessen, 2010; Rose, Swenson, & Carlson, 2004). To our knowledge, no previous work has examined whether children's prosocial tendencies differentially impact their friendship quality, depending on whether they are popular or not. However, there is some preliminary evidence that the friendship quality of popular versus less popular children is dependent upon different behavioral dispositions. One study found that children's disposition to engage in relationally aggressive behaviors (e.g., gossiping, excluding others) may have a negative impact on the quality of their friendships, but only so for nonpopular children, not for popular children (Rose et al., 2004). Similarly, we propose that the impact of children's prosocial behavior on their friendship quality will depend on their level of popularity.

Indirect evidence for the notion that popular children should be able to attain good-quality friendships, even when showing relatively low levels of prosocial behavior, comes from Hawley's research on adolescents' resource control strategies. Popularity is positively related to the use of resource control strategies, which are strategies to get what you want, either in a nice ("prosocial") way or a not so nice ("coercive") way. Hawley et al. (2007) found that both prosocial and bistrategic controllers experience high friendship quality compared with typical controllers. Thus, to the extent that bistrategic and prosocial controllers are usually popular in their peer group, Hawley's work suggests that for popular children it is not necessary to be prosocial all of the time to hold high-quality friendships.

The current study

The aim of the current study was to examine to what extent the presumed link between children's prosocial tendencies and their perceived best friendship quality is moderated by individual differences in popularity. We predicted that prosocial tendencies would be less strongly related to friendship quality for popular children because these children have multiple other resources and qualities that make them attractive to be friends with.

We measured prosocial tendencies using procedures from two fairly independent research traditions. Research in experimental social psychology has relied mainly on behavioral measures of prosocial behavior, typically obtained by observing helping behavior in controlled settings (Penner, Dovidio, Piliavin, & Schroeder, 2005). Research in personality psychology has relied mainly on self-report measures of one's generalized tendency to act, feel and think in prosocial ways, indexed by the Big Five trait of agreeableness (Penner et al., 2005). We used a controlled laboratory procedure to measure actual prosocial behavior. In a computerized task, participants ostensibly received e-mails from younger children who asked them for help, and the prosocial quality of participants' responses was coded as a measure of prosocial behavior. We also administered a standard self-report measure of agreeableness.

Popularity and the related construct of likeability (i.e., how much children are liked by their classmates) were measured using peer ratings. The inclusion of likeability allowed us to assess the specificity of the predicted effects for popularity. Friendship quality was indexed by children's perceptions of the social provisions they obtain from their friendship (Furman & Buhrmester, 1985). Because these provisions (e.g., companionship, affection, enhancement of worth) are subjective, we measured them using self-reports (Berndt & McCandless, 2009; Furman, 1996; Ladd, 2009).

Method

Participants

Participants were 477 sixth graders (47% boys and 53% girls) whose age ranged from 10 to 14 years (M = 12.2, SD = 0.5). They were recruited from 22 primary schools serving middle-class communities in the Netherlands. Most participants were of Dutch

origin (81%); others were mainly of mixed cultural/ethnical origin. Informed parental consent was obtained for all participants (consent rates ranged between schools from 50% to 100%; with a mean consent rate of 80%). Among the sample, 10 children completed only the questionnaires because they were absent on the day the computer task was administered.

Procedure

Participants were tested in a quiet room at their school by female research assistants. They were told that they were participating in a study on children's information processing during computer tasks. Task instructions were provided both on the screen and through headphones. First, participants logged onto the study website where they allegedly interacted with other participants from different schools and different ages. In reality, participants worked on offline computers. Participants were informed that the assignments were difficult to complete for the youngest children participating in the study and, therefore, that these youngest children were allowed to ask other users for help via e-mail. Participants were told that they could choose either to help these other children or not.

To maximize situational generalizability, our procedure assessed prosocial behavior in three different contexts pertaining to different costs for helping: helping at the cost of one's own performance on the assignment, helping at no cost, and helping at the cost of one's involvement in a fun computer game. The assignment consisted of solving puzzles within a limited amount of time. The puzzles required participants to move pieces of different shapes and sizes to the right place in a silhouette (e.g., of a rabbit or a bird). They were relatively easy to solve for children of this age.

To measure helping at a cost to performance, participants received four (bogus) e-mails from younger participants (e.g., "I don't know how to solve the first puzzle. How should I make the ears of the rabbit?") while they worked on the assignment. The e-mails appeared as a large pop-up screen and contained two buttons: "CLOSE SCREEN" and "SEND MESSAGE". Thus, participants could either click to close the screen and continue working on the puzzle (coded as "no" helping behavior) or click to write a message and send it (the content of the message was coded as "no", "some", or "much"

helping behavior; see "Measures" section below). It was ascertained that children received only questions concerning puzzles they already solved themselves.

Next, to assess helping at no cost to performance, when participants had completed the puzzles they received the following instruction: "You finished this task. Other users are still working. Please wait…. If you wish, you may help other children by responding to their e-mails." While waiting, participants received four e-mails with questions about the puzzles.

Finally, to assess helping at the cost of involvement in a fun game, participants were told that they could play a computer game during a break in the study and that if they wished they could help other children who were still working on the puzzles by responding to their e-mails. While playing a computer game, they obtained four e-mails with questions concerning the puzzles.

Next, participants completed self-report measures of perceived friendship quality and agreeableness as well as peer rating measures of popular status and likeability in their classes. Finally, participants were fully debriefed. They were informed that the e-mails they received were fictitious. They were also informed about the study purposes and the need for deception.

Measures

Helping behavior. The quality of participants' helping behavior during the tasks was rated by the first author and a research assistant for each of the responses to the 12 e-mails. For each response, a score of 0 was given when participants provided no help at all, for example, when they did not write anything or when they provided no suggestion to solve the puzzle (e.g., "Sorry, I am busy right now"). A score of 1 was given when participants provided "some help", for example, when they provided encouragement (e.g., "Just try all the pieces, then you will succeed") or general instructions that would not directly help the other child to solve the puzzle (e.g., "Try to look carefully at the shape of the pieces"). A score of 2 was given when participants provided "much help", for example, when they indicated where a particular puzzle piece should be placed (e.g., "The big triangle is the bird's wing") or provided other help that would have directly allowed the other child to solve the puzzle. Interrater reliability (kappa) for each of the 12 responses ranged from .82 to 1.00 (M = .92).

The measures of helping behavior in the three situational contexts were significantly correlated (correlations ranged from r = .43 to r = .58, all ps < .01) and showed very similar associations with the other study variables. Therefore, an aggregate score for helping behavior was computed from responses to all e-mails (Cronbach's alpha = .84), with higher scores indicating more helping behavior.

The amount of helping behavior did differ between situational contexts. A one-way repeated measures analysis of variance (ANOVA) showed that the amounts of children's helping behavior in the performance context (M = 0.69; SD = 0.58), the no-cost context (M = 1.21; SD = 0.48) and the entertainment context (M = 0.79; SD = 0.56) differed significantly, $F(1.88, 877.1) = 225.90$, $p < .001$. Contrasts revealed that helping behavior in the no-cost context was significantly higher than in the entertainment context, $F(1, 466) = 10.87$, $p < .01$. In turn, helping in the entertainment context was significantly higher than in the performance context, $F(1, 466) = 356.30$, $p < .001$.

Agreeableness. The Big Five trait of agreeableness was measured using the Big Five Inventory (John & Srivastava, 1999; translated into Dutch by Denissen, Geenen, van Aken, Gosling, & Potter, 2008). The agreeableness subscale consists of nine items (sample item: "I see myself as someone who is helpful and unselfish with others"). Participants rated their agreement with the statements on a 5-point Likert scale (1 = *disagree strongly*; 5 = *agree strongly*). Negative items were recoded, and a mean agreeableness score was computed (Cronbach's alpha = .63), with higher scores indicating higher levels of agreeableness.

Popularity. Popularity was measured using a peer rating procedure. Participants received a class roster and indicated the popularity of each of their classmates. Ratings were provided on a 5-point scale (1 = *not at all popular*, 5 = *very popular*). Based on these ratings, a mean popularity score was computed for each participant (Hopmeyer Gorman, Kim, & Schimmelbusch, 2002), with higher scores indicating higher levels of popularity. One advantage of using ratings rather than nominations to index popularity is that all children are explicitly evaluated by their peers. In nominations, children who are not named are unranked (Cillessen & Marks, 2011). Popularity ratings are highly stable over time and positively linked to popularity nominations (Cillessen & Marks, 2011).

Likeability. Likeability was measured using the same peer rating procedure. However, this time, participants indicated how much they liked each of their classmates (1 = *don't like at all,* 5 = *like a lot*).

Perceived friendship quality. Perceived friendship quality was measured using the short version of the Network of Relationship Inventory (Furman & Buhrmester, 1985; translated into Dutch by De Goede, Branje, & Meeus, 2009). This scale consists of 12 items and measures children's perceptions of the social provisions they obtain from their best friend including companionship, instrumental aid, intimacy, enhancement of worth, reliable alliance and affection (sample item: "How much does your best friend really care about you?"). Items are rated on a 5-point scale (1 = *little or none*, 5 = *the most*). A mean score for perceived friendship quality was computed (Cronbach's alpha = .90), with higher scores indicating higher levels of perceived friendship quality.

Results

Preliminary Analyses

Table 1 shows the descriptive statistics and correlations between the study variables. Both helping behavior and agreeableness were significantly related to perceived friendship quality (*p*s < .01), but not to popularity (*p*s > .18). Helping behavior and agreeableness were not significantly correlated, as is often true for self-reported and behavioral indexes of conceptually related constructs.

Table 1. Means, Standard Deviations and Intercorrelations for the Study Variables

	M	*SD*	1	2	3	4
1. Helping behavior	0.91	0.42	_			
2. Agreeableness	3.84	0.50	.07	_		
3. Perceived Friendship Quality	3.39	0.68	.14*	.27*	_	
4. Popularity	3.17	0.80	.05	.06	.27*	_
5. Likeability	3.39	0.51	.06	.19*	.21*	.76*

Note. * $p < .01$

Girls reported higher levels of friendship quality than boys, $t(475) = -3.96$ $p < .01$, $d = 0.35$. Girls also showed more helping behavior and reported higher levels of agreeableness than boys, $t(465) = -4.73$, $p < .01$, $d = 0.44$ and $t(475) = -4.61$, $p < .01$, $d =$

0.42, respectively. No gender differences were found for popularity and likeability, $t(475) = 0.25$, $p > .80$ and $t(475) = -1.93$, $p > .06$. There were no interactions involving gender, and controlling for gender in the analyses did not affect the pattern of results. Therefore, gender was dropped from further analyses.

Because of potential dependency in the data (i.e., it is possible that children within classrooms are more similar to each other than between classrooms), it was assessed whether multilevel analyses were necessary. The intraclass correlation (ICC) showed that the proportion of variance in friendship quality that was due to classroom differences was negligible (i.e., ICC for friendship quality = 1.6%). Furthermore, deviance tests comparing models with fixed slopes (in which the strength of the predictor is the same for all classrooms) and models with random slopes (in which strength of the predictor is allowed to vary between classrooms) for each of the predictors revealed no significant random slopes (all *p*s > .50), making ordinary regression analysis a well-suited analytic approach.

Primary Analyses

Hierarchical regression analysis was conducted to examine whether the presumed link between helping behavior and perceived friendship quality was moderated by popularity. Perceived friendship quality was entered as the dependent variable. Helping behavior and popularity were entered as predictor variables in Step 1 of the analysis, and the Helping x Popularity interaction was entered in Step 2. Both predictors were centered to reduce multicollinearity (Aiken & West, 1991). The analysis revealed main effects for both helping behavior and popularity. Specifically, higher levels of helping and popularity were related to higher perceived friendship quality, $\beta = .13$, $t(464) = 2.98$, $p < .01$, and $\beta = .28$, $t(464) = 6.24$, $p < .01$, respectively. Importantly, these main effects were qualified by the predicted significant interaction between helping behavior and popularity, $\beta = -.11$, $t(463) = -2.49$, $p < .05$ (see Figure 1). Post hoc probing (Aiken & West, 1991) showed that for nonpopular children (i.e., 1 *SD* below the mean), helping behavior predicted perceived friendship quality, $\beta = .24$, $t(463) = 3.94$, $p < .01$. By contrast, for popular children (i.e., 1 *SD* above the mean), helping behavior did not predict perceived friendship quality, $\beta = .02$, $t(463) = 0.41$, $p > .68$.

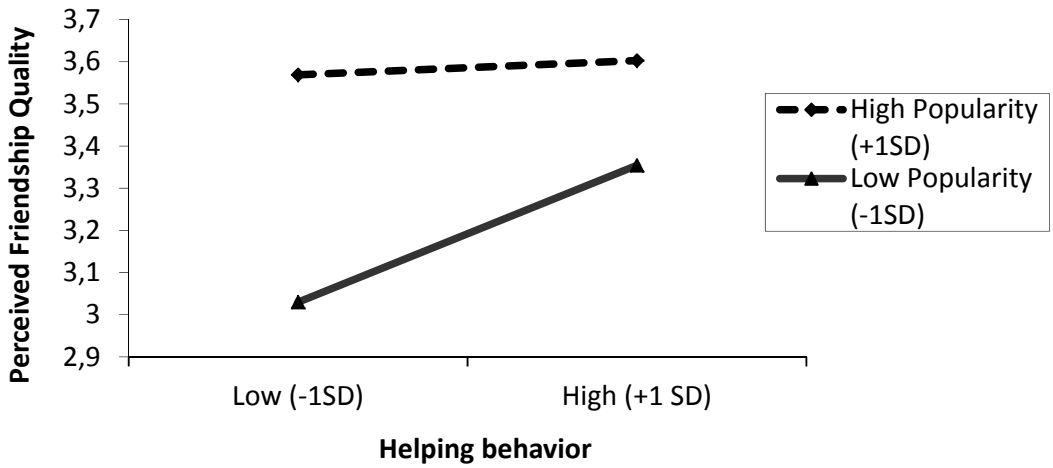

Figure 1. Popularity moderates the relation between helping behavior and perceived friendship quality. High values of popularity and helping behavior are 1 *SD* above the mean; low values of popularity and helping behavior are 1 *SD* below the mean.

To obtain more detailed insight into the moderating impact of popularity, we conducted additional post hoc analyses using the "region of significance" method (Preacher, Curran, & Bauer, 2006). This method computes at what point along the distribution of a moderating variable (in this case popularity) the slope becomes significantly different from zero. Results showed that the slope was significant (alpha = 0.05) at a popularity level lower than 0.30—about $^{1}/_{3}$ standard deviation above the mean value of the centered popularity distribution. Thus, for children whose popularity levels varied from very low to somewhat above average, helping behavior predicted perceived friendship quality. No such effect was found for children scoring more than $^{1}/_{3}$ standard deviation above the mean on popularity.

Next, to test whether popularity would also moderate the relation between agreeableness and perceived friendship quality, a second hierarchical regression analysis was conducted. This analysis was identical to the previously reported analysis, but helping behavior was replaced by self-reported agreeableness in Steps 1 and 2 of the analysis. A similar pattern of findings emerged. There were main effects for both agreeableness and popularity, such that higher agreeableness and higher popularity

were related to higher perceived friendship quality, β = .26, *t*(474) = 6.12, *p* < .01, and β = .25, *t*(474) = 5.96, *p* < .01, respectively.

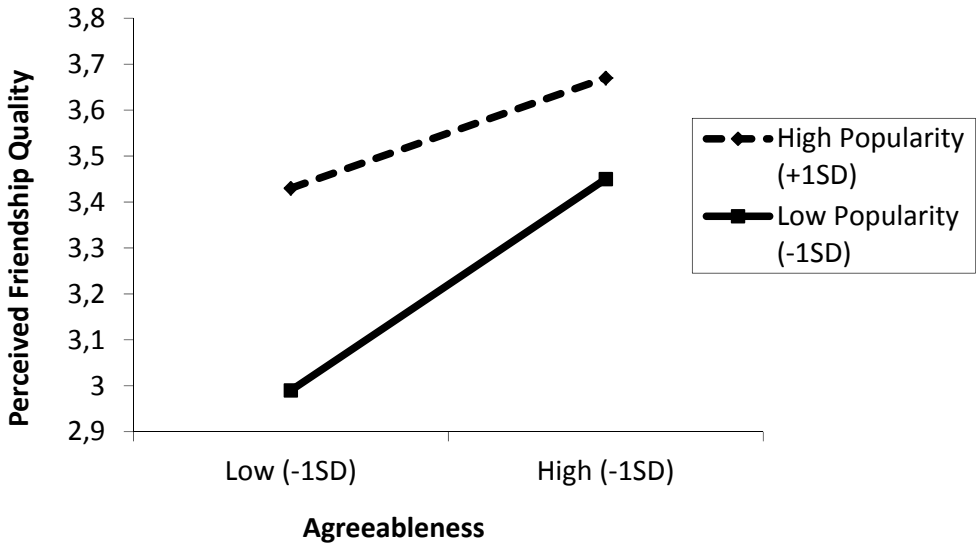

Figure 2. Popularity moderates the relation between agreeableness and perceived friendship quality. High values of popularity and agreeableness are 1 *SD* above the mean; low values of popularity and agreeableness are 1 *SD* below the mean.

These main effects were qualified by the predicted significant interaction between agreeableness and popularity, β = -.09, *t*(473) = -2.04 , *p* < .05 (see Figure 2). Post hoc probing showed that for nonpopular children (i.e., 1 *SD* below the mean), the relation between agreeableness and perceived friendship quality was significantly stronger than for popular children (i.e., 1 *SD* above the mean), β = .34, *t*(473) = 5.99, *p* < .01, and β = .17, *t*(473) = 2.92, *p* < .01, respectively. Post hoc analyses using the region of significance method showed that the slope was significant (alpha = 0.05) at a popularity level lower than 1.11—approximately $1^1/_3$ standard deviation above the mean value of the centered popularity distribution. Thus, for children whose popularity levels varied from very low to well above average, agreeableness predicted perceived friendship quality. No such effect was found for very popular children, who scored higher than $1^1/_3$ standard deviation above the mean on popularity.

As is common among children this age, popularity was strongly correlated with likeability (*r* = .76). To assess the specificity of the effects we found for popularity, we

repeated the regression analyses, but this time we controlled for likeability (by entering this variable first in the regression model). Although there was a main effect for likeability, $\beta = .23$, $t(465) = 5.02$, $p < .01$, this effect disappeared when popularity was added to the model. All other variables remained significant and similar in strength compared to the models without likeability. Thus, the findings of the current study pertain specifically to popularity.

Discussion

Do children hold higher quality friendships to the extent that they are more prosocial? It depends on their level of popularity. Specifically, the current study found that children's prosocial tendencies (assessed either as observed behavior in a controlled setting or as a self-reported predisposition to act in prosocial ways) were associated with higher perceived friendship quality among children holding lower and average levels of popularity. For children holding higher levels of popularity, however, friendship quality was relatively independent of their prosocial tendencies. Regardless of their prosocial tendencies, popular children tended to have relatively high levels of friendship quality. Importantly, these results held even when controlling for likeability, highlighting the specificity of these findings for popular status.

Consistent with prior research (Cillessen et al., 2005; Markiewicz et al., 2001; McDonald et al., 2011), we found that for most children, the tendency to act in prosocial ways toward others is associated with higher friendship quality. People strive toward a just balance of the social provisions they give and receive within their friendships (Adams, 1965; Mendelson & Kay, 2003). Prosocial children have much to offer to their friend in terms of social provisions (e.g., the provision of emotional support or instrumental aid) and, thus, are likely to obtain many social provisions in return, resulting in high friendship quality.

Why is it, then, that popular children's prosocial tendencies toward others are not associated with higher quality friendships? We propose that popular children have other compensating characteristics that make them attractive for peers to be friends with. Popular children are powerful, influential, and visible (e.g., Adler & Adler, 1998; Cillessen, 2011), and they can help their peers to gain popularity (Dijkstra et al. 2010;

Marks et al., 2011), which is particularly desirable to young adolescents (LaFontana & Cillessen, 2010). Thus, popular children's friends may well be motivated to maintain their friendships regardless of whether their popular friends behave prosocially. Consistent with such an explanation, previous research has shown that popular children (unlike their less popular counterparts) can afford to be relationally aggressive without experiencing negative consequences for their level of friendship quality (Rose et al., 2004). Popular children, so it seems, can rely on other qualities that make them attractive as friends.

In the light of these findings, the well-known phenomenon that lower status children are often inclined to imitate the behavior of their popular peers (Cohen & Prinstein, 2006; Prinstein, Brechwald, & Cohen, 2011) may be particularly problematic. Although for some children such imitation could lead to a rise in status, for most children this will not be the case because high status is reserved for only a few children in the peer group (Dijkstra et al., 2010). To the extent that nonpopular children will imitate the more coercive and less prosocial behaviors of their popular peers, this may come at the expense of the quality of their friendships.

It should be noted that popularity was not significantly related to prosocial tendencies, in contrast to previous studies (e.g., Dijkstra, Lindenberg, Verhulst, Ormel, & Veenstra, 2009; LaFontana & Cillessen, 2002; Sandstrom & Cillessen, 2006). One possible explanation is that, unlike these previous studies, our study used different sources of information to index popularity (i.e., peer ratings) and prosocial tendencies (behavior in a standardized task and self-reports). Thus, our findings were not influenced by shared method variance.

There was no correlation between the behavioral measure of helping and the self-report measure of agreeableness. This is not unusual. Broad constructs such as the Big Five personality trait of agreeableness tend to be related to measures of actual behaviors only when these behaviors are aggregated over a range of situations (Epstein, 1983). More specific behavioral measures, such as ours, typically represent only part of the agreeableness construct.

Our study has several strengths. First, we extended the literature by examining children's friendship quality in the context of their social roles in the larger peer group (i.e., popularity). Although the importance of the joint study of friendship and group

processes is generally acknowledged, empirical studies doing so are rare to date (Rubin et al., 2006).

Second, we diversified our measurement of prosocial tendencies by including both a behavioral measure of helping and a self-report questionnaire measuring agreeableness, a general tendency to act in prosocial ways. The simultaneous inclusion of both experimental social psychological and personality measures can be seen as an optimal way to address strengths inherent in each tradition. The strength of our behavioral measure is that it was obtained in a tightly controlled research setting, and is relatively impervious to biases that may influence informant measures of prosocial behavior (e.g., social desirability, memory lapses). The strength of our self-report measure is that it is well validated and reflects children's prosocial predispositions that generalize across situations and behaviors. Our findings generalized across measures, strengthening the robustness of the study findings.

Third, our findings cannot be explained by shared method variance. All study variables were indexed by different sources of information—observations for prosocial behavior, peer ratings for popularity, and self-reports for perceived friendship quality.

A number of limitations should be noted. First, friendship benefits are subjective and often differ for the two partners in a friendship (Berndt & McCandless, 2009; Furman, 1996; Furman & Buhrmester, 1992). We chose to focus exclusively on target children's perceptions of their friendship quality because we wanted to link those to their own prosocial tendencies and popularity. Still, future research could examine whether the joint effects of children's prosocial tendencies and popularity also translate into the benefits that *friends* perceive as obtaining from the friendship.

A related issue is that we focused on target children's popularity and did not assess the popularity status of their friends. It is possible that the moderating effect of popularity may be more pronounced in friendships with clear status asymmetry because in such friendships the lower status friends may benefit more from associating with their higher status friends than in friendships between children who are similar in status. Further research is needed to test this hypothesis.

Second, children's prosocial tendencies were measured as they occur toward peers in general, not as they occur specifically toward their best friend. This said, research supports the view that children who hold prosocial predispositions also tend to

behave prosocially within their friendships (Cillessen et al., 2005). For example, peer-nominated prosocial behavior (i.e., reported by the class) tends to be positively related to how much help and guidance children provide in their friendships (i.e., reported by friends; McDonald et al., 2011). Still, future research on this topic may benefit from including relational-specific measures of prosocial behavior. For example, the helping task in the current study could be adapted to measure children's helping behavior toward their best friends.

Third, we chose to focus on the age period of early adolescence, a time when children attach relatively great importance to being popular, and to associate with popular peers (LaFontana & Cillessen, 2010). Our developmental focus limits the ability to make generalizations to children of other ages. We cannot exclude the possibility that during developmental periods when popularity is less prioritized, prosocial tendencies do predict friendship quality regardless of children's popularity. Future research should examine the extent to which the moderating role of popularity holds for other age groups.

Conclusion

Not all friendships are created equal. Although it is intuitive that children will hold closer and more affectionate peer relationships to the extent they are more prosocial, our findings indicate there are exceptions. Popular children enjoy high-quality friendships regardless of whether they behave kindly toward others. In concert with findings from previous work (Cillessen et al., 2005; Litwack et al., 2010; Rose et al., 2004), it seems that for young adolescents there are at least two ways to obtain high-quality friendships: having high peer status or behaving in prosocial ways. Because high status is reserved for only few children (Dijkstra et al., 2010), and is resistant to change (Hymel, Wagner & Butler, 1990), it is hard to attain for most children. Less popular children who hold unsatisfying friendships may benefit from learning to share, cooperate and be more helpful toward other children so that they too can attain reciprocal, supportive and satisfying friendships.

Chapter 4

Dashed hopes, Dashed Selves?
A Sociometer Perspective on Self-Esteem Change
Across the Transition to Secondary School

Astrid M.G. Poorthuis, Sander Thomaes, Marcel A.G. van Aken,
Jaap J.A. Denissen, & Bram Orobio de Castro

Manuscript submitted for publication

Abstract

The transition from primary to secondary school challenges children's psychological well-being. A cross-transitional longitudinal study (*N* = 306; mean age = 12.2 years) examined why some children's self-esteem decreases across the transition whereas other children's self-esteem does not. Children's expected social acceptance in secondary school was measured before the transition; their actually experienced social acceptance was measured after the transition. Self-esteem and Big Five personality traits were measured both pre- and post-transition. Self-esteem changed as a function of the discrepancy between children's expected and actually experienced social acceptance. Furthermore, neuroticism magnified self-esteem decreases when children's "hopes were dashed"—when they experienced disappointing levels of social acceptance. These findings provide the first longitudinal support for sociometer theory across the critical transition to secondary school.

Introduction

Each September, after summer vacation, millions of children around the world move their shaky feet over the doorstep of their new secondary school—a step into an entirely new world. Few events are as challenging in children's social lives as the transition from primary to secondary school. Right at the time that children tend to be highly concerned about how they are viewed by others, they enter a new peer group and need to re-establish their social standing and worth. One particularly important challenge for transitioning children is to maintain self-esteem—to maintain the value that they place on themselves as a person. There are marked individual differences in how the secondary school transition impacts children's self-esteem. Whereas subsets of children experience marked self-esteem decreases, others manage to uphold or even enhance their previously held levels of self-esteem across the transition (Grolnick, Kurowski, Dunlap, & Hevey, 2000; Lord, Eccles, & McCarthy, 1994). The goal of the present longitudinal study is to understand individual differences in self-esteem change following the secondary school transition.

Why Do School Transitions Challenge Children's Self-Esteem?

Multiple changes occur when children transition into secondary school, yet changes in peer relationships are especially salient. Interactions with familiar peers become less frequent, former peer cliques disappear, and former friendships often dissolve (e.g., Berndt, Hawkins, & Jiao, 1999; Hardy, Bukowski, & Sippola, 2002). At the same time, the transition requires children to establish new peer bonds, and to find their position in a newly established social hierarchy. Ironically, these social changes co-occur with the onset of adolescence, a time when children are relatively sensitive—more so than in other developmental stages—to how well they are valued and accepted by others (Harter, 2006). Not surprisingly, many children experience the transition to secondary school as stressful and socially challenging (Berndt et al., 1999; Pellegrini & Bartini, 2000).

It does not seem far-fetched, then, to presume that children's level of self-esteem should typically decrease in response to the secondary school transition. Empirical evidence, however, is inconclusive. Whereas some studies found that, on average, children's self-esteem decreases following the school transition (e.g., Seidman, Allen, Aber, Mitchel, & Feinman, 1994; Simmons & Blyth, 1987; Wigfield, Eccles, MacIver, Reuman, & Midgley, 1991), other studies found no such evidence (e.g., Crockett, Petersen, Graber, Schulenberg, & Ebata, 1989; Hirsch & Rapkin, 1987), or even found that children's self-esteem slightly increases following the transition (e.g., Barber & Olsen, 2004; Nottelmann, 1987). How can these inconsistent findings be explained? With others (Fenzel, 2000; Harter, 2006; Trzesniewski, Donnellan, & Robins, 2003), we propose that the secondary school transition is a psychologically sensitive period during which children's self-esteem is relatively likely to change, due to renewed social circumstances in particular. Following this logic, the extent to which children's self-esteem decreases, increases or remains stable, will depend on how positively children experience their changed social circumstances.

Sociometer Theory: A Framework for Understanding Self-Esteem Change

An important account of the psychological processes that underlie self-esteem change can be found in sociometer theory (Leary & Baumeister, 2000; Leary & Downs, 1995). Sociometer theory assumes that people have a fundamental "need to belong", a

need to be valued and accepted by others. This need has supposedly evolved because our ancestors who were living in social groups were better able to survive and reproduce than those who were living in isolation (Baumeister & Leary, 1995). Sociometer theory posits that the function of self-esteem is to monitor how much people are valued and accepted by others. Much like feelings of hunger function as a gauge of one's nutritional state, feelings of self-esteem are assumed to function as a "sociometer", a gauge of one's interpersonal acceptance. Self-esteem is proposed to respond to changes in interpersonal acceptance by evoking negative or positive feelings that, in turn, motivate behaviors that allow people to gain, maintain, or restore interpersonal acceptance (Denissen, Penke, Schmitt, & van Aken, 2008; Leary, Tambor, Terdal, & Downs, 1995; Thomaes et al., 2010). Sociometer theory distinguishes between *state self-esteem* (i.e., momentary feelings of worth) as a short-term sociometer and *trait self-esteem* (i.e., enduring feelings of worth) as a long-term sociometer. Whereas state self-esteem monitors the immediate situation and responds to cues of rejection and acceptance in the here and now, trait self-esteem is assumed to monitor structural (i.e., marked and enduring) changes in one's "relational value"—how well one will typically be able to gain acceptance from others in future situations (Leary & Baumeister, 2000).

We propose that sociometer theory can be used to explain individual differences in trait self-esteem change across the transition from primary to secondary school. At the end of primary school, children base their expectations on how much they will be valued and accepted by their future secondary school classmates on their current self-appraised relational value (Baldwin & Keelan, 1999; Cillessen & Mayeux, 2007; London, Downey, & Bonica, 2007). In secondary school, these expectations will be confronted with the reality of a new peer group. Depending on the discrepancies between expected and actually experienced social acceptance, children should adapt their sociometer, resulting in self-esteem change. Thus, we predict that children's self-esteem will change as a function of how well they feel accepted by their new peer group and how much that acceptance is discrepant with how well they anticipated to be accepted based on their primary school experiences.

Although sociometer effects are thought to be universal, this is not to say that no individual differences in sociometer sensitivity exist (Leary & Downs, 1995). Some children's self-esteem may be more sensitive to change of social context than other

children's self-esteem. One child characteristic that may be especially relevant to sociometer sensitivity is the personality trait of neuroticism. Children high on neuroticism tend to be tense, moody, and emotionally unstable (John & Srivastava, 1999; Shiner & Caspi, 2003). Previous research involving adult participants has suggested that neuroticism is associated with individuals' psychological reactivity to socially threatening events (Bolger & Zuckerman, 1995; Denissen & Penke, 2008). In this study we will examine how neuroticism moderates the extent to which children's self-esteem is dependent upon discrepancies between their expected (i.e., by the end of primary school) and actually experienced (i.e., directly following the transition) social acceptance.

In addition to neuroticism, gender will be examined as another moderating factor. Previous research has suggested that girls may be more vulnerable than boys to losing self-esteem following the secondary school transition, especially when the transition coincides with other developmental changes such as the onset of puberty (Simmons & Blyth, 1987; Robins, Trzesniewski, Tracy, Gosling, & Potter, 2002).

The Present Study

To test how individual differences in self-esteem change are predicted by discrepancies between children's expectations and experiences of social acceptance across the school transition, a 3-wave longitudinal study was conducted. We measured children's pre-transition expectations of social acceptance by future classmates and compared these expectations to their actually experienced social acceptance just after the school transition. Self-esteem was assessed both pre- and post-transition. Neuroticism and gender were considered as potential moderators. To establish discriminant validity, the hypothesized moderating effect of neuroticism was contrasted with the effects of the other Big Five personality traits (i.e., agreeableness, extraversion, conscientiousness and openness to experience). These traits do not involve psychological reactivity to social rejection and so they were hypothesized not to moderate children's self-esteem reactions.

Based on sociometer theory, we predicted self-esteem increases when experiences of social acceptance exceeded expectations of social acceptance, and conversely, self-esteem decreases when experiences failed to meet expectations of

social acceptance. Furthermore, we predicted that the self-esteem of children high on neuroticism and of girls would be particularly reactive, both in positive and negative directions, to discrepancies between expected and experienced social acceptance.

Method

Participants

In the spring semester of Grade 6 (the final year of primary school in the Dutch school system) 487 children were recruited from 22 primary schools serving middle-class communities in the Netherlands. From this initial sample, 322 children (66%) continued to participate in the study after they transitioned into one of the four secondary schools that participated in the study (i.e., Time 2 and 3). The rest of the initial sample went to secondary schools that did not participate in the study. Sixteen children were excluded because they were absent at one or more measurement occasions. The final sample consisted of 306 children (47% boys) aged 11 to 14 years (M = 12.2, SD = 0.44) at the start of the study. Most participants were of Dutch origin (78%); others mainly were of mixed cultural/ethnical origin. Informed parental consent was obtained for all participants (consent rates ranged between schools from 50% to 100%; M consent rate = 80%).

Procedure

In the Dutch school system, children transition into secondary school at seventh grade and they are unfamiliar with the large majority of their secondary school classmates. In contrast to students in some other countries, Dutch seventh-graders spend the entire school day amongst the same classmates and thus tend to familiarize themselves with their classmates relatively quickly. Surveys were administered in children's classes at three time points. At Time 1 (grade 6 spring semester; pre-transition) we measured children's self-esteem and their expected social acceptance in secondary school. At Time 2 (grade 7 fall semester; three weeks after the transition to secondary school) we measured experienced social acceptance. At Time 3 (three months later) we measured self-esteem. Personality traits were measured at all time points.

Measures

Self-esteem. Self-esteem was measured using the Global Self-Worth scale of the Self Perception Profile for Adolescents (Harter, 1988; translated into Dutch by Treffers et al., 2002). This well-validated 5-item scale measures how satisfied children are with themselves and the way they are leading their lives. A sample item includes: "Some kids are happy with themselves". As in previous studies (e.g., Thomaes, Bushman, Stegge, & Olthof, 2008) we used a 4-point response format (1 = *I am not like these kids at all*; 4 = *I am exactly like these kids*). Negative items were recoded and a mean self-esteem score was computed. Cronbach's alpha was .75 at Time 1 and .82 at Time 3.

Expected social acceptance. Expected social acceptance was measured using a 3-item scale that asked children to predict their acceptance by future classmates (i.e., "How much do you think your classmates in secondary school will like you?", "How popular do you think you will be in secondary school?" and "How many friends do you think you will have in secondary school?"). Items were rated on a 5-point scale (1 = *not at all / little or no;* 5 = *a lot*). A mean expected social acceptance score was computed (Cronbach's α = .73).

Experienced social acceptance. Experienced social acceptance was measured by asking the children to rate on a 5-point scale (1 = *doesn't like me at all;* 5 = *likes me a lot*) how much they thought each of their classmates liked them (David & Kistner, 2000). An experienced social acceptance score was computed for each participant by averaging the ratings he or she gave (number of ratings ranged among classes from 14 to 30, $M_{\text{number of ratings}}$ = 26)

Big Five personality traits. The Big Five personality traits were measured using the Big Five Inventory (John & Srivastava, 1999; translated into Dutch by Denissen, Geenen, Van Aken, Gosling, & Potter, 2008). This self-report questionnaire consists of 44 items that measure the Big Five traits of neuroticism, conscientiousness, agreeableness, extraversion, and openness to experience. A sample item for the neuroticism scale is "I see myself as someone who can be tense". Items were rated on a 5-point scale (1 = *disagree strongly;* 5 = *agree strongly*). Negative items were recoded and mean trait scores were computed for each time point. Cronbach's alphas ranged from .73 to .86. Because all personality traits were highly stable over time (*r*s > .60), trait scores at Time 1, 2, and 3 were aggregated.

Results

Preliminary analyses

Table 1 shows the descriptive statistics and correlations between the study variables. Girls reported higher levels of neuroticism than boys, $F(1, 304) = 16.56$, $p < .01$, $d = 0.48$. No gender differences were found for self-esteem, expected social acceptance and experienced social acceptance (*p*s >.17). Mean levels of self-esteem did not significantly change across the transition from primary school (Time 1) to secondary school (Time 3), $t(305) = 0.89$, $p > .37$. Self-esteem was moderately stable across the school transition ($r = .48$).

Table 1. Means, Standard Deviations and Intercorrelations for the Main Study Variables

	M	*SD*	1	2	3	4	5
1. Self-esteem (T1)	3.22	.52	_				
2. Self-esteem (T3)	3.25	.51	.48*	_			
3. Expected social acceptance (T1)	3.82	.52	.22*	.11	_		
4. Experienced social acceptance (T2)	3.16	.48	.17*	.21*	.36*	_	
5. Neuroticism (T123)	2.74	.63	-.45*	-.41*	-.23*	-.20*	
6. Discrepancy between expected and experienced acceptance	0.00	1.13	-.05	.08	-.57*	.57*	.03

Note. * $p < .01$

Primary analyses

To index the discrepancy between children's expected and experienced social acceptance, we computed a difference score between standardized experienced social acceptance at Time 2 and standardized expected social acceptance at Time 1 (standardized difference scores have been recommended over other discrepancy indices by De Los Reyes, & Kazdin, 2004; for a discussion of alternative discrepancy indices, see Griffin, Murray, & Gonzalez, 1999). Positive values represent above-expectation acceptance, whereas negative values represent below-expectation acceptance.

Next, to test whether this discrepancy predicted changes in self-esteem, we conducted a hierarchical regression analysis with self-esteem at Time 3 as dependent variable. We entered self-esteem at Time 1 in Step 1, the discrepancy between expected and experienced social acceptance in Step 2, neuroticism in Step 3, and the interaction

between neuroticism and the discrepancy in Step 4. All predictors were centered to reduce multicollinearity (Aiken & West, 1991).

Table 2. Summary of Hierarchical Regression Analyses Predicting Self-Esteem at Time 3

	B	*SE*	β	R^2	ΔR^2
Step 1				.23	.23**
Constant	3.26	.03			
Self-esteem (T1)	0.47	.05	.48**		
Step 2				.24	.01*
Discrepancy between expected (T1) and experienced (T2) acceptance	0.05	.02	.11*		
Step 3				.29	.05**
Neuroticism (T123)	-0.18	.04	-.22**		
Step 4				.31	.02**
Discrepancy × Neuroticism	0.10	.03	.15**		

Note. *p < .05, **p < .01

As predicted, the discrepancy between expected and experienced social acceptance significantly predicted change in self-esteem from Time 1 to Time 3 (see Table 2). Moreover, in Step 4, this main effect was qualified by the predicted significant interaction between the discrepancy and neuroticism. Post-hoc probing (Aiken & West, 1991) showed that for children low on neuroticism (i.e., 1 *SD* below the mean), the discrepancy between expected and experienced social acceptance did not predict self-esteem change (β = -.05, p > .32, see Figure 1). For children high on neuroticism (i.e., 1 *SD* above the mean), however, the discrepancy between expected and experienced social acceptance did predict self-esteem change (β = .23, p < .001). Children high on neuroticism showed decreased self-esteem when their acceptance was lower than expected (change score = -0.2, see Figure 1), but no change in self-esteem when their acceptance was higher than expected (change score = 0.0).

To obtain more detailed insight into the moderating impact of neuroticism, we conducted additional post hoc analyses using the "region of significance" method (recommended by Preacher, Curran, & Bauer, 2006). This method computes at what point along the distribution of a moderating variable (in this case, neuroticism) the slope becomes significantly different from zero. Results showed that the slope became

significant (alpha = 0.05) at a neuroticism level of -0.22 or higher—about $^{1}/_{3}$ standard deviation below the mean value of the centered neuroticism distribution. Thus, for children whose neuroticism levels varied from below-average to very high, disappointing acceptance predicted decreased self-esteem. No such effect was found for children scoring lower than one-third standard deviation below the mean on neuroticism.[1]

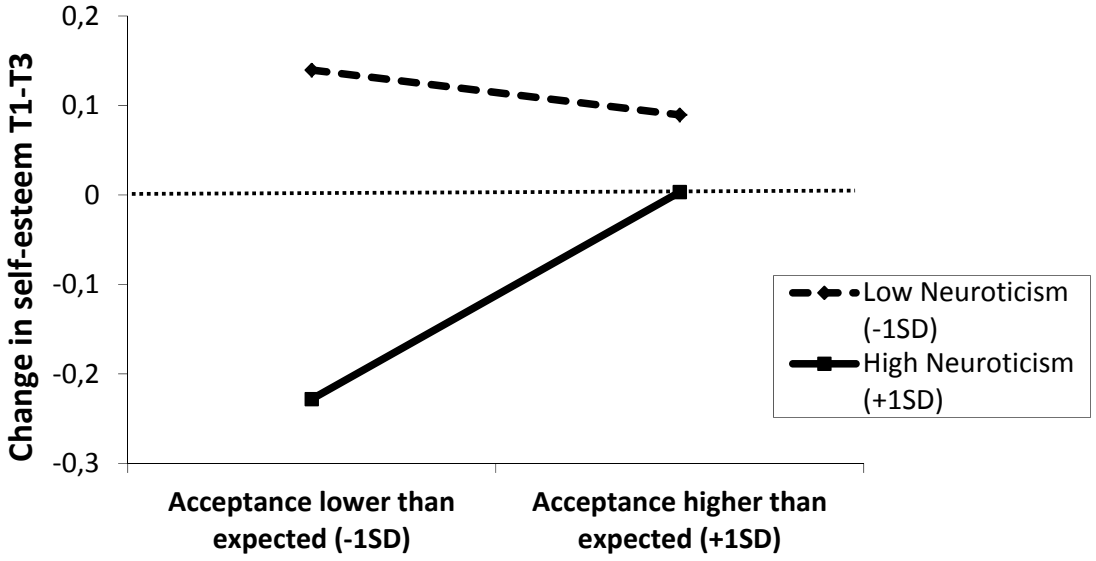

Figure 1. Neuroticism moderates the relationship between non-expected acceptance and cross-transition self-esteem change. High values of neuroticism and non-expected acceptance are 1 *SD* above the mean; low values of neuroticism and non-expected acceptance are 1 *SD* below the mean. Positive values of change represent increased self-esteem; negative values of change represent decreased self-esteem.

[1] To better understand the relative contribution of both components in the discrepancy score (i.e., expected social acceptance and experienced social acceptance), we conducted a similar hierarchical regression analysis, but this time we controlled for experienced social acceptance. Neither experienced social acceptance nor the discrepancy score were significant predictors in this model, β = .05, *p*>.41 and β = .08, *p*>.19, respectively. Although the significant main effect for the discrepancy score disappeared when controlling for experienced social acceptance, the interaction between the discrepancy score and neuroticism remained significant, β = .16, *p* <.01, while the interaction between experienced social acceptance and neuroticism was not significant, β = -.02, *p* > .75. These results emphasize the importance of taking into account both expected and experienced social acceptance to predict self-esteem change among children high on neuroticism.

Next, we tested a regression model including gender. There was no main effect of gender on changes in self-esteem across the school transition, β = .01, p > .88, but we did find an interaction effect between gender and the discrepancy score, with girls being more reactive to discrepancies in expected and experienced acceptance than boys, β = .17, p <.05. However, this Gender × Discrepancy interaction became non-significant when the Neuroticism × Discrepancy interaction was added to the model. This suggests that the moderating effects for gender were actually due to differences in levels of neuroticism between boys and girls.

To establish discriminant validity for neuroticism as a moderator, we also tested a regression model including the other Big Five personality traits (i.e., agreeableness, extraversion, conscientiousness and openness to experiences) and their interaction terms. Neuroticism turned out to be the only significant moderator (β = .16, p < .01; other βs < .09, ps > .10). Thus, of the five core dimensions that define children's personality, it is specifically neuroticism that is associated with sociometer sensitivity (Denissen & Penke, 2008).

Discussion

Why does some children's self-esteem decrease across the transition to secondary school, whereas other children's self-esteem does not? The present study found an explanation in sociometer theory, which posits that self-esteem functions as a gauge of social acceptance. We found that children's level of self-esteem changed as a function of how much their post-transition experiences of social acceptance differed from the social acceptance they expected beforehand. Thus, during the secondary school transition self-esteem does not change for all children alike. Rather, these self-esteem changes depend upon how much children's current social acceptance meets their prior expectations.

Not all children's sociometers were equally sensitive, though. The more neurotic children were, the more reactive their self-esteem was to discrepancies between expected and experienced social acceptance. Specifically, significant levels of self-esteem reactivity were found among those children whose neuroticism levels ranged from slightly below average to high. Only for children low in neuroticism (i.e., children

whose neuroticism levels were more than $^{1}/_{3}$ *SD* below the mean), their self-esteem appeared resistant to cross-transition discrepancies between expected and experienced social acceptance. No other Big Five personality traits influenced sociometer sensitivity, highlighting the specificity of neuroticism to children's sociometer sensitivity. Girls' sociometer sensitivity also appeared stronger than that of boys, but this difference was driven by girls' higher levels of neuroticism.

Interestingly, neuroticism was more potent at magnifying self-esteem decreases (i.e., when children's experienced social acceptance was disappointing) than self-esteem increases (i.e., when children's experienced social acceptance was better-than-expected). This finding is consistent with typical conceptualizations of neuroticism as reflecting *negative* psychological reactivity (Bolger & Zuckerman, 1995; Carver, Suttin & Scheier, 2000; Denissen & Penke, 2008). Furthermore, it is consistent with Leary and Baumeister's (2000) notion that the sociometer system might be more sensitive to negative cues of social acceptance than to positive cues of social acceptance. Leary and Baumeister draw an analogy with other motivational systems, such as the hunger system. The hunger system urges individuals to eat when nutrients become deficient, but does not so much urge individuals to stay maximally saturated at all times. Similarly, they argue, the sociometer system may be reactive to decrements in acceptance but does not necessarily urge individuals to seek maximal acceptance at all times.

Our results can also be interpreted in the light of two predominant models of person-environment interaction: the diathesis-stress model (Zuckerman, 1999) and the differential susceptibility model (Belsky, Bakermans-Kranenburg, & Van IJzendoorn, 2007). The diathesis-stress model would consider neuroticism as a vulnerability factor that interacts with negative environmental experiences to undermine children's well-being. The differential susceptibility model would consider neuroticism as a factor that magnifies the effects of both negative and positive environmental experiences. Our results are consistent with a diathesis-stress view, in that neuroticism magnified the impact of disappointing, but not better-than-expected experiences of social acceptance.

The present study contributes in several ways to the existing literature. It provides the first longitudinal test of sociometer theory in the critical developmental stage of early adolescence, a time when children are particularly sensitive to their peers' evaluation of them, and also a time when children's self-esteem is still relatively

unstable (Harter, 2006; Trzesniewski et al., 2003). In doing so, we focused on the transition to secondary school, a naturally occurring time of change that poses a challenge to children's feelings of acceptance and self-esteem. Also, whereas prior research on school transitions focused mainly on mean level changes in self-esteem (Rudolph, Lambert, Clark, & Kurlakowsky, 2001), we adopted an individual differences approach, and found that a changed social context after the transition to secondary school can have differential consequences for children's self-esteem.

A number of limitations should be noted. First, we chose to focus rather narrowly on how much children were accepted by their classmates; we did not examine other potential sources of acceptance (e.g., acceptance from parents, teachers, or close friends). Previous research has shown that peers' acceptance is a stronger determinant of young adolescents' self-esteem than is teachers' or close friends' acceptance (Harter, 1999). Moreover, peers' acceptance is more likely than parents' acceptance to be associated with self-esteem changes across the secondary school transition because it is mainly the peer context that changes. Still, further research should examine the extent to which these other sources of acceptance affect transitioning children's self-esteem as well.

Second, the focus of the present study was on changes in self-esteem as a function of changes in relational value. Of course, this is not to say that other changes concurring with the secondary school transitions are irrelevant. For example, prior research has suggested that advanced pubertal maturation relative to peers is related to decreased self-esteem, especially so at the start of secondary school (Reynolds & Juvonen, 2011). Also, differences in academic practices between primary and secondary school (e.g., stricter grading, ability grouping) have been linked to changes in self-esteem (Eccles et al., 1993). We recommend further research on the joint effects of these changes on self-esteem change across the secondary school transition.

Third, an important question for future research is to examine the adaptiveness of sociometer sensitivity. According to sociometer theory, the sociometer system serves an adaptive regulatory function and may help people to adjust to changes in their social environment. On the other hand, one might assume that there can be costs to sociometer sensitivity, and that high sociometer sensitivity can be "too much of a good thing". Especially in Western cultures, we want our children to grow up as relatively

autonomously functioning individuals, not overly dependent on others' accidental opinions or evaluations. Future research focusing on the adaptiveness of sociometer sensitivity should seek to establish costs and benefits of sociometer sensitivity.

In conclusion, this study found that children's self-esteem can change across the transition from primary school to secondary school as a function of how their experienced social acceptance matches their prior expectations. Our findings are consistent with the view that self-esteem functions as a sociometer, a gauge of social acceptance. Children high on neuroticism are especially prone to experience self-esteem decreases when their "hopes are dashed"—when they experience disappointing levels of social acceptance. These children might need a helping hand when crossing the doorstep of their new secondary school.

Chapter 5

Do Grades Shape Students' School Engagement? The Psychological Consequences of Report Cards at the Beginning of Secondary School

Astrid M. G. Poorthuis, Jaana Juvonen, Sander Thomaes,
Jaap J. A. Denissen, Bram Orobio de Castro, & Marcel A. G. van Aken

Manuscript in preparation

Abstract

Receiving grades is psychologically salient to most students and can elicit a range of affective reactions. A 3-wave longitudinal study (*N* = 375; mean age at wave 1 = 12.6 years) examined how grades shape students' school engagement through the affective reactions they elicit. Emotional and behavioral engagement were measured at the start of secondary school and 6 months later. Halfway through this period, students' positive and negative affective reactions to their first report card in secondary school were assessed. As expected, lower report card grades predicted larger decreases in both emotional and behavioral engagement over time. These links were mediated by students' affective reactions. Moreover, boys and children who perceived the performance norms in their class to be high were more affectively reactive to their grades, which in turn magnified the changes in emotional engagement they showed. Whereas school performance has been typically examined as a consequence of school engagement, these findings highlight that school performance can be a powerful antecedent of school engagement as well.

Introduction

Throughout the world, students typically receive grades as an evaluation of their school work. Grades are not only a form of feedback on past performance, they also impact subsequent academic trajectories by determining whether students graduate from one grade to the next, and what level of course work (e.g., low or high academic track) is available to them. Given the importance of grades, it is not surprising that they can trigger a range of affective reactions, from excitement and pride to distress and shame (Crocker, Karpinski, Quinn, & Chase, 2003; Goldstein & Strube, 1994; Kluger & DeNisi, 1996). Grades and the affective reactions they evoke likely affect how much time and effort students invest in their subsequent work. Although at times teachers may give low grades to try to urge students to put more effort in their school work (Kohn, 1994), there is some empirical research suggesting that it may be high rather than low grades that are more effective at increasing student effort (You & Sharkey, 2009) and intrinsic interest in the subject matter (Butler, 1988; Denissen, Zarrett, & Eccles, 2007; Shim & Ryan, 2005). Thus, the motivational effects of grades may differ from their often

presumed effects, possibly in part because of the motivational consequences of the emotions they evoke.

How grades shape students' school engagement through the affective reactions they elicit is the question addressed in the current study. In spite of a growing body of research showing that achievement-related emotions (e.g., anxiety, pride, and anger) play an important role in student learning (Linnenbrink-Garcia & Pekrun, 2011), there is paucity of research linking grades, emotional reactions, and student engagement. Research on such interconnections may be especially informative at critical time points, such as at the beginning of secondary school, when students are uncertain about how their academic competencies and performance will match up to what is expected from them at their new school (Harter, Rumbaugh Whitesell, & Kowalski, 1992). Research shows that students' grades tend to fall off in the beginning of secondary school, possibly because of stricter grading compared to primary school (Barber & Olsen, 2004; Eccles et al., 1993; Zanobini & Usai, 2002). At the same time, school engagement also declines for many students (Eccles et al., 1993; Fredricks & Eccles, 2002; Maulana, Opdenakker, Stroet, & Bosker, 2012). We propose that students' affective reactions to grades might help explain how and why grades impact subsequent student engagement.

School engagement

School engagement—students' active involvement in school based activities (Fredricks, Blumenfeld, & Paris, 2004; Skinner, Furrer, Marchand, & Kindermann, 2008)—is one of the strongest predictors of academic success and failure, including school drop-out, retention, and achievement (Alexander, Entwisle, & Horsey, 1997; Connell, Spencer, & Aber, 1994; Fredricks et al., 2004). Two overlapping but empirically distinguishable components of school engagement are behavioral engagement and emotional engagement (Li & Lerner, 2011; Fredricks et al., 2004). Behavioral engagement refers to overt behavior, such as active class participation, effort and attention during classroom activities (Skinner et al., 2008), whereas emotional engagement more strongly refers to psychological experience, such as interest, enthusiasm, and boredom (Skinner et al., 2008). Most students show decreases in both emotional and behavioral engagement from childhood into adolescence, with the steepest decline after the transition to secondary school (Eccles et al., 1993; Fredricks &

Eccles, 2002), yet such decreasing trajectories are not universal (e.g., Li & Lerner, 2011). Individual students who manage to uphold their school engagement after the secondary school transition are not exceptional.

There are some initial indications that grades may help understand individual differences in student engagement. In a longitudinal study among adolescents (You & Sharkey, 2009), grades were a better predictor of change in behavioral engagement over time than were other relevant variables (including parental expectations, parent-child communication, locus of control, self-concept, peer academic value, whether a friend dropped out of school, and college aspirations), with higher grades predicting increased behavioral engagement. Grades have also been related to changes in emotional engagement. For example, college students who received high grades showed increased emotional engagement over the course of a semester (Shim & Ryan, 2005). Other studies have demonstrated concurrent positive associations between grades and both behavioral and emotional engagement (e.g., Marks, 2000; Skinner, Wellborn, & Connell, 1990; Trautwein, Lüdtke, Marsh, Koller, & Baumert, 2006).

Role of Affective Reactions

The present study builds on previous work by testing the proposition that grades impact changes in school engagement through the positive and negative affective reactions they elicit. *Positive* affect captures active and alert mood states. High positive affect is characterized by feelings such as excitement, enthusiasm and pride. Low positive affect is characterized by sadness and lethargy. *Negative* affect, on the other hand, captures arousing aversive mood states. High negative affect is characterized by emotions such as distress, shame, and fear. Low negative affect is characterized by calmness and serenity (Watson, Clark, & Tellegen, 1988). Previous research has established that positive and negative affect are relatively independent affect dimensions (Goldstein & Stube, 1994; Tellegen, Watson, & Clark, 1999).

Positive affect is theorized to be part of a larger motivational system of approach tendencies (Watson, Wiese, Vaidya, & Tellegen, 1999). As such, it seems straightforward to assume that the positive affective reactions induced by high grades should facilitate school engagement, both its emotional and behavioral manifestations. Previous empirical work is consistent with such a view (Efklides & Petkaki, 2005; Linnenbrink –

Garcia, Kempler Rogat, & Koskey, 2011; Pekrun, Goetz, Titz, & Perry, 2002; Pekrun, Goetz, Frenzel, Barchfeld, & Perry, 2011). Predictions for negative affect, however, may be less straightforward. Negative affect is theorized to be part of a larger motivational system of withdrawal tendencies, that help people to avoid aversive stimuli (Watson et al., 1999). With others (e.g., Pekrun et al., 2002), we propose that negative affect may have ambivalent effects on school engagement. On the one hand, it seems plausible that negative affect will compromise student interest and enjoyment from learning. It is hard to imagine that students would experience high levels of stress from their school work and like it too. Indeed, prior studies have found that negative affect is associated with lower emotional engagement (e.g., Martin, 2011; Pekrun et al., 2002). On the other hand, negative affect may motivate students to overcome the aversive state they are in and avoid future failure by investing extra effort in their schoolwork. Indeed, the motivational power of negative feelings such as anxiety or shame has been well documented both in academic and non-academic domains (Martin, 2011; Tangney & Dearing, 2002; Turner & Schaller, 2001). In other studies, however, negative affect has been linked to lower behavioral engagement (Dettmers et al., 2011; Linnenbrink – Garcia et al., 2011). Given these presumed opposing motivational forces and mixed empirical findings, we predict that negative affect will decrease emotional engagement but not behavioral engagement.

Moderating factors: Performance norms and gender

Of course, students do not receive their grades in a social vacuum, but are likely to compare their performance to the performance of their classmates (Pulfrey, Buchs, & Butera, 2011; Trautwein et al., 2006). Hence, when considering affective reaction to grades and their potential impact on engagement, it is important to consider students' perceptions of the performance norms in their classroom—how they think their classmates achieve. Prior research has shown that adolescents are particularly prone to internalize and adapt to peer academic norms shortly after the secondary school transition (Masten, Juvonen, & Spatzier, 2009). Thus, when students perceive performance norms to be high in their class, they may try to adapt to this norm, and attach more importance to grades themselves. Consequently, their report card grades

may elicit stronger affective reactions, which should subsequently increase the changes they show in school engagement.

Affective reactions to grades may also differ for boys and girls. Compared to boys, girls typically obtain higher school grades (e.g., Hendriks, Kuyper, Lubbers, & van der Werf, 2011; Lam et al., 2012; Wampler, Munsch, & Adams, 2002) and they also report higher levels of school engagement (e.g., Lam et al., 2012; Li & Lerner, 2011; Marks, 2000; Rozendaal, Minnaert, & Boekaerts, 2001; Wang, Willet, & Eccles, 2011). Yet, little is known about gender differences in affective reactivity to grades, and how such reactivity is related to emotional and behavioral engagement. Given that boys are usually somewhat less emotionally reactive than girls (e.g., Charbonneau, Mezulis, & Hyde, 2009; Rudolph, 2002), it may be that boys will experience weaker affective reactions than girls in response to their grades. On the other hand, boys tend to be more competitive than girls (e.g., Gneezy & Rustichini, 2004; Hibbard & Buhrmester, 2010), and so the possibility that they experience stronger affective reactions to grades may be equally plausible. In the present study, these two different hypotheses regarding the moderating role of gender are examined.

Present study

A conceptual model of the study is provided in Figure 1.

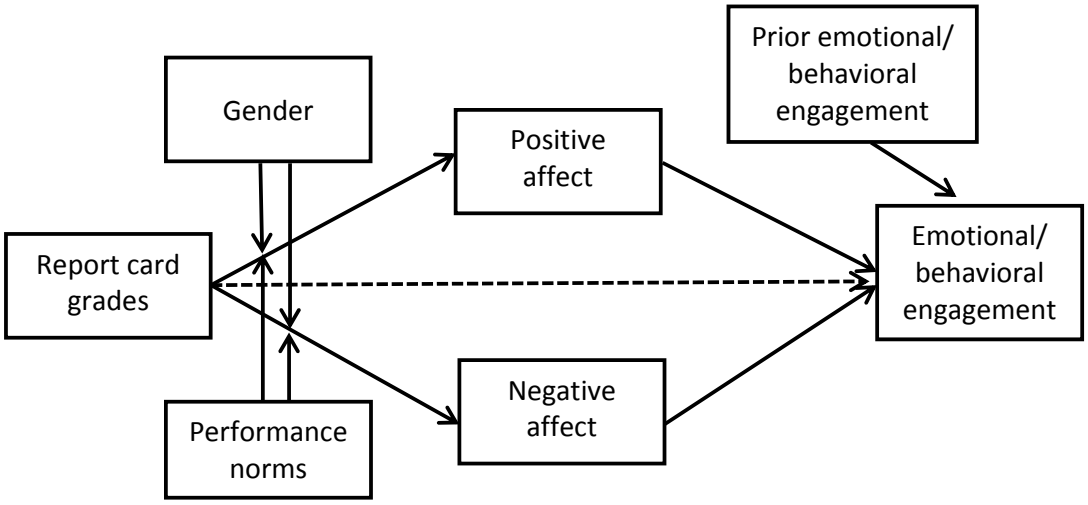

Figure 1. Conceptual model of the links between report card grades and school engagement through affective reactions. These links are hypothesized to be moderated by gender and performance norms.

The first aim of the present study was to examine whether students' report card grades predict change in both their emotional and behavioral engagement over the course of the first year in secondary school, a time when school engagement tends to decline (Eccles et al., 1993; Fredricks & Eccles, 2002). We predicted that typical declines in engagement will be buffered to the extent that students earn higher report card grades.

The second aim of the study was to examine whether the presumed link between report card grades and school engagement is mediated by the positive and negative affective reactions that grades trigger. We predicted that higher report card grades will induce stronger positive affective reactions than lower grades, which in turn should attenuate typical decreases in emotional and behavioral engagement. Furthermore, we predicted that lower report card grades will lead to stronger negative affective reactions than higher grades, which should magnify decreases in emotional engagement. Because of opposing theoretical ideas and mixed empirical findings for the link between negative affect and behavioral engagement, we explored this link without an a priori hypothesis.

The third aim of the study was to examine whether the presumed mediation of positive and negative affect will be moderated by students' perceptions of the performance norms in their classroom and by their gender (Preacher, Rucker, & Hayes, 2007). We predicted that higher performance norms strengthen the link between students' grades and their affective reactions, and subsequently predict larger changes in engagement. Furthermore, we explored whether the link between grades and affective reactions would be stronger for either boys or girls.

The present study extends past research in important ways. First, it contributes to the relatively recent field of research on emotional aspects of learning and achievement in educational contexts (Linnenbrink-Garcia & Pekrun, 2011) by examining affective reactions to report card grades. Second, whereas school engagement has been typically examined as an antecedent of school performance, it is now examined as a *consequence* of school performance. In doing so, we focus on a particularly meaningful phase in students' academic careers: their first semester in secondary school, marked by uncertainty over living up to academic standards and declines in school engagement (Harter et al., 1992; You & Sharkey, 2009). Third, this study examines the underlying mechanisms that can explain how report card grades are linked with school

engagement. It is the first to test mediation of the link between grades and school engagement through affective reactions. Fourth, we examine performance norms—an important aspect of the peer context in which students receive their grades—as a putative moderator, thereby improving our understanding of peer influence on the psychological impact of grades.

Method

Participants

We conducted a longitudinal study among 430 Dutch seventh graders recruited from 19 classrooms in three secondary schools. As is common in the Dutch school system, the students transitioned into secondary school between sixth and seventh grade. Sixty-four children (15%) were excluded because they were absent at one or more waves of data collection. No differences were found between participants and nonparticipants on any of the study variables (all *p*s >.13).

The final sample consisted of 375 young adolescents (52% girls) aged 11 to 14 years (M_{age} = 12.6, *SD* = 0.4) at the start of the study. Most participants (87%) were of Dutch origin; 3% of Moroccan origin; 2% of Turkish origin; others (8%) were mainly of mixed cultural/ethnic origin. Nationwide 80% of the inhabitants of the Netherlands are of Dutch origin, indicating that there was a slight overrepresentation of this group in our sample. Informed parental consent was obtained for all participants. Consent rates ranged from 73% to 100% across classrooms ($M_{consent\ rate}$ = 84%).

Procedure

Surveys were administered in students' classes at three time points. We measured students' emotional and behavioral engagement at Time 1 (September, 2 to 3 weeks after the secondary school transition) and Time 3 (March). Students' affective reactions to their first report card and performance norms were measured at Time 2 (early in December, when they received their first report card).

Measures

Emotional and behavioral engagement (Time 1 and Time 3). School engagement was measured using the Engagement versus Disaffection with Learning Scale (Skinner et al., 2008) both at the start of the school year (September) and six months later (March). This scale consists of four subscales (behavioral engagement, behavioral disaffection, emotional engagement, and emotional disaffection). Due to less than adequate internal consistencies for three of these subscales (Cronbach's alpha ranged from .64 to .67), we aggregated the positive and negative emotional subscales and the positive and negative behavioral subscales (engagement and disaffection). The 10-item *emotional* engagement scale (alpha = .78 at Time 1 and Time 3) measured students' emotional involvement during learning activities (e.g., "I enjoy learning new things in class"; "When we work on something in class, I feel bored."). The 10-item *behavioral* engagement scale (alpha = .78 at Time 1 and alpha = .80 at Time 3) measured students' effort, attention, and persistence during classroom activities (e.g., "When I am in class, I listen very carefully"; "I don't try very hard in school"). Items were rated on a 4-point scale (1 = *not at all true;* 4 = *completely true*).

Report card grades. Report card grades were retrieved from school records. In the Dutch school system, grades range from 1 (extremely low) to 10 (extremely high). A mean score was computed across the six main academic subjects (i.e., Dutch, English, Math, Biology, History,and Geography). Cronbach's alpha was .75.

Affective reactions to report card grades (Time 2). Participants' affective reactions to their report card grades were measured using an adapted version of the Positive Affect and Negative Affect Schedule (Watson et al., 1988). The 10-item *positive* affect subscale captures a range of positive, active, and alert mood states (e.g., interested, attentive, proud) and the 10-item *negative* affect subscale captures a range of activating aversive mood states (e.g., upset, ashamed, irritable). Participants were asked to rate on a 5-point scale (1 = *very slightly or not at all;* 5 = *very much*) the extent to which they had experienced each mood state the moment they saw their report card for the first time. Internal consistencies for both scales were very high: Cronbach's alpha was .94 for positive affect and .91 for negative affect. The correlation between both scales was significant (r = -.30, p <.01), but both scales were clearly not redundant.

Performance norms (Time 2). Performance norms were measured by asking the children to estimate the grades that each individual classmate would receive. Ratings were given on a 5-point scale (1 = *receives very low grades;* 5 = *receives very high grades*). A performance norm score was computed for each participant, by averaging the ratings he or she gave (number of ratings ranged from 19 to 31 across classrooms, $M_{\text{number of ratings}} = 26.6$).

Results

In the first results subsection, we provide descriptive information about the study variables and test for gender differences. In the second subsection, we test whether report card grades predict changes in both emotional and behavioral engagement over the course of the first semester in secondary school. In the third subsection, we examine whether positive and negative affective reactions to grades mediate the link between report card grades and change in both emotional and behavioral engagement. In the fourth subsection, we examine whether the mediation through positive and negative affect is moderated by performance norms and gender.

Preliminary analyses

Table 1 shows the descriptive statistics and correlations among the study variables. The average report card grade was 7.2 on a 1-10 scale, which is equivalent to an A- in the American school system. As expected, report card grades were related to both positive and negative affective reactions to grades, and to emotional and behavioral engagement. Emotional and behavioral engagement were strongly correlated ($r = .62$).

T-tests comparing boys' and girls' report card grades and affective reactions to grades revealed two gender differences. Girls obtained higher grades than boys, $t(373) = -2.95$, $p < .001$, $d = -0.30$. Also, girls experienced less negative affect in response to their grades than boys, $t(373) = -2.64$, $p < .01$, $d = -0.27$, but there were no differences in positive affect, $t(373) = -1.23$, $p > .22$.

A 2 (Time) x 2 (Gender) repeated measures analysis of variance (ANOVA) with emotional engagement as dependent variable showed that emotional engagement

decreased over the course of the first year in secondary school, $F(1, 373) = 37.95$, $p < .001$. This main effect, however, was qualified by a Time × Gender interaction, showing that emotional engagement decreased more strongly for boys than for girls, $F(1, 373) = 3.91$, $p < .05$. A similar repeated measures ANOVA showed that behavioral engagement also decreased over time, $F(1, 373) = 62.37$, $p < .001$. No gender differences were found for behavioral engagement ($ps > .20$).

Table 1. Means, Standard Deviations and Intercorrelations for the Study Variables

	M	*SD*	1	2	3	4	5	6	7
1. Emotional engagement (T1)	3.25	0.40	_						
2. Behavioral engagement (T1)	3.19	0.41	.62*	_					
3. Mean report card grade	7.16	0.74	.12	.11	_				
4. Positive affective reactions (T2)	3.20	0.93	.27*	.23*	.48*	_			
5. Negative affective reactions (T2)	1.42	0.59	-.15*	-.14*	-.50*	-.30*	_		
6. Performance norms (T2)	3.22	0.32	.07	.00	-.14*	.09	.08	_	
7. Emotional engagement (T3)	3.13	0.40	.42*	.39*	.26*	.36*	-.30*	.11	_
8. Behavioral engagement (T3)	3.04	0.44	.51*	.61*	.20*	.31*	-.17*	.05	.69*

Note. * $p < .01$

Grades predicting changes in engagement

First, hierarchical regression analyses were conducted to examine whether grades predicted change in emotional and behavioral engagement over time. To predict emotional engagement at Time 3 (spring), emotional engagement at Time 1 (fall) was entered as predictor variable in Step 1 and report card grades were entered in Step 2. Not surprisingly, initial level predicted emotional engagement in spring, $\beta = .49$, $t(372) = 11.14$, $p < .001$. More importantly, high report card grades predicted increased emotional engagement, $\beta = .20$, $t(372) = 4.48$ $p < .001$. A similar pattern of results was obtained for behavioral engagement. Initial level predicted behavioral engagement in

spring, β = .60, $t(372) = 14.61$, $p < .001$, and report card grades predicted behavioral engagement, β = .14, $t(372) = 3.33$, $p < .01$. Thus, higher grades predicted increases in emotional and behavioral engagement over the course of the first school year.

Mediation analyses

Bootstrapping procedures (using the process macro for SPSS; Hayes, 2012; Preacher & Hayes, 2008) were used to examine whether positive and negative affect mediated the link between report card grades and subsequent change in school engagement. Thus, in bootstrapping terminology, we examined whether the indirect effects through positive and negative affect were significant (see Preacher & Hayes, 2008). In bootstrapping, a large number of random samples (in the present analyses, N = 5,000) are generated from the original dataset. For each random sample, the indirect effects (i.e., mediated effects) of report card grades on engagement through positive and negative affective reactions were computed. The distribution of these indirect effects was then used to obtain 95% confidence intervals for the size of the indirect effects for both positive and negative affect. When these confidence intervals contain the value 0 the indirect effect is not significant.

Table 2. Mediation of the Effect of Report Card Grades on Behavioral and Emotional Engagement at Time 3 Through Positive and Negative Affect, Controlled for Engagement at Time 1.

Dependent variable	Indirect effect through positive affect	Boot 95% CI[a] for effect through positive affect	Indirect effect through negative affect	Boot 95% CI for effect through negative affect
Emotional engagement	.044*	.016 to .076	.042*	.016 to .073
Behavioral engagement	.044*	.014 to .077	.004	-.025 to .031

Note. Coefficients are unstandardized.

[a] Bootstrap confidence intervals are bias-corrected and accelerated.

*$p < .05$

The analyses were conducted separately for emotional and behavioral engagement. For emotional engagement, both positive and negative affect were found to significantly mediate the effect of report card grades (i.e., both bootstrap 95% confidence intervals excluded the value 0, see Table 2). For behavioral engagement, positive affect but not negative affect significantly mediated the effect of report card grades (see Table 2).

As shown in Figures 1 and 2, the mediation effects for positive and negative affect were in the expected direction. Thus, higher report card grades predicted higher positive affect, which subsequently predicted increased emotional and behavioral engagement. Lower report card grades predicted higher negative affect, which subsequently predicted decreased emotional engagement, but not behavioral engagement.

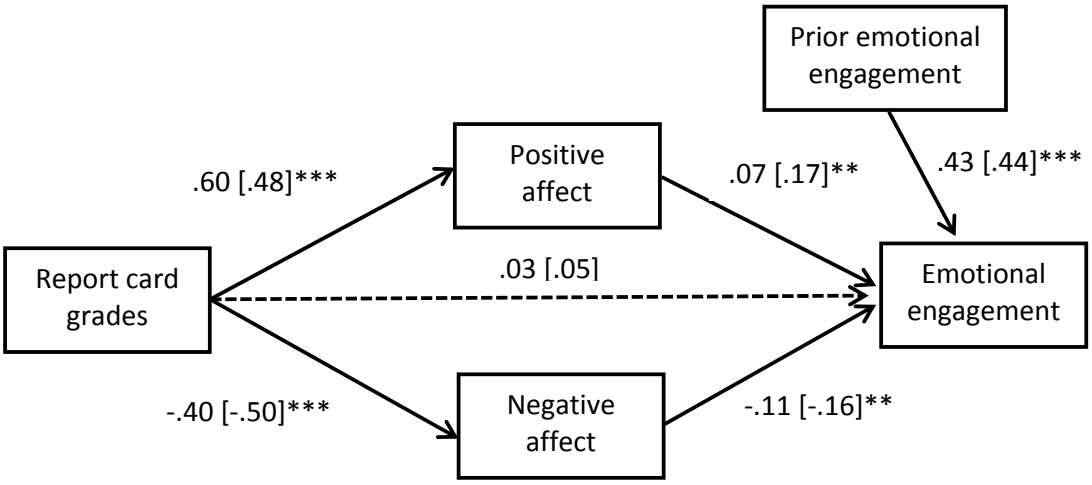

Figure 1. Path model for the effect of report card grades on emotional engagement (Time 3) through positive and negative affect (Time 2), controlled for prior levels of emotional engagement (Time 1). Numbers in brackets are standardized coefficients.
* $p < .05$; ** $p < .01$; *** $p < .001$

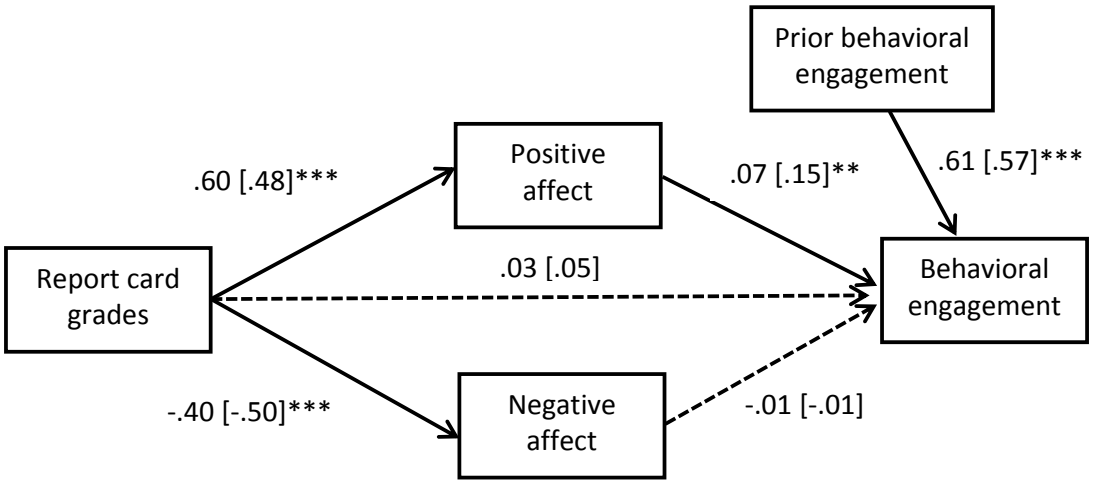

Figure 2. Path model for the effect of report card grades on behavioral engagement (Time 3) through positive and negative affect (Time 2), controlled for prior levels of behavioral engagement (Time 1). Numbers in brackets are standardized coefficients.
* $p < .05$; ** $p < .01$; *** $p < .001$

Moderated mediation

To test whether the links between grades and engagement through affective reactions were moderated by performance norms and gender, moderated mediation analyses were conducted following procedures outlined by Hayes (2012).

Emotional engagement. First, moderation of the indirect effect of report card grades on emotional engagement through *positive* affect was examined. Along with report card grades, performance norms and gender were entered into the mediation model that predicted positive affect. Next, the Report card grades × Performance norms and the Report card grades × Gender interactions were entered. The analysis revealed a main effect for performance norms, but no other significant effects (see Table 3). Specifically, higher levels of performance norms were related to higher positive affect, but the mediating effect of positive affect on emotional engagement was not moderated by performance norms or gender.

Second, moderation of the indirect effect of report card grades on emotional engagement through *negative* affect was examined (see Table 4). Neither performance norms nor gender were significant predictors of negative affect. However, the Report card grades × Performance norms and Report card grades × Gender interactions both were significant, indicating moderated mediation.

Table 3. Regression Results for Moderated Mediation Analyses (Positive Affect)

		Mediator: Positive affect			
	Predictor	ΔR^2	*B*	*SE*	B
Step 1	Report card grades	.25***	0.63	0.06	.50***
	Performance norms		0.45	0.13	.16**
	Gender		-0.02	0.08	-.01
Step 2	Grades x Norms	.00	-0.01	0.19	.00
	Grades x Gender		-0.15	0.12	-.08
Step 3	Norms x Gender	.00	-0.15	0.27	-.04
Step 4	Grades x Norms x Gender	.00	-0.02	0.37	.00

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 4. Regression Results for Moderated Mediation Analyses (Negative Affect)

		Mediator: Negative affect			
	Predictor	ΔR^2	*B*	*SE*	B
Step 1	Report card grades	.25***	-0.39	0.04	-.49***
	Performance norms		0.03	0.04	.01
	Gender		-0.07	0.05	-.06
Step 2	Grades x Norms	.03***	-0.23	0.11	-.10*
	Grades x Gender		0.24	0.07	.21**
Step 3	Norms x Gender	.00	-0.13	0.17	-.05
Step 4	Grades x Norms x Gender	.01	0.42	0.23	.11

* $p < .05$; ** $p < .01$; *** $p < .001$

To further explore the moderation, the moderated mediation effects were probed in a way analogous to standard moderation analyses (Hayes, 2012). Table 4 shows the mediating effects of negative affect on emotional engagement at three different levels of performance norms (i.e., 1 *SD* below the mean, mean, and 1 *SD* above the mean) and for boys and girls separately. Again, bootstrapping procedures were used to test the significance of the indirect effect at these different levels (using 5,000 bootstrap resamples). At all levels of performance norms, negative affect significantly mediated the link between report card grades and emotional engagement. Yet the mediating effect of negative affect was stronger to the extent that students perceived

performance norms in their class to be higher. Also, the mediating effects of negative affect were stronger for boys than for girls (e.g., .053 for boys versus .028 for girls at mean levels of performance norms), suggesting that boys react with stronger negative affect to their grades than girls.

Table 5. Indirect Effects of Report Card Grades on Emotional Engagement (Time 3) Through Negative Affect at Different Levels of Performance Norms, Controlled for Emotional Engagement at Time 1.

Performance norms	Boys		Girls	
	Indirect effect through negative affect	Boot 95% confidence interval[a]	Indirect effect through negative affect	Boot 95% confidence interval
2.90 (-1 SD)	.045*	.015 to .083	.020*	.005 to .047
3.22 (Mean)	.053*	.017 to .092	.028*	.010 to .052
3.54 (+1 SD)	.061*	.013 to .066	.036*	.013 to .066

Note. Indirect effect are based on unstandardized coefficients.

[a] Bootstrap confidence intervals are bias-corrected and accelerated

* $p < .05$.

Behavioral engagement. Next, it was examined whether performance norms and gender moderated the link from report card grades through positive and negative affect to *behavioral* engagement. The first part of these analyses (i.e., moderation of the link between report card grades and affect) is identical to the analyses for the model with emotional engagement (see Table 3 and 4). Performance norms and gender did not moderate the link between grades and *positive* affect, but they did moderate the link between grades and *negative* affect.

Again, the moderated mediation effects were probed. Table 6 shows the mediating effects of negative affect on behavioral engagement at three different levels of performance norms, and for boys and girls separately. Bootstrapping procedures showed that none of the indirect effects was significant (i.e., all bootstrap 95% confidence intervals contained zero). These analyses confirm the mediation analyses above, showing that the effect of report card grades on behavioral engagement is not mediated by negative affective reactions to those grades.

Table 6. Indirect Effects of Report Card Grades on Behavioral Engagement (Time 3) Through Negative Affect at Different Levels of Performance Norms, Controlled for Behavioral Engagement at Time 1.

Performance norms	Boys		Girls	
	Indirect effect through negative affect	Boot 95% confidence interval[a]	Indirect effect through negative affect	Boot 95% confidence interval
2.90 (-1 SD)	.005	-.024 to .036	.002	-.011 to .021
3.22 (Mean)	.005	-.029 to .040	.003	-.016 to .024
3.54 (+1 SD)	.006	-.035 to .044	.004	-.021 to .028

Note. Indirect effect are based on unstandardized coefficients.

[a] Bootstrap confidence intervals are bias-corrected and accelerated

Discussion

Do grades shape student's school engagement? The present study suggests they do. Students' grades on their first report card in secondary school predict how their engagement, both its emotional and behavioral components, changed over the course of the school year. Higher grades buffered the usual declines in engagement, while lower grades further magnified these declines. Students' affective reactions to their grades drove these effects, albeit in somewhat different ways for emotional and behavioral engagement. Whereas the impact of grades on emotional engagement was mediated by both positive and negative affective processes, the impact of grades on behavioral engagement was mediated by positive affective processes exclusively. Thus, students may come to act passively in the classroom not so much because they experience strong negative feelings (e.g., distress, shame, anxiety), but more because they lack positive feelings (e.g., activation, inspiration, excitement).

An alternative explanation for not finding the expected mediation for negative affect is that two countervailing effects may be working simultaneously: prior research shows that activating negative emotions have detrimental effects on behavioral engagement for some individuals, but positive effects for others (e.g., Martin, 2011; Turner & Schaller, 2001). Pekrun and colleagues (2002; 2011) argued that whereas "deactivating negative emotions" (negative emotions that inhibit people to act, such as hopelessness or boredom) have universal detrimental effects on students' engagement, "activating negative emotions" (negative emotions that motivate people to act, such as anxiety or shame) can have variable effects on students' engagement because they elicit

mixed motivational responses. They found that anxiety and shame were linked to decreased intrinsic motivation (i.e., motivation to learn because the learning is enjoyable), but increased extrinsic motivation (i.e., motivation to learn to attain outcomes such as high grades; Pekrun, et al., 2011). The joint effects of these different motivational responses may determine whether students who experience negative affective reactions to their grades will invest increased effort to avoid future failure or instead disengage from their school work. Thus, it may well be that these two competing motivational forces that both stem from negative affect may have added up to the absence of a link between negative affect and behavioral engagement.

Moderated mediation analyses showed that links between grades, affect, and engagement were not equally strong for everyone. Boys' negative affective reactivity to grades was stronger than girls', which resulted in larger changes in emotional engagement. Although in many situations boys are somewhat less emotionally reactive than girls (e.g., Charbonneau, et al., 2009; Rudolph, 2002), this is not the case in the specific context of receiving grades. Grades encourage social comparison and highlight students' normative standing in the peer group (Pulfrey et al., 2011). It may be the competitive nature of grades that makes boys more reactive to them (e.g., Hibbard & Buhrmester, 2010). Because boys on average obtain lower grades than girls (e.g., Lam et al., 2012) and experience relatively strong negative affect in response to those grades, they are especially vulnerable to declines in emotional engagement.

Furthermore, the link between grades, negative affect, and subsequent emotional school engagement was stronger for students who perceived that their classmates obtained high grades. These students experienced relatively high levels of negative affect when they obtained low grades, and relatively low levels of negative affect when they obtained high grades. Students are likely to compare their performance to the performance of their classmates (Pulfrey et al., 2011; Trautwein et al., 2006). Adolescents who feel that their classroom's norms for performance are high may attach more importance to their own performance, resulting in stronger negative affective reactivity to their report card. Notably, when students perceived higher performance norms in their class, they experienced increased positive affect in response to their report card grades, regardless of their own grades. The perception that

classmates perform well may increase students' attentiveness at the moment they receive their report cards, stressing the importance of grades for these students.

Our study contributes to the literature on school engagement: it replicates prior findings regarding declines in engagement after transitioning to secondary school (Eccles et al., 1993; Fredricks & Eccles, 2002), and extends these findings by examining how grades predict these declines. School engagement has been typically examined as an antecedent of school performance (Fredricks et al., 2004; You & Sharkey, 2009) but in this study it was examined as a *consequence* of school performance. Furthermore, the study examined the underlying mechanisms that can explain how report card grades are linked with school engagement. It was the first to test mediation of the link between grades and school engagement through affective reactions.

The strengths of the present study include its longitudinal design, which allowed stringent testing of the effects of grades and students' affective reactions to those grades on *change* in students' levels of school engagement over time. Furthermore, the study was timed in a crucial phase in students' academic development: shortly after the secondary school transition, when many students experience a steep decline in school engagement (Eccles et al., 1993). Finally, the study appreciated that the impact of grades may depend on the social context in which students receive them. How students perceived the performance norms in their class partially explained individual differences in the affective impact of grades and subsequent changes in engagement. Other aspects of the social context (e.g., peers' comments on students' school performance) may be the focus of future research.

A number of limitations should be noted. First, we assessed the rather broad dimensions of positive and negative affect, not discrete emotions (e.g., shame, anxiety, and anger). There may be critical differentiations among negative emotions that may lead to different patterns of engagement. For example, guilt is theorized to arise in response to controllable causes of failure and to induce increases in engagement (Weiner, 1985; 2010). In contrast, shame is theorized to arise in response to uncontrollable causes of failure and to induce decreases in engagement (Weiner, 1985; 2010). It should be noted that in our sample shame and guilt were strongly correlated (r = .73), suggesting that the negative feelings children experienced were not so differentiated. Still, future research might benefit from assessing discrete achievement

emotions and examining their differential effects on engagement (e.g., see Pekrun et al., 2011).

Second, we chose to focus on affective reactions as a mediating mechanism. Of course, this is not to say that other mediating mechanisms are unimportant. For example, low grades also induce lower expectancies of subsequent performance, which have been shown to be related to lower persistence and interest (e.g., Denissen et al., 2007; Wigfield & Eccles, 2000; Wigfield, Tonks, & Klauda, 2009). Future research could test various putative mediating mechanisms in the same study to compare their relative strength.

Third, although the intervals between the measurement occasions in our study were relatively short when compared to most longitudinal studies (i.e., three-monthly, rather than half-yearly or yearly), they could have been even shorter. A more intensive longitudinal design might have permitted us to capture the change processes we focused on in more detail (Collins, 2006). Theoretically, an immediate effect of students' affective reactions to grades on their levels of school engagement is expected (Pekrun, 2006). We measured school engagement three months later—a period during which other meaningful events influencing engagement may have occurred. Future research using more intensive repeated measure designs, such as experience sampling designs, is needed to test fine-grained changes in engagement in response to obtaining grades.

Conclusion

Grades can provide vital information to teachers, students, and parents that can be used to enhance both teaching and learning (Guskey & Bayley, 2001). Teachers, however, should be aware of the emotional impact grades can have on their students and of the subsequent changes in students' emotional and behavioral engagement in class. Low grades strengthen normative declines in engagement shortly after the secondary school transition. A downward spiral may evolve in which low grades induce declines in engagement, which subsequently translate into obtaining even lower grades. In a worst case scenario, students may eventually even discard school and disengage from learning. Boys in particular are vulnerable for declines in engagement because they tend to receive lower grades and are more affectively reactive to grades than girls. Low-

performing students who perceive their classmates to receive high grades are vulnerable too. Negative effects of grades may be prevented when teachers convey the message to their low-performing students that their difficulties likely are only temporary, and that improvement is attainable when they exert more effort and use the right strategies (e.g., Robertson, 2000; Yeager & Walton, 2011).

Chapter 6

General Discussion

The transition from primary to secondary school

The aim of the present dissertation was to better understand why children differ in their social, academic, and psychological adjustment following a major transition in their lives, the transition from primary to secondary school. We studied several important pre-transitional individual differences between children, including individual differences in personality traits and expectations regarding secondary school. We also took important post-transitional experiences into account, including acceptance by the new peer group and receiving grades. We collected multi-informant, multi-method data on five occasions before and after the transition in 322 children. Thus, we were able to examine both continuity and change in social, academic, and psychological functioning across the transition.

Continuity and change in adjustment

Children's adjustment, including their adjustment following major transitions, can partly be predicted from their prior levels of adjustment. For example, when children function well in primary school on some relevant domain, there is a good chance that they will function well in that same domain in secondary school again. In this dissertation, we found considerable continuity for self-esteem, emotional and behavioral school engagement, and peer-rated social acceptance (*Chapter 1, 3,* and *4)*. Lower continuity was found for academic achievement (*Chapter 1*), possibly because it was indexed in different ways in primary and secondary school (i.e., using a standardized achievement test and report card grades, respectively).

Although we found considerable cross-transitional continuity in adjustment, by no means was prior adjustment a perfect predictor of later adjustment. Children differ in how they respond to the secondary school transition. For some children the secondary school transition poses a risk: their adjustment in secondary school is relatively low compared to their adjustment in primary school. For other children, however, the school transition offers new opportunities: their adjustment in secondary school is relatively high compared to primary school. We were interested in these individual differences in change in adjustment across the transition to secondary school. Therefore, in all longitudinal studies we controlled for prior levels of adjustment.

We tested various theories regarding adaptation to change, and found various child characteristics predicting changes in social, academic, and psychological adjustment after the transition to secondary school. Main findings are summarized for each of these three domains of adjustment.

Social adjustment

In *Chapter 2 and 3*, we studied whether children's agreeableness (in *Chapter 3* referred to as prosocial tendencies) is linked to their social acceptance and friendship quality. We developed a brief behavioral personality test for agreeableness measuring children's actual helping responses to requests from unknown younger peers at the cost of spending time on other valued activities. Previous research has relied mostly on either self-report measures of agreeableness or reputational measures of peer-nominated prosocial behavior (e.g., Cillessen, Jiang, West, & Laszkowski, 2005; Jensen-Campbell et al., 2002; Scholte, van Aken, & van Lieshout, 1997). Both types of measures have several strengths (e.g., access to information on behavior in a wide range of situations), but also several limitations. For example, self-report measures may suffer from limited self-knowledge and biases due to social desirable responding (Paulhus & Vazire, 2007). Peer-nominations may suffer from memory biases that are consistent with reputational expectations (Hymel, Wagner, & Butler, 1990). For example, prior research shows that children recall more positive behaviors for socially accepted peers than for rejected peers, even when the information to be recalled is exactly similar (Butler, 1984 as cited in Hymel et al., 1990). Behavioral personality tests do not share these limitations and may be an important complement to existing measures (Proyer & Häusler, 2007). We therefore developed a behavioral personality test to measure agreeableness.

We tested the predictive value of both our newly developed behavioral personality test and a self-report measure of agreeableness on change in social acceptance across the transition to secondary school (*Chapter 2*). Only the behavioral test—observing how well children help others by responding to their requests for help—predicted social acceptance a year later, self-reported agreeableness did not. In a cross-sectional study (*Chapter 3*) using the data from the first wave (i.e., spring of the last year in primary school), we found that both indices of agreeableness were associated with

higher perceived friendship quality. These results are in line with prior research on agreeableness (or prosocial tendencies) and social adjustment (e.g., Cillessen et al., 2005; Jensen-Campbell et al., 2002; Markiewicz, Doyle, & Brendgen, 2001; McDonald, Wang, Menzer, Rubin, & Booth-LaForce, 2011).

There is, however, more for children to value in their social relationships than agreeableness alone. Children also attach great importance to being popular and they typically prefer to associate with popular peers (Hawley, Little, & Card, 2007; LaFontana & Cillessen, 2010). We found that children's level of popularity moderated the link between agreeableness and friendship quality. Agreeableness was associated with higher perceived friendship quality among nonpopular children (i.e., children holding average or lower levels of popularity), but not among popular children, for whom friendship quality was high regardless of agreeableness (*Chapter 3*). Popular children may have other compensating characteristics that make them attractive for peers to be friends with. Popular children are influential and visible, and they can help their peers gain popularity (Cillesen, 2011; Marks, Cillessen, & Crick, 2012). Thus, popular children's friends may well be motivated to maintain their friendships regardless of whether their popular friend behaves in prosocial ways. This study illustrates the importance of examining children's friendships in the context of their social roles in the larger peer group, which has been rarely done to date (Rubin, Bukowski, & Parker, 2006).

Academic adjustment

In *Chapter 2*, we studied whether children's conscientiousness—their tenacity of goal pursuit—is linked to changes in academic achievement across the transition to secondary school. Much like we did for agreeableness, we developed a brief behavioral personality test measuring conscientiousness and we used this in addition to a self-report measure of conscientiousness. Both measures uniquely predicted children's report card grades a year later, controlled for prior levels of academic achievement. Thus, children who behave in conscientious ways prior to the secondary school transition have relatively high school performance in secondary school compared to children who perform similarly in primary school, but are less conscientious. The link between conscientiousness and academic achievement has been demonstrated before

(e.g., Laidra, Pullman, & Allik, 2007; Poropat, 2009), but the present study was the first to test this link in a longitudinal cross-transitional design, and the first demonstrating the unique contribution of a behavioral personality test designed to measure conscientiousness.

Report card grades are an important index of academic adjustment in school. At the same time, receiving grades is psychologically salient and meaningful to most students, can elicit a range of affective reactions, and may result in increased or decreased engagement in classroom activities (*Chapter 5*). This may be especially important during the first semester in secondary school, when evaluation criteria tend to change and both grades and school engagement often decline (Barber & Olsen, 2004; Eccles et al., 1993; You & Sharkey, 2009). Whereas school engagement has been studied mostly as an antecedent of school performance (Fredricks, Blumenfeld, & Paris, 2004), in this dissertation it was also studied as a *consequence* of school performance and the grades by which it is indexed. In *Chapter 5*, we found that students' grades predicted change in both their emotional and behavioral engagement over the course of the first semester in secondary school. Higher grades buffered the usual declines in engagement, while lower grades magnified these declines. These links were mediated by the positive and negative affective reactions grades elicited in students. The link between grades, negative affect, and subsequent emotional engagement was stronger for students who thought that their classmates obtained high grades. They experienced relatively high levels of negative affect and a decrease in school engagement when they obtained low grades and vice versa. Thus, the psychological impact of grades depends in part on the social context in which students receive them.

Psychological adjustment

In addition to how well children can get along with peers and how well they perform in secondary school, children's self-esteem is another important aspect of adjustment after the transition to secondary school. Many studies have looked at mean level self-esteem changes across the secondary school transition, and found inconsistent results (e.g., Barber & Olsen, 2004; Nottelman, 1987; Simmons & Blyth, 1987). Based on sociometer theory, we predicted that changes in children's self-esteem would depend

on how positively children experience their changed social circumstances (*Chapter 3*). Sociometer theory posits that self-esteem functions as a gauge of social acceptance, monitoring changes in acceptance by the peer group (Leary & Baumeister, 2000). At the end of primary school, children have expectations about how much they will be accepted by their future secondary school classmates. In secondary school, these expectations will be confronted with the reality of a new peer group. Based on sociometer theory, we hypothesized that change in children's level of self-esteem would be predicted by the discrepancy between the social acceptance they expected before the secondary school transition and the actual social acceptance they experienced after the secondary school transition.

This is indeed what we found: disappointing social acceptance after the secondary school transition predicted decreased self-esteem; higher-than-expected social acceptance predicted increased self-esteem. Importantly, not all children's sociometers were equally sensitive. The higher children's levels of neuroticism, the more reactive their self-esteem was to discrepancies between expected and experienced acceptance. Highly neurotic children were especially vulnerable to self-esteem decreases in response to disappointing social acceptance. Our study provided the first longitudinal support for sociometer theory across the critical transition to secondary school. It offers a new perspective on the often debated issue of whether and why children experience self-esteem decreases after the transition to secondary school.

Gender differences

In several chapters, we found gender differences. In their classical study, Simmons and Blyth (1987) reported that girls experience larger self-esteem decreases than boys across the secondary school transition. Like others, however, we did not find gender differences in self-esteem change (e.g., Wigfield, Eccles, Mac Iver, Reuman, & Midgley, 1991; Seidman, Allen, Aber, Mitchel, & Feinman, 1994). We did find that girls were more vulnerable to self-esteem decreases than boys when they experienced disappointing social acceptance after the transition to secondary school (*Chapter 4)*. This gender difference was driven by girls' higher levels of neuroticism. The moderating effects for gender disappeared when the interaction between neuroticism and the

discrepancy between expected and experienced acceptance was taken into account. The more neurotic children were, the more reactive their self-esteem was to discrepancies between expected and experienced social acceptance by peers.

Boys may be more vulnerable to decreases in academic adjustment (Chung, Elias, & Schneider, 1998). As in other studies (e.g., Hendriks, Kuyper, Lubbers, & van der Werf, 2011; Lam et al., 2012; Wampler, Munsch, & Adams, 2002), we found that boys received lower grades on their first report card in secondary school than girls (*Chapter 1 and 5*). Furthermore, they experienced relatively strong negative affect in response to those grades (*Chapter 5)* and subsequently experienced larger declines in emotional engagement over the course of the first semester in secondary school. Grades encourage social comparison and highlight students' normative standing in the peer group (Pulfrey, Buchs, & Butera, 2011). Perhaps it is the competitive nature of grades that makes boys more reactive to them (e.g., Hibbard & Buhrmester, 2010).

In sum, girls' self-esteem is more reactive to discrepancies between expected and experienced social acceptance than boys' self-esteem. Boys are more emotionally reactive to grades and more likely to experience decreased emotional school engagement than girls when they obtain low grades. These gender differences resonate nicely with the large body of research showing that from the onset of adolescence, girls are at higher risk to experience psychological distress and develop internalizing problems (Nolen-Hoeksema & Girgus, 1994) and boys are at higher risk to experience school problems, such as repeating a class and dropping out of school (Statistics Netherlands, 2010; Vallerand, Fortier, & Guay, 1997). This dissertation gives insight in two possible psychological mechanisms that may contribute to these gender differences.

Implications for the field of education

What can school teachers, policymakers, and other educational professionals learn from this dissertation research? First, this dissertation shows that there are profound individual differences in how children adjust to the transition from primary to secondary school. For some children, the secondary school transition poses a major challenge to their social, academic, or psychological adjustment. For other children, it does not make a difference at all, or even benefits adjustment. If teachers are aware of

the child characteristics that contribute to these individual differences, they can pay more attention to vulnerable children and try to give them additional support. We found that children with lower levels of agreeableness, lower levels of conscientiousness, and higher levels of neuroticism are at risk for decreased social, academic, and psychological adjustment across the secondary school transition, respectively.

How can these children be identified? We developed brief behavioral tests of agreeableness and conscientiousness. To be sure, our research only provided an initial test of the potential effectiveness of these tests, and explained variance was modest, so they are no ready-to-use diagnostic tools. Eventually, however, tests such as the ones we developed might be used to identify vulnerable children who may need extra guidance when transitioning into secondary school.

Second, we found that children's expectations and perceptions of their peer group predicted various aspects of children's adjustment in secondary school—not only their social adjustment, but also their psychological and academic adjustment. In particular, disappointing social acceptance by new classmates predicted self-esteem decreases across the secondary school transition. Furthermore, children's perceptions of high performance norms in their classroom made them more emotionally sensitive to their own grades. These findings highlight the importance of the peer group for young adolescents (Harter, 2006). Teachers are advised to pay much attention to the social atmosphere in their classrooms, perhaps even more than they are already inclined to do, especially just after the secondary school transition when new peer relations are established. Talking to students about their expectations and perceptions of the peer group, may help teachers to identify children at risk. Recent advances in our understanding of social processes in classrooms highlight the importance of considering the roles of each and every child in the classroom in establishing a favorable classroom climate, so such an approach should not focus only on vulnerable children, but include the classroom as a whole (Salmivalli, 1999).

Third, this dissertation shows that grades can have serious consequences for students' interest and effort during classroom activities. In many schools, giving grades is a daily routine and teachers sometimes do not fully realize how much impact these grades can have on students. We found that low report card grades elicited high negative affect (and low positive affect) in students. These students became less

emotionally engaged (e.g., interested and enthusiastic) and behaviorally engaged (e.g., actively participating in class) over the course of the first semester in secondary school. Thus, low grades may set in motion a downward spiral, whereby consequent declines in engagement result in even lower grades. We do not suggest that the common practice to evaluate schoolwork with grades should be abandoned. Grades can provide vital information to teachers, students, and parents that can be used to enhance both teaching and learning (Guskey & Bailey, 2001). However, teachers should be aware of the potential negative consequences of grades. Prior research shows that negative effects of grades may be prevented when teachers convey the message to their low-performing students that their difficulties are likely to be temporary and that when they exert more effort and use the right strategies they will perform better next time (e.g., Robertson, 2000; Yeager & Walton, 2011).

Fourth, we found that children who experience problems in their social or academic functioning in primary school have higher chances to experience problems again in secondary school than children who functioned well in primary school. According to the accentuation hypothesis (Caspi & Moffit, 1993), transitions usually accentuate prior individual differences between children, including problem behavior. Especially in the social domain, however, the secondary school transition may also provide opportunities for change, because children become part of a new peer group and are not bothered by social reputations that are difficult to change. Caspi and Moffit (1993) argue that transitions into new situations can favor change if previous non-adaptive behaviors are actively discouraged and clear information is available about how to behave adaptively. Thus, interventions for children who experience social difficulties may have relatively large effects if they are provided to children just before they enter their new peer group in the new school. In fact, the effectiveness of one such intervention—"Happy at School"—is currently being evaluated in the Netherlands (Mulder, Faber, & van Aken, 2012).

Limitations and future directions

Of course, this research is not without limitations. First, we deliberately limited our scope. We zoomed in on specific child characteristics and we used the school

transition to test specific theories pertinent to the form of adjustment at hand. This approach allowed us to gain a more in-depth understanding of the psychological mechanisms underlying individual differences in adjustment after the transition to secondary school. This is not to say that there are no other factors that predict changes in adjustment across the transition to secondary school. In particular, parents and teachers also play an important role. For example, parental involvement and autonomy support are associated with positive psychological adjustment changes across the secondary school transition (Grolnick, Kurowski, Dunlan, & Hevey, 2000; Lord, Eccles, McCarthy, 1994). Differences between primary and secondary school teachers' efficacy and student support are associated with changed motivation and performance in school (Eccles et al., 1993). Furthermore, characteristics of the school context are of importance. Schools vary in their structure (e.g., size) and climate, characteristics that have been linked to students' adjustment (e.g., Ferguson & Fraser, 1998; Haynes, Emmons, & Ben-Avie, 1997). For example, larger differences between primary and secondary school size are related to larger decreases in children's adjustment (Ferguson & Fraser, 1998).

Second, because for many children the transition to secondary school coincides with the onset of puberty, we cannot know for sure whether the changes in adjustment we found were the result of the school transition or of pubertal changes (or possibly other developmental changes) or a combination of both. Prior research suggests that when the transition to secondary school coincides with other normative developmental changes, including the onset of puberty, children experience more difficulties in adjusting to their new school (e.g., Koenig & Gladstone, 1998; Petersen, Sarigiani, & Kennedy, 1991; Simmons & Blyth, 1987). Thus, children's pubertal status may be another important child characteristic to take into account when studying the transition to secondary school. For example, children's pubertal status may affect how they well they are able to cope with disappointing social acceptance or low report card grades in the beginning of secondary school.

Based on the research reported in this dissertation, I suggest that three directions for future research are particularly important. First, individual differences in personality can be studied at three different levels (McAdams, 1995; McAdams & Olson, 2010): at the level of dispositional traits (e.g., Big Five personality), at the level of

characteristic adaptations (i.e., motivational constructs including motives, goals, expectations, and perceptions), and at the level of a narrative identity (i.e., an internalized story of the self). To date, these levels of personality are studied in rather separate research traditions (Trautwein, Lüdtke, Roberts, Schnyder, & Niggli, 2009; Winter, John, Stewart, Klohnen, & Duncan, 1998). Studying the interconnections between personality traits and characteristic adaptations is necessary to obtain a more integrated view on personality (Winter et al., 1998).

Different ideas exist regarding the interconnections between personality traits and characteristic adaptations. One possibility is that characteristic adaptations are manifestations of underlying core personality traits in dynamic interplay with the environment (Asendorpf & van Aken, 2003; McCrae & Costa, 1996). As such, characteristic adaptations would be expected to mediate the link between dispositional traits and behavioral outcomes. Another possibility is that dispositional traits and characteristic adaptations operate relatively independent from each other (McAdams, 1995; Trautwein et al., 2009). A third possibility is that personality traits and characteristic adaptations interact with each other in predicting behavioral outcomes (Winter et al., 1998).

In this dissertation, we found some evidence for the last possibility: neuroticism (i.e., a dispositional trait) and the discrepancy between experienced and expected social acceptance (i.e., a characteristic adaptation) interacted in predicting self-esteem change across the transition to secondary school (*Chapter 4)*. Yet it is clear that more research is needed to unravel the interconnections between Big Five personality traits and characteristic adaptations. One way to do this, is by studying behavioral personality tests in more detail. For example, as part of the behavioral personality tests for agreeableness and conscientiousness that we developed, we measured children's social information processing—their perceptions, interpretations, goals and response decisions, while they were working on the tasks. These data could provide valuable insights into how personality traits and characteristic adaptations are intertwined.

Second, an often overlooked aspect when designing longitudinal research is its temporal design: the timing, frequency and spacing of measurement waves (Collins, 2006). Most longitudinal studies are routinely comprised of yearly or half-yearly measurement waves; rarely are the chosen intervals between waves based on

theoretical models of change. This is unfortunate because if change takes place at another time-scale than the spacing of the measurement observations, we are unable to observe it properly (Collins, 2006). One strength of our longitudinal design is that measurement occasions were closer to each other than in most longitudinal studies (i.e., three-monthly, rather than half-yearly or yearly) because we theorized that many of the changes we were interested in would take place within the first school year in secondary school. However, these measurement waves may still be somewhat far apart for some of the relevant change processes in children's adjustment after transitioning into secondary school. Future research in this area could take advantage of even more intensive longitudinal designs, including experience sampling and daily diary studies (Bolger, Davis, & Rafaeli, 2003). For example, we showed that students' affective reactions to report card grades predicted their school engagement three months later (*Chapter 5)*. However, these affective reactions are also theorized to have an immediate effect on students' engagement (Pekrun, 2006). Experience sampling could be used to capture these immediate responses each time when a student receives a grade for a particular subject.

Third, an important question for future research is whether the transition to secondary school provides an opportunity for change for children who experience problems (e.g., rejection, victimization) in primary school. Prior research shows that social problems are relatively stable and difficult to change as long as children stay in the same peer group (e.g., Hymel et al., 1990; Salmivalli, 1999). This does not mean that transitioning to a new school is a guarantee that social problems will be reduced. Even in a new class with no former classmates, the same children tend to be victimized again (Salmivalli, 1999). Caspi and Moffit (1993) argued that behavioral change is likely to occur during transitions into new situations, but only when previous responses are actively discouraged and clear information is provided about how to behave adaptively. Future research is needed to test these assumptions. For example, the effectiveness of an intervention just before the transition to secondary school may be compared to the effectiveness of the same intervention at other moments in time.

Conclusion

Transitions are times of profound changes in many domains. In this dissertation one particularly important transition in children's lives was studied: the transition from primary to secondary school. This transition is characterized by both continuity and change in children's social, academic, and psychological adjustment.

How children adapt to their new school environment depends on many factors, including their personality, their pre-transitional expectations, and important post-transitional experiences including how well they feel accepted by their new classmates and the grades they receive. For virtually all children the transition is an exciting and challenging time, but for some it may pose a risk to their adjustment, while for others it turns out to be a time of opportunities.

Appendix

Overview of Measures in the Study

	Wave 1 Spring 2009	*School transition*	**Wave 2** Sept 2009	**Wave 3** Dec 2009	**Wave 4** Mar 2010	**Wave 5** Jun 2010
Self-report questionnaires						
•Big Five personality Big Five Inventory (John & Srivastava, 1999; translated into Dutch by Denissen, Geenen, van Aken, Gosling, & Potter, 2008)	X		X	X	X	X
•Behavioral and emotional school engagement Engagement Versus Disaffection with Learning Scale (Skinner, Furrer, Marchand, & Kindermann, 2008)	X		X	X	X	X
•Self-perceived competence (academic, social and close friendships) and self-esteem Self-Perception Profile for Adolescents (Harter, 1988; translated into Dutch by Treffers et al., 2002)	X		X	X	X	X
•Friendship quality: support and conflict Network of Relationships Inventory (Furman & Buhrmester, 1985; translated into Dutch by De Goede, Branje, & Meeus, 2009)	X		X	X	X	X
•Narcissism Childhood Narcissism Scale (Thomaes, Stegge, Bushman, Olthof, & Denissen, 2008)	X		X	X	X	X
•Grade expectations Prediction of report card grades of six subjects (i.e., Dutch, English, Math, Biology, History, and Geography)	X		X	X	X	X

	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5
•Pre-transition expectations of own academic and social functioning in secondary school (Cillessen and Mayeux, 2007)	X				
•Internalizing problems Strengths and Difficulties Questionnaire, Emotional Symptoms Subscale (Goodman, Meltzer, & Bailey, 1998; translated into Dutch by Muris, Meesters, & van den Berg, 2003)	X	X	X	X	X
•Perceived acceptance by classmates Ratings: how much do you think each of your classmates likes you?		X	X	X	X
•Acquaintance with classmates in secondary school How many classmates did you already know/were your friend in primary school?		X			
•Affective reactions to report card Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988)			X		
•Comparing primary school and secondary school experiences					X
Peer ratings					
•Likeability/peer acceptance How much do you like your classmates?	X	X	X	X	X
•Popularity How popular are your classmates?	X	X	X	X	X
•Friendship To what extent are you friends with your classmates?	X	X	X	X	X

	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5
•Classmates' grades / Academic reputation What grades do you think your classmates obtain?		X	X	X	X
• Helping /prosocial behavior How much have classmates helped you?					X
Peer nominations					
•Best friend Who is your best friend?	X	X	X	X	X
•Physical aggression Who kicks, pushes and hits others?	X	X	X	X	X
•Verbal aggression Who calls other children names or say mean things to other children out loud?	X	X	X	X	X
•Relational aggression Who gossips, tells lies about other children or excludes other children?	X	X	X	X	X
•Disobedience Who is disobedient at school?	X	X	X	X	X
Parental report (note: October/November 2009)					
•Big Five Personality		X			
•Emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems, prosocial behavior Strengths and Difficulties Questionnaire (Goodman, 1997; translated into Dutch by Muris, Meesters & van den Berg, 2003)		X			

	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5
•Grade expectations Prediction of report card grades of six subjects (i.e., Dutch, English, Math, Biology, History, and Geography)		X			
•Grade aspirations What report card grades would satisfy the parent?		X			
•Social expectations Prediction of how much child will be liked, how popular he/she will be and how many friends he/she will have in secondary school.		X			
•Social aspirations How much importance does the parent attach to the child being well-liked, popular and having many friends?		X			
School records					
•Standardized achievement score (cito)	X	X			
•Academic track – advice primary school teacher	X	X			
•Academic track – placement secondary school		X			
•Academic track – placement 8th grade					X
•Report card grades			X		X
Behavioral personality tests					
•Conscientiousness: tenacity of goal pursuit under distracting circumstances Number of video clips participants clicked away to be able to continue working on an assignment	X				

	Wave 1	**Wave 2**	**Wave 3**	**Wave 4**	**Wave 5**
•Agreeableness: tendency to display altruistic behavior when limited resources are available Quality of help given in response to e-mails containing requests from other children, while participants were spending time on an assignment, having a break, or playing a computer game	X				
•Social information processing questions Questions regarding interpretation of cues, clarification of goals, response generation and response decisions (see Crick & Dodge, 1994) with regard to the behavioral personality tests	X				

References

Adams, J. S. (1965). Inequity in social exchange. In L. Berkowitz (Ed.), *Advances in experimental social psychology. Vol. 2* (pp. 267-299). New York: Academic press.

Adler, P. A., & Adler, P. (1998). *Peer Power. Preadolescent culture and identity.* New Brunswick, NJ: Rutgers University Press.

Ahadi, S., & Diener, E. (1989). Multiple determinants and effect size. *Journal of Personality & Social Psychology, 56*, 398-406.

Ahadi, S. A., & Rothbart, M. K. (1994). Temperament, development and the Big Five. In G. Kohnstamm, C. Halverton, & R. Martin (Eds.), *The developing structure of temperament and personality from infancy to adulthood*. Hillsdale, NJ: Erlbaum.

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.

Akos, P., & Galassi, J. P. (2004). Middle and high school transitions as viewed by students, parents, and teachers. *Professional School Counseling, 7*, 212-221.

Alexander, K. L., Entwisle, D. R., & Horsey, C. S. (1997). From first grade forward: Early foundations of high school dropout. *Sociology of Education, 70*, 87-107.

Asendorpf, J. B., & van Aken, M. A. G. (2003). Personality-relationship transaction in adolescence: Core versus surface personality characteristics. *Journal of Personality, 71*, 629-666.

Asendorpf, J. B., & van Aken, M. A. G. (2003). Validity of Big Five personality judgments in childhood: a 9 year longitudinal study. *European Journal of Personality, 17*, 1-17.

Asher, S. R., & McDonald, K. L. (2009). The behavioral basis of acceptance, rejection and perceived popularity. In K. H. Rubin, W. M. Bukowski & B. Laursen (Eds.), *Handbook of peer interactions, relationships and groups* (pp. 232-248). New York: The Guilford Press.

Back, M. D., Schmukle, S. C., & Egloff, B. (2009). Predicting actual behavior from the explicit and implicit self-concept of personality. *Journal of Personality & Social Psychology, 97*, 533-548.

Baldwin, M. W., & Keelan, J. P. R. (1999). Interpersonal expectations as a function of self-esteem and sex. *Journal of Social and Personal Relationships, 16*, 822-833.

Barber, B. K., & Olsen, J. A. (2004). Assessing the transitions to middle and high school. *Journal of Adolescent Research, 19*, 3-30.

Baumeister, R. F., Campbell, J. D., Krueger, J. I., & Vohs, K. D. (2003). Does high self-esteem cause better performance, interpersonal success, happiness, or healthier lifestyles? *Psychological Science in the Public Interest, 4*, 1-44.

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*, 497-529.

Baumeister, R. F., Vohs, K. D., & Funder, D. C. (2007). Psychology as the science of self-reports and finger movements: Whatever happened to actual behavior? *Perspectives on Psychological Science, 2*, 396-403.

Belsky, J., Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (2007). For better and for worse. Differential susceptibility to environmental influences. *Current Directions in Psychological Science, 16*, 300-304.

Berndt, T. J., Hawkins, J. A., & Jiao, Z. (1999). Influences of friends and friendships on adjustment to junior high school. *Merrill-Palmer Quarterly, 45*, 13-41.

Berndt, T. J., & McCandless, M. A. (2009). Methods for investigating children's relationships with friends. In K. H. Rubin, W. M. Bukowski & B. Laursen (Eds.),

Handbook of peer interactions, relationships and groups (pp. 63-81). New York: The Guilford Press.

Berndt, T. J., & Hoyle, S. G. (1985). Stability and change in childhood and adolescent friendships. *Developmental Psychology, 21*, 1007-1015.

Berndt, T. J., & Mekos, D. (1995). Adolescents' perceptions of the stressful and desirable aspects of the transition to junior high school. *Journal of Research on Adolescence, 5*, 123-142.

Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology, 54*, 579-616.

Bolger, N., & Zuckerman, A. (1995). A framework for studying personality in the stress process. *Journal of Personality and Social Psychology, 69*, 890-902.

Buhrmester, D. (1996). Need fulfillment, interpersonal competence, and the developmental contexts of early adolescent friendship. In W. M. Bukowski, A. F. Newcomb & W. W. Hartup (Eds.), *The company they keep. Friendship in childhood and adolescence* (pp. 158-185). Cambridge: Cambridge University Press.

Bukowski, W. M., Newcomb, A. F., & Hartup, W. W. (1996). Friendship and its significance in childhood and adolescence: Introduction and comment. In W. M. Bukowski, A. F. Newcomb & W. W. Hartup (Eds.), *The company they keep. Friendship in childhood and adolescence* (pp. 1-15). Cambridge: Cambridge University Press.

Butler, R. (1988). Enhancing and undermining intrinsic motivation: The effects of task-involving and ego-involving evaluation on interest and performance. *British Journal of Educational Psychology, 58*, 1-14.

Carver, C. S., Sutton, S. K., & Scheier, M. F. (2000). Action, emotion, and personality: Emerging conceptual integration. *Personality and Social Psychology Bulletin, 26*, 741-751.

Caspi, A., & Moffitt, T. E. (1993). When do individual differences matter? A paradoxical theory of personality coherence. *Psychological Inquiry, 4*, 247-271.

Cattell, R. B. (1958). What is "objective" in "objective personality tests"? *Journal of Counseling Psychology, 5*, 285-289.

Cattell, R. B., & Warburton, F. W. (1967). *Objective personality and motivations tests: A theoretical introduction and practical compendium*. Urbana, OH: University of Illinois Press.

Charbonneau, A. M., Mezulis, A. H., & Hyde, J. S. (2009). Stress and emotional reactivity as explanations for gender differences in adolescents' depressive symptoms. *Journal of Youth and Adolescence, 38*, 1050-1058.

Chung, H., Elias, M., & Schneider, K. (1998). Patterns of individual adjustment changes during middle school transition. *Journal of School Psychology, 36*, 83-101.

Cialdini, R. B., Bordon, R. J., Thorne, A., Walker, M. R., Freeman, S., & Sloan, L. R. (1976). Basking in reflected glory: Three (football) field studies. *Journal of Personality and Social Psychology, 34*, 366-375.

Ciarrochi, J., & Heaven, P. C. L. (2009). A longitudinal study into the link between adolescent personality and peer-rated likeability and adjustment: Evidence of gender differences. *Journal of Research in Personality, 43*, 978-986.

Cillessen, A. H. N. (2011). Toward a theory of popularity. In A. H. N. Cillessen, D. Schwartz & L. Mayeux (Eds.), *Popularity in the peer system* (pp. 273-299). New York: The Guilford Press.

Cillessen, A. H. N., Jiang, X. L., West, T. V., & Laszkowski, D. K. (2005). Predictors of dyadic friendship quality in adolescence. *International Journal of Behavioral Development, 29*, 165-172.

Cillessen, A. H. N. & Marks, P. E. L. (2011). Conceptualizing and measuring popularity. In A. H. N. Cillessen, D. Schwartz & L. Mayeux (Eds.), *Popularity in the peer system* (pp. 273-299). New York: The Guilford Press.

Cillessen, A. H. N., & Mayeux, L. (2007). Expectations and perceptions at school transitions: The role of peer status and aggression. *Journal of School Psychology, 45*, 567-586.

Closson, L. A. (2009). Aggressive and prosocial behaviors within early adolescent friendship cliques. What's status got to do with it? *Merrill-Palmer Quarterly-Journal of Developmental Psychology, 55*, 406-435.

Cohen, G. L., & Prinstein, M. J. (2006). Peer contagion of aggression and health risk behavior among adolescent males: An experimental investigation of effects on public conduct and private attitudes. *Child Development, 77*, 967-983.

Coie, J. D., Dodge, K. A., & Kupersmidt, J. B. (1990). Peer group behavior and social status. In S. R. Asher, & J. D. Coie (Eds.), *Peer rejection in childhood.* (pp. 17-59). Cambridge: Cambridge University Press.

Collins, L. M. (2006). Analysis of longitudinal data: The integration of theoretical model, temporal design, and statistical model. *Annual Review of Psychology, 57*, 505-528.

Connell, J. P., & Spencer, M. B. (1994). Educational risk and resilience in African-American youth: Context, self, action, and outcomes in school. *Child Development, 65*, 493-506.

Crick, N. R., & Dodge, K. A. (1994). A review and reformulation of social information-processing mechanisms in children's social adjustment. *Psychological Bulletin, 115*, 74-101.

Crocker, J., Karpinski, A., Quinn, D. M., & Chase, S. K. (2003). When grades determine self-worth: consequences of contingent self-worth for male and female engineering and psychology majors. *Journal of Personality and Social Psychology, 85*, 507-516.

Crockett, L. J., Petersen, A. C., Graber, J. A., Schulenberg, J. E., & Ebata, A. (1989). School transitions and adjustment during early adolescence. *The Journal of Early Adolescence, 9*, 181-210.

David, C. F., & Kistner, J. A. (2000). Do positive self-perceptions have a “dark side”? Examination of the link between perceptual bias and aggression. *Journal of Abnormal Child Psychology, 28*, 327-337.

de Goede, I. H. A., Branje, S. J. T., & Meeus, W. H. J. (2009). Developmental changes and gender differences in adolescents' perceptions of friendships. *Journal of Adolescence, 32*, 1105-1123.

de Jong, P. F., & Das-Smaal, E. A. (1993). Factor structure of standard attentions tests for children: A distinction between perceptual speed and working memory. *European Journal of Psychological Assessment, 9*, 94-106.

de los Reyes, A., & Kazdin, A. E. (2004). Measuring informant discrepancies in clinical child research. *Psychological Assessment, 16*, 330-334.

de Raad, B., & Schouwenburg, H. C. (1996). Personality in learning and education: a review. *European Journal of Personality, 10*, 303-336.

Denissen, J. J. A., Geenen, R., van Aken, M. A. G., Gosling, S. D., & Potter, J. (2008). Development and validation of a Dutch translation of the Big Five Inventory (BFI). *Journal of Personality Assessment, 90*, 152-157.

Denissen, J. J. A., & Penke, L. (2008a). Motivational individual reaction norms underlying the Five-Factor model of personality: First steps towards a theory-based conceptual framework. *Journal of Research in Personality, 42*, 1285-1302.

Denissen, J. J. A., & Penke, L. (2008b). Neuroticism predicts reactions to cues of social inclusion. *European Journal of Personality, 22*, 497-517.

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*, 181-196.

Denissen, J. J. A., Zarrett, N. R., & Eccles, J. S. (2007). I like to do it, I'm able, and I know I am: Longitudinal couplings between domain-specific achievement, self-concept, and interest. *Child Development, 78*, 430-447.

Dettmers, S., Trautwein, U., Lüdtke, O., Goetz, T., Frenzel, A. C., & Pekrun, R. (2011). Students' emotions during homework in mathematics: Testing a theoretical model of antecedents and achievement outcomes. *Contemporary Educational Psychology, 36*, 25-35.

Dijkstra, J. K., Cillessen, A. H. N., Lindenberg, S., & Veenstra, R. (2010). Basking in reflected glory and its limits: Why adolescents hang out with popular peers. *Journal of Research on Adolescence, 20*, 942-958.

Dijkstra, J. K., Lindenberg, S., Verhulst, F. C., Ormel, J., & Veenstra, R. (2009). The relation between popularity and aggressive, destructive, and norm-breaking behaviors: Moderating effects of athletic abilities, physical attractiveness, and prosociality. *Journal of Research on Adolescence, 19*, 401-413.

Dislich, F. X., Zinkernagel, A., Ortner, T. M., & Schmitt, M. (2010). Convergence of direct, indirect, and objective risk-taking measures in gambling: The moderating role of impulsiveness and self-control. *Zeitschrift Fur Psychologie/Journal of Psychology, 218*, 20-27.

Eccles, J. S., Midgley, C., Wigfield, A., Buchanan, C. M., Reuman, D., Flanagan, C., & Mac Iver, D. (1993). Development during adolescence: The impact of stage environment fit on young adolescents' experiences in schools and in families. *American Psychologist, 48*, 90-101.

Eccles, J. S., & Midgley, C. (1989). Stage-environment fit: Developmentally appropriate classrooms for young adolescents. In C. Ames, & R. Ames (Eds.), *Research on motivation in education (Vol. 3). Goals and cognitions* (pp. 139-186). San Diego, CA: Academic Press, Inc.

Eder, D. (1985). The cycle of popularity: Interpersonal relations among female adolescents. *Sociology of Education, 58*, 154-165.

Efklides, A., & Petkaki, C. (2005). Effects of mood on students' metacognitive experiences. *Learning and Instruction, 15*, 415-431.

Eisenberg, N., Fabes, R. A., & Spinrad, T. L. (2006). Prosocial Development. In W. Damon, R. M. Lerner (Series Eds.) & N. Eisenberg (Vol. Ed.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development.* (pp. 646-718). New York: Wiley.

Eisenberg, N., Guthrie, I. K., Murphy, B. C., Shepard, S. A., Cumberland, A., & Carlo, G. (1999). Consistency and development of prosocial dispositions: A longitudinal study. *Child Development, 70*, 1360-1372.

Epstein, S. (1983). Aggregation and beyond: Some basic issues on the prediction of behavior. *Journal of Personality, 51*, 360-392.

Fenzel, L. M. (2000). Prospective study of changes in global self-worth and strain during the transition to middle school. *The Journal of Early Adolescence, 20*, 93-116.

Ferguson, P. D., & Fraser, B. J. (1998). Changes in learning environment during the transitions from primary to secondary school. *Learning Environments Research, 1*, 369-383.

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research, 74*, 59-109.

Fredricks, J. A., & Eccles, J. S. (2002). Children's competence and value beliefs from childhood through adolescence: Growth trajectories in two male-sex-typed domains. *Developmental Psychology, 38*, 519-533.

Furman, W. (1996). The measurement of friendship perceptions: Conceptual and methodological issues. In W. M. Bukowski, A. F. Newcomb & W. W. Hartup (Eds.), *The company they keep. Friendship in childhood and adolescence* (pp. 41-65). Cambridge: Cambridge University Press.

Furman, W., & Buhrmester, D. (1985). Children's perceptions of the personal relationships in their social networks. *Developmental Psychology, 21*, 1016-1024.

Furman, W., & Buhrmester, D. (1992). Age and sex differences in perceptions of networks of personal relationships. *Child Development, 63*, 103-115.

Furman, W., & Collins, W. A. (2009). Adolescent romantic relationships and experiences. In K. H. Rubin, W. M. Bukowski & B. Laursen (Eds.), *Handbook of peer interactions, relationships and groups* (pp. 341-360). New York: The Guilford Press.

Furr, R. M. (2009). Personality psychology as a truly behavioural science. *European Journal of Personality, 23*, 369-401.

Gneezy, U., & Rustichini, A. (2004). Gender and competition at a young age. *American Economic Review, 94*, 377-381.

Goldstein, M. D., & Strube, M. J. (1994). Independence revisited: The relation between positive and negative affect in a naturalistic setting. *Personality and Social Psychology Bulletin, 20*, 57-64.

Goodman, R., Meltzer, H., & Bailey, V. (1998). The Strengths and Difficulties Questionnaire: A pilot study on the validity of the self-report version. *European Child & Adolescent Psychiatry, 7*, 125-130.

Goodman, R. (1997). The Strengths and Difficulties Questionnaire: A research note. *Journal of Child Psychology and Psychiatry, 38*, 581-586.

Griffin, D., Murray, S., & Gonzalez, R. (1999). Difference score correlations in relationship research: A conceptual primer. *Personal Relationships, 6*, 505-518.

Grolnick, W. S., Kurowski, C. O., Dunlap, K. G., & Hevey, C. (2000). Parental resources and the transition to junior high. *Journal of Research on Adolescence, 10*, 465-488.

Guay, F., Marsh, H. W., & Boivin, M. (2003). Academic self-concept and academic achievement: Developmental perspectives on their causal ordering. *Journal of Educational Psychology, 95*, 124-136.

Guskey, T. R., & Bailey, J. M. (2001). *Developing grading and reporting systems for student learning*. Thousand Oaks, CA: Corwin Press, Inc.

Hair, E. C., & Graziano, W. G. (2003). Self-esteem, personality and achievement in high school: A prospective longitudinal study in Texas. *Journal of Personality, 71*, 971-994.

Hardy, C. L., Bukowski, W. M., & Sippola, L. K. (2002). Stability and change in peer relationships during the transition to middle-level school. *The Journal of Early Adolescence, 22*, 117-142.

Harter, S. (1988). *Manual for the self-perception profile for adolescents*. Denver, CO: University of Denver.

Harter, S. (1999). *The construction of the self: A developmental perspective*. New York: The Guilford Press.

Harter, S. (2006). The Self. In W. Damon, R. M. Lerner (Series Eds.) & N. Eisenberg (Vol. Ed.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development.* (pp. 505-570). New York: Wiley.

Harter, S., Rumbaugh Whitesell, N., & Kowalski, P. (1992). Individual differences in the effects of eduactional transitions on young adolescent's perceptions of competence and motivational orientation. *American Educational Research Journal, 29*, 777-807.

Hawley, P. H., Little, T. D., & Card, N. A. (2007). The allure of a mean friend: Relationship quality and processes of aggressive adolescents with prosocial skills. *International Journal of Behavioral Development, 31*, 170-180.

Hayes, A. F. (2012) PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling [White paper]. Retrieved from http://www.afhayes.com

Haynes, N. M., Emmons, C., & Ben-Avie, M. (1997). School Climate as a Factor in Student Adjustment and Achievement. *Journal of Educational & Psychological Consultation, 8*, 321.

Heaven, P. C. L., & Ciarrochi, J. (2012). When IQ is not everything: Intelligence, personality and academic performance at school. *Personality and Individual Differences, 53*, 518-522.

Hendriks, A. A. J., Kuyper, H., Lubbers, M. J., & Van der Werf, M. P. C. (2011). Personality as a moderator of context effects on academic achievement. *Journal of School Psychology, 49*, 217-248.

Hibbard, D. R., & Buhrmester, D. (2010). Competitiveness, gender, and adjustment among adolescents. *Sex Roles, 63*, 412-424.

Hirsch, B. J., & Rapkin, B. D. (1987). The transition to junior high school: A longitudinal study of self-esteem, psychological symptomatology, school life, and social support. *Child Development, 58*, 1235-1243.

Hofstede, G. (1980). *Culture's consequences. International differences in work-related values*. Beverly Hills, CA: Sage.

Hopmeyer Gorman, A., Kim, J., & Schimmelbusch, A. (2002). The attributes adolescents associate with peer popularity and teacher preference. *Journal of School Psychology, 40*, 143-165.

Hymel, S., Wagner, E., & Butler, L. J. (1990). Reputational bias: View from the peer group. In S. R. Asher, & J. D. Coie (Eds.), *Peer rejection in childhood.* (pp. 156-186). Cambridge: Cambridge University Press.

Jensen-Campbell, L. A., Adams, R., Perry, D. G., Workman, K. A., Furdella, J. Q., & Egan, S. K. (2002). Agreeableness, extraversion, and peer relations in early adolescence:

Winning friends and deflecting aggression. *Journal of Research in Personality, 36*, 224-251.

Jensen-Campbell, L. A., Rosselli, M., Workman, K. A., Santisi, M., Rios, J. D., & Bojan, D. (2002). Agreeableness, conscientiousness, and effortful control processes. *Journal of Research in Personality, 36*, 476-489.

Jiang, X. L., & Cillessen, A. H. N. (2005). Stability of continuous measures of sociometric status: a meta-analysis. *Developmental Review, 25*, 1-25.

John, O. P., & Srivastava, S. (1999). The Big Five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin, & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 102-138). New York: Guilford.

Kline, P., & Cooper, C. (1984). A construct validation of the Objective-Analytic Test Battery (OATB). *Personality and Individual Differences, 5*, 323-337.

Kluger, A. N., & DeNisi, A. (1996). The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory. *Psychological Bulletin, 119*, 254-284.

Kochanska, G., Murray, K. T., & Harlan, E. T. (2000). Effortful control in early childhood: Continuity and change, antecedents, and implications for social development. *Developmental Psychology, 36*, 220-232.

Koenig, L. J., & Gladstone, T. R. G. (1998). Pubertal development and school transition. *Behavior Modification, 22*, 335-357.

Kohn, A. (1994). Grading: The issue is not how but why. *Educational Leadership, 52*, 38-41.

Ladd, G. W. (2009). Trends, travails, and turning points in early research on children's peer relationships: Legacies and lessons for our time? In K. H. Rubin, W. M. Bukowski & B. Laursen (Eds.), *Handbook of peer interactions, relationships and groups* (pp. 20-41). New York: The Guilford Press.

LaFontana, K. M., & Cillessen, A. H. N. (2002). Children's perceptions of popular and unpopular peers: A multimethod assessment. *Developmental Psychology, 38*, 635-647.

LaFontana, K. M., & Cillessen, A. H. N. (2010). Developmental changes in the priority of perceived status in childhood and adolescence. *Social Development, 19*, 130-147.

Laidra, K., Pullmann, H., & Allik, J. (2007). Personality and intelligence as predictors of academic achievement: A cross-sectional study from elementary to secondary school. *Personality and Individual Differences, 42*, 441-451.

Lam, S., Jimerson, S., Kikas, E., Cefai, C., Veiga, F. H., Nelson, B., . . . Zollneritsch, J. (2012). Do girls and boys perceive themselves as equally engaged in school? The results of an international study from 12 countries. *Journal of School Psychology, 50*, 77-94.

Leary, M. R., & Baumeister, R. F. (2000). The nature and function of self-esteem: Sociometer theory. *Advances in Experimental Social Psychology, 32*, 1-62.

Leary, M. R., & Downs, D. L. (1995). Interpersonal functions of the self-esteem motive: The self-esteem system as a sociometer. In M. H. kernis (Ed.), *Efficacy, Agency, and Self-Esteem* (pp. 123-144). New York: Plenum 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*, 518-530.

Li, Y., & Lerner, R. M. (2011). Trajectories of school engagement during adolescence: Implications for grades, depression, delinquency, and substance use. *Developmental Psychology, 47*, 233-247.

Linnenbrink-Garcia, L., & Pekrun, R. (2011). Students' emotions and academic engagement: Introduction to the special issue. *Contemporary Educational Psychology, 36*, 1-3.

Linnenbrink-Garcia, L., Rogat, T. K., & Koskey, K. L. K. (2011). Affect and engagement during small group instruction. *Contemporary Educational Psychology, 36*, 13-24.

Litwack, S. D., Aikins, J. W., & Cillessen, A. H. N. (2012). The distinct roles of sociometric and perceived popularity in friendship: Implications for adolescent depressive affect and self-esteem. *The Journal of Early Adolescence, 32,* 226-251.

London, B., Downey, G., Bonica, C., & Paltin, I. (2007). Social causes and consequences of rejection sensitivity. *Journal of Research on Adolescence, 17*, 481-506.

Lord, S. E., Eccles, J. S., & McCarthy, K. A. (1994). Surviving the junior high school transition. Family processes and self-perceptions as protective and risk factors. *The Journal of Early Adolescence, 14*, 162-199.

Markiewicz, D., Doyle, A. B., & Brendgen, M. (2001). The quality of adolescents' friendships: Associations with mothers' interpersonal relationships, attachments to parents and friends, and prosocial behaviors. *Journal of Adolescence, 24*, 429-445.

Marks, H. M. (2000). Student engagement in instructional activity: Patterns in the elementary, middle, and high school years. *American Educational Research Journal, 37*, 153-184.

Marks, P. E. L., Cillessen, A. H. N., & Crick N. R. (2011, April). *Popular by association: The theory of adolescent popularity contagion.* Paper presented at the biennial meeting of the Society for Research in Child Development, Montréal, Canada.

Marks, P. E. L., Cillessen, A. H. N., & Crick, N. R. (2012). Popularity contagion among adolescents. *Social Development, 21*, 501-521.

Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98*, 224-253.

Martin, A. J. (2011). Courage in the classroom: Exploring a new framework predicting academic performance and engagement. *School Psychology Quarterly, 26*, 145-160.

Masten, C. L., Juvonen, J., & Spatzier, A. (2009). Relative importance of parents and peers. *The Journal of Early Adolescence, 29*, 773-799.

Maulana, R., Opdenakker, M., Stroet, K., & Bosker, R. Observed lesson structure during the first year of secondary education: Exploration of change and link with academic engagement. *Teaching and Teacher Education, 28*, 835-850.

McAdams, D. P. (1995). What do we know when we know a person? *Journal of Personality, 63*, 365-396.

McAdams, D. P., & Olson, B. D. (2010). Personality development: Continuity and change over the life course. *Annual Review of Psychology, 61*, 517-542.

McCrae, R. R., & Costa, P. T. (1996). Toward a new generation of personality theories: theoretical contexts for the Five-Factor model. In J. S. Wiggins (Ed.), *The Five-Factor Model of personality. Theoretical perspectives* (pp. 51-87). New York: The Guildford Press.

McDonald, K. L., Wang, J., Menzer, M. M., Rubin, K. H., & Booth-LaForce, C. (2011). Prosocial behavior moderates the effects of aggression on young adolescents' friendships. *International Journal of Developmental Science, 5*, 127-137.

Mendelson, M. J., & Kay, A. C. (2003). Positive feelings in friendship: does imbalance in the relationship matter? *Journal of Social and Personal Relationships, 20*, 101-116.

Mischel, W., Shoda, Y., & Peake, P. K. (1988). The Nature of Adolescent Competencies Predicted by Preschool Delay of Gratification. *Journal of Personality & Social Psychology, 54*, 687-696.

Mulder, S. F., Faber, M., & van Aken, M. A. G. (2012). Plezier op School: Een zomercursus om de sociale competentie van aanstaande brugklassers te verhogen. In F. A. Goossens, M. M. Vermande, M. van der Meulen (Eds.). *Pesten op school* (pp. 197-202). Den Haag: Boom/Lemma.

Muris, P., Meesters, C., & van, d. B. (2003). The Strengths and Difficulties Questionnaire (SDQ): Further evidence for its reliability and validity in a community sample of Dutch children and adolescents. *European Child & Adolescent Psychiatry, 12*, 1-8.

Newcomb, A. F., Bukowski, W. M., & Pattee, L. (1993). Children's peer relations: a meta-analytic review of popular, rejected, neglected, controversial, and average sociometric status. *Psychological Bulletin, 113*, 99-128.

Noftle, E. E., & Robins, R. W. (2007). Personality predictors of academic outcomes: Big Five correlates of GPA and SAT scores. *Journal of Personality & Social Psychology, 93*, 116-130.

Nolen-Hoeksema, S., & Girgus, J. S. (1994). The emergence of gender differences in depression during adolescence. *Psychological Bulletin, 115*, 424-443.

Nottelmann, E. D. (1987). Competence and self-esteem during transition from childhood to adolescence. *Developmental Psychology, 23*, 441-450.

Paulhus, D. L., & Vazire, S. (2007). The self-report method. In R. W. Robins, R. C. Fraley & R. F. Krueger (Eds.), *Handbook of research methods in personality psychology* (pp. 224-239). New York: The Guilford Press.

Pekrun, R. (2006). The control-value theory of achievement emotions: Assumptions, corollaries, and implications for educational research and practice. *Educational Psychology Review, 18*, 315-341.

Pekrun, R., Goetz, T., Frenzel, A. C., Barchfeld, P., & Perry, R. P. (2011). Measuring emotions in students' learning and performance: The Achievement Emotions Questionnaire (AEQ). *Contemporary Educational Psychology, 36*, 36-48.

Pekrun, R., Goetz, T., Titz, W., & Perry, R. P. (2002). Academic emotions in students' self-regulated learning and achievement: A program of qualitative and quantitative research. *Educational Psychologist, 37*, 91-105.

Pellegrini, A. D., & Bartini, M. (2000). A longitudinal study of bullying, victimization, and peer affiliation during the transition from primary school to middle school. *American Educational Research Journal, 37*, 699-725.

Penner, L. A., Dovidio, J. F., Piliavin, J. A., & Schroeder, D. A. (2005). Prosocial behavior: Multilevel perspectives. *Annual Review of Psychology, 56*, 365-392.

Petersen, A. C., Sarigiani, P. A., & Kennedy, R. E. (1991). Adolescent depression: Why more girls? *Journal of Youth and Adolescence, 20*, 247-271.

Poorthuis, A. M. G., Thomaes, S., Denissen, J. J. A., van Aken, M. A. G., & Orobio de Castro, B. (2012). Prosocial tendencies predict friendship quality, but not for popular children. *Journal of Experimental Child Psychology, 112*, 378-388.

Poropat, A. E. (2009). A meta-analysis of the Five-Factor Model of personality and academic performance. *Psychological Bulletin, 135*, 322-338.

Preacher, K. J., Curran, P. J., & Bauer, D. J. (2006). Computational tools for probing interactions in multiple linear regression, multilevel modeling, and latent curve analysis. *Journal of Educational and Behavioral Statistics, 31*, 437-448.

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*, 879-891.

Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research, 42*, 185-227.

Prinstein, M. J., Brechwald, W. A., & Cohen, G. L. (2011). Susceptibility to peer influence: Using a performance-based measure to identify adolescent males at heightened risk for deviant peer socialization. *Developmental Psychology, 47*, 1167-1172.

Proyer, R. T., & Häusler, J. (2007). Assessing behavior in standardized settings: The role of objective personality tests. *International Journal of Clinical and Health Psychology, 7*, 537-546.

Pulfrey, C., Buchs, C., & Butera, F. (2011). Why grades engender performance-avoidance goals: The mediating role of autonomous motivation. *Journal of Educational Psychology, 103*, 683-700.

Robertson, J. (2000). Is attribution training a worthwhile classroom intervention for K-12 students with learning difficulties? *Educational Psychology Review, 12*, 111-134.

Reynolds, B. M., & Juvonen, J. (2012). Pubertal timing fluctuations across middle school: Implications for girls' psychological health. *Journal of Youth and Adolescence, 41,* 677-690.

Robins, R. W., Tracy, J. L., & Sherman, J. W. (2007). What kind of methods do personality psychologists use? A survey of journal editors and editorial board members. In R. W. Robins, R. C. Fraley & R. F. Krueger (Eds.), *Handbook of research methods in personality psychology* (pp. 673-678). New York: The Guilford Press.

Robins, R. W., Trzesniewski, K. H., Tracy, J. L., Gosling, S. D., & Potter, J. (2002). Global self-esteem across the life span. *Psychology and Aging, 17*, 423-434.

Rose, A. J., Swenson, L. P., & Carlson, W. (2004). Friendships of aggressive youth: Considering the influences of being disliked and of being perceived as popular. *Journal of Experimental Child Psychology, 88*, 25-45.

Rozendaal, J. S., Minnaert, A., & Boekaerts, M. (2001). Motivation and self-regulated learning in secondary vocational education: information-processing type and gender differences. *Learning and Individual Differences, 13*, 273-289.

Rubin, K. H., Bukowski, W. M., & Parker, J. G. (2006). Peer interactions, relationships, and groups. In W. Damon, R. M. Lerner (Series Eds.) & N. Eisenberg (Vol. Ed.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development.* (pp. 571-645). New York: Wiley.

Rubio, V. J., Hernandez, J. M., Zaldivar, F., Marquez, O., & Santacreu, J. (2010). Can we predict risk-taking behavior? Two behavioral tests for predicting guessing tendencies in a multiple-choice test. *European Journal of Psychological Assessment, 26*, 87-94.

Rudolph, K. D. (2002). Gender differences in emotional responses to interpersonal stress during adolescence. *Journal of Adolescent Health, 30*(4, Supplement 1), 3-13.

Rudolph, K. D., Lambert, S. F., Clark, A. G., & Kurlakowsky, K. D. (2001). Negotiating the transition to middle school: The role of self-regulatory processes. *Child Development, 72*, 929.

Salmivalli, C. (1999). Participant role approach to school bullying: implications for interventions. *Journal of Adolescence, 22*, 453-459.

Sandstrom, M. J., & Cillessen, A. H. N. (2006). Likeable versus popular: Distinct implications for adolescent adjustment. *International Journal of Behavioral Development, 30*, 305-314.

Scholte, R. H., van Aken, M. A. G., & van Lieshout, C. F. M. (1997). Adolescent personality factors in self-ratings and peer nominations and their prediction of peer acceptance and peer rejection. *Journal of Personality Assessment, 69*, 534-554.

Schwartz, D., Hopmeyer Gorman, A., Nakamoto, J., & McKay, T. (2006). Popularity, social acceptance, and aggression in adolescent peer groups: Links with academic performance and school attendance. *Developmental Psychology, 42*, 1116-1127.

Seidman, E., Allen, L., Aber, J. L., Mitchell, C., & Feinman, J. (1994). The impact of school transitions in early adolescence on the self-system and perceived social context of poor urban youth. *Child Development, 65*, 507-522.

Shim, S., & Ryan, A. (2005). Changes in self-efficacy, challenge avoidance, and intrinsic value in response to grades: The role of achievement goals. *The Journal of Experimental Education, 73*, 333-349.

Shiner, R., & Caspi, A. (2003). Personality differences in childhood and adolescence: measurement, development, and consequences. *Journal of Child Psychology and Psychiatry, 44*, 2-32.

Simmons, R. G., & Blyth, D. A. (1987). *Moving into adolescence: The impact of pubertal change and school context*. New York: Aldine de Gruyter.

Sirsch, U. (2003). The impending transition from primary to secondary school: Challenge or threat? *International Journal of Behavioral Development, 27*, 385-395.

Skinner, E., Furrer, C., Marchand, G., & Kindermann, T. (2008). Engagement and disaffection in the classroom: Part of a larger motivational dynamic? *Journal of Educational Psychology, 100*, 765-781.

Skinner, E. A., Wellborn, J. G., & Connell, J. P. (1990). What it takes to do well in school and whether I've got it: A process model of perceived control and children's engagement and achievement in school. *Journal of Educational Psychology, 82*, 22-32.

Statistics Netherlands (2009). *Bevolking: generatie, geslacht, leeftijd en herkomstgroepering.* Retrieved from http://statline.cbs.nl

Statistics Netherland (2010). *Voortijdig schoolverlaters; inkomstenniveau huishouden.* Retrieved from http://statline.cbs.nl

Statistics Netherlands (2012). *Voorgezet onderwijs: deelname leerlingen per onderwijssoort.* Retrieved from http://statline.cbs.nl

Tangney, J. P., & Dearing, R. L. (2003). *Shame and guilt*. New York: The Guilford Press.

Tellegen, A. (1991). Personality traits: Issues of definition, evidence, and assessment. In W. M. Grove, & D. Cicchetti (Eds.), *Thinking clearly about psychology. Volume 2: personality and psychopathology* (pp. 10-35). Minneapolis, MN: University of Minnesota Press.

Tellegen, A., Watson, D., & Clark, L. A. (1999). On the dimensional and hierarchical structure of affect. *Psychological Science, 10*, 297-303.

Thomaes, S., Bushman, B. J., Stegge, H., & Olthof, T. (2008). Trumping shame by blasts of noise: Narcissism, self-esteem, shame, and aggression in young adolescents. *Child Development, 79*, 1792-1801.

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

Thomaes, S., Stegge, H., Bushman, B. J., Olthof, T., & Denissen, J. (2008). Development and validation of the Childhood Narcissism Scale. *Journal of Personality Assessment, 90*, 382-391.

Trautwein, U., Ludtke, O., Marsh, H. W., Koller, O., & Baumert, J. (2006). Tracking, grading, and student motivation: Using group composition and status to predict self-concept and interest in ninth-grade mathematics. *Journal of Educational Psychology, 98*, 788-806.

Trautwein, U., Ludtke, O., Roberts, B. W., Schnyder, I., & Niggli, A. (2009). Different forces, same consequence: Conscientiousness and competence beliefs are independent predictors of academic effort and achievement. *Journal of Personality & Social Psychology, 97*, 1115-1128.

Treffers, P. D. A., Goedhart, A. W., Van den Bergh, B. R. H., Veerman, J. W., Ackaert, L., & De Rycke, L. (2002). *Competentie Belevingsschaal voor Adolescenten (CBSA), handleiding*. Lisse: Swets Test Publishers.

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.

Turner, J. E., & Schallert, D. L. (2001). Expectancy-value relationships of shame reactions and shame resiliency. *Journal of Educational Psychology, 93*, 320-329.

Vaillancourt, T., & Hymel, S. (2006). Aggression and social status: the moderating roles of sex and peer-valued characteristics. *Aggressive Behavior, 32*, 396-408.

Vallerand, R. J., Fortier, M. S., & Guay, F. (1997). Self-determination and persistence in a real-life setting: Toward a motivational model of high school dropout. *Journal of Personality & Social Psychology, 72*, 1161-1176.

van der Linden, D., Scholte, R. H. J., Cillessen, A. H. N., Nijenhuis, J. t., & Segers, E. (2010). Classroom ratings of likeability and popularity are related to the Big Five and the general factor of personality. *Journal of Research in Personality, 44*, 669-672.

Vos, P. G. (1988). *Bourdon-Vos-test*. Lisse: Zwets & Zeitlinger B.V.

Walster, E., Berscheid, E., & Walster, G. W. (1976). New directions in equity research. In L. Berkowitz, & E. Walster (Eds.), *Equity theory: Toward a general theory of social interaction. Advances in experimental social psychology* (Vol 9 ed., pp. 1-42). New York: Academic Press.

Wampler, R. S., Munsch, J., & Adams, M. (2002). Ethnic differences in grade trajectories during the transition to junior high. *Journal of School Psychology, 40*, 213-237.

Wang, M., Willett, J. B., & Eccles, J. S. (2011). The assessment of school engagement: Examining dimensionality and measurement invariance by gender and race/ethnicity. *Journal of School Psychology, 49*, 465-480.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS Scales. *Journal of Personality & Social Psychology, 54*, 1063-1070.

Watson, D., Wiese, D., Vaidya, J., & Tellegen, A. (1999). The two general activation systems of affect: Structural findings, evolutionary considerations, and

psychobiological evidence. *Journal of Personality and Social Psychology, 76*, 820-838.

Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review, 92*, 548-573.

Weiner, B. (2010). The development of an attribution-based theory of motivation: A history of ideas. *Educational Psychologist, 45*, 28-36.

Wigfield, A., Eccles, J. S., MacIver, D., Reuman, D. A., & Midgley, C. (1991). Transitions during early adolescence: Changes in children's domain-specific self-perceptions and general self-esteem across the transition to junior high school. *Developmental Psychology, 27*, 552-565.

Wigfield, A., Tonks, S., & Klauda, S. (2009). Expectancy-value theory. In K. Wentzel, & A. Wigfield (Eds.), *Handbook of motivation at school* (pp. 55-76). New York: Routledge.

Wigfield, A., & Eccles, J. S. (2000). Expectancy–value theory of achievement motivation. *Contemporary Educational Psychology, 25*, 68-81.

Winter, D. G., John, O. P., Stewart, A. J., Klohnen, E. C., & Duncan, L. E. (1998). Traits and motives: Toward an integration of two traditions in personality research. *Psychological Review, 105*, 230-250.

Wood, D., & Wortman, J. (2012). Trait means and desirabilities as artifactual and real sources of differential stability of personality traits. *Journal of Personality, 80*, 665-701.

Yeager, D. S., & Walton, G. M. (2011). Social-psychological interventions in education. *Review of Educational Research, 81*, 267-301.

You, S., & Sharkey, J. (2009). Testing a developmental–ecological model of student engagement: a multilevel latent growth curve analysis. *Educational Psychology, 29*, 659-684.

Zanobini, M., & Usai, M. C. (2002). Domain-specific self-concept and achievement motivation in the transition from primary to low middle school. *Educational Psychology, 22*, 203-217.

Zuckerman, M. (1999). *Vulnerability to psychopathology: A biosocial model*. Washington, DC: American Psychological Association.

Samenvatting

Kinderen in Transitie: Moeilijkheden en Mogelijkheden Tijdens de Overgang naar de Middelbare School

De overgang van basisschool naar middelbare school

Het leven kent veel transitiemomenten, zoals voor het eerst naar de basisschool gaan, de overgang van school naar werk, vader of moeder worden en met pensioen gaan. Transities gaan vaak gepaard met abrupte veranderingen in de omgeving. Een persoon “in transitie” ontmoet onbekende mensen, krijgt andere rollen en nieuwe (ontwikkelings)taken (Caspi & Moffit, 1993). Mensen verschillen in hoe ze met deze veranderingen omgaan. Volgens het accentuatiemodel vallen mensen in een nieuwe, onzekere situaties vaak terug op hun meest karakteristieke manier van gedragen (Caspi & Moffit, 1993). Individuele verschillen tussen mensen worden volgens dit model dus geaccentueerd tijdens transities. Transities vormen daarmee een unieke mogelijkheid om de effecten van individuele verschillen op het functioneren te bestuderen.

Een belangrijke transitie in het leven van kinderen is de overgang van de basisschool naar de middelbare school. Deze overgang brengt grote veranderingen met zich mee, zowel op academisch als op sociaal gebied. Van een kleine basisschool met één of twee groepsleerkrachten gaan kinderen naar een grotere school met elk uur een andere leraar. Op de middelbare school worden doorgaans hogere eisen aan leerlingen gesteld op het gebied van zelfstandig werken en plannen (Rudolph, Lambert, Clark, & Kurlakowsky, 2001). Vaak ligt er meer nadruk op cijfers en worden beoordelingen strenger (Eccles et al., 1993). Op sociaal gebied verandert er ook veel: kinderen komen in een nieuwe klas, waar ze nieuwe contacten moeten leggen met leeftijdgenoten en hun positie moeten zien vinden in de sociale pikorde.

Hoewel de meeste kinderen de overgang naar de middelbare school als een grote verandering ervaren, zijn er verschillen in hun functioneren na de overgang. Het doel van dit proefschrift was om beter the begrijpen waarom kinderen verschillen in hun sociaal, schools en psychisch functioneren na de overgang van de basisschool naar de middelbare school. Daartoe hebben we een longitudinale studie uitgevoerd met vijf meetmomenten. Het eerste meetmoment vond plaats aan het einde van de basisschool, het tweede meetmoment twee tot drie weken na de overgang en de overige drie meetmomenten om de drie maanden in het eerste jaar van de middelbare school. We hebben een aantal individuele verschillen tussen

kinderen vóór de overgang in ogenschouw genomen, zoals persoonlijkheidstrekken en verwachtingen. Daarnaast hebben we gekeken naar een aantal belangrijke ervaringen ná de overgang naar de middelbare school, zoals de acceptatie door leeftijdgenoten in de nieuwe klas en de eerste rapportcijfers. In verschillende studies hebben we de effecten van deze individuele verschillen tussen kinderen op hun sociaal, schools en psychisch functioneren onderzocht.

Continuïteit en verandering in functioneren

Het functioneren van kinderen wordt deels voorspeld door voorgaand functioneren. Met andere woorden, als een kind goed functioneert op de basisschool op een bepaald domein, dan is er een grote kans dat dit kind in hetzelfde domein ook goed zal functioneren op de middelbare school. In dit proefschrift vonden we deze continuïteit in functioneren voor zelfwaardering, emotionele en gedragsmatige betrokkenheid bij activiteiten in de klas, sociale acceptatie door leeftijdgenoten en schoolprestaties.

Goed functioneren op de basisschool is echter geen garantie voor succes op de middelbare school. Voor sommige kinderen gaat de overgang naar de middelbare school gepaard met moeilijkheden, voor andere kinderen biedt het juist nieuwe mogelijkheden. Wij waren geïnteresseerd in individuele verschillen in *verandering* in functioneren tijdens de overgang van basisschool naar de middelbare school. Daarom hebben we in alle longitudinale studies gecontroleerd voor voorgaand functioneren. De belangrijkste bevindingen in dit proefschrift zullen worden samengevat voor drie domeinen van functioneren: sociaal, schools en psychisch functioneren.

Sociaal functioneren

In hoofdstuk 2 en 3 hebben we bestudeerd in hoeverre de neiging om prosociaal te zijn (ook wel *agreeableness* genoemd) gerelateerd is aan sociale acceptatie door leeftijdgenoten en aan vriendschapskwaliteit. Tot nu toe is prosocialiteit vooral gemeten door middel van zelfrapportage of rapportage door leeftijdsgenoten. Deze meetmethoden hebben sterke kanten (o.a. dat de

informanten kennis hebben over gedrag in een groot aantal situaties), maar ook beperkingen. De kwaliteit van zelfrapportage kan bijvoorbeeld te lijden hebben onder beperkte zelfkennis en op een sociaal wenselijke manier antwoorden (Paulhus & Vazire, 2007). Rapportage door leeftijdgenoten kan vertekend zijn door reputaties die kinderen hebben. Onderzoek laat zien dat kinderen meer positief gedrag onthouden van sociaal geaccepteerde kinderen dan van afgewezen kinderen, zelf als de informatie die ze over deze kinderen hebben gekregen identiek is (Hymel, Wagner & Butler, 1990). Taken waarin gedragsneigingen van kinderen worden gemeten in een gestandaardiseerde situatie hebben geen van de genoemde beperkingen.

We hebben daarom een korte gedragstaak ontwikkeld om te meten in welke mate kinderen geneigd zijn tot prosociaal gedrag. We bekeken het hulpgedrag van kinderen in reactie op e-mails met vragen van onbekende, jongere kinderen, terwijl ze bezig waren met andere activiteiten op de computer (o.a. een puzzel maken). De kwaliteit van de hulp die ze gaven vormde de maat voor prosociaal gedrag.

We hebben onderzocht hoe onze nieuwe gedragstaak en een bekende zelfrapportagevragenlijst voor prosocialiteit (*agreeableness*), gemeten aan het eind van de basisschool, veranderingen in sociale acceptatie na de overgang naar de middelbare school voorspellen. Alleen prosocialiteit gemeten met de gedragtaak voorspelde sociale acceptatie een jaar later, zelfrapportage niet. De cross-sectionele studie in hoofdstuk 3, waarbij de data van het eerste meetmoment (eind basisschool) werden gebruikt, wees uit dat beide maten van prosocialiteit gerelateerd zijn aan hogere ervaren vriendschapskwaliteit.

Kinderen vinden echter niet alleen prosociaal gedrag belangrijk binnen hun sociale relaties. Ze vinden het ook heel belangrijk om populair te zijn en ze willen het liefst omgaan met populaire leeftijdgenoten (Hawley, Little, & Card, 2007; LaFontana & Cillesen, 2010). Ons onderzoek in hoofdstuk 3 toont aan dat de populariteit van een kind de relatie tussen prosociaal gedrag en vriendschapskwaliteit modereert. Uit de resultaten bleek dat prosociaal gedrag gerelateerd was aan hogere ervaren vriendschapskwaliteit voor niet-populaire kinderen, maar dit gold niet voor populaire kinderen. Populaire kinderen hadden een relatief hoge vriendschapskwaliteit, ongeacht of ze zelf prosociaal waren of niet. Deze kinderen hebben mogelijk

compenserende eigenschappen die het aantrekkelijk maken ze als vriend te hebben. Populaire kinderen zijn invloedrijk en krijgen veel aandacht in de groep. Bovendien kunnen ze hun vrienden helpen om populairder te worden. De vrienden van populaire kinderen willen hun vriendschap dus misschien graag behouden, ongeacht of hun populaire vriend prosociaal is of niet. Deze studie laat zien dat het belangrijk is om de vriendschappen van kinderen in de context van hun sociale rollen in de klas te bestuderen, iets wat tot nu toe nog niet vaak is gedaan (Rubin, Bukowski, & Parker, 2006).

Schools functioneren

In hoofdstuk 2 hebben we onderzocht of de mate waarin kinderen consciëntieus zijn – volhardend zijn in het nastreven van hun doelen – gerelateerd is aan veranderingen in schoolprestaties na de overgang naar de middelbare school. Net als voor prosocialiteit hebben we een korte gedragstaak ontwikkeld om consciëntieusheid te meten. In deze taak werkten kinderen aan een saaie opdracht waarbij af en toe leuke filmpjes opkwamen, die kinderen konden bekijken of weg klikken om verder te werken aan hun oorspronkelijke doel. Het aantal filmpjes dat kinderen weg klikten vormde de maat voor consciëntieusheid. De gedragstaak en zelfgerapporteerde consciëntieusheid gemeten aan het eind van de basisschool waren beide unieke voorspellers van rapportcijfers een jaar later, gecontroleerd voor voorgaande schoolprestaties (Cito-score). Kinderen die zich consciëntieus gedragen op de basisschool hebben dus over het algemeen hogere cijfers in de brugklas dan kinderen die even goed presteerden op de basisschool, maar minder consciëntieus zijn.

Rapportcijfers zijn een belangrijke indicator van schools functioneren. Tegelijkertijd is het krijgen van een cijfer een ingrijpende gebeurtenis voor kinderen. Cijfers kunnen uiteenlopende emotionele reacties oproepen en uitmonden in meer of minder actieve betrokkenheid bij activiteiten in de les (hoofdstuk 5). Dit is waarschijnlijk extra belangrijk tijdens de eerste periode op de middelbare school als leerlingen nog onzeker zijn over in hoeverre hun prestaties voldoen aan de eisen van hun nieuwe school. Uit eerder onderzoek blijkt dat aan het begin van de middelbare

school zowel cijfers als schoolbetrokkenheid gemiddeld genomen dalen (Barber & Olsen, 2004; Eccles e.a., 1993; Maulana, Opdenakker, Stroet, & Bosker 2012). Schoolbetrokkenheid is tot nu toe vooral onderzocht als voorspeller van schoolprestaties, maar in dit proefschrift werd ook onderzocht in hoeverre schoolbetrokkenheid een *gevolg* is van schoolprestaties.

Uit hoofdstuk 5 blijkt dat de cijfers die kinderen haalden op hun eerste rapport veranderingen in zowel emotionele schoolbetrokkenheid (interesse en enthousiasme tijdens de les) en gedragsmatige schoolbetrokkenheid (actief meedoen in de les) voorspelden tijdens het eerste half jaar in de brugklas. Hoge cijfers verminderden de normaal voorkomende daling in schoolbetrokkenheid, terwijl lage cijfers deze daling nog meer versterkten. Deze relaties weren gemedieerd door positieve en negatieve emotionele reacties die kinderen hadden bij het zien van hun rapport.

Sommige kinderen waren gevoeliger voor cijfers dan anderen. Voor kinderen die het idee hadden dat hun klasgenoten hoge cijfers haalden was de relatie tussen cijfers, negatieve emoties en emotionele schoolbetrokkenheid sterker dan voor kinderen die dachten dat klasgenoten lage cijfers haalden. De impact van cijfers hangt dus deels af van de sociale context waarin leerlingen hun cijfer krijgen. Jongens reageerden sterker op cijfers dan meisjes, mogelijk vanwege de competitiviteit die cijfers oproepen (Pulfrey, Buchs & Butera, 2011). Aangezien jongens gemiddeld genomen lagere cijfers hadden dan meisjes en relatief veel negatieve emoties ervoeren als gevolg van deze cijfers, waren zij extra kwetsbaar voor dalingen in emotionele schoolbetrokkenheid.

Psychisch functioneren

Naast de omgang met leeftijdgenoten en schoolprestaties, is ook de zelfwaardering van kinderen een belangrijk aspect van het functioneren. Veel studies hebben gemiddelde veranderingen in zelfwaardering onderzocht en daarbij inconsistente resultaten gevonden (o.a. Nottelman, 1987; Simmons & Blyth, 1987). Op basis van de sociometer theorie voorspelden we dat de veranderingen in zelfwaardering van kinderen afhangen van hoe positief ze hun veranderde sociale

omstandigheden ervaren (hoofdstuk 3). De sociometer theorie beschrijft zelfwaardering als een soort graadmeter van sociale acceptatie die veranderingen in sociale acceptatie van leeftijdgenoten bijhoudt. Aan het eind van de basisschool hebben kinderen verwachtingen over hoe ze gewaardeerd zullen worden door hun toekomstige klasgenoten op de middelbare school. Eenmaal op de middelbare school worden deze verwachtingen getoetst aan de realiteit van een nieuwe groep klasgenoten. Onze hypothese was dat veranderingen in zelfwaardering voorspeld worden door de discrepantie tussen de sociale acceptatie die kinderen verwachtten voor de overgang naar de middelbare school en de daadwerkelijke sociale acceptatie zoals ze die na de overgang ervaren. Dit bleek inderdaad het geval:

Tegenvallende sociale acceptatie voorspelde dalingen in de zelfwaardering van kinderen; meevallende sociale acceptatie voorspelde stijgingen in zelfwaardering. Niet alle kinderen waren even gevoelig voor deze discrepanties. Hoe hoger kinderen scoorden op de persoonlijkheidstrek neuroticisme – ook wel emotionele stabiliteit genoemd – hoe kwetsbaarder deze kinderen waren voor dalingen in zelfwaardering als gevolg van tegenvallende sociale acceptatie door leeftijdgenoten. Omdat meisje hoger scoorden op neuroticisme, waren zij kwetsbaarder voor deze dalingen in zelfwaardering dan jongens.

Implicaties voor het onderwijs

Wat kan het onderwijsveld leren van het onderzoek in dit proefschrift? In de eerste plaats toont dit proefschrift aan dat er grote individuele verschillen zijn in hoe kinderen zich aanpassen na de overgang naar een nieuwe school. Voor sommige kinderen gaat de overgang naar de brugklas gepaard met moeilijkheden in sociaal, schools of psychisch functioneren. Andere kinderen maken de overgang zonder noemenswaardige veranderingen in hun functioneren, of gaan juist beter functioneren op de middelbare school. Als leraren zich bewust zijn van de eigenschappen die kinderen kwetsbaarder maken tijdens de schoolovergang, kunnen ze deze kinderen misschien extra ondersteunen. Kinderen die minder prosociaal, minder consciëntieus en minder emotioneel stabiel (hoger scoren op de persoonlijkheidstrek neuroticisme) zijn, lopen groter risico op dalingen in

respectievelijk sociaal, schools en psychisch functioneren na de overgang naar de middelbare school.

Ten tweede komt uit dit proefschrift naar voren dat verwachtingen en percepties van leeftijdgenoten een belangrijke rol spelen in het functioneren van kinderen na de overgang naar de middelbare school, niet alleen in het sociaal functioneren maar ook in het schools en psychisch functioneren. Leraren doen er daarom goed aan om veel aandacht te besteden aan het sociale klimaat in de klas, vooral net na de schoolovergang als nieuwe relaties worden gevormd.

Ten derde blijkt uit dit proefschrift dat cijfers serieuze gevolgen kunnen hebben voor de interesse en inzet van leerlingen op school. Cijfers geven belangrijke informatie aan leraren, leerlingen en ouders, maar het is belangrijk dat leraren zich ook bewust zijn van de potentiële negatieve gevolgen van (vooral lage) cijfers op de motivatie van leerlingen. Negatieve effecten kunnen worden voorkomen als leraren aan slecht presterende leerlingen laten weten dat hun moeilijkheden waarschijnlijk tijdelijk zijn en dat betere resultaten te verwachten zijn als ze de volgende keer meer hun best doen en andere strategieën gebruiken.

Conclusie

Transities zijn periodes van grote veranderingen in veel verschillende domeinen van het leven. In dit proefschrift hebben we één transitie in het leven van kinderen bestudeerd: de overgang van de basisschool naar de middelbare school. Deze transitie wordt gekenmerkt door zowel continuïteit als verandering in het sociaal, schools en psychisch functioneren van kinderen. Hoe kinderen zich aanpassen aan hun nieuwe schoolomgeving hangt van veel verschillende factoren af, zoals hun persoonlijkheid, hun verwachtingen voorafgaand aan de transitie en ervaringen na de transitie (hoe goed ze zich geaccepteerd voelen en welke cijfers ze krijgen). De overgang naar de middelbare school is voor bijna alle kinderen een spannende tijd, maar voor sommigen vormt het een risico voor het functioneren terwijl het voor anderen een tijd van mogelijkheden blijkt te zijn.

Dankwoord

Toen ik aan het begin stond van mijn promotietraject leek vijf jaar een eeuwigheid, maar achteraf is die tijd voorbij gevlogen. En nu ligt er dan dit proefschrift als resultaat. Hoewel alleen mijn naam op de voorkant staat, hebben velen er een bijdrage aan geleverd, die ik daarvoor graag wil bedanken.

Allereerst mijn begeleiders Bram, Jaap, Marcel en Sander. Bedankt voor de vele uren waarin jullie met mij hebben meegedacht over de opzet van het onderzoek, de ontwikkeling van de computertaken, de keuze van de vragenlijsten, de statistische analyses en rapporteren van de resultaten in artikelen. Jullie hebben mij geleerd dat goed onderzoek doen op verschillende manieren kan. Ik denk met een glimlach terug aan mijn manuscripten met in vier kleuren—soms tegengestelde—feedback. Juist hierdoor werd ik gestimuleerd zelf kritisch na te denken over wat ik het beste vond.

Bram, ik heb ervan genoten om met je te brainstormen en ideeën uit te wisselen, bijvoorbeeld bij het bedenken van de SIP vragen voor de computertaken. Jaap, hoewel fysiek op afstand was je altijd goed bereikbaar per mail en telefoon. Je originele commentaren op mijn artikelen hebben me vaak aan het denken gezet en van je SPSS tips heb ik nog steeds profijt. Marcel, jij hebt me op mogelijkheden gewezen die ik zelf (nog) niet zag en me op de juiste momenten gestimuleerd een uitdaging aan te gaan, zoals het lidmaatschap van de ISSBD Membership Committee en het subsidievoorstel voor ELS dat ik met jouw hulp in korte tijd heb geschreven.

Sander, je bent letterlijk mijn *dagelijks* begeleider geweest, want we hebben de afgelopen jaren intensief samengewerkt op (bijna) dagelijkse basis. Bedankt voor alle kennis en kunde die je met me hebt gedeeld op vele gebieden, van praktische tips voor de dataverzameling tot het op een aantrekkelijke en overtuigende manier schrijven van artikelen. Ik waardeer het heel erg dat je me ook deelgenoot hebt gemaakt van jouw werk, waardoor ik al vroeg tijdens mijn promotietraject het reviewproces en alles wat daarbij komt kijken leerde kennen. Naast aandacht voor de inhoud, had je ook veel aandacht voor mij als persoon. Je bood altijd een luisterend oor en ik heb veel gehad aan je steun als het eens tegenzat. Bram, Jaap, Marcel en Sander, ik prijs me gelukkig met jullie als mijn (co-) promotoren en ik hoop in de toekomst nog veel met jullie te kunnen samenwerken.

Ik bedank natuurlijk de scholen, leraren, leerlingen en ouders die hebben deelgenomen aan het onderzoek. Zonder jullie medewerking was het onderzoek niet

mogelijk geweest. In totaal hebben 676 leerlingen uit Gorinchem en omstreken in groep 8 en/of de brugklas tot wel vijf keer toe een lesuur lang vragenlijsten ingevuld. Na een paar keer soms wat zuchtend en verbaasd uitroepend: alweer?!! Gelukkig maakte de verloting van de *gift cards* na afloop van elke meting veel goed. Bedankt dat jullie de vragen elke keer zo serieus hebben beantwoord. De leraren bedank ik voor het beschikbaar stellen van hun lestijd.

In het bijzonder wil ik mijn contactpersonen op de middelbare scholen bedanken: Everine van der Hoek, Jan Geertsema, Joke Stiphout, Pieter Snel, Philip Lommers en Pius van Oort. Bedankt voor jullie enthousiaste ondersteuning van het onderzoek, die varieerde van het verspreiden van toestemmingsbrieven en het maken van de roosters tot het creëren van draagvlak onder de docenten. Jan, bedankt voor je hulp in het begin van het project. Je was de eerste die deelname van jouw school aan het onderzoek toezegde en je hebt me vervolgens geholpen veel basisscholen en middelbare scholen in Gorinchem enthousiast te krijgen.

Bij het verzamelen van de data ben ik geholpen door bachelor- en masterstudenten en student-assistenten. Angela, Caroline, Eva, Florentine, Geraldine, Maaike, Marieke, Marylou, Marie-Claire, Mellanie, Lieveke, Lotte en Roos: bedankt voor jullie inzet! Sophieke, bedankt voor je bijdrage aan de ontwikkeling van de computertaken om persoonlijkheid te meten. Roos, ik wil je daarnaast bedanken voor je gastvrijheid tijdens mijn bezoek aan Berlijn.

Collega's van de afdeling ontwikkelingspsychologie, bedankt voor de fijne werksfeer, de gezellige lunches, praatjes op de gang en uitwisseling van ideeën voor onderzoek. Jonkies, het was fijn om samen een groep te vormen, op de hoogte te zijn van elkaars onderzoek en elkaar te helpen waar mogelijk. Nori, Maaike, Saskia en Laura, ik heb met veel plezier een kamer met jullie gedeeld. Saskia en Hilde, dank dat jullie mijn paranimfen wilden zijn.

Prof. Jaana Juvonen, thank you very much for giving me the opportunity to visit UCLA for three months. You immediately made me feel at home and I learned a lot during these months. Prof. Sandra Graham, thank you for the inspiring course on motivation in education. Cari, Casey, Lupita, Karen, Patrick, Samantha, Ylva, and all others from Jaana and Sandra's lab, thanks for all the fun we had both on and off campus! Alberto and Marisol, thank you for providing me with a home away from home.

Dankwoord

Mijn familie en vrienden bedank ik voor hun interesse in mijn onderzoek en voor alle herinneringen die ze met me gedeeld hebben over hun eigen overgang van de basisschool (ofwel lagere school) naar de middelbare school. Papa, we delen onze enthousiasme voor het onderwijs. Bedankt voor al je onderwijsadviezen en ideeën om studenten nog meer te activeren. Leuk dat ik jou nu soms kan adviseren over je actieonderzoek. We zullen vast nog heel wat discussiëren over het onderscheid tussen actieonderzoek en wetenschappelijk onderzoek. Mama, ik vind het geweldig dat we samen onze jeugdpsychologiepraktijk hebben opgezet. Je hebt me de fijne kneepjes van de Zelf Kennis Methode bijgebracht en ik bewonder je klinische kennis en kunde. Bedankt dat je me hiermee de kans geeft me ook in de klinische richting te ontwikkelen.

Sander—*mijn* Sander, zoals ik je op mijn werk vaak noem—wat fijn dat je je leven met mij wil delen. Je bent mijn steun en toeverlaat, dank je wel!

Curriculum Vitae

Astrid Poorthuis (1983) obtained a Master's degree in developmental psychology at Utrecht University. During her studies, she spent a semester at the University of Valencia (Spain) and she worked as an intern at the Child- and Youth Psychiatry Clinic at Sophia Children's Hospital in Rotterdam. After graduating in 2006 (cum laude), she became a junior lecturer at Utrecht University, teaching a variety of bachelor courses in psychology. In 2007 she started her five-year PhD project on individual differences in children's adjustment after the transition to secondary school. During this period she participated in the National Think Tank project (Nationale DenkTank), working three months in an interdisciplinary team of young professionals on innovative solutions to improve education. She also spent three months at the University of California at Los Angeles (UCLA) where she collaborated with Prof. Dr. Jaana Juvonen. In 2012, she obtained funding from the Utrecht University Research Impulse for Educational and Learning Sciences. Currently, she works as a post-doctoral researcher at Utrecht University in the Department of Developmental Psychology studying the impact of peers and receiving grades on daily fluctuations in school engagement. In addition, she provides psychological treatment to children, adolescents, and young adults in a clinical practice she started in collaboration with a healthcare psychologist.

Publications

This dissertation

Poorthuis, A. M. G., Thomaes, S., Denissen, J. J. A., van Aken, M. A. G., Orobio de Castro, B. (2012). Personality in action: Can brief behavioral personality tasks predict children's academic and social adjustment across the transition to secondary school? *Manuscript submitted for publication.*

Poorthuis, A. M. G., Thomaes, S., Denissen, J. J. A., van Aken, M. A. G., & Orobio de Castro, B. (2012). Prosocial tendencies predict friendship quality, but not for popular children. *Journal of Experimental Child Psychology, 112,* 378-388.

Poorthuis, A. M. G., Thomaes, S., van Aken, M. A. G., Denissen, J. J. A., Orobio de Castro, B. (2012). Dashed hopes, dashed selves? A sociometer perspective on self-esteem change across a school transition. *Manuscript submitted for publication.*

Poorthuis, A. M. G., Juvonen, J., Thomaes, S., Denissen, J. J. A., Orobio de Castro, B. & van Aken, M. A. G. (2012). Do grades shape students' school engagement? The psychological consequences of report cards at the beginning of secondary school. *Manuscript in preparation.*

Other publications

Brummelman, E., Thomaes, S., Walton, G. M., Poorthuis, A. M. G., Overbeek, G., Orobio de Castro, B., & Bushman, B. J. (2012). Reflecting upon unconditional regard bolsters the self: A longitudinal field experiment. *Manuscript in preparation.*

Koolen, S**.**, Poorthuis, A. M. G., van Aken, M. A. G. (2011). Cognitive distortions and self-regulatory personality traits associated with proactive and reactive aggression in early adolescence*. Cognitive Therapy and Research.* Advance online publication. doi: 10.1007/s10608-011-9407-6

Polman, H., Poorthuis, A. M. G., & Orobio de Castro, B. (2007). De relatie tussen gewelddadige videospellen en agressief gedrag. In A. Vyt, M. A. G. van Aken, J. D. Bosch & R. J. van der Gaag (Eds.), *Jaarboek ontwikkelingspsychologie, orthopedagogiek en kinderpsychiatrie*. Houten: Bohn, Stafleu van Loghum.

Thomaes, S**.**, Poorthuis, A. M. G., & Nelemans, S. (2011). Self-esteem*.* In: B. B. Brown & M. Prinstein (Eds.), *Encyclopedia of Adolescence*. Oxford: Academic Press.

Thomaes, S.**,** Reijntjes, A., Orobio de Castro, B., Bushman, B. J., Poorthuis, A. M. G., & Telch, M. J. (2010). I Like Me If You Like Me: On the Interpersonal Modulation and Regulation of Preadolescents' Self-Esteem. *Child Development, 81, 811-825.*