The handle http://hdl.handle.net/1887/54943 holds various files of this Leiden University dissertation.

**Author:** Meuwese, R.
**Title:** Me, My Friends, and I : a neuro-ecological perspective on adolescent prosocial development
**Issue Date:** 2017-10-31
CHAPTER 1
General introduction
CHAPTER 1

General introduction
1.1 INTRODUCTION

“umuntu ngumuntu ngabantu” is a Zulu proverb expressing the essence of humanity: “a person is a person through other persons”. This proverb emphasizes not only the survival of the human kind because of social bonds, but also the dependence of the existence and identity of a single person on its social environment. Throughout universal human development the social context is of tremendous relevance: from primary caretakers in infancy and onwards, to peers in childhood and adolescence, to romantic partners in adulthood (Bronfenbrenner, 1994).

Adolescence, the developmental phase between the onset of puberty and the culturally determined commencement of adulthood, is a unique period in social development: social dependence shifts from biological relatives towards non-kin individuals in the immediate environment. This transition “from parents to peers” is essential for further success in life in social and cognitive domains, for reproductive purposes, and for overall well-being (Nelson, Jarcho, & Guyer, 2016; Nelson, Leibenluft, McClure, & Pine, 2005; Seyfarth, & Cheney, 2012).

The aim of this thesis is to highlight social environmental and neural processes at play during adolescent prosocial development using an integrative approach of multiple levels of social functioning and relationships. Prosocial behavior is generally defined as behavior that benefits another individual or the relationship with this individual and has developmental advantages (Hay, 1994). Current models on adolescent prosocial development mainly focus on either the role of the social context of peer relationships or study neural correlates of (pro)social development in adolescence (Telzer, 2016). The goal of this thesis is to integrate these theoretical perspectives into a neuro-ecological model of adolescent prosocial development. This introduction provides a framework for the set of studies provided in this thesis and the integrative perspectives in the discussion. First, prosocial behavior will be introduced, then the adolescent peer context will be defined, followed by social brain development in adolescence. Finally I will provide a theoretical framework in which prosocial development, the peer context and social brain development can be incorporated. The final paragraph of this first chapter contains an outline of the thesis and describes how the individual chapters will can support a neuro-ecological model of adolescent prosocial development.
1.2 PROSOCIAL BEHAVIOR

Human prosocial behavior is defined as behavior that is beneficial for the other; this can be either costly (also referred to as ‘altruism’; Fehr & Fischbacher, 2003) or non-costly to the individual. Classic examples of prosocial behavior are cooperation and helping and these behaviors can be observed from early childhood on. Recent theory of the ontogeny of human prosocial behavior features the role of prosocial behaviors in cooperative breeding (Burkart et al., 2014; Tomasello, & Vaish, 2013). Instead of mother-child units that can be observed among many species, cooperative breeding is a reproductive system that can be observed among human and several non-human primates, and it secures survival of both offspring and mother. Rearing responsibilities are shared with genetically related and unrelated females within the group. This theory is able to fill in the gap in evolutionary theories about why prosocial behavior towards non-kin others can be observed.

Early in life, from around two years of age, requested and spontaneous prosocial actions can be observed (Zaki & Mitchell, 2013). That is, until young children become more selective in their sharing and selfish responding increases (Brownell, Svetlova, & Nichols, 2009; Fehr, Bernhard, & Rockenbach, 2008). It is during this phase that monitoring of adults about compliance to prosocial norms (e.g. “children should share”) becomes of importance for prosocial behavior to occur (Shaw et al., 2013). Adolescence, as the transition phase from parental dependence in childhood to cooperation with family and unrelated adults in adulthood, provides abundant opportunities for the training of prosocial behaviors. Time spent with peers increases, and acceptance and popularity among peers are important adolescent social needs (Levy, Kaplan, & Patrick, 2004). Research shows that prosocial behavior can be a means through which these needs can be met: more prosocial behavior is related to acceptance among peers and to higher status (Newcomb, Bukowski, & Pattee, 1993; Lease, Musgrove, & Axelrod, 2002; Rodkin, Farmer, Pearl, & Van Acker, 2000; Wolters, Knoors, Cillessen, & Verhoeven, 2013). Furthermore, adolescent’s well-being increases after being encouraged to show more prosocial behaviors (Layous, Nelson, Oberle, Schonert-Reichl, & Lyubomirsky, 2012).

Prosocial decision-making taps into affective and cognitive processes (Rand, Greene, & Nowak, 2012). Being motivated to behave prosocially has a strong affective component, irrespective of whether this motivation arises internally (“doing what feels good”) or is activated by the presence of others. Parental supervision can elicit feelings of anticipation of reward or punishment during the decision-making pro-
cess. Similarly, anticipation of social reward or punishment from the candidate recipient or from the peer group can give rise to the motivation for prosocial behavior. Besides being motivated, social cognitive skills are necessary to understand the intentions and needs of others in order to be able to display appropriate prosocial behavior. Finally, regulatory skills that allow individuals to refrain from selfish behavior and allow them to initiate prosocial behavior can play an important role. Note that the decision-making process behind prosocial behavior does not necessarily occur in a set sequence of the above preconditions.

**Affective and cognitive social skills**

Being able to experience the feelings of others through affective empathy and understanding the cognitions and needs of others through cognitive empathy are essential in social interactions (Netten et al., 2015; Pouw, Rieffe, Oosterveld, Huskens, & Stockmann, 2013). Relatively early in human development the fundament of affective empathy is being shaped in interaction with the social environment. Affective empathy can provide the motivation for prosocial behaviors, since alleviating negative emotions of others will mitigate one’s own negative emotional experience as well. Furthermore, it is through affective empathy that observing others experiencing positive emotions as a result of one’s prosocial behavior, can be very rewarding and help motivate future prosocial behaviors (Telzer, 2016). This explains why being affectively moved by emotions of others can be important for establishing and maintaining successful peer relationships.

Cognitive empathy is the ability to understand emotions of others and is a means to detect communicated social needs (Caravita, Di Blasio, & Salmivalli, 2009). Being able to perceive the world through another individual’s perspective using perspective-taking skills is crucial in understanding the emotions of this other person and cognitive empathy is therefore also being referred to as emotional perspective-taking (Ruby & Decety, 2004). Another concept that is closely related to cognitive empathy, besides perspective-taking, is mentalizing: the ability to infer mental states of others. Mentalizing requires perspective-taking skills as well and has been described as key feature in understanding mental states of other individuals in a neuroscientific tradition of studying social cognition. In a vast body of research, mentalizing has been linked to a specific social brain network (Adolphs, 2009; Frith, 2007). The above attributes of social cognition all greatly contribute to social interactions in that when interaction partners can understand each other’s emotions, the opportunity to act upon these emotions opens up.
During adolescence social cognitive skills continue to develop. For example, understanding the intentions of others through perspective-taking increases in adolescence (Güroğlu, Van den Bos, & Crone, 2009; Overgaauw, Güroğlu, & Crone, 2012), visual perspective-taking skills continue to increase until adulthood (Dumontheil, Apperly, & Blakemore, 2010), and processing skills of faces change in that sensitivity for recognition of faces of specifically peers increases during early adolescence (Picci & Scherf, 2016).

**Behavior regulation**

Inhibiting selfish impulses or behaviors that are potentially harmful for others can be critical for the constitution of prosocial behavior (Steinbeis, 2016; DeWall, Baumeister, Gailliot, & Maner, 2008). The mirror concept of behavior inhibition, behavior activation, enables individuals to activate behaviors that are prosocially motivated (Carver & White, 1994; Stoltenberg, Christ, & Carlo, 2013). Furthermore, regulatory skills are able to moderate the link between motivational aspects such as affective empathy and prosocial behavior in adults (Lockwood, Seara-Cardoso, & Viding, 2014).

The development of behavior regulation has been extensively studied and shows conspicuous increases across childhood (Kochanska, Murray, & Harlan, 2000; Anderson, 2003). Continuing development of inhibition skills is observed in adolescence as well, although also increases in approach behaviors occur: adolescents are more prone to approach rewarding stimuli, especially in the peer context, even when this comes at a risk (Chein, Albert, O’Brien, Uckert, & Steinberg, 2011). This seemingly contradictory combination of more inhibition skills and more risk-taking in adolescence is most likely facilitated by more flexible reasoning and hereby the recruitment of inhibition skills becomes more context-dependent (Steinbeis & Crone, 2016).

**Prosocial decision-making**

The concept of prosociality can be measured using observations, self-reports or reports from informants. The field of game theory provides an internally valid solution to capturing prosociality: experiments to measure social decision-making. The key feature of these paradigms is that participants are prompted to weigh their own benefits against that of others. In these social decision-making experiments, generally monetary units are used to represent value for the participant and most experiments involve the decision to propose or accept a certain distribution of coins between self and other. Decisions that are beneficial to another individual, either at the cost of the
participant or non-costly are considered prosocial decisions and these decisions indicate an other-oriented preference. In the last years, application of these experiments in developmental research has greatly increased and has been proven to be valid and efficient in studying prosocial development (Crone, Will, Overgaauw, & Güroğlu, 2014).

Studies using social decision-making experiments have shown that in early- to mid-childhood prosocial decisions resulting from the evaluation of the benefits for oneself against the benefits for the other sharply increase (Blake & McAuliffe, 2011; Fehr et al., 2008; Shaw & Olson, 2012). Especially considering and acting upon an equity principle shows growing preference across childhood. That is, at around 7-8 years of age almost all children prefer an equal division of money (i.e. “fairness”) when this does not incur any cost for themselves. Costly prosocial decisions also increase between early- and mid-childhood (Blake & McAuliffe, 2011; Fehr et al., 2008; Shaw & Olson, 2012). It is from mid-childhood on that the ability to understand and apply the principle of equity shows no further increase (Harbaugh, Krause, & Vesterlund, 2007). It should be noted that children often need the presence of an adult (e.g. experimenter, parent, teacher) to be able to suppress selfish impulses and to evoke prosocial motivation (Shaw et al., 2013).

Prosocial dilemmas in real-life are rarely unidimensional in that only equity is the result of not choosing for inequity. For example, equity can be costly or non-costly and advantageous or disadvantageous for the player and therefore these decisions can involve more complex reasoning. In addition, an equity decision can sometimes involve the dismissal of coins or other goods and therefore be the less efficient choice. It has been argued that with age adolescents’ social decision-making becomes more flexible and increasingly dependent on context and individual constructions of fairness (Gummerum, Keller, Takezawa, & Mata, 2008; Steinbeis & Crone, 2016).

### 1.3 PEER RELATIONSHIPS IN ADOLESCENCE

Adolescence as a period of social reorientation (Steinberg & Morris, 2001) is marked by quantitative changes in social context (e.g., more time spent with peers, increasing size and complexity of the peer group, decreasing supervision by adults) as well as qualitative changes in social relationships (e.g., disclosure and intimacy within friendships, better conflict-resolution styles, different types of social activities) (for example, see Rubin, Bukowski, & Parker, 2007). These changes have differential impact on different levels of peer interactions: as having dyadic friendships remains
important as in childhood, belongingness to larger peer *groups* becomes an additional priority during adolescence (Brown, Eicher, & Petrie, 1986).

The developmental relevance of successful peer relations in adolescence has been supported by evidence from studies relating success in the peer context to socio-emotional functioning. On the one hand, being deprived of peer interactions by exclusion from the peer group has been shown to have detrimental long-lasting effects on well-being and even psychiatric disorders in adolescence and later in life (Parker & Asher, 1987; Rigby, 2000). On the other hand, positive peer relations provide opportunities in the development of social functioning, academic achievement, and self-esteem (Malti, Gummerum, Keller, Chaparro, & Buchmann, 2012; Valkenburg, Peter, & Schouten, 2006; Wentzel, 2005). In turn, increases in social skills can support success among peers (Caravita et al., 2009; Chow, Ruhl, & Buhrmester, 2013).

**Dyadic level: friendships**

Friendships are close reciprocal relationships between two individuals (Hartup & Stevens, 1997). Of all non-romantic peer relationships, friendships are marked by highest levels of closeness between individuals. Typically, adolescents have at least one friend and few adolescents have no close friends at all (Demuth, 2004; Falci & McNeely, 2009; Prinstein, Boergers, Spirito, Little, & Grapentine, 2000). The importance of having friends is demonstrated in the case of adverse social experiences: having at least one friend can limit the negative effects of being the victim of bullying on emotional adjustment (Hodges, Boivin, Vitaro, & Bukowski, 1999), and the presence of a best friend can alleviate stress responses under negative experiences (Adams, Santo, & Bukowski, 2011). Furthermore, a longitudinal study on the role of peers in social brain functioning found decreased neural sensitivity to peer rejection in adolescents who had previously spent more time with their friends (Masten, Telzer, Fuligni, Lieberman, & Eisenberger, 2012). Not only quantitative aspects (having friends and the amount time spent with them) seem important: friendship quality can be relevant in development as well. For example, the quality of relationship with friends buffers the effects of a lack of positive parenting on internalizing problems (Gaertner, Fite, & Colder, 2010).

Friendship quality is a relational construct that refers to the positive (such as intimacy and support) and negative characteristics (such as conflict and imbalance) of the relationship (Bukowski, Hoza, & Boivin, 1994). Since two individuals contribute to a dyadic relationship, friendship quality is a combined measure of both prosocial functioning of the individual within a close relationship and of exposure to prosocial experiences with close peers. This has been supported by previous research.
showing that in adolescence both prosocial behavior of the individual (i.e. prosocial functioning in the relationship) and of the friend (i.e. opportunities for prosocial experiences) are associated with higher levels of friendship quality (Cillessen, Jiang, West & Laszkowski, 2005). Furthermore, from a developmental perspective, friendship quality has been linked to later prosocial goals and behaviors (Barry & Wentzel, 2006).

**Group level: peer status**

In navigating their social environment, adolescents usually pursue acceptance in multiple peer groups. Yet, for many adolescents social needs exceed acceptance into a peer group: higher status within the peer group has also been shown to be very desirable (Levy et al., 2004). Traditionally, two distinct yet partially overlapping dimensions of popularity within peer groups can be distinguished: sociometric popularity, also being referred to as preference and likability, and perceived popularity. Sociometric popularity is typically measured by “like” and “dislike” nominations by peers and indicates levels of preference/likability among peers. Perceived popularity can be measured using popularity nominations (“who is popular?”) and refers to individual levels of popularity as perceived by the peer group. Generally, sociometric popularity is characterized by prosocial behavior, whereas both antisocial and prosocial behaviors are typical for adolescents who are labeled as “popular” by their peers (Newcomb et al., 1993; Lease et al., 2002; Rodkin et al., 2000; Wolters et al., 2013).

1.4 THE SOCIAL BRAIN

Our understanding of the different dimensions and factors that are involved when individuals engage in social interactions has benefited from recent progress in studying brain regions that are important for social behavior. Although activation throughout the whole brain can be observed during social interactions, a network of regions have been shown to be crucial for social information processing (Nelson et al., 2016; Nelson et al., 2005). First, temporal regions in the social brain network respond to the social nature of stimuli, in the so-called detection node. With this node, social agents can be recognized through biological motion sequences and visual patterns that represent facial features. Second, emotional relevance of social information is processed in the affective node, consisting of subcortical nuclei that are located in the ventral striatum and the amygdala, resulting in differential levels of
approach and avoidance motivation. These regions respond to familiar faces, emotional facial expressions and attractive others. Finally, higher-order social processing such as social awareness and social decision-making takes place in regions of the ventral and medial prefrontal cortex. Functions of behavior regulation in social contexts and other social skills are dependent upon activation in these prefrontal areas as well (for a review, see Nelson et al., 2016). Below, we distinguish between social-affective neural processing in the affective node and social-cognitive neural processing, which takes place in the detection node and prefrontal regions. In the literature, the detection node and the relevant prefrontal areas are also being referred to as the “social brain” or “mentalizing brain” (Burnett, Sebastian, Cohen Kadosh, & Blakemore, 2011).

The human cortex undergoes prominent changes from its earliest prenatal development until well into young adulthood (Stiles, & Jernigan, 2010). Cortical maturation in adolescence is generally marked by decreases in grey matter, through both thinning of the cortex and decreasing surface area (Wierenga, Langen, Oranje, & Durston, 2014). Social brain regions are submitted to similar developmental trajectories of decreasing grey matter over the course of adolescence (Mills, Lalonde, Clasen, Giedd, & Blakemore, 2014). Evidence from functional MRI studies shows that activation patterns in the social brain undergo changes across adolescence as well (for a review, see: Burnett et al., 2011).

**Social-affective neural processing**

The Nucleus Accumbens (NAcc) is a small subcortical structure that is part of the ventral striatum and has an important role in motivation and reward-processing. Social reward-processing in this region occurs in many different social contexts: for example, studies show involvement of this region during observation of preferred others (e.g. parents, babies, good friends, desirable romantic partners, celebrities), during observation of positive facial expressions, and during observing close others receiving rewards (i.e. vicarious winning) (Mobbs et al., 2009). These studies demonstrate the contextual sensitivity of the NAcc.

Evidence from cross-sectional and longitudinal studies shows that during adolescence, activation in the NAcc increases, and then decreases again in adulthood (Braams et al., 2014; Braams, Van Duijvenvoorde, Peper, & Crone, 2015; Ernst et al., 2005; Galvan et al., 2006; Van Leijenhorst et al., 2010). It has been theorized that this can explain increased risk-taking and sensitivity to peer influences in adolescence. Important developmental goals of adolescence are to establish and maintain belongingness to a resourceful and supportive peer system. An increase in NAcc activation during reward-processing can serve as a drive to overcome the uncertainty
that new contexts bring, because being motivated to explore the social environment beyond the safe proximity of parents is a condition for accessing new social contexts.

**Social-cognitive neural processing**

Social cognition is supported by activation patterns in social brain regions (Adolphs, 2009; Frith, 2007). The social brain or mentalizing brain network typically includes temporal regions such as the posterior superior temporal sulcus (pSTS), the temporoparietal junction (TPJ) and the anterior temporal cortex (ATC), the medial prefrontal cortex (mPFC), and the precuneus, a medial region posterior to the cingulate gyrus. The temporal regions of the social brain are mainly involved in the recognition of stimuli as being social and in perspective-taking (Burnett et al., 2011; Frith, 2007; Van Overwalle & Baetens, 2009). The mPFC is involved in thinking of own and other’s mental states and traits (Frith, 2007; Van Overwalle & Baetens, 2009). The exact role of the precuneus in the mentalizing system is less clear: it has been hypothesized that it has an important function in the handling of social conventions through coupling of observed social input with perceptions of social conventions stored in memory during social information processing (Petrini, Piwek, Crabbe, Pollick, & Garrod, 2014; Van Overwalle & Baetens, 2009).

### 1.5 A THEORETICAL FRAMEWORK OF PROSOCIAL DEVELOPMENT IN THE PEER CONTEXT

With prosocial behavior being a construct that can only exist in the presence of a recipient, development of prosociality naturally takes place within a social context. Depending on the developmental period, parents, teachers or other adults or peers are the main interaction partners to exercise prosocial behaviors on. Below, I provide theoretical perspectives on psychological development within the social context (1.5.1), environmental influences on brain development (1.5.2), and learning in the social context (1.5.3). Together, these perspectives can provide an integrative framework in which prosocial development in peer context can be studied.

**Systems theory**

Bronfenbrenner has developed a model of interrelations between individual development and the social ecosystem (Bronfenbrenner, 1994; see Figure 1). This ecological systems model highlights the effects of the social environment on the develop-
Bronfenbrenner’s ecological systems model (1994). The model highlights the effects of the social environment on the development of the individual in relation to social influences within different levels of social proximity. Furthermore, it stresses the bi-directionality of social influencing. For example, children interact with parents, through which both parental behaviors can affect child development and child characteristics can moderate parental responses.

Although this model addresses general social development within the environment, neurobiological components of the individual’s social development in relation to the environment were underrepresented in this model. An updated version of the ecological systems model acknowledges biological characteristics of the individual yet remains abstract by referring to “gene-environment interactions”. The ecological systems model could be applied to interactions between the peer context and brain functioning as well, and this process could explain social brain development. Differences in social brain activation and structure between adolescence and other age groups have been reported in multiple studies (Burnett et al., 2011; Mills...
et al., 2014) and these neurodevelopmental changes should be reflected in a neuroecological model of prosocial development.

**Experiential dependency of neural development**

Neurobiological theories of human development point out the importance of sensitive periods for brain development and specific changes in the brain are “experience expectant” and others “experience dependent” (Greenough, Black & Wallace, 1987). Experience expectant changes are part of normative brain development and imply adverse developmental effects in the absence of the required environmental input. Many of these changes occur early in human brain development. Experience dependent changes on the other hand provide the individual with the opportunity to successfully adapt to the environment and different environments increase individual differences in brain morphology. The earliest prenatal and postnatal brain development is marked by synapse overproduction and this process of synaptogenesis is dependent on both genetic signaling and experiences. These experience expectant changes have long-lasting effects on brain development (Black & Greenough, 1986). Changes in grey matter volume or cortical thickness during adolescence are often discussed in terms of synaptic pruning and increased myelination (for example see: Stiles & Jernigan, 2010). These processes are also thought to be dependent on experiences through the recruitment of neural circuitries.

Considering the detrimental effects of the lack of positive social experiences such as parental neglect during early childhood on the human brain (for a review, see: Belsky & De Haan, 2011), the human cortex is probably at least dependent on (or maybe even expectant of) sufficient beneficial social interactions. Because social adjustment is of such high importance in multiple aspects of psychosocial functioning in adolescence (e.g. academic achievement, self-esteem, emotional well-being and even psychopathology), it seems that adolescence is a sensitive period for social development (Blakemore & Mills, 2014). It is therefore likely that adolescent social experiences are also related to neural development.

**Learning theory**

Bronfenbrenner and Evans (2000) propose that enduring forms of interactions between social environment and individual could give rise to development of competence. Learning theory could further elucidate how peer interactions can impact prosocial behavior and brain development from a cognitive perspective. Examples of reinforcement are the promotion of prosocial behavior through explicit feedback by peers (Van Hoorn, Van Dijk, Meuwese, Rieffe, & Crone, 2014) or through more sub-
tle reinforcement such as positive facial expressions and the reciprocation of prosocial behavior (Fett, Gromann, Giampietro, Shergill, & Krabbendam, 2014). Examples of punishment are also explicit judgments of behavior that is not prosocial or through exerting relational consequences upon the offender such as (temporary) exclusion from the peer group or a decline in status.

As an extension of conditioning theories, Bandura’s theory of social learning or observational learning provides a mechanism of learning through observation of the behaviors of others and the consequences they endure (Bandura, 1971). The peer context offers ample opportunities for this vicarious learning of prosocial behavior. This theory predicts more prosocial behaviors of an individual, after the individual has observed positive consequences of prosocial behaviors in the peer group. Indeed, research shows that over time, prosocial behavior increased for adolescents with friends that were more prosocial (Barry & Wentzel, 2006). In the peer system, the peers that are most close, such as best friends, and peers high in status can serve as important models in observational learning.

### 1.6 OUTLINE

This thesis investigated interrelations between the adolescent social environment and behavioral and neural indices of prosocial development from a neuro-ecological perspective on development. The study of the social development of the human organism requires an approach that spans research across disciplines and includes multiple levels of adolescent social functioning. In my approach, I integrate adolescent peer relations research with prosocial development perspectives using behavioral, sociometric and neuroimaging techniques. The study of social decision-making (chapter 2), individual social cognitive and affective characteristics (chapters 2, 4 and 5), friendships and peer group dynamics (chapters 3, 4 and 5), and neural morphometric and functional indices of social development (chapters 3 and 5) together can bring new insights in the field of adolescence research, that demands extended conceptualizations of prosocial development from a neuro-ecological perspective.

In chapter 2, I tested an aspect of adolescent prosocial development; the development of equity preferences. I used an experimental paradigm on social decision-making, in which choosing for equity varied in costliness and efficiency. Using such an experimental design, I was able to examine the development of equity, generosity and efficiency preferences in mid childhood to late adolescence. In the study in chapter 3 neural development of the social brain, a brain network that consists
of regions that social cognition relies upon, was examined. I tested longitudinal morphometric changes in the social brain from mid-childhood to early adulthood. In addition, the role of friendship quality above and beyond age and sex effects was tested to investigate the association between the social environment and structural social brain development. The importance of the peer context in friendship quality was examined in chapter 4. Reports from peers about social preference and popularity were related to friendship quality, using a dyadic approach. Empathy and prosocial behavior were considered as potential mediators in this relationship. Using multiple methods (peer nominations, self-ratings, a behavioral experiment), I was able to examine how dyadic relationships function within the wider peer system. In Chapter 5 I examined self-serving and prosocial motivations in the peer context. In this study, I tested associations between NAcc activation during winning money for self or for the best friend in an experimental paradigm and likability among peers. This study aims to disclose motivational processes in peer appreciated behaviors and resulting peer likability. Chapter 6 summarizes the findings and proposes an integrative narrative on how adolescent social development emerges within the peer context.