The Prominence of Peer Interactions, Relationships, and Networks in Adolescence and Early Adulthood

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Peer relationships are prominent when children move into adolescence. Adolescents seek autonomy from authority figures, such as parents or teachers, and spend increasingly more time with their peers than with adults. Compared with parents, peers provide opportunities and experiences that cannot be duplicated by other socializing agents. Peer relationships are attractive for adolescents because they are more egalitarian, accepting, and present-oriented, and less controlling than relationships with adults who are deemed as experts or authorities (see Hussong Rothenberg, & Midgette, this *Handbook*). For adolescents, a friendship reflects an intimate, trustful, reciprocal, and affectionate relationship that strongly affects their well-being and social-emotional adjustment (Bagwell & Bukowski, 2018). Moreover, adolescents become increasingly attuned to what their peers think about them and are increasingly capable to reflect upon their relative social standing in the larger peer group. They are also motivated to actively pursue being noticed, approved, and viewed as influential among their peers (Chein et al., 2011; Prinstein, 2017).

Adolescence is a period with opportunities and challenges for personal growth, social commitment, and identity development (see Meeus, this *Handbook*). The peer context allows adolescents to acquire skills and exhibit behaviors that enable them to become emotionally independent from parents. Buffered by institutions such as the family and the school, adolescents have the chance to prepare themselves to establish mature relationships when moving toward adulthood. Although peer relationships can be a breeding ground for stress, insecurity, conflict, and turmoil (see Adam, Villaume & Thomas, this *Handbook*), peers also provide adolescents with unique opportunities for adjustment and positive development. Feelings of belonging and friendship quality are important components of individual adjustment in not only adolescence but also emerging adulthood (Pittman & Richmond, 2008). Maintenance of high school friendships can buffer against loneliness at the transition to college (Oswald & Clark, 2003).

This chapter describes the major developments underlying the increasing prominence of peers in adolescents' behavioral and psychosocial adjustment. We focus at how adolescents strive for status and affection. We discuss how adolescents are connected to their peers, in positive and negative ways, and how peers influence and select each other. We also discuss how social norms and social comparisons in the peer context affect adolescents' adjustment. Our aim is to provide an interdisciplinary overview of the prominence of peers, with special attention to social network research. We also give attention to peer relationships among young adults, but we have to emphasize that the predominant focus of the relevant literature has been adolescence and not early adulthood. We end this chapter with directions for further research.

Three Major Developments that Affect the Prominence of Peers

The increasing importance of peer relationships in adolescence is accompanied by biological, socio-structural, and socio-cognitive changes. Biologically, adolescents experience a growth spurt and changes in secondary sex characteristics, reflected by physiological and

physical changes (see Dorn & Beltz, this *Handbook,* and Halpern, this *Handbook*). This biological maturation may go together with an increased attention to the other sex, resulting in more cross-sex interactions and romantic relationships (Collins, 2003; Savickaitė et al., 2020). That adolescents tend to belong to larger peer networks makes inclusion of cross-sex peers easy and creates opportunities (e.g., parties and group activities) for romantic contact (Kreager et al., 2016, see for same-sex relationships, Russell et al., this *Handbook*).

A second change that marks the prominence of peers in adolescence is socio-structural. Peer relationships in childhood are anchored in the neighborhood, but in adolescence, peers often come from different neighborhoods because adolescents transition from smaller elementary to larger secondary schools (see Benner & Crosnoe, this *Handbook*). This transition is accompanied by an influx of new and unfamiliar peers, causing a de-stabilization and re-organization of the peer context. In this new peer context, almost all adolescents have a smartphone, which enables them to have contact with each other more extensively, quickly, and thoroughly (see Underwood, George, & Burnell, this *Handbook*). These socio-structural changes make that adolescents spend more time with peers and have greater autonomy, whereas parental supervision is more difficult. Adolescents often seek affiliation with a group of peers based on shared interests, values, norms about school involvement, risk behaviors, and substance use (Veenstra et al., 2018). Such a peer group can fulfill adolescents' needs for emotional support and exploration or reaffirmation of interests, values, and norms. This concurs with an important developmental task in adolescence: the establishment of more mature, intimate relationships with peers in combination with a more emotionally independent relationship with parents.

A third change that marks the prominence of peer relationships in adolescence is socio-cognitive. Significant structural and functional changes in adolescents' social brain network (Crone & Dahl, 2012) enhance perspective taking, abstract thinking, meta-cognitive thinking, and

role taking, which enables adolescents to reflect upon and establish and maintain significant peer relationships. Peers provide information about appropriate behavior, and through social comparison, adolescents learn more about their unique strengths and weaknesses, which contributes to self-knowledge, self-definition, and individual identity development. The peer group to which adolescents belong and the similarities they experience with this peer group contributes to their *social* identity as well. For instance, being part of a highly desired peer group can elicit pride in adolescents. These socio-cognitive changes elicit an increased awareness and concern about their own social position.

Together, these biological, socio-structural, and socio-cognitive changes amplify the prominence of peers and lead to an increase in time spending with peers, more cross-sex interactions, larger peer networks, more autonomy from adults, and more reflection on adolescents' social position.

How Adolescents Strive for Status (and Affection)

Peer research focuses on adolescents' position in the peer network, such as the extent to which adolescents are liked by others or belong to the peer group. Historically, having strong social bonds improved people's chances for survival and reproduction, which led to a strong motivation to establish and maintain sustainable relationships (referred to as the need to belong, Baumeister & Leary, 1995). Satisfying this need for affection by sustaining mutually supportive relationships boosts people's well-being (Holt-Lunstad et al., 2010; Ryff & Keyes, 1995). In research on peers, peer nominations yield information about with whom adolescents are befriended and by whom they are liked or disliked in their network. Many studies have indicated that well-liked adolescents are frequently preferred as activity partners, friends, and academic helpers (Ryan & Shin, 2018). In general, well-liked adolescents are prosocial (e.g., cooperative, kind), function well psychosocially (less depressed, higher wellbeing) and do well academically.

The biological, socio-structural, and socio-cognitive changes in adolescence trigger another social goal: the attainment of a popular status. Popularity marks an adolescent's dominant and powerful position in the peer group hierarchy, and hence differs from likeability (Adler & Adler, 1998). Popular adolescents have access to privileged resources that are not available to everyone, such as being highly admired by others, being invited to fun parties, setting the norm in a group, or getting their way when disagreements arise (Hawley, 2014). Popular adolescents have the power to attract and influence peers, which requires prosocial as well as antisocial features, including proactive aggression or bullying (Prinstein, 2017). During adolescence, popularity is increasingly prioritized among adolescents, often more so than academic achievement or friendship (LaFontana & Cillessen, 2010). Having a certain degree of popularity may work out beneficially for adolescents' adjustment: it may boost their self-esteem and satisfaction about their relationships (Ferguson & Ryan, 2019). Although highly desired, it is questionable whether popularity is beneficial for later adjustment (Prinstein, 2017). Popular adolescents are more prone to become academically disengaged and to display risk-taking behaviors, such as delinquency and substance use (Mayeux et al., 2008). Popular adolescents at the top of the hierarchy also may become insecure about their social functioning (Ferguson & Ryan, 2019). These risks may even carry over into young adulthood: adolescents who prioritize popularity over close friendships have lower psychological well-being and self-esteem, and higher anxiety and depression in early adulthood (Narr et al., 2019).

In light of adolescents' affection and status goals, being the target of peer ridicule, intimidation, or exclusion takes a large and significant social-emotional toll (Paul & Cillessen, 2003). Negative peer experiences, such as victimization, provide adolescents with signals that they are unwelcome in their peer group. Such experiences may lead to a negative self-perception (Boulton et al., 2010), emotional and psychosocial maladjustment (Hawker & Boulton, 2000),

and academic underperformance (Nakamoto & Schwartz, 2010). The adolescent brain experiences peer victimization in a similar way as physical pain (Vaillancourt et al., 2013) and adolescents' immune system that normally combats physical diseases becomes overactivated in response to victimization (Copeland et al., 2014). Moreover, the experiences of peer victimization become embedded in the physiology of adolescents, which puts them at risk for life-long mental and physical health problems (Vaillancourt et al., 2013).

How Peers Are Positively and Negatively Connected

Regarding peer relationships, most research has focused on friendships (Bagwell & Bukowski, 2018). However, adolescents relate to their peers in many other ways. Examples of positive relationships - other than friendships - are victim-defender and helping relationships, and examples of negative relationships are bully-victim relationships and antipathies. In a study on who defends whom, it was found that boys and girls predominantly defend same-sex peers (Sainio et al., 2011). Defenders are liked by the victims they defend and are perceived as popular, among not only victims, but also among other classmates. Adolescents can also have peers around them who are not necessarily their friends, but on whom they can rely for emotional, instrumental, or practical support (Van Rijsewijk et al., 2016). Some helping relationships are formed based on dissimilarities: lower academic achievers receive help from their higher-achieving peers. Other helping relationships occur among peers who are similar to each other. That is, popular peers help out other popular peers but refrain from helping the non-popular ones.

Bullying is often characterized by repetition, and hence, can be viewed as a relationship or a way in which adolescents are connected to their peers. From the perspective of both the bully and the victim, another study examined who bullies whom (Veenstra et al., 2007). Bullies have an advantage over their victims by being more dominantly aggressive. To prevent the loss of social approval, bullies pick on targets that are rejected by classroom peers. Bullies find status

important and often are perceived as popular, whereas victims consider status less important, are only reactively aggressive, and are perceived as unpopular (Sijtsema et al., 2009).

Together, these studies demonstrate the value of looking at relationships between specific peers, in order to better understand who is related to whom - positively or negatively. This may also provide more insights into the role of these relationships in adolescents' social-emotional or behavioral adjustment. For instance, being the victim of a popular bully may have a more negative, overruling impact on adolescents' adjustment than being the victim of an unpopular bully. Thus, knowing how certain adolescents are (positively or negatively) connected to particular types of peers enhances our understanding of peer influence on adjustment.

How Peers Influence and Select Each Other

Friends are often more similar in behaviors than non-friends (Hartup, 1996). Similarity in behavior can be the result of influence processes in which individuals adopt behaviors and attitudes of their peers. Research into influence processes is rooted in social learning theory (Akers, 2011; Bandura, 1977). The core of this theory is that engagement in new behaviors is promoted by observing and imitating the behaviors of valued others. Social rewards or sanctions, such as status or rejection, can further reinforce or discourage positive or negative behavior (Burgess & Akers, 1966; Warr, 2002). Adolescents also confirm and encourage each other in deviance through deviancy training (Dishion et al., 1996). Moreover, peer group influence on adolescents' misconduct is intensified if peers within a group engage in negative laughter and endorse a coercive interaction style (Ellis et al., 2018).

Similarity also might occur through a selection process, in which adolescents with similar behaviors, values, preferences, or characteristics select each other as friends. Similar people tend to understand each other better, communicate with less effort, and find each other more trustworthy and predictable. These factors make relationships more rewarding, stable, less prone

to conflict, and a source of validation for identity development (Laursen & Veenstra, 2021). Similarity between friends is therefore an important basis for the maintenance of friendships.

The extent to which influence and selection are at work also depends on opportunities to affiliate with peers. Structural characteristics that emerge from living in a particular neighborhood or attending a specific school affect the proximity to peers and, therefore, the opportunities to affiliate. As schools tend to be relatively homogeneous in terms of socioeconomic status, ethnicity, or intelligence, the chances of meeting and affiliating with similar peers are higher in a specific school than in society at large. The school setting thus increases the likelihood of friendships with similar others. Peer influence also emerges through opportunities. Particularly, unstructured socializing creates an opportunity structure for deviant behavior, even if adolescents initially do not aim for deviant acts (Hoeben & Weerman, 2014). Therefore, the formation and establishment of peer relationships and the influence of peers on the development of behavior is based on not only individual preferences but also the opportunity to meet similar others in one's daily life (Lomi & Stadtfeld, 2014).

The next sections describe how peers select and influence each other in (1) school behavior; (2) externalizing problems; (3) internalizing problems; (4) substance use; (5) popularity. These are the most well-studied topics in the field of peer relations. Furthermore, we highlight some studies that focus on not only same-behavior but also cross-behavior selection and influence processes. Special attention is also paid to social network studies among young adults.

Social Networks and School Behavior

With respect to school adjustment, adolescents who are similar in attentiveness and school engagement choose each other as friends and also influence each other in their attention during class and homework activity (Geven et al., 2013). Adolescents influence each other's academic functioning and extend more friendship nominations to peers who are similar in truancy and

academic achievement (Rambaran et al., 2017). In the first year of secondary education, adolescents select friends on the basis of similarity in grades (Gremmen et al., 2017). Influence processes start later in secondary education, when adolescents know each other better, indicating that their grades become more similar over time in response to their connectedness.

Peers also are important for why girls' preferences for science, technology, engineering, and math (STEM) subjects decline. Because adolescents have more same-sex friends, sex-specific tendencies of influence emerge. Boys, with higher initial preference for STEM, are further influenced toward STEM by other boys, whereas girls, with lower initial preferences for STEM, are further influenced by other girls. Having other female classmates who prefer STEM can protect girls from being discouraged from STEM subjects. Thus, pre-existing preferences are amplified in peer networks, contributing to the widening of the STEM gender gap (Raabe et al., 2019).

Among university undergraduates, friendships have been found to evolve into studying relationships over the academic year, which in turn affected students' success at the examination – irrespective of individual differences in socioeconomic background or cognitive abilities. Socially isolated undergraduates have been found to have significantly lower grades and to be more likely to drop out of university (Stadtfeld et al., 2019).

Social Networks and Externalizing Problems

Peers are crucial in the development of externalizing problems (see Dotterer et al., this *Handbook*) through learning of skills, norms, and attitudes. Whereas children and preadolescents can use direct aggression – such as hitting or kicking - without much concern for the loss of affection (Veenstra et al., 2010), older adolescents cannot use such aggression with impunity (Sijtsema et al., 2020). However, many other forms of aggression – such as bullying or standing up against teachers – may help adolescents to gain or maintain a high position in their peer group.

Showing aggressive or delinquent behaviors may be a way of adolescents to stand up against adults and to emphasize that they are not a child anymore, hence function to bridge the maturity gap – the discrepancy between biological and social maturation (Moffitt, 2018). Moreover, displaying risky, delinquent behavior can indicate ones' braveness or invincibility (a so-called *no guts, no glory* principle; Rebellon, Trinkner, Van Gundy, & Cohn, 2019). Adolescents who can easily drink many beers without getting drunk, or who engage in successful risk-taking (e.g., fighting, stealing something valuable, risky sports) may be seen as fit and as daredevils, and hence, are admired by others. Risk-takers also provide multiple benefits to the social groups they are embedded in. First, they may provide protection for their peers: gang members who are willing to fight, for instance, may be more valuable for protecting others than those who do not. Second, risk-takers may get access to desirable resources. An adolescent who dares to steal a bottle from the family's liquor cabinet, can provide alcohol for friends at a party. Third, risk-taking can entertain and amuse peers.

Influence and selection processes are important for externalizing problems. Adolescents' aggression and delinquency appear, in part, to be influenced by the extent to which their friends exhibit such behaviors (Gallupe et al., 2018; Sijtsema & Lindenberg, 2018). Adolescents who have aggressive and delinquent friends become more antisocial over time themselves (Jose et al., 2016). Research provides support for selection similarity in delinquency (Jose et al., 2016), whereas evidence for selection based on similarity in aggression is mostly lacking (for an exception, see Rulison et al., 2013).

Like delinquency and aggression, bullying is a group process (Salmivalli, 2010). It has been found that bullies select other bullies as friends and that adolescents adopt their friends' bullying behavior and target victims collectively (Sentse et al., 2014). Victims in secondary education select each other as friends as well, for instance to seek protection against bullies

(Hodges et al., 1999). However, adolescents who befriend victims run the risk of becoming victimized by the bully (Lodder et al., 2016).

Social Networks and Internalizing Problems

Adolescents who face difficulties in the establishment of peer relationships are at risk for maladaptive outcomes. Adolescents who are excluded in the peer group are likely to develop feelings of inferiority and are at risk for internalizing problems, such as anxiety, loneliness, and depression (see Conley et al., this *Handbook*). These internalizing problems also cause difficulties for adolescents to develop meaningful peer relationships (Schaefer et al., 2011).

Influence and selection processes affect depressive symptoms. Adolescents select friends who are similar in depressive symptoms (Neal & Veenstra, 2021). University undergraduates with depressive symptoms were also found to spend relatively more time with depressed others than with non-depressed others, and to spend less time with friends (Elmer & Stadtfeld, 2020).

This may be risky, as friends who are similar in depression may even further reinforce each other's level of depression (Neal & Veenstra, 2021) through a process called co-rumination (Rose et al., 2007). That is, depressive friends tend to stimulate problem talk, rehash problems and speculate about them, and mutually dwell on negative affect. Thus, it may be more beneficial for depressive adolescents to have more non-depressive peers as friends. However, studies indicate that friendships between depressive and non-depressive friends are likely to break down relatively quickly. Adolescents with depressive symptoms often lack the social skills necessary to provide support and closeness, which increases the chances of dissatisfaction with and a dissolution of the relationship by non-depressive friends (Kiuru et al., 2012; Van Zalk et al., 2010). Non-depressive friends may also be influenced by the depressive mood of the adolescent, which induces negative feelings in these non-depressive friends. These negative feelings may trigger dissatisfaction with a friendship and, therefore, increase the chances of the friendship

ending. Consequently, though depressive adolescents may be the ones with the most urgent need for support from a friend, their friendships seem not to work out positively, which may cause a vicious cycle where they become even more depressed by their depressive friends or by the dissolution of friendships with a non-depressive friend.

Social Networks and Substance Use

Influence and selection processes also underlie the spread of substance use among adolescents (see Maggs, Calhoun, & Allen, this *Handbook*). Selection is more important than influence in explaining similarity in smoking behavior of friends in middle and late adolescence (DeLay et al., 2013; Mathys et al., 2013), as once adolescents are addicted to nicotine, social influence becomes less important to smoking progression.

Peer networks also are prominent in the onset of alcohol consumption (Henneberger et al., 2021). Friends who have experience with drinking provide contexts, including information about parties, in which peers model their drinking behavior. In such a context, adolescents expect social approval if they start drinking themselves (McCann et al., 2019; Osgood et al., 2013). Influence on alcohol consumption also takes place in networks of indirect relationships, so-called weak ties: adolescents are affected not only by their own friends, but also by the friends of their friends (Cheadle et al., 2013). In certain social settings, such as bars or parties, indirect contacts are likely to form norms and opportunities affecting alcohol use. Influence processes thus can occur in settings in which adolescents know each other only superficially.

Social Networks and Popularity

Research examined how *popularity* functions as grouping mechanism in adolescent networks. The “cool kids” usually hang out together, and do not want to be associated with the unpopular ones (Dijkstra et al., 2013). Whereas prosocial adolescents are not attracted to aggressive adolescents as friends, aggressive adolescents prefer prosocial adolescents as friends

as long as they are similar in popularity (Logis et al., 2013). The selection based on popularity has important consequences for the adjustment of *wannabe's,* referring to those who want to be associated with the popular kids, but are not considered popular themselves: they pay a high price and are disliked or even victimized by other peers (Breslend et al., 2018). At the same time, adolescents who are considered a good friend of popular peers tend to increase in popularity over time, a process referred to as "basking in reflected glory" (Dijkstra et al., 2010).

Social Networks and Cross-Behavior Processes

Research has demonstrated that cross-behavior influence also plays a role in behavioral change. For instance, adolescents with relatively more aggressive friends are likely to decrease in prosocial behavior, whereas adolescents with relatively few aggressive friends are more likely to increase in prosocial behavior (Laninga-Wijnen et al., 2020). It could be that aggressive friends hinder the normative development of prosocial conduct in adolescents, by being a role model for engaging in negative behaviors as a way to overcome the maturity gap (Moffitt, 2018) discussed above. Another study found that friends' depressive symptoms and friends' impulsivity predicted an increase in adolescents' non-suicidal self-injury behaviors (Giletta et al., 2013). Finally, although it is widely assumed that adolescents with "risky friends" start to value other things than school and tend to decrease in academic achievement, friends' delinquency was *unrelated* to changes in adolescents' grade point average (Gremmen et al., 2019).

Going Beyond Adolescence

There are only few longitudinal social network studies in young adulthood. A study on peer relationships of people in early adulthood (Stadtfeld & Pentland, 2015) found that young adults tend to become friends with the friends of their friends as well as with the friends of a partner and with the partner of their friends. Young adults avoid creating cross-sex friendships when their partner is not also friends with that person and thus is in an approving position.

Another study among young adults demonstrated the importance of considering differences in relationship strengths for influence and selection processes (Elmer et al., 2017). Influence and selection processes regarding emotional well-being are stronger for strong ties: young adults select strong-tied friends based on emotional well-being and are influenced by their strong-tied rather than their weak-tied friends' emotional well-being.

How Social Norms Affect Peer Relations

Peer networks are embedded in larger contexts, such as classrooms or schools. Research has demonstrated that contexts can strongly vary in social norms, and that these variations have important consequences for adolescents' social relationships, behavioral development, and social-emotional adjustment. Social norms reflect a certain level of consensus about what is typical or appropriate within a particular context. In addition, social norms shape, constrain, maintain, and redirect behavior at the individual level.

Traditionally, prescriptive and descriptive norms have been identified in peer research (Henry et al., 2000). Prescriptive norms reflect perceived moral rules of the group (also known as injunctive norms). Prescriptive norms are defined by examining the mean level of attitudes, reflecting what network members consider appropriate ('what ought to be done'). Descriptive norms represent the perceived prevalence of a behavior in a network, reflecting what network members actually do ('what is done'). Whereas these concepts of prescriptive and descriptive norms consider *all* peers to be equally influential, a norm salience perspective argues that in particular the behavior of popular peers is noticeable and a guideline to increase one's own chances to obtain the highly valued goal of popularity. As such, popular peers may set a norm for others (a popularity norm).

Norms provide important guidelines for how adolescents should behave to align with their peers' expectations and to prevent being perceived as a social "misfit" (person-group

dissimilarity model; Wright et al., 1986). Conforming to a norm leads to positive external benefits and rewards, including social approval, inclusion, and status, as well as internal rewards, such as feeling good about oneself. By contrast, deviation from the norm entails the risk of facing negative social sanctions, such as peer rejection and victimization, as well as internal consequences, such as feeling guilty or bad about oneself (Veenstra et al., 2018). As such, the power of norms may lie in its capacity to steer adolescents' peer preferences – for instance, whom they like or whom they prefer as friends – and to strengthen adolescents' behavioral conformity processes (Therborn, 2002).

Building on the person-group dissimilarity model, research has focused on how descriptive norms strengthen or mitigate the effects of individual behavior on acceptance and rejection (Wright et al., 1986). What is considered appropriate or typical varies across groups because of different group norms. The very same behavioral pattern can be approved and result in social acceptance in one group, but can be disapproved and result in peer rejection and victimization in another group. For example, when classroom levels of bullying increase, the negative effect of adolescent bullying on peer preference decreases (Sentse et al., 2007). In classrooms with low levels of bullying, bullies are rejected, whereas bullies are accepted in classrooms with high levels of bullying. A study building upon this approach from a norm salience perspective found that the bullying norms of popular peers (referring to the popularity norm) enhanced the acceptance of bullies in classrooms more strongly than the bullying of all peers (referring to the descriptive norm: Dijkstra et al., 2008).

Other studies indicated that popularity norms rather than descriptive norms affect the extent to which a certain behavior becomes important for friendship selection and influence processes. For instance, friendship selection and influence based on similarity in aggression *only* take place in classrooms where aggression is related with popularity (Laninga-Wijnen et al., 2017). Thus,

adolescents are *not* influenced by their friends in these negative behaviors in classrooms where aggression is not rewarded with popularity. Another study found that popular peers can also be a role model for prosocial behavior: prosocial popularity norms stimulate prosocial friendships and discourage aggressive friendship influence. Importantly, this positive role of popular peers is only present when they (or other popular peers in the classrooms) also abstain from aggression. That is, when aggressive popularity norms are equally strong or stronger than prosocial popularity norms within a classroom, aggression is more important for adolescent friendship processes than prosocial behavior, indicating an overpowering role of aggressive popularity norms (Laninga-Wijnen et al., 2020). Popular peers also have been found to set a strong prescriptive (i.e., injunctive) norm. In classrooms where popular peers value risk behaviors, adolescents are more likely to adopt a positive attitude toward risk behaviors from their friends (Rambaran et al., 2013).

How Social Comparison Processes Affect Adolescents' Adjustment

An underlying mechanism explaining how peer networks and contexts may affect individuals' adjustment, is the process of *social comparison*. Social comparison theory (Festinger, 1954) argues that individuals determine their self-worth based on how they stack up against others. Although social comparison is a natural, healthy drive that can help individuals to reduce uncertainty about their opinions or to evaluate their values, ideas, and interests, it can have a negative side if exacerbated. Adolescents may rely too strongly on social comparisons to define their self-worth, as the concepts that matter to them (e.g., being popular) are *relative*: someone's status only gets meaning in a context with status differences (Laninga-Wijnen et al., 2018). Higher positioned adolescents may engage in downward comparisons (comparing themselves to someone worse off), which may boost their self-esteem, whereas unpopular, rejected, or

victimized adolescents may engage in upward comparisons (comparing themselves to someone better off), resulting in maladjustment and negative self-perceptions.

The extent to which social comparisons processes take place may depend on the broader peer context. For example, social comparison processes may be prominent in a context where the endorsement of performance goals (outperforming others) is salient. In such contexts, there is a focus on demonstrating academic competence relative to other students, through superior performance or looking smart (Pintrich, 2000). Thus, interpersonal standards are used to define relative competence. Consequently, adolescents use social comparison to ensure that they do better (or not worse) than others with respect to their academic achievements (Brophy, 2005). For example, in classrooms where popular peers make performance goals salient, social comparison processes affect friendship selection and influence processes (Laninga-Wijnen et al., 2018). In these classrooms, adolescents have a strong preference for friends who are similar in achievement, which can be considered the safest choice (Elliot et al., 2011). Moreover, whereas most prior work shows that friends influence each other in achievement, this does not happen in classrooms where popular peers set a norm for the endorsement of performance goals. This may occur because of the competitive process that results from social comparison. Indeed, competitive contexts enhance negative interactions among students, for instance by obstructing others' goal achievement efforts, hiding information, and acting in distrustful ways (Roseth et al., 2008).

Evidence that certain contexts amplify social comparison processes has also been found in bullying research. Studies have shown that contexts where bullying is reduced may harm the remaining victims. There are several explanations for this healthy context paradox (Garandeau et al., 2018; Huitsing et al., 2019); one of them is that social comparisons within such a context affect the causal attributions victims make about their situation, which may influence victims' psychological well-being. In a social context where bullying is rare and few others are targeted,

victims are more likely to compare themselves to non-victims, who tend to be happier and more popular. These upward comparisons may increase victims' tendency to blame themselves for being bullied (Schacter & Juvonen, 2015), which exacerbates internalizing problems.

How Peer Relationships Vary Across Cultures

Cross-cultural comparisons have revealed some similarities in the association of the antecedents and consequences of peer relationships. Although the cultural norms and values and the structure of the middle schools differ in the United States and China, the social status networks of European American and Chinese adolescents are similar, and the influence and selection processes of well-liked and popular peers regarding academic engagement did not differ in an exemplary study in the two countries (Zhang et al., 2019).

Cross-cultural similarity adds confidence to the viability of the peer processes being examined, and helps to identify universal patterns in peer interactions, relationships, and groups. More cross-cultural research is necessary to discover whether there are systematic cultural differences. For example, nonparticipation in a collectivistic culture or interference with its harmony would provide stronger sanctions for both social withdrawal and peer-directed aggression. Some evidence has been provided that a lower likeability and more loneliness is the price of social withdrawal and aggression for adolescents in collectivistic-oriented Cuba compared with individualistic-oriented Canada (Valdivia et al., 2005). Another study found that Chinese preadolescents perceived externalizing problems less favorably than their American counterparts (Li et al., 2012). To determine whether the findings of peer research are context-specific or generalizable across geographic settings, future research should examine peer relations in Asian, Latin American, and African countries and should provide cross-country comparisons.

Likewise, the life histories of adolescents growing up in adverse conditions may impact their interactions and relationships with peers. For example, adolescents in two Chicago schools responded to the neighborhood violence by adopting a strategic and instrumental attitude toward friendships that involved multiple strategies: seeking friendships for protection, avoiding emotional investment in friendship, cultivating friends who help to avoid violence, testing friends to ensure their worthiness, and relying on (fictive) kin to fulfill their emotional needs for friendships (Chan Tack & Small, 2017).

Recommendations for Future Directions

There are several avenues for future research. Longitudinal social network analysis has the potential to integrate research on how adolescents strive for status and affection (research at the individual level), how relationships with peers differ (research at the dyadic level), how peers influence and select each other (research at the social network level), and how social norms or social comparisons affect peer relations and adjustment (research at the group level). More research that combines these different levels of interest is needed.

Research linking parent-child relationships, peer networks, and parent-peer relationships has the potential to broaden our understanding of the interdependence of peers and other social relationships. Adolescents select friends with similar levels of parental control (McCann et al., 2019). Friendship networks also connect adolescents to influence from a broader group of adults beyond their own families (Ragan et al., 2014). The behavior of friends' parents tends to be linked to adolescents' alcohol use. Much of the influence from friends' parents is mediated through peer behavior, but a unique influence of parental knowledge on alcohol use remains. Thus, intergenerational closure contributes to the development of adolescents (Coleman, 1988). Likewise, most research on adolescent (mal)adjustment has focused on relations with either parents or peers. As a result, the knowledge base on whether parents can compensate for peers, or

vice versa, is limited. For example, being rejected by parents matters less for adolescents' externalizing and internalizing problems if peers accept the adolescents. Peer acceptance, thus, buffered parental rejection, but parental acceptance did not buffer peer rejection (Sentse et al., 2010). In addition to an integration of research on parents and peers, it is also important to combine research on the relationships with teachers and peers and examine how teachers affect peer processes.

Another area requiring further research is the changing nature of peer relationships and network characteristics during the transition to adulthood. Most peer research is focused on the period from 10 to 16. There is a need for research that follows individuals through late adolescence into adulthood. It is difficult to capture the entire network of young adults, as these will more and more expand beyond the school context. This also constitutes a further shortcoming in our knowledge base: the predominant focus on school settings at the expense of peer relationships in the neighborhood, sport clubs, college, or the workplace. Research is needed that examines, for instance, how friends outside school can buffer against negative peer experiences at school. Research also is needed that follows adolescents into young adulthood to chart developmental trajectories of youths' social position or social bonds from adolescence to young adulthood, and how this contributes to (mental) health, wellbeing, educational outcomes, and occupational opportunities.

More research also is needed about the long-term consequences of peer relationships for functioning in adulthood (Brendgen, 2018). Traumatic experiences during adolescence, including peer victimization, are likely to have detrimental and lasting effects on later life outcomes in adulthood. So far, evidence regarding the potential long-term ramifications of positive and negative peer experiences in childhood and adolescence often stems from epidemiological studies with only limited information about peer relationships (Kretschmer et al., 2018).

New forms of communication technology, online games, and web-based social media programs have created extra platforms for peer interaction (see Underwood et al., this *Handbook*). Social media allow people to be in constant contact. As a result, adolescents may expect their friends to be available permanently. For many, online social networks extend offline social networks. For some, the online context is an opportunity to develop relationships with like-minded peers (Eklund & Roman, 2019). Sometimes, social media can be used as social compensation: shy adolescents may benefit from having friends exclusively online, as these friendships may increase self-esteem, thereby facilitating the formation of offline friendships (Van Zalk et al., 2014). Researchers must recognize that adolescents and young adults are (partly) living their social lives online. What occurs online also may have repercussions for subsequent offline interactions. For example, cyberbullying may lead to retaliation at school, and vice versa. Peer research needs to examine adolescents' peer interactions and relationships through social media, including the use of technology to observe what adolescents say and do on social media.

Developments in neuroscience (Telzer, this *Handbook*), genetics, epigenetics, and inflammatory processes (Neiderhiser & Chen, this *Handbook*; Slavich et al., 2020), and psychophysiology (Kornienko et al., 2020) show a need to further incorporate biological mechanisms in peer research. For example, neuroscience has identified neural profiles linked to heightened sensitivity to peer influence (Steinberg, 2014). Future research should examine whether and how peer experiences entrain the biological system, and vice versa. This may provide more insight in mechanisms explaining long-lasting effects of peer-experiences, or potential markers of susceptibility for peer influence.

Researchers may want to intensify and diversify the collection of longitudinal social network data. A longitudinal social network study with *bi-weekly* assessments found that changes in delinquency are related to situational changes in unstructured socializing, alcohol use, and

marijuana use (Weerman et al., 2018). A recent ecological momentary assessments study among young adults (Van Zalk et al., 2020) examined influence and selection effects by combining diary data on friendships and extraversion dynamics. Similarity in extraversion predicted positive interaction quality changes, which in turn led to friendships. Innovative methods, including the use of wearables or social sensors, also have the potential to give peer research an impetus. For instance, these methods can be used to classify the most dominant or popular person in a group, as well as the impact of this person on group behaviors (Hung et al., 2007).

Another future direction is the inclusion of more diverse samples in terms of socioeconomic status and ethnicity to ensure generalizability of the findings presented in this chapter. Social inequalities in adolescent mental health problems are related to family affluence, immigrant background, adolescent educational level, and gender. Specifically, a study analyzing 10-year trends in self-reported emotional and behavioral problems among Dutch adolescents demonstrated that non-western immigrant youth persistently reported relatively more conduct problems and peer relationship problems their native counterparts, whereas native Dutch adolescents reported higher levels of hyper-activity inattention problems (Duinhof et al., 2015). Other work indicated that youth with an immigrant background were less likely to search for professional help in case of mental health problems (Verhulp et al., 2013). Analyzing how social networks may enhance or leverage such social inequalities among diverse groups may provide important insights that inform policies on social diversity.

Conclusions

Peer research has been motivated by an interest in understanding where peer interactions and relationships come from and how these experiences affect multiple aspects of positive and negative development (Bukowski et al., 2018). Peer research continues to provide insight in how adolescents strive for status and affection, how adolescents are connected to their peers, and how

peers influence and select each other. Recent advances show the importance of considering variations between contexts (such as classrooms) in these peer processes. Selection and influence processes vary strongly between classrooms, and in particular popular peers set a norm for what behaviors are important for friendship selection and influence processes. Moreover, some contexts may elicit exacerbated social comparison processes, which may explain why certain individuals have academic or psychosocial maladjustment in some contexts but not in others. The avenues for further research offer researchers several opportunities to diversify and expand into new areas of inquiry among adolescents and young adults.

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