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Social Integration and Isolation in Youth

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Danksagung

Am Ende eines jeden Großprojektes ist die Liste der Personen denen man zu Dank verpflichtet ist länger, als der Platz, den man in der Danksagung zur Verfügung hat. Erwähnt werden sollen daher lediglich die Personen(kreise) ohne die eine Realisierung dieser Arbeit per se nicht möglich gewesen wäre: Allen voran möchte ich der LIFE Research School für die finanzielle Unterstützung und akademische Bereicherung dieser Dissertation danken; ebenso meinem Betreuer Herbert Scheithauer für die Ermöglichung zur Promotion, dem Vertrauen und der Gewährung nötiger Entfaltungsfreiräume; schlussendlich Kai Cortina für die intensive und fruchtbare Zusammenarbeit während meines wissenschaftlichen Austausches.

Letztendlich ist jedoch jede instrumentelle Hilfe völlig zwecklos, wenn es an Personen fehlt, die einen emotional beistehen und unterstützen: Danke Roos, Anna, Marion, Norbert und allen Freunden meines Sportvereins!

Contents

<u>Introduction</u>

The title of the present dissertation expresses its underlying idea at best. It is based on Kenneth Gergenøs related quote which goes back to René Descartesø famous sentence õI think therefore I amö. What rational thinking represents for Descartes, are social relations for this thesis: The main reason of why we are (who we are). Social relationships constitute us: The extent of our social integration in quality and quantity is supposed to determine a variety of psychosocial outcomes which, in turn, will affect our amount of social integration. This transactional causality between the individual and its social environment allows a better understanding of human behavior by considering the level of social integration, because the development we took, the way we are and the growth we will take is reflected largely in the social structure, in which we were, are and will be embedded.

Over the last 120 years, psychological research has made much progress in understanding individual characteristics. Nonetheless, little is known with regard to the social perspective on psychological states (Carpendale & Lewis, 2004). From the beginning, the discipline of psychology is mainly driven by an individualistic perspective and the single human being, his or her personality, psychological functioning or clinical dysfunction is the predominant focus of research. This individually-based scientific perspective is reflected in the methods psychologists use, wherein the individual reaction, item response or test score is the basic unit of measurement, as well as in the theoretical approaches they base their research on (Gergen, 2000).

Based on the symbolic interactionism, Mead (1934) argued alternatively to the individual approach that there is no self that is independent of social processes. Through social interactions, mental symbolizations emerge slowly, e.g. gestures, language, concepts or social roles and, because this process applies to all of us as, we generate our self from others with whom we are interrelated. This interdependence affects our behavior, cognitions, emotions, and motivations,

which all derive from social interactions and are not distinguishable from social processes. Consequently, if we want to understand human behavior, we need to explicitly integrate a social perspective.

A societal perspective additionally clarifies the importance of this research due to the irreversible breakdown of traditional forms of social relationships (Putnam, 2000). Compared to pre- or non-industrialized social systems, our recent society is characterized by a reduced quantity and quality of social relationships: Extended families and one's close circle of friends become replaced by virtual facebook contacts (West, Lewis, & Currie, 2009), globalized economic structures force employees to work far away from relatives and the original peer group (Schneider & Collet, 2009), emerging adulthood leads to a delay in the timing of marriage and parenthood (Arnett, 2000), and loneliness becomes more and more of a widespread phenomenon for individuals in all ages (McPherson, Smith-Lovin, & Brashears, 2006).

In the present dissertation, I will focus on the relevance of social relations in adolescence, because especially during this age period the influence of peer relationships on the individual development is of particular interest due to various age-related socio-cognitive modifications. While much progress has been made in understanding this intense and sensitive period of age, at least three major research questions remain to be explored with regard to the role of social relationships in adolescence: These are (a) the mechanisms responsible for social integration in adolescence, (b) their effect on and dynamic interplay with adolescents' socio-cognitive development, and (c) the perception of and coping with a lack of social integration in youth.

As outlined above, much of the yet unknown psychosocial mechanisms in youth can be answered by taking into account a comprehensive and detailed social perspective. Hence, I will investigate the cause and effect of adolescents' peer relationships by utilizing a multi-methodological design including social network analyses and experimental designs, which aims

to shed light on the aforementioned still open research questions. The present dissertation is written in a cumulative form and contains three research papers in accordance with to the three main research goals. I will start with a theoretical background that underlies all papers covering an empirical review, general theoretical approaches of explanation, and specific developmental aspects concerning the importance of peer relationships, followed by a section describing the methodological approaches and how they converge into the overall study design, before the research papers will be presented in the empirical part, and finally reflected in the discussion.

Theoretical Background

Review on the Importance of Social Relationships

Beneficial effect of social relationships. Social relationships do not just feel good, but they are of high value for our physical and psychological well-being. The presence of social bonds is highly beneficial, which is reflected in numerous findings from various research areas covering the fields of neuropsychology, sociology, psychotherapy, and evolution.

As an example from neuropsychology, Coan, Schaefer, and Davidson (2006) found that social contact regulates the neural response to a threatening situation. In their fMRI-study, the researchers exposed 16 women to slight electric shocks. The subjects showed a weaker neural threat response when holding the hand of their husbands compared to holding the hand of an anonymous experimenter which, in turn, produced a weaker activation in the neural system compared to situations wherein the subjects held no hand at all. Most interestingly, the effects of spousal hand-holding were moderated by marital quality. In sum, feeling an emotional support in the form of physical contact, ideally from a close and personally important person, buffers stressful and harmful situations.

From a sociological perspective, the concept of social capital highlights the importance of having social relationships. In accordance with Putnam (2000), social capital is defined as the

value of social relationships within one's own social networks (bonding) as well as among different social networks (bridging). Originally, social capital was shown to facilitate the individual power. For instance, Bourdieu (1972) argued that it is helpful to gain powerful positions in society, corresponding to "*The folk wisdom that more people get their jobs from whom they know, rather than what they know […]*" (Sander, 2002, p. 213). Similarly, Coleman (1988) related social capital to the improvement of educational outcomes. Later on, sociologists even revealed positive collective effects of social capital such as fostering the economic and business performance (Knack & Keefer, 1997; Whiteley, 1997), promoting the overall civic engagement, volunteering, and political participation within society (Putnam, 2000; Dekker & Uslaner, 2001), or reducing crime (Sampson, Raudenbush, & Earls, 1997). Both mechanisms, the direct or indirect employment of social connections on the individual level and the function of strengthening community ties, promoting norms and values, and encouraging supportive behavior on the collective level, explain the beneficial character of social capital and find support with compelling evidence (cp. Aldridge, Halpern, & Fitzpatrick, 2002). In sum, different generations of researchers on social capital explicitly emphasize and confirm the benefit of social relationships on the individual, community, regional, and national level and provide an impressive example from a sociological perspective of why social relationships are important.

Another notable illustration for the impact of social relationships comes from the clinical area and refers to the importance of the relationship between therapist and client in clinical contexts. Based on the humanistic approach (Rogers, 1959), the effectiveness of treating disorders depends crucially on the relationship between client and therapist, which is aimed at being based on acceptance, empathy, and congruence. In line with this, the psychotherapeutic utilization of social relationships and its positive effect is also expressed in the application of group psychotherapy, self-help groups, or patient organizations, which were shown to have a

high effectiveness (McDermut, Miller, & Brown, 2001). Many group-therapeutic principles arise from the social interconnection among their members and reduce the sense of social isolation for each of them. The authors Yalom and Leszcz (2005) specified factors such as the possibility to share experiences, feelings, and concerns, the chance to securely train social skills within a supportive environment, the fact of feeling cohesiveness, receiving hope, or getting useful information which, in turn, helps patients to obtain an improved self-understanding and reflect personal problems.

Finally, a strong argument for the benefit of social relationships stems from the field of evolution. Advanced vertebrates like birds and mammals display pronounced forms of social life, which includes not only group living with non-relatives in organized structures, but also postnatal care for their offspring. The reason for the evolution of social systems is the same as for every evolutionary mechanism: Benefits outweigh costs (Alexander, 1974). Even though, group living involves high costs such as competition, conflict regarding reproduction, higher risk of infection and transmission of parasites as well as an increased attraction for predators (Bilde et al., 2007), the fitness for individuals in groups still outruns the fitness of solitarily living individuals as the reproductive success increases in relation to the group size (Crespi & Choe, 1997). That is, social relationships have an evolutionary basis as they come along with survival benefits such as sharing food or giving mutual care and protection (Axelrod & Hamilton, 1981).

Negative effect of absent social relationships. On the other hand, the lose, deprivation, or even complete absence of social bonds is associated with a variety of problems. Since Durkheim (1897/1963) found that less socially integrated people are more likely to commit suicide, the lack of social relationships is a replicated major risk factor for health. For example, the amount of social relationships was found to negatively predict mortality, because less socially integrated individuals are less healthy and more likely to die (cp. House, Landis, & Umberson,

1988). Other studies provided evidence for a longitudinally harmful effect of being isolated during youth on one's health and physical well-being in adulthood (Caspi, Harrington, Moffitt, Milne, & Poulton, 2006). A recent meta-analysis conducted by Holt-Lunstad, Smith, and Layton (2010) additionally supports the idea that a lack of social relationships is a risk factor for mortality: Based on 148 prospective longitudinal studies that examined the influence of social relationships for health, the authors revealed that more socially integrated individuals had a significantly increased likelihood of survival than those who were less integrated. In sum, social relationships seem to similarly influence health or mortality such as well-established risk factors like smoking or alcohol.

Besides the physical consequences, lacking social relations also have detrimental psychological effects and people strongly intend to avoid any sense of isolation. Surprising results in classical experiments from social psychology can be at least partially explained by people's concern and fear of being socially excluded: For example, individuals tend to converge their own estimation of a õlight-spot movementö to the majority's opinion (Sherif, 1935), they prefer making incorrect judgments about the length of a line than behaving non-conform to the unanimous majority (Asch, 1956), or they obey an authority and give electric shocks to strangers rather than being rejected by the instructor (Milgram, 1974). All of this is grounded in the fact that the experience of lacking integration is connected with harmful consequences: First and foremost, social isolation is perceived as aversive and is associated with feelings of extreme distress. Ainsworth's famous strange situation test (1978), which primarily examined patterns of attachment through observing the reactions of toddlers and young children when becoming acquainted with an unknown person, also clearly demonstrated the stress which most of them felt, when they became isolated from their mothers.

The distress effect of social isolation was replicated numerously, especially by the research group of Kip Williams, who developed an experimental paradigm called cyberball (Williams, Cheung, & Choi, 2000). This virtual ball-tossing game involves three players: One real subject and two computer players, which are perceived as real participants due to the introducing cover story, in which the subjects are to be told that they are connected with them via the internet. In fact, the other two players are pre-programmed actors, who throw the ball to the real subject in the control variant, but exclude the real subject after a short while in the experimental group by not throwing the ball back to him or her. In doing so, the real subject has to wait for the ball while watching the other players for about two minutes as they throw the ball to each other. This well-designed procedure provides a way to manipulate the social involvement of participants as an independent variable in a highly standardized way. Therewith, cyberball causes remarkable short-term effects of social isolation, which are reversible after a final debriefing: Experimental findings of Kip Williams and colleagues showed that the short-term reduction of social interactions causes aversive emotions (Williams, 2001) which, in turn, were found to be just as painful as receiving physical forms of aggression (Eisenberger, Lieberman, & Williams, 2003). Moreover, social isolation was also shown to threaten fundamental human needs such as the need to belong (Gardner, Pickett, & Brewer, 2000), the need for control (Campbell et al., 2006), the need for self-esteem (Williams, 2001), and the need of experiencing a meaningful existence (Zadro, Williams, & Richardson, 2004). Beyond these painful feelings of distress and threatened needs, social isolation was also investigated with consideration to its behavioral consequences. A major category of behavioral responses involves various forms of antisocial and maladaptive reactions such as anger or aggression (Williams, 2007).

This link between lacking integration and maladaptive reactions was supported across multiple experimental paradigms. In particular, Jean Twenge and colleagues utilized two other

elegant experimental designs that additionally confirmed this harmful effect of becoming isolated. Twenge⌀s first procedure to manipulate social exclusion is the so-called life-alone paradigm (Twenge, Baumeister, Tice, & Stucke, 2001; Twenge, Catanese, & Baumeister, 2002, 2003; Twenge, Baumeister, DeWall, Ciarocco, Bartels, 2007). Therein, participants receive false feedback about their later social life. Due to their scores on a personality inventory, participants in the rejection condition are told that they will most likely spend the end of their life⌀s alone as they are unable to maintain close relationships. In another experimental setting, the get-acquainted paradigm (Twenge et al., 2001, 2003, 2007), participants come together in small groups of four to six people, engaged in a structured conversation to get to know each other, and are asked to nominate members they want to interact with again. Independently of the result, participants in the experimental group receive the information of total rejection by telling them that they were nominated by nobody at all. Both exclusion paradigms revealed that participants showed a variety of maladaptive reactions in response to the previous social exclusion. These negative outcomes encompass aggressive reactions (Twenge et al., 2001), self-defeating behavior (Twenge et al., 2002), emotional numbness when participants enter the defensive state of cognitive deconstruction (Twenge et al., 2003), or reduced prosocial behavior (Twenge et al., 2007).

Aggressive reactions in response to previous ostracism episodes are not restricted to the initiation of short-term exclusion in laboratorial experiments. Especially when experienced over a prolonged period of time, the lack of integration or rejection in everyday life is a risk factor for the development of aggressive behavior (Leary, Kowalski, Smith, & Phillips, 2003; Leary, Twenge, & Quinlivan, 2006).

Summary. Without any effort, the list of empirical studies that exemplify the importance of social integration could be continued to a great extent. However, this brief review already

allows the clear conclusion that social relationships are a necessary condition for our physical and psychological well-being.

A variety of research fields with multiple methodological approaches demonstrated both, the beneficial effect of present social relationships and conversely the negative effect of missing social ties. After reviewing the compelling evidence on the importance of social relationships, I will continue with the theoretical explanations of the mechanisms by which social relationships are assumed to influence our physical and psychological health.

Theoretical Approaches of Explanation

The need to belong. A concept which explains the crucial role of having social relationships and being integrated is the need to belong, which is the need to form and maintain social bonds with a regular and positive character (Baumeister & Leary, 1995). The belongingness hypothesis states that õ[í] *human beings have a pervasive drive to form and maintain at least a minimum quantity of lasting, positive, and significant interpersonal relationships.*ö (p. 497). Based on this, all human beings are driven by an interpersonal desire to be connected with other people and this need can even be considered to be a fundamental motivation. The need to belong is in accordance with and indirectly supported by a diversity of psychological theories: Human beings have a fundamental need to belong because of our sex drive (Freud, 1930), because we obtain information about ourselves in comparison to others (Festinger, 1954), because interpersonal contact and affiliation reduces anxiety (Schachter, 1959), and because belongingness is the necessary requirement for emotional (Bowlby, 1969, 1973), social (Bandura, 1977), and cognitive learning processes (Vygotski, 1978).

The concept is especially reflected in the work of Abraham Maslow and his hierarchy of needs model (1943). Guided by the assumption that everybody is born with particular needs that have to be satisfied, Maslow specified, classified, and ordered these needs hierarchically with

regard to their relevance, whereby humans always aim to fulfill the lowest or most basic unsatisfied need or as Maslow (1943) stated: õ[í]*the appearance of one need usually rests on the prior satisfaction of another, more pre-potent need.*ö (p. 370). The need to belong is an essential ingredient within this system and is embedded as third level, directly after physiological needs such as breathing, eating, and sleeping as well as safety needs such as security and health. As a consequence of Maslowøs model, the fulfillment of the belongingness needô in case the very basic physiological and safety needs are satisfiedô has the highest priority for human beings.

Hofstede (1984) criticizes Maslow with regard to the cultural limitation of his model. In fact, the hierarchy of needs was created from an individualistic perspective with the consequence of focusing on self-centered needs in content and priority. However, other cultures may differ concerning the order of needs as well as Maslowøs underlying idea that humans are driven by the egocentric desire to improve themselves. Especially in collectivistic societies, the need to belong may even be more important than originally expressed by Maslow.

Furthermore, a recent revision of Maslowøs hierarchy of needs additionally lifts the status of belongingness and social relationships within the hierarchical system (Kenrick, Griskevicius, Neuberg, & Schaller, 2010). This updated reformulation is based on modern evolutionary theory and regards to the architectural modification of the top of Maslowøs pyramid of needs by replacing self-actualization with evolutionarily fundamental and social motives such as mating and parenting.

In any case, the theoretical concept of the need to belong clearly explains one aspect of why social relationships and social integration are so important and why a lack thereof leads to the outlined detrimental consequences: Human beings have the motivational drive to be connected with others. The existence of this need applies to all of us. Given the fulfillment of

physiological and security needs, an unsatisfied need to belong guides our emotions, cognitions, and behavior by the primary desire to re- or fulfill it. When people fail to refill their need to belong, because of their own incapacity to form and maintain social relationships or because others continuously isolate them unintentionally or on purpose, this unsatisfied need will cause comparably serious effects as thwarting any other fundamental human need.

Social support theory. Beyond the need to belong, the theoretical framework of social support additionally explains the beneficial effect of social bonds as well as the detrimental consequences of lacking integration. Although definitions of social support run the risk of being tautological clarifications, it is widely accepted to describe this multidimensional construct similarly to Thoits (1985) as õ*[í] helpful functions performed for an individual by significant others [í].*ö (p. 53).

Inspired by Lazarus (1966) and his work in the field of stress and coping, social support became introduced into social science. Within the following years, the attention concerning this concept increased exponentially, especially because it enabled researchers to explain the surprisingly small relationship between the accumulation of social stressors and health outcomes with the moderating effect of social support (e.g. Cassel, 1974; Cobb, 1976). The so-called buffer hypothesis emphasized the protective role of social relationships in reducing or eliminating negative effects of stressors or critical life events.

The buffering mechanism by which social support is hypothesized to influence the relationship between stressors and well-being is the following. Drawn on the stress and coping process model (Lazarus, 1966), social support is supposed to operate during both stages (Wilcox & Vernberg, 1985). During the first stage of the model, when people confront a stressful situation, they perceive an objective stressor differentially due to two cognitive processes: The primary appraisal which involves the evaluation of the stressfulness of a situation and the

secondary appraisal which involves the evaluation of one's coping resources with regard to this situation. Both cognitive processes are positively influenced by the perceived availability of social support. That is, the pure knowledge of having reliable and helpful relationships will lead a person to appraise an objectively threatening situation as less stressful which, in turn, will boost his or her will to challenge or belief to master this situation. During the second stage of Lazarus' model, when a situation has been evaluated as stressful and the person has to cope with it, social support by significant others unfolds its positive effects in a variety of different forms (cp. Berg & Piner, 1990). These not mutually exclusive types of social support are (a) emotional support which includes the provision of love, care, value, sympathy, and feelings of belonging, (b) instrumental support which encompasses the provision of resources in the form of actions or materials, and (c) informal support which covers problem-related communications to give useful facts and advices.

Taken together, received social support strengthens both, one's belief for being able to successfully master a stressor and the actual coping performance. That is, the more friends and supportive relationships a person possesses, the more resistant this person will be while facing stressful situations or critical life events.

However, the upcoming generation of researchers in the field of social support criticized the "buffering-only view" (Cohen & Wills, 1985; Lakey & Cohen, 2000; Leatham & Duck, 1990). They argue that social relationships are not merely a resilience factor, the function of which is restricted in decreasing the vulnerability to stress or helping to adjust after critical life events, but expand the conceptualization to the so-called "main-effect view". In accordance with this perspective, social relationships are furthermore assumed to have a direct effect on our physical and psychological well-being: "[…] *lack of social support and changes in support over*

*time are stressors in themselves, and as such ought to have direct influences upon psychological symptomatology, whether or not other stressful circumstances occur.*ö (Thoits, 1985, p. 51).

Social constructionism. The main effect, meaning that supportive social relationships directly influence health and well-being, is strongly grounded on the theory of social constructionism which is, in turn, based on the approach of symbolic interactionism (Mead, 1934). Social constructionism states that our perception about the world does not reflect the objective reality, but the social context which we are embedded in (Lakey & Cohen, 2000). As a result, the self is largely a reflection of how one is related to and viewed by others. This primary assumption is summarized best with the words õ*[í] what we take to be knowledge of the world grows from relationships, and is embedded not within individual minds but within interpretive or communal constructions.*ö (Gergen, 2000, p. 122).

Transferred to the supportive character of social relationships, social constructionism implies that regularized interactions by the õsocial selfö are the motor behind the maintenance of health and well-being. In line with this, three mechanisms are assumed to account for this main effect (cp. Thoits, 1985): First, as social relationships are the source of the reflected self, they provide the possibility to develop an individual identity, social roles, and role relationships by regularly interacting with others. These social identities, which develop in the eyes of the people we are in relation to, give us the sense of existential security, guide our activities, and prevent aimless or disorganized behavior, which clarifies their supportive character. Conversely, as outlined above in the review section, the lack or loss of such relationships is associated with a feeling of meaninglessness (e.g. Zadro, et al., 2004). Second, social relationships are the source of positive self-evaluations. Given the existence of supportive connections, in particular emotionally supportive connections, positive self-evaluations are very likely to occur and will, in turn, foster oneøs self-esteem, self-regulation, satisfaction, and well-being (Lakey & Cohen,

2000). Third, social relationships provide a sense of control and mastery. When people fulfill their social roles and behave in accordance with the identity they developed in interaction with their social environment, role-adequate performances create feelings of success. Moreover, social interactions are utilized to reinforce this process. By observing other people and extracting information regarding their goal achievement, people enhance their own performances (cp. social learning theory, Bandura, 1977).

In sum, the emergence of an individual identity and the involvement in role relationships are the essence of ourselves and satisfy many of our basic needs. Consequently, social relationships directly influence physical health and psychological well-being by providing existential security, a sense of belonging, positive self-esteem, and comparative mastery. Hence social constructionism clarifies crucial aspects of the importance of social relationships and adds a valuable perspective besides the explanations given by the need-to-belong concept and the buffering-view of the social support theory.

Summary. Three co-equal perspectives outlined the mechanisms by which social relationships affect our physical health and psychological well-being: (a) they fulfill a fundamental human need; (b) they buffer and help to overcome stressful situations by providing multiple forms of support; and (c) they are even supportive in the absence of a specific stressor. These theoretical explanations shed light on the importance of being accepted by peers, colleagues, neighbors, and especially by family members, close friends, and the ones we love and therefore offer multiple reasons of why it hurts to be socially rejected.

I will now turn my attention to the present dissertation's age group of interest: Late childhood and early adolescence. Within the next section, I will support and specify previous theoretical explanations concerning the importance of social relationships on the background of

developmental processes and demonstrate the essential need for examining social relationships in this specific age period.

Developmental Focus on the Importance of Adolescentsø Peer Relationships

Especially in adolescence, the importance of peer relationships is of particular interest and needs special research attention due to a variety of reasons. First, this age period is accompanied by different developmentally-based psychosocial changes. For instance, it is well documented that peer relationships reach the climax of importance in adolescence (LaFontana & Cillessen, 2009), while at the same time adolescents gradually become autonomous and independent of their parents. This shift of priorities, which is empirically reflected in the considerable increase of time that adolescents spend with their peers (Larson & Richards, 1991; Steinberg & Morris, 2001), enables the reorganization of social networks favoring interactions that are based on symmetry and equality (Youniss & Smollar, 1985). Furthermore, adolescence is a time of increasing social demands such as forming friendships, regulating relationships, mediating conflicts, or (re-)adjusting a developing identity to oneøs social environment. All of these new challenges require a rising social understanding and higher levels of psychosocial capacities, which develop due to the aforementioned increasing amount of time adolescents spend with their peers and because of socio-cognitive maturation (cp. Oerter & Montada, 2002; Petermann, Niebank & Scheithauer, 2004; Steinberg, 2005).

Second, more than in any other age groups, functional, protective, and supportive peer relationships are crucial for an adaptive development (Gilman, Schonfeld, & Carboni, 2009). This is grounded in the fact that stable peer friendships in late childhood and adolescence provide the first opportunities to learn the principles of reciprocity, interpersonal responsibility, and mutual concern (Youniss, 1994). Therefore, in accordance with the convoy model (Antonucci, 1985), early experiences of supportive relationships will continue to influence later networks,

social roles, and supportive behavior. Moreover, this age period also involves an uncountable number of behavioral risk factors such as substance abuse, school drop-out, deviant behavior, or even delinquency (Adams & Gullotta, 1989; Meeus, 1994). That is, adolescents are in particular need for emotional, instrumental, and informal support and henceô much more than in later lifeô self-esteem and feelings of worth, security, or control depend on the social connectedness to peers (Nestmann & Hurrelmann, 1994).

A third reason which makes social relationships uniquely important in youth is the fact that adolescents are highly susceptible to their peersø influence. It is not a novel finding that adolescentsø behavior is strongly influenced by the social structure in which they are embedded (cp. Hollingshead, 1949). Once they are integrated within a friendship network, adolescents will adjust their behavior, interests, attitudes, and beliefs to various group or collective norms (Brechwald & Prinstein, 2011). That is, adolescents are shaped by their peers and their behavior depends not only on individual characteristics, but also on the social structure and constraints of the social environment, they are embedded in and exposed to specific influence processes.

Fourth, youth in particular is characterized by the occurrence of aggression that intends to damage someoneøs relationships or social affiliations, which is reflected in the considerably high and stable prevalence rates of peer rejection (Asher & Coie, 1990), lacking social integration (Hoza, Bukowski, & Beery, 2000), loneliness (Jones, 1985), bullying (Scheithauer, Hayer, Petermann, & Jugert, 2006), or relational aggression (Prinstein, Boergers, & Vernberg, 2001; Werner & Crick, 1999). Certainly, as does every form of aggressive behavior, social exclusion or peer rejection have a functional character in the way that they can be used to control for contra-normative behavior (Boivin, Dodge, & Coie, 1995; Stormshak, Bierman, Bruschi, Dodge, & Coie, 1999) or to regulate or protect the group (Brewer, 2005). Nonetheless, in contrast to physical aggression, nonphysical forms of aggression are harder to detect and, even when

correctly recognizing social stress among adolescence, people seem to lack empathy concerning victims of social aggression: In contrast to the social pain theory (MacDonald & Leary, 2005) and its empirical verification (Eisenberger et al., 2003), we seem to underestimate the hurtfulness of social pain (Nordgren, Banas, & MacDonald, 2011).

Fifth and finally, diverse developmental models emphasize the exclusive importance of social relationships in adolescence. For example, the famous concept of Vygotsky (1978), namely the zone of proximal development, states that the learning success is boosted under guidance or in collaboration with more competent peers. Hence for Vygotsky, social relationships in adolescence are a necessary condition for the genesis of higher mental functions. In line with this, the social learning theory of Bandura (1977) proposes that social relationships present possible role models for adolescents, from whom they learn through observation, imitation, and reinforcement. Based on the stage model of Erikson (1959), the central developmental task in adolescence is the growth of an individual identity, whichô accordingly to the theory of social constructionism (cp. Gergen, 2000)ô depends on adolescentsø social relationships and social networks, which shape identities and social roles.

Taken together, adolescentsø behavior, cognitions, and emotions are strongly driven by social goals such as belongingness, acceptance or integration; in all likelihood, stronger than in any other age group. The outlined empirical facts and developmental models highlight the extent to which social relationships are particularly important for adolescents: This age period is marked by a social shift of priorities favoring equal peer relationships, a dynamic growth of social demands and required psychosocial capacities, a distinctive need for social support due to the high vulnerability for diverse risk factors as well as its later effect for the development of a supportive person, a pronounced sensitivity to social cues and peer influence processes, and a peak concerning the frequency of problematic social relationships.

The implications are twofold: First, adolescence is a sensitive period for research: It seems to be ironic that adolescence is both, the age period with the highest importance of social relationships on the one hand and the highest frequency of problematic social relationships on the other hand. The combination of this remarkable importance and high vulnerability calls for research on social relationships in adolescence to shed light on the question, which protective factors can be identified that prevent distinctive forms of social victimization. Second, adolescence serves as an observation window: If we want to understand the antecedents and consequences of social relationships, adolescence is the age period of choice, because even subtle social processes that are hard to analyze may be illuminated due to the strength to which social mechanisms occur. These initial findings may be the starting point for ongoing research and guide generalizations to other age groups.

Objectives

The outlined theoretical concepts are neither mysterious, nor revolutionarily innovative. In fact, the importance of social relationships has been numerously described, explained, and supported from diverse research areas. However, congratulating ourselves for finding evidence concerning the importance of social relationships prevents us from finding the concrete processes by which social relationships are formed and by which they influence adolescentsø behavior in the short term or shape their development in the long term. That is, despite the theoretical and empirical advances on the issue of social relationships, urgent research questions still remain unaddressed and we are only beginning to understand the psychosocial mechanisms of social integration and social isolation in youth. The present dissertation aims to shed light on these questions by focusing on three yet unexplored research topics.

Predictors of social integration. The first research project will address the sources of social integration. As the review section showed, social relationships have been frequently

studied as a predictor and much effort has been made to investigate the outcomes of social integration or social isolation. However, although social relationships have been frequently studied as an independent variable, they have hardly been examined as a dependent variable and thus almost no insights exist regarding their antecedents.

This deficit involves unanswered research questions such as: Why do some adolescents lack social integration? What are psychosocial differences between isolated and integrated adolescents? What are risk and protective factors of social integration or isolation, respectively? Which predictors explain adolescentsø social status? To which extent do individual and contextual effects play a role in explaining social integration?

I will address this research topic by taking a social network perspective. This methodological approach provides a way to investigate real-life social integration with a great degree of accuracy by considering the influence of peer relationships within an entire network system (Gest, Farmer, Cairns, & Xie, 2003). Utilizing social network analyses enables researchers to take a unique look at adolescentsø degree of integration beyond close and dyadic friendship patterns. In combination with multilevel modeling (Raudenbush & Bryk, 2002), which adequately accounts for the nested data structure (adolescents as units of peer groups), this research perspective helps to look beyond the individual perspective. Moreover, the simultaneous consideration of individual and contextual factors is grounded in the fact that (a) social integration rather results from complex group processes and (b) data on the individual level are not completely independent from one another.

Psychosocial outcomes of social integration. The second research project focuses on the effect of social integration regarding its psychosocial outcomes. In fact, research revealed much information concerning the consequences of social integration or the lack thereof, especially with regard to state outcomes such as affect, distress or well-being. However, little is known regarding

the influence of social relationships on adolescentsø development of psychosocial traits. While the consideration of a social dimension in explaining adolescentsø development is not completely new (cp. biopsychosocial approach: Petermann et al., 2004), most existing studies that examine the consequences of social integration or isolation are limited regarding their degree of detail and consequently lack psychometric properties.

Novel approaches are needed to illuminate questions such as: Which social-psychological effects do social relationships produce or are accompanied by? To which extent is the emergence of social-cognitive capabilities influenced by adolescentsø social environment? Do social integration and the associated social responsibilities shape adolescentsø psychological constitution? What is the role of individual characteristics and contextual effects?

The aforementioned social network and multilevel perspective will be applied to analyze adolescentsø amount of social integration and its predictive power for their psychosocial constitution, because this approach meets the required psychometric properties. I aim to shed light on the outlined research questions by focusing on a specific psychosocial construct that (ideally) develops during adolescence: Empathy. More specifically, I will test the hypothesis that the emergence of empathy is influenced by an underlying social network to the extent that the individual network position and its associated social responsibility shape adolescentsø degree of empathy.

Perception of and coping with social isolation. To illustrate the importance of peer relationships, this dissertation project finally examines, what happens when peer relationships are absent by temporarily reducing them to a minimum. This extreme form of lacking social integration is known as ostracism, which is defined as õ*[í] any act or acts of ignoring and excluding of an individual or groups by an individual or group.*ö (Williams, 2001, p. ix). Even though, the lack of social integration is not limited to specific age groups and literature suggests

that the exposure to and reception of social isolation may differ with age (Prinstein et al., 2001), research lacks for developmental findings, especially in young age.

On the one hand, this refers to the perception of ostracism; more specifically to age-related differences driven by social, biological, and cognitive changes in late childhood and early adolescence. On the other hand, research also lacks with regard to coping differences. Ostracism is a frequent form of interpersonal behavior that we experience 25.000 times on average in our lifetime (Williams, Wheeler, & Harvey, 2001). Intentionally or on purpose, less pronounced or very intense, just a few times or very frequently, everyone will experience and has to cope with ostracism. Accordingly to individual differences in behavioral reactions after experienced ostracism (Roecker Phelps, 2001; Williams, 2001), I assume that coping with ostracism is influenced by personal factors, which present capacities that protect youth from receiving further aggression and support their adaptive development. Unfortunately, the empirical knowledge regarding moderating factors is still an open research question (Williams, 2007).

The yet unknown developmentally-based perception of and coping with ostracism raises questions such as: What are the consequences of reduced social interactions in childhood and adolescence? Do children and adolescents differ on behavioral reactions to social isolation? Which predictors may explain possible behavioral differences?

This final focus of the present dissertation project will be investigated by utilizing laboratorial and online experiments. The primary interest is to explore predictors that explain differences between adaptive and maladaptive reactions to experimentally initiated short-term episodes of ostracism for the detection of individual risk and protective factors.

In the upcoming section, all methodological approaches of the present dissertation project will be outlined in more detail and I aim to demonstrate to which extent they build on and converge into one another.

Method

Social Network and Multilevel Analyses

As it is insufficient to illuminate the biological determinants of human behavior by taking the type of gender into account, results regarding the social influence on adolescentsø behavior are limited when merely considering the number of friends. Non-existent or inconsistent findings from previous research on adolescentsøpeer relationships are assumed to be grounded in the lack of sophisticated approaches (Berg & Piner, 1990) and hence many researchers (e.g. Gilman et al., 2009; Lakey & Cohen, 2000) suggest to examine social relationships by utilizing social network analyses: õ*While the goal of operating beyond the individual level of analysis is acknowledged in most work on social relationships, it is the network perspective that pursues it most fully.*ö (Morgan, 1990, p. 192f.).

Social network analyses (SNA) go back to Jacob Moreno (1934), who is commonly acknowledged as the father of SNA. He was driven by the idea that human behavior has something to do with individual traits as well as with the individual position in an underlying social network. Built on this, Lewin (1947) argued that social interactions within a group form a structure, which can be analyzed mathematically with regard to its properties and quantitative features. Researchers in the field of sociology or anthropology started to recognize the usefulness of SNA for studying their research questions that were concerned with explaining changing social environments (e.g. Fischer, 1948) or the performance of family roles (e.g. Bott, 1957), respectively. Not before the late eighties, psychologists finally begun to use SNA when Cairns and colleagues designed the socio-cognitive mapping procedure to study adolescentsø peer relationships within school classes (Cairns, Cairns, Neckerman, Gest, & Gariépy, 1988). Subsequently, the use of this methodological approach increased exponentially to investigate and understand human behavior.

A social network structures ties (e.g. social relationships) between nodes (e.g. individuals) through certain interdependencies (e.g. friendship) and assumes that these interdependencies explain something about the network members (Borgatti, Mehra, Brass, & Labianca, 2009; Pierce, Sarason, & Sarason, 1990). This research perspective matches perfectly with our theoretical background, because SNA refuse to view relationships in isolation but reach beyond individual-based explanations by emphasizing structural aspects: õ*The ties we have formed, as well as those we have not established, reflect the nature of our lives, our interests and priorities, our obligations, loves, and disappointments.*ö (Hirsch, 1985, p. 119).

This analytic perspective provides crucial statistical and methodological benefits with regard to the psychometric properties and the uniqueness of generated information. Based on matrix algebra and graph theory, SNA offer the possibility of illuminating latent structures such as peer groups. Thus these analyses equip researchers with the necessary condition to adequately study peer influence processes and to consider the existing social organization of a given network. Moreover, since SNA consider all relationships within the entire social network system, it is characterized by a greater degree of accuracy. While conventional peer rating systems yield error-prone results as they neglect indirect and complementary peer connections, SNA creates a more valid picture by taking into account friendships and sources of social support in all kinds of forms. Finally, SNA allow to reveal unique outcomes on different social levels covering individual properties such as measures of centrality, embeddedness, closeness, or betweenness as well as collective features, which describe the overall network characteristics such as density, reciprocity, transitivity, clustering, or centralization.

As SNA uncover the dynamics and features on diverse levels, this method provides the basis for the multilevel analysis (Raudenbush & Bryk, 2002), which simultaneously considers individual and contextual processes. This statistical combination meets our outlined theoretical

background to the extent that social behavior results from complex group processes. Moreover, it also allows handling the problem that people on the individual level are not completely independent from each other. In particular, as outlined above, adolescents are susceptible to the influence of their peers. Once they find their position in a network, adolescents will adjust their behavior and beliefs to various group or collective norms. That is, social selection and social influence processes homogenize each group member's attitudes and behaviors (McPherson, Smith-Lovin, & Cook, 2001), which violates the assumption of statistical independence on the individual level. However, with the use of multilevel modeling, I can adequately account for the nested data structure.

Depending on the item used to elicit a social network, researchers can highlight very different kinds of relations to pursue different research goals (cp. Borgatti et al., 2009). In the two projects of the present dissertation that used this social network and multilevel perspective, different network approaches and study designs were implemented to address the respective research question. The following subsections are devoted to briefly contrast the used network procedures and study designs.

Study 1: Social integration in youth. The first study of the present dissertation investigated the predictors of social integration in youth with a sample of 317 seventh through ninth graders out of 18 school classes, who were rated by their classmates with regard to peer affiliations and by their respective teachers concerning social skills. To analyze the degree of social integration from a social network perspective, the social-cognitive mapping (Cairns et al., 1988) was applied, because this network approach has been designed to study peer connections in school classes. Furthermore, the procedure of the social-cognitive mapping (SCM) has been frequently validated within the context of adolescents' school classes (Gest et al., 2003; Kindermann & Skinner, 2009; Rodkin, Wilson, & Ahn, 2007).

The SCM is a peer-report technique, where participants are asked to identify as many peer groups in class as they are able to recall. These reported friendship patterns presented the basis for the SNA as they allow to extract the latent peer group structure within each school class as follows: Based on all individual ratings, an aggregated co-nomination matrix will be generated, which mirrors the actual peer interaction patterns in class to the extent that each cell represents the number of times two students were rated by peers to be in the same group. A subsequent correlation matrix that indicates the correspondence between the group membership scores of two students represents the basis for the peer group extraction by utilizing a Lambda-X (LX) LISREL matrix (for more detail see Cairns et al., 1988).

After identifying the peer groups, the degree of social integration for each student was calculated. Based on the range of group-membership nominations, SCM specified a discrete criterion of each participantøs integration within his or her peer group and, in turn, each groupøs integration within the class by using three categories of integration levels: The upper 30% range of nominations were categorized to be nuclear, the following 40% were categorized to be secondary, and the lowest 30% were categorized to be peripheral. Participants without any group membership were assigned to the category of social isolates. In addition, I used the number of group-membership nominations each person received (the diagonal in the co-nomination matrix) as a continuous criterion of social integration.

Study 2: Embeddedness and empathy. The second study examined the social mechanisms that underlie the concept of empathy in adolescence with a sample of 3.159 seventh graders out of 166 school classes, who provided information on empathy and friendship patterns. Utilizing the network approach of UCINET (Borgatti, Everett, & Freeman, 2002), I was equipped to illuminate a comprehensive representation of the social environment adolescents are embedded in.

Based on a peer nomination procedure, students rated their classmates on the item õWhich classmates do you like a lot?ö. Built on these information, UCINET illuminated the latent peer group structure and revealed an outcome of someoneøs social integration, similarly but not identical to the SCM procedure. The analytic unit for extracting peer groups were cliques, which are defined as the maximum number of actors who have all possible ties present among each other (Luce & Perry, 1949). To handle the problem of multi-group membership, the hierarchical clique clustering approach (cp. Everett & Borgatti, 1998) was applied, which produced non-overlapping groups, so that each student was assigned to one distinct peer group.

Thereafter, an individual parameter of embeddedness was calculated that measured each studentøs social importance in his or her class. For this purpose, I utilized Bonacichøs centrality measure (Bonacich, 1987). This indicator goes beyond the conventional quantitative description of someoneøs number of connections and additionally takes into account the qualitative value of connections by considering, in turn, their number of connections. Phrased differentially, two students with the same number of friendship ties are characterized by the same degree centrality, but they may still differ regarding their degree of embeddedness. When one student is connected to central friends and the other to friends at the fringe of the network, they clearly vary in regard to their network status in class. However, Bonacichøs centrality measure takes this into account and provides a precise parameter of adolescentsøembeddedness within the entire social network.

Comparison of the network projects. The network approach in the first project is group-based. Thus the SCM procedure suits this specific research question of explaining adolescentsø amount of integration, because it is primarily concerned with uncovering (non-)group membership. In contrast, the network approach in the second project focuses on the complete school class. This analysis and especially its quantification of the degree of overall embeddedness matches the respective research goal, because it gives particular consideration to the fact that

social relationships influence adolescentsø development beyond direct friendships, including indirect, complementary, or secondary peer relationships within the entire network system.

Besides their differences, what both of these research projects have in common is that they utilize class-specific network analyses. Therewith, I account for the specific social organization of German schools, where the data collection took part. In contrast to the US, German schools differ insofar as students spend most of their classes with the same classmates in a designated classroom while teachers rotate between rooms. Consequently, the classroom creates a strong social network, which needs be analyzed accordingly.

Experimental Approach

Even the most sophisticated statistical analyses cannot overcome the limitation that the causal mechanisms still remain unknown. The correlational data of the previous network projects provide important and unique insights into the nature of peer relationships, but produce a chicken-and-egg problem, which disables me to determine the causal interplay of antecedents and consequences.

Therefore, in my final research project, I enhanced the social network and multilevel perspective by including an experimental approach. The consideration of experimental findings is important as most studies in this field are non-experimental and hence miss to shed light on the question of how social relationships cause emotions, cognitions, and behavior. By adding an experimental design, I hope for being able to advance the understanding of the ramifications yielded by the previous research projects. Within two studies, I examined the perception of and coping with ostracism in laboratorial settings and an online study, respectively. The following subsections will briefly outline the utilized paradigms and designs.

Study 3a: Ostracism in childhood and adolescence (perception of ostracism). The third study of the present dissertation project examined the developmentally-based perception of

ostracism with a sample of 94 fourth and eighth graders, who were either socially included or excluded and tested for their emotional and cognitive responses in laboratorial single-case experiments.

To experimentally manipulate the social connectedness to peers, I used the cyberball paradigm (Williams et al., 2000). Therein, subjects in the control group are included and those in the experimental group excluded for about two minutes by two dummies within a virtual ball-tossing game. This procedure is described in more detail within the section 2.1.2 of the introduction. Cyberball enables me to manipulate the social involvement of participants as an independent variable in a highly standardized way, which causes reversible, but remarkable short-term effects of social isolation (Zadro et al., 2004).

Afterwards, participants were asked to report their mood on the PANAS and to recall previously read diary events of an unknown person. The latter measure is based on the needs-threat-repair prediction (Williams, 2001), which postulates that short-term ostracism motivates people to socially reconnect themselves and fulfill their thwarted need to belong, which will consequently drive their cognitions to the extent that they will implicitly pay greater attention to social events in their environment. The proportion of individual versus social diary events that were recalled by the participants then provides an objective cognitive test, which enriches the usual restriction of subjective self-reports by eliminating faking-good tendencies and high face validity.

Study 3b: Ostracism in childhood and adolescence (behavioral reactions to ostracism). The final study investigated moderators that were assumed to influence ostracism reactions with a sample of 97 fourth to ninth graders, who participated in an online study that contained a modified version of the cyberball paradigm and a questionnaire covering diverse psychosocial variables.

Because the current version of the cyberball paradigm merely provides researchers with the opportunity to uncover the harmful effects of ostracism, I designed a modification of the cyberball paradigm that goes beyond the experimental initiation of short-term ostracism and allows to address the still open research question of explaining behavioral variations of ostracism reactions (Williams, 2007).

For this purpose, I introduced a õsecond levelö within an extended cyberball version, in which participants were given the chance to behaviorally react to the previously induced short-term ostracism. In accordance with the literature (Smart Richman & Leary, 2009), the modification of the virtual ball-tossing game (cyberball-R) includes the three most frequent behavioral reactions to ostracism: Participants were enabled to throw the ball (a) very hard to the other players, which equates to the aggressive reaction, (b) to a wall, wherefrom the ball bounces back to them, which parallels the social withdrawal or reactive ostracism reaction, and (c) in a normal manner to the other two players, which is operationalized as an attempt of social reintegration.

Afterwards, participants completed a questionnaire including a wide range of psychosocial variables that were theoretically assumed to explain the behavioral reactions to ostracism, such as physical aggression, need to belong, perspective-taking skills, social anxiety, and anger regulation.

Overall Study Design

Figure 1 illustrates the extent to which the two methodological approaches build on and converge into one another. The first two research projects, which present paper one and two in the following empirical part of the dissertation, are concerned with examining predictors and outcomes of social integration. For this purpose, a social network perspective was applied that precisely reveals the degree of real-life social integration. The other two projects, which are

embedded as a multi-study paper in the third and final manuscript of the following empirical part, focus on the consequences after, behavioral reactions to, and moderators of social isolation, when experimentally varying the degree of adolescentsø social involvement.
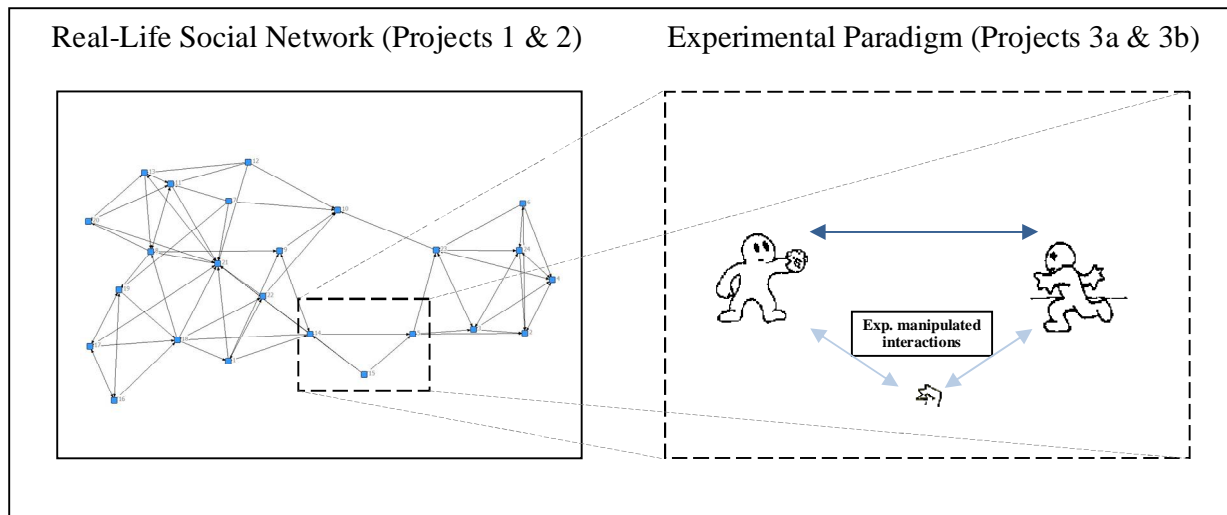

Figure 1: Methodological Approaches of the Present Dissertation

Both methodological approaches complement each other by compensating their respective advantages and disadvantages. While the network approach allows to study peer relationships with a high accuracy and provides a comprehensive picture of adolescentsø social environment, it is characterized by a sufficient external and ecological validity, but lacks internal validity due to the impossibility of unraveling the causal interplay of antecedents and consequences. In contrast, the latter task is feasible with the experimental approach, which helps in understanding the causal effects of peer relationships and isolation, but lacks external validity.

Hence the examination of peer relationships from different perspectives with complementing methodological approaches allows to integrate supplementary findings, to outbalance the respective research limitations of each single project, and hence to shed light on the complete mechanism of social integration and isolation in youth.

Study 1: Social Integration in Youth

Abstract

Research repeatedly demonstrates the detrimental consequences of social isolation, but little is known of why adolescents lack social integration. Therefore, the present study uses social network analyses to take a unique look at adolescentsø degree of integration. A total of 317 seventh through ninth graders (13.7 years, 162 girls) out of 18 classes reported friendship patterns and their respective class teachers provided information on studentsøsocial skills. Results showed that social-skill indicators improve with higher categories of integration. Furthermore, in two-level-random-intercept models (L1: adolescents, L2: peer groups) indicators of social skills predicted the degree of integration each adolescent had on both, the individual and the contextual level. Findings support the importance of adaptive peer relationships, because the degree to which adolescents are socially integrated in class is not merely related to their own but also to their friends social-psychological constitution.

Keywords: Social integration, Social network analysis, Peer relationships, Adolescence, Social skills

Study 2: Embeddedness and Empathy

Abstract

Based on theories of social-cognitive development, the present study investigated the yet unknown social structure that underlies the concept of empathy in adolescence. A total of 3.159 seventh graders (13.67 years, 56% girls) from 166 school classes participated by providing information on empathy, related psychosocial factors, and friendship patterns. Social network analyses were used to measure a comprehensive representation of adolescents' social environment by covering individual, group, class, and school characteristics. Multilevel models revealed that individual characteristics as well as contextual factors predict adolescents' level of empathy. Findings indicate that empathy is mirrored in the social structure of adolescents supporting the hypothesis that social demands, which continuously grow with the amount of embeddedness, shape their social understanding.

Keywords: Empathy, Social integration, Peer relationships, Adolescence, Social network analysis

Study 3: Ostracism in Childhood and Adolescence

Abstract

Drawing on theories of development, motivation, and personality, we examined children's and adolescents' emotional and cognitive perception of and explained their behavioral reactions to ostracism, in two experimental studies. In study one, 93 fourth and eighth graders (49 girls) were either socially included or excluded within a virtual ball-tossing game (cyberball). Results demonstrated that ostracism causes negative emotions and a selective memory for social events, similarly for children and adolescents, which verifies the usefulness of cyberball beyond self-reports. In study two, 97 fourth to ninth graders (43 girls) behaviorally reacted to the previously induced ostracism episode within a modified paradigm (cyberball-R). Multinomial logistic regression demonstrated that psychosocial differences between participants displaying prosocial, avoidant, and antisocial reactions followed the expected pattern, which provides initial evidence concerning moderators that prevent children and adolescents from receiving further aggression.

Keywords: Ostracism, Cyberball, Behavioral reactions, Childhood and adolescence

<u>General Discussion</u>

The following section provides a brief overview of all conducted studies and highlights the theoretical, empirical, and practical advances they contributed to the current state of research. The subsequent part aims to emphasize and review the consistent findings across the different studies and methods. Thereafter, practical implications of these results will be outlined including scientifically-based recommendations for the applied area. In the end, all results will be reflected with respect to their existing limitations and a consequent outlook will be given before a final conclusion completes this discussion.

Summary of Studies

Study 1: Social Integration in Youth

The first study of the present dissertation project considered social integration as dependent variable and examined its psychosocial antecedents in the form of individual and contextual predictors. With more than 300 students out of 18 classes, a network and multilevel approach realized the illumination and investigation of different social levels and revealed useful insights: First, social skills differentiated groups of social integration; second, the degree of social integration was predictable with social skills; third, the predictive power was more pronounced on the contextual level.

Although these novel findings certainly need to be replicated, the central resultô individual associations between social skills and social integration are eclipsed once taking the group dynamic into accountô supports the theory of social constructionism to which social interdependences, social processes, and social interactions form us (cp. Gergen, 2000). Moreover, this finding suggests fundamental implications for intervention programs fostering social skills in adolescence: While previous programs exclusively focused on the individual, the present studyøs core result clarifies that intervention programs have to be designed, implemented, conducted, and

evaluated in a way that the contextual level is to be concerned about and in particular that peer groups are considered as specific units of intervention and evaluation.

Study 2: Embeddedness and Empathy

Within the second study, I addressed the research question of investigating the influence of social integration on the degree of adolescentsø psychosocial capacities by testing the mechanism that increasing social integration mounts social demands which, in turn, boost the shape of adolescentsø social understanding. The yet unknown social mechanisms underlying adolescentsø individual degree of empathy were illuminated with social network and multilevel analyses on more than 3.000 students out of 166 classes. Findings demonstrated that both, individual network characteristics such as the amount of integration as well as contextual network factors such as a certain peer-group or school-class membership, predicted adolescentsødegree of empathy.

These findings supported the hypothesized embeddedness-empathy association indicating that social understanding is mirrored in the social structure of adolescents. In conclusion, research that aims to explain the individual level of empathy cannot overlook the social environment adolescents are embedded in, since this factor seems to substantially contribute to the development of empathy. Moreover, a social perspective on empathy may also enrich individual-based intervention programs. Based on the present studyøs results, such interventions could contain to block reinforcing disruptive or delinquent dispositions within peer groups or to improve the overall network density of a class considering primary and secondary friendship circles.

Study 3: Ostracism in Childhood and Adolescence

The final research project covered two experimental studies, which addressed the perception of and coping with ostracism. This alternative methodological approach enabled me to

shed light on the counterpart of social integration in young age, namely social exclusion or ostracism, and to compensate the limitations of the previous social network and multilevel analyses. Hence this additional perspective allows to provide a comprehensive picture and to enhance our understanding of this dissertationsø global research question.

In accordance with the literature and theories of motivation, the first study demonstrated that experimentally initiated ostracism is perceived as a fundamental threat and social danger signal, because it causally affects youthøs emotions and cognitions. These results provided initial empirical evidence for ostracism effects in young age beyond self reports and offered a strict manipulation check for the experimental paradigm used in the subsequent study.

Utilizing an extended version of the experimental paradigm wherein participants were enabled to behaviorally react to the previous initiated ostracism, the second study is the first which explored personal moderators of ostracism. Drawn on the cognitive-affective personality system (Mischel & Shoda, 1995), theoretically based psychosocial variables were found to predict behavioral reactions, in particular aggressive reactions after ostracism experiences. These results show that psychosocial capacities moderate reactions to ostracism and suggest specific factors, which protect youth from receiving further aggression and support their adaptive development.

Consistent Findings

One strength of the present dissertation refers to its multi-methodological design. This fact allows to compare findings across different studies and methods within this dissertation and therewith yields a more comprehensive and valid picture of adolescentsø peer relationships. In this regard, consistent findings have much empirical value, because each empirical avenue offers a different perspective and illuminates a specific research question. Moreover, different methodological approaches enable to compensate the respective limitations of each single

method. And finally, as consistent findings appear independently of the used methodological approach, they prove the robustness of yielded effects in the form of õmini-replicationsö and allow integrating supplementary findings into an entire framework uncovering mechanisms of social integration and isolation in youth.

Universality of Social Isolation and Ostracism

In both network projects, social isolates were identified with a nearly identical prevalence rate. Although utilizing different kinds of network analyses and investigating different samples, the difference between the two projects concerning the frequency of isolates is vanishingly small with 13% in the first project using the socio-cognitive-mapping procedure and 12% in the second project using UCINET as an analytic tool. Moreover, no differences in any subpopulations were found with respect to the occurrence of social isolation, in both projects. That is, social isolation similarly occurs in girls and boys as well as in younger and older participants.

With regard to the experimental approach, I revealed that ostracism effects are as ubiquitous as their occurrence. In accordance with the literature (Williams, 2001), I found universal ostracism effects with regard to the perception of and coping with social exclusion. More specifically, independent of age and gender, children and adolescents perceived ostracism episodes in a similar manner and displayed comparable behavioral reactions to it.

In sum, across all studies and all methodological approaches, I revealed consistent and robust results with regard to the occurrence and effects of ostracism.

Importance of Social Relationships

In line with the outlined theoretical background in the introduction, results across all studies support the importance of social relationships, especially in adolescence. Study one emphasized the incremental power of contextual factors in explaining adolescentsø degree of social integration; study two demonstrated the influence of social relationships on adolescentsø

development of psychosocial traits as well as the usefulness of applying a social perspective in examining their psychosocial development; and study three and four highlighted the pain of social exclusion as this state was found to causally affect adolescentsø emotions, cognitions, and behavior.

These findings consistently support adolescentsø susceptibility to and dependence on peer influences clarifying the essential role of social relationships in youth. As stated by representatives of social constructionism, there is no self that is independent of social processes (Mead, 1934). Hence adolescentsø development is not a one-way street, but entirely unfolds in the complex interplay with the social environment. Phrased differentially, adolescentsø social relationships are an indispensable part of their selves: The social support peers provide and the need to belong they fulfill are necessary conditions for an adaptive development.

Hence the lack of social relationships in the form of social isolation or ostracism is a serious risk factor, which explains why isolates posses less social skills and empathy compared to their integrated peers or why experimentally induced short-term episodes of ostracism are perceived as a signal of social danger affecting adolescentsø emotional-cognitive state and causing predominantly aggressive reactions. A great deal of adolescentsø emotions, cognitions, and behavior reflect their effort of establishing and maintaining social bonds to peers and its successful realization corresponds to mastering the central developmental task in this age period (Sroufe & Rutter, 1984).

The Role of Relational Aggression

The role of relational aggression is an interesting though ambivalent one. Within the network project investigating the antecedents of social integration, relational aggression was found to be of unexpected predictive power, as I revealed a positive association between relational aggression and social integration. This direction of effects initially falsifies the social

skill framework (cp. Farmer, Pearl, & Van Acker, 1996) and the idea that social integration is associated with higher social skills.

Within the experimental project which investigates personal moderators of ostracism, relational aggression was reflected in the behavioral reaction of reactive ostracism. In contrast to physical aggression, which was fairly predictable by various cognitive-affective variables, relational aggression was rather unrelated to personal moderators indicating that its expression is more strongly associated with specific situational or contextual factors than with youthøs personality.

Overall, these findings suggest that relational aggression is used by adolescents independent of personal traits as a tool to their own advantage for maintaining a given social status or as an adaptive strategy of group regulation by controlling for contra-normative behavior (Brewer, 2005; Stormshak et al., 1999).

Practical Implications

Combining all consistent findings, the universality of ostracism and the utilization of relational aggression on the one hand as well as the importance of social relationships on the other hand, the relevance of this research topic becomes apparent, which highlights the necessity to contribute empirical knowledge to the applied areas.

This objective is driven by the desire to prevent bullying, to avoid distinct and enduring forms of ostracism, or to improve the overall class and school climate. Hopefully, these implications raise educatorsø awareness of and sensitivity to this nonphysical form of school victimization, because I still suspect teachers to understate and overlook the hurtful effects of social pain.

Taking the Group Dynamic into Account

One of the primary implications concerns the consideration of the group dynamics adolescentsø are exposed to, which refers to both research and applied fields. For the field of research, this dissertation provides accumulating evidence that the incorporation of a social dimension furthers our understanding of adolescentsø emotions, cognitions, and behavior. Unfortunately, so far, the consideration of social processes is a rather neglected issue in psychological science, which isô as outlined in the introductionô mainly driven by an individualistic approach when researching, analyzing, and explaining human behavior. However, according to Carpendale and Lewis (2004) formulation, it is hard to understand the psychological architecture without reflecting on the social landscape in which it is constructed. In fact, psychological research possesses statistical tools which have reached a point of analytic refinement that enables scientists to adequately meet the necessary requirement of taking the group dynamic into account. For instance, social network analyses, which illuminate a comprehensive picture of adolescentsø social environment, or multilevel modeling, which allow to simultaneously analyze individual and contextual effects, present useful analytic methods, which enable researchers to enhance the predominantly individual-focused perspective in psychology and reveal novel and exciting insights into explanatory mechanisms of adolescentsø behavior.

For all applied fields, in particular schools, the important consideration of group dynamics suggests a sequence of practical recommendations. First and foremost, it is not enough to apply intervention strategies to the individual level; in contrast, prevention-intervention programs have to be designed and implemented in order to explicitly consider contextual structures and effects. For example, programs have to take heed of the social norms within a certain school class or a given peer group, which initially attract and finally shape adolescentsø attitudes and behavior.

This requires the identification of latent peer group structures by means of SNA to use or modify reinforcing group dynamics. Moreover, within the context of bullying prevention and in accordance with the participant-role approach (Salmivalli, 1999), it would be highly beneficial to uncover specific bullying groups beyond the bullying-victim dyad such as assistants, reinforcers, outsiders, or (potential) defenders. This knowledge would make it possible to conduct bullying-role specific interventions, which would certainly improve the treatment fit and efficacy as it allows addressing the different, role specific problems within the complex bullying process: For example, changing the attitudes towards bullying in assistants / reinforcers, motivating outsiders to take social responsibility, or presenting concrete intervention strategies for (potential) defenders. In sum, programs that foster social skills or prevent forms of school harassment will become more suitable and fine-tuned, when considering the existing social dynamics school classes and their nested peer groups are exposed to.

Risk and Protective Factors of Social Integration

Although previous research had advanced our understanding of social integration as a necessary parameter for physical health (Holt-Lunstad et al., 2010) and psychological well-being (Williams, 2001), it has been hardly investigated as a dependent variable with regard to its antecedents. Likewise, much effort has been made to examine the painful effects of ostracism (Zadro et al., 2004), but little is known concerning the moderating factors which underlie behavioral consequences of social exclusion.

The present dissertation yields initial implications regarding risk and protective factors of (lacking) social integration. Both the social network and the experimental approach provide insights concerning specific psychosocial capacities, which should be addressed in prevention-intervention programs when aiming to prevent distinct forms of social isolation. These factors include social skills, which were found to be a consistent predictor of social integration, as well

as social withdrawal, physical aggression, anger regulation, and perspective-taking skills, which were uncovered as moderating factors between experimentally initiated ostracism episodes and behavioral reactions to it.

Improving these psychosocial capacities suggest concrete strategies to treat social isolation in school. However, in line with the results of the network project and the outlined thoughts in the last section, programs have to consider the contextual level, when providing learning opportunities which aim to improve adolescentsø social skills, since not merely the individual degree of social skills determines the amount of adolescentsø social integration, but also and especially their friendsø psychosocial constitution.

Improve collective Parameters within the overall Network

Related to the final point of the ongoing section, an efficient way to enhance the degree of social integration in school beyond the improvement of psychosocial capacities in the form of modifying individual risk and protective factors, is to address the contextual structure of the entire class.

Those interventions may simply increase the overall number of connections. For instance, one can expand the collective sense of belongingness within school classes by means of extracurricular activities. Alternatively, programs can improve the density within the overall network and establish alternative connections for social isolates. Besides these steps, interventions are also very promising which address other network parameters, such as the centrality of school classes. In particular, decentralized networks with equally-powered actors are suspected to offer less structural possibilities of bullying or social isolation in contrast to networks with just a few highly influential network members.

In sum, regardless of individual, contextual, or combined approaches, all practical efforts to prevent social isolation and improve social integration are valuable interventions, because

social connectedness is a necessary condition for an adaptive development: As demonstrated by the second project, the amount of embeddedness determines the degree of social demands and the daily mastering of conflicts, peer support, and regulation of relationship shape adolescentsø social understanding.

Limitations

As in every empirical research project, the findings of the present dissertation have to be reflected within the light of their limitations. Fortunately, because of its multi-methodological design, the present dissertation outbalances several internal weaknesses of each single study. While the network approach is characterized by a high external and ecological validity, it does not allow unraveling causal mechanisms of investigated effects. In contrast, the experimental approach possesses the internal validity to reveal causal conclusions, but it is limited with respect to its external validity.

Furthermore, the multi-study character of this cumulative dissertation provides the opportunity for limitations which could not be handled in a given project to be resolved within an ongoing project. For example, whereas the consideration of the overall environment in form of the school class as a third level within the multilevel analyses was not feasible within the first SNA project, the modified outcome variable as well as the bigger sample within the second SNA project enabled me to realize this more comprehensive analysis. Another example refers to the subjectivity of self reports on psychosocial scales, which diminished the validity in the second SNA project and the experimental paper, but did not occur in the first SNA project.

Therefore, as outlined above, robust findings which consistently occur across all studies independently of the utilized methodological approach outshine limitations of single methods. Moreover, given the structure of this dissertation, supplementary empirical refinements allow to compensate limitations of previous projects.

However, one general limitation occurred in all studies and still remains to be challenged in ongoing projects, which refers to the cross-sectional nature of the study designs. I highly suspect social integration to be a dynamic concept rather than a stable trait and it would certainly further our understanding to explain its developmental trajectories.

Unfortunately, given the current state of research, longitudinal analyses were simply impossible with the utilized methodological approaches. At this moment, SNA merely provide a current snap-shot of a given social system, and existing analyses are just beginning to unfold the full potential of longitudinal examinations. This includes serious network-specific problems such as missing-data treatment or the existing dependencies in networks. The latter leads to congruency of input and output variables in explaining network change such as in SIENA (Ripley & Snijders, 2010), wherein a current network predicts its own dynamics and future composition based on the assumption of an optimal network change. More sophisticated techniques, which overcome tautological explanatory mechanisms, still need to be designed, before a meaningful longitudinal analysis of network data can be conducted. Moreover, within the experimental studies using the cyberball paradigm and its extension, the design-based necessity of initially presenting and finally debriefing a cover story rendered any possibilities of gathering longitudinal insights. Hence, at least for the moment, longitudinal analyses remain to be an open challenge for future studies.

Outlook and Future Research Agenda

Any effort in realizing longitudinal designs in the form of studying network modifications or dynamics is more than worthwhile, because this realization allows addressing research questions such as the fluctuation of network positions or the generation and modification of peer groups on the background of developing psychosocial capacities in adolescence. Moreover, examining changing ostracism effects and reactions in experimental paradigms on the

background of adolescentsø development would provide additional advancements in understanding peer relationships in youth. In sum, longitudinal analyses should be the first point on the future research agenda since they rule out bidirectional explanations and present a step toward understanding the causal mechanisms that underlie adolescentsødevelopment.

Besides the longitudinal design, the theoretically based exploration of risk and protective factors for social integration and the lack thereof, presents another important research question for future studies. Within this thesis, I provided different research strategies in this regard: On the background of psychological theories, I started to uncover specific psychosocial factors in their predictive value for establishing and maintaining social relationships. Regardless of whether we empirically expand the experimental approach by examining moderating risk factors for ostracism reactions or whether we methodologically improve the network approach and illuminate certain predictors of social integration, the continuation of this line of research is of vital importance.

Several still unexplored research perspectives may provide additional fruitful insights into our understanding of adolescentsø peer relationships. Among them are representative surveys which assess youthø attitudes and behaviors in this regard by using large samples that are ideally investigated in a longitudinal manner. Furthermore, cultural comparisons are absent in this research field, although the difference between individualistic and collectivistic cultures suggests interesting disparities concerning the perception and provision of social relationships. Finally, studying clinical associations, especially with lacking social integration, will certainly advance this field by offering information on specific risk populations and will also improve the treatment fit in applied fields, because general school-based intervention programs would fail to successfully treat clinical disorders.

Conclusion

On the one hand, research concerning social relationships looks back and builds on a rich empirical history of more than 100 years, but on the other hand, we are only at the beginning to understand the underlying mechanisms of adolescentsø peer relationships. õI link therefore I amö expresses the existential need for social connectedness, which founds compelling evidence in the existing literature as in the present thesis. Nonetheless, guided by the plentitude of empirical and theoretical knowledge, we still need to shed light on several research question. The present dissertation demonstrated the potential of revealing novel insights for the explanation of adolescentsø behavior, when considering a social perspective, and at the same time highlighted the need to deepen scientific efforts in accordance with the research questions that remain unanswered or have arisen as a consequence of the outlined studies.

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__Zusammenfassung__

Auf der Grundlage sozial-, entwicklungs- und persönlichkeitspsychologischer Theorien, widmete sich die vorliegende Dissertation in mehreren empirischen Studien der Untersuchung von Peerbeziehungen im Jugendalter. Insbesondere war es das Ziel dieser Arbeit, Erkenntnisse hinsichtlich der Ursachen und Auswirkungen sozialer Integration und Isolation zu gewinnen. Zur Illuminierung dieser Fragestellungen wurde ein multimethodologisches Design angewendet: Mithilfe sozialer Netzwerkanalysen sowie experimentalpsychologischer Untersuchungen wurden in drei aufeinander aufbauenden Studien Befunde gesammelt, welche den bisherigen Forschungsstand theoretisch und empirisch bereicherten.

In Studie 1 wurde mithilfe der sozialen Netzwerkanalyse die Ursachen sozialer Integration an einer Stichprobe von 317 Jugendlichen beleuchtet. In mehrebenenanalytischer Auswertung resultierte, dass in erster Linie soziale Fähigkeiten eine prädiktive Kraft für die Vorhersage der sozialen Eingebundenheit im Klassenverband haben. Allerdings wird dieser individuelle Effekt vom äquivalent Kollektiven überstrahlt, d.h. sobald die aggregierten sozialen Fähigkeiten der Peergruppe auf Ebene zwei hinzugefügt werden, wird dieser Effekt auf Kosten des individuellen Zusammenhangs signifikant. Dieser Befund verdeutlicht die Bedeutung adaptiver Peerbeziehungen im Jugendalter, daô im Gegensatz zur gängigen Vorstellung des social-skill-deficit modelsô geringe soziale Fähigkeiten nicht notwendigerweise mit geringer sozialer Integration einhergehen müssen, sofern Jugendliche mit sozial fähigen Gleichaltrigen befreundet sind.

In Studie 2 wurde der Frage nachgegangen, inwiefern das Ausmaß sozialer Eingebundenheit eine Vorhersagekraft für die Ausprägung psychosozialer Fähigkeiten, im Spezifischen Empathie, besitzt. Diese Fragestellung basierte auf der Annahme, dass steigende soziale Integration mit zunehmenden sozialen Herausforderungen einhergeht, wie beispielsweise

Regulation von Konflikten im Klassenverband oder Bereitstellung von sozialer Unterstützung, was wiederum in einer Verbesserung des sozialen Verständnisses resultiert. An einer Stichprobe von über 3.000 Schülern aus über 160 Schulklassen wurde nach der Auswertung sozialer Netze in einem Vier-Ebenen-Random-Intercept-Random-Slope-Modell dieser Zusammenhang unter Kontrolle diverser Störvariablen bestätigt. Dieser Studie legt die Vermutung nahe, dass die Ausprägung sozialer Eingebundenheit eine notwendige Voraussetzung für eine adaptive Entwicklung und die Herausbildung psychosozialer Fähigkeiten im Jugendalter ist.

In Studie 3 wurde in zwei experimentellen Untersuchungen die Wahrnehmung von und der Umgang mit sozialen Ausschluss untersucht. In der ersten Teilstudie wurden in über 90 Einzelfallexperimenten beweisen, dass virtueller Kurzzeitausschluss sowohl als emotional aversiv erlebt wird, als auch aufgrund motivationaler Mechanismen kognitive Regulationsprozesse in Gang setzt, welche die Basis sozialer Reintegration schaffen. In der zweiten Teilstudie wurde mithilfe einer programmierten Modifikation des Ausschlussparadigmas die Reaktionen auf sozialen Ausschluss von nahezu 100 Jugendlichen erfasst und durch zusätzlich erhobene psychosoziale Variablen zu erklären versucht. Hierbei resultierte aus der multinomial logistischen Regression, dass sich die behavioralen Reaktionsmuster (prosozial, vermeidend, aggressiv) durch erwartungsgemäße Unterschiede auszeichnen. Dadurch erbrachte diese Studie erste Erkenntnisse hinsichtlich psychosozialer Faktoren, welche die (Un-)Fähigkeit von Kindern und Jugendlichen reflektieren, adaptiv mit Ostrazismus umzugehen und somit Risiko- und Schutzfaktoren für zukünftige Viktimisierungen in Frage kommen.

Insgesamt bestätigen die resultierten Befunde einerseits die existierende Forschung und Literatur in diesem Feld, andererseits erbringen sie aufgrund der fortgeschrittenen, methodischen Zugänge neue und einzigartige Erkenntnisse, welche unser Verständnis von Peerbeziehungen im Jugendalter vertiefen und gleichzeitig die Notwendigkeit weiterer Untersuchungen aufzeigen.

<u>Curriculum Vitae</u>

Der CV ist nicht Bestandteil der elektronischen Dissertation, befindet sich aber in den

entsprechenden Druckexemplaren.

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__Erklärung__

Hiermit versichere ich, dass ich die vorgelegte Arbeit selbständig verfasst habe. Andere als die angegebenen Hilfsmittel habe ich nicht verwendet. Die Arbeit ist in keinem früheren Promotionsverfahren angenommen oder abgelehnt worden.

Datum   Unterschrift