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A CHANCE TO BE KINDER?

The Role of Peer Acceptance and Rejection in the Development of Prosocial Behavior in Adolescence

Daniela V. Chávez

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Daniela V. Chávez

University of Turku

Faculty of Social Sciences
Department of Psychology and
Speech-Language
Pathology Psychology
Doctoral Programme on Inequalities,
Interventions and New Welfare State

Pontificia Universidad Católica de Chile

Faculty of Social Sciences
School of Psychology
Doctoral Program in Psychology

Supervised by

Professor Christina Salmivalli
University of Turku
Turku, Finland

Associate Professor Claire Garandeau
University of Turku
Turku, Finland

Professor Christian Berger
Pontificia Universidad Católica de Chile
Santiago, Chile

Reviewed by

Professor Antonius H. N. Cillessen
Radboud University
Nijmegen, The Netherlands

University Lecturer Miia Sainio
University of Jyväskylä
Jyväskylä, Finland

Opponent

Professor Antonius H. N. Cillessen
Radboud University
Nijmegen, The Netherlands

This doctoral thesis has been completed under joint supervision (Cotutelle) between the Faculty of Social Sciences at the University of Turku, Finland, and the Faculty of Social Sciences at the Pontificia Universidad Católica de Chile, Santiago, Chile.

The originality of this publication has been checked in accordance with the University of Turku quality assurance system using the Turnitin Originality Check service.

A mi Madre, mi Abuela, y mis Ancestras

UNIVERSITY OF TURKU
Faculty of Social Sciences
Department of Psychology and Speech-Language Pathology
Psychology

ABSTRACT

Prosocial behavior, defined as voluntary actions intended to benefit others (e.g., helping, caring, sharing), has been both positively and negatively associated with peer status—namely, the extent to which individuals are liked (i.e., accepted) or disliked (i.e., rejected) by their peers. While much of the existing research has concentrated on children and young adults, often operationalizing peer status as the difference between acceptance ("liked most") and rejection ("liked least"), there remains a gap in understanding how peer acceptance and rejection influence the development of prosocial behavior during adolescence. The primary goals of this dissertation are to investigate longitudinally: (1) whether peer acceptance and rejection serve as precursors to or consequences of adolescents' prosocial behaviors; (2) how stable sociometric status profiles, based on levels of acceptance and rejection, can explain subsequent changes in adolescents' prosocial and aggressive behaviors; and (3) the extent to which adolescents adopt the prosocial behaviors of their (highly) liked classmates. To address these goals, three empirical studies were conducted using data from the ProCiviCo project in Chile. Study I investigated the longitudinal and bidirectional associations between prosocial behavior and peer acceptance/rejection. Study II examined peer status profiles based on peer acceptance and rejection, their stability over a 6-month interval, and how the affiliation to a specific profile predicted changes in both prosocial and aggressive behavior at the beginning of the new academic year. Finally, Study III tested the "contagion" effect of prosocial behavior based on liking preferences and whether both highly and less liked peers are more influential and influenced, respectively.

The findings of this dissertation offer novel insights into the role of peer status — specifically acceptance/likeability and rejection/dislikeability— during adolescence and its impact on the development of prosocial behavior. These insights are derived from a longitudinal analysis across three-time points, employing three distinct methodological approaches: variable-oriented, person-oriented, and network-oriented approaches.

KEYWORDS: Prosocial behavior, peer acceptance, peer rejection, longitudinal associations, peer influence, peer status, likeability

Acknowledgments

Wow! I finally reached the end of this journey, and I can only be grateful for the amazing process I am about to conclude. I began this process in Chile and am now completing it in Turku, Finland. Along the way, I have had the privilege of meeting many people who have contributed in several ways. I want to express my gratitude to everyone who has guided, supported, and accompanied me, sharing their encouragement and positive vibes that allowed me to be just right here! ☺

First, I want to thank the ProCiViCo Project and its principal investigator, Paula Luengo Kanacri. Thank you, Paula, for the incredible opportunity to be part of such an inspiring project, which introduced me to the fascinating world of prosocial behavior. Your dedication and passion for fostering prosociality in Chilean schools have been an inspiration that, in the end, shaped the focus of my doctoral dissertation. I am grateful for the invaluable learnings and insights, the school visits in Santiago, and the opportunity to collaborate with the exceptional ProCiViCo team, from whom I learned so much at the very beginning of my research.

I would also like to express my deepest gratitude to my academic supervisors at the Catholic University in Chile and the University of Turku in Finland for their wise guidance throughout this journey from an academic and human point of view. Christian Berger, thank you for believing in my research career after my master's degree and for guiding me from the very start of my PhD in Chile. Your insightful suggestions, open discussions, pragmatism, and, above all, your kindness in supporting my work have been invaluable to me. You inspired me to keep growing as a researcher, and I am deeply grateful for your unwavering support, especially in pursuing a cotutelle in Finland. I really appreciate all the paperwork you managed along the way—it was a lot, and I cannot thank you enough! :)

Christina Salmivalli, you were an inspiration to me even before I arrived in Turku, and having the opportunity to work with you here has truly been a dream come true. You have provided invaluable opportunities to develop and refine my research skills in English, helping me grow in ways I never imagined—both as a researcher and a person. Thank you for your trust, guidance, and your precise feedback, which has greatly improved my work. Most of all, I am grateful for your humanity in both your research and your interactions with others, and of course, for

I could relax and reconnect with myself after long weeks of work. Thank you, Tiia Turki, for literally giving me a house that became my own home! You always cared about my well-being there, and you became the best neighbor I have ever had ♥ Thank you, Minna Tuominen, for opening your home to me with so much warmth and care. This made me hug you strongly every time we saw each other☺ I also want to express my gratitude to my friends in Chile—Cami, Carli, Vere, Beta, Pilli, and Consu—who have always supported me from a distance, sending love and encouragement, but also sending funny memes and new stickers! :))) Just hearing your voice messages always brightened my day ☼

To mein schatz Daniel Graf. Omg! Life definitely knows better than I do how to make me happy ♥ I am so incredibly grateful to have you in my life, and I love you more than words can express. Thank you for being such a wonderful person to me. You may be a man of few words, but your actions always remind me of the importance of being kind to ourselves and how deeply one can love. Thank you for patiently listening to my endless talks about my research questions! Somehow, we always ended up saying, "I think we need some food," and that was always the best part. Thank you for the unforgettable times together—the dinners, the delicious pizzas, the (many) drives to Järvelä, and most of all, for your genuine love and support ♥

Finally, I am deeply thankful to my family in Chile, my cousins, hermana, nephews, and especially my nieces Laura, Ale, Fer, Estefi, Anto, and Diana, for your genuine love from a distance. You are just amazing (little and some not-so-little) girls!! Never forget how amazing and smart you are!

I especially want to thank my mom, Viky, and my grandma, María Andrea, to whom I dedicate this whole work. Thank you for raising me with the freedom to play, explore the world, and ask questions, which made me believe that I could do whatever I dreamed of. Thank you for supporting my education and every (crazy) decision I have made. I know that it has been a bit wild to constantly be moving around, not only from Puerto Montt but also from Chile. However, you cannot imagine the strength you gave every time you believed in me; every time, you were proud of me and were making a hurray for me! My own strength comes from you, without a doubt, and none of what I have achieved in life would have been possible without your love and example ♥⚘

[¡Ahora es español para que mi mamá y mi abuela puedan leerme también!] Agradezco profundamente a mi familia en Chile, especialmente a mi mamá, Viky, y a mi abuela, María Andrea, a quienes dedico esta tesis doctoral. Gracias por criarme con la libertad de jugar, explorar el mundo, el campo, y hacer preguntas. Sin duda esto me hizo creer que podría lograr todo lo que soñara. Gracias por apoyar mi educación y por apoyar cada loca decisión que he tomado. Sé que ha sido un poco loco estar moviéndome constantemente de lugar, no sólo de Puerto Montt sino

también de Chile. Sin embargo, no se imaginan la fuerza que me han dado cada vez que han creído en mí, cada vez que se han sentido orgullosas de mí, y han estado haciendo hurra por mí! Mi fortaleza viene de ustedes, y nada de esto sería posible sin el amor y enseñanzas que ustedes me han entregado a lo largo de toda mi vida ♥≹

♥ I love you all! ♥

December 2024
Daniela V. Chávez

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List of Original Publications

This thesis is based on the following original publications, which are referred to in the text by their Roman numerals:

I   Chávez, D. V., Salmivalli, C., Garandeau, C. F., Berger, C., & Luengo Kanacri, B. P. (2022). Bidirectional Associations of Prosocial Behavior with Peer Acceptance and Rejection in Adolescence. *Journal of Youth and Adolescence*, 51, pp. 2355–2367. https://doi.org/10.1007/s10964-022-01675-5

II   Chávez, D. V., Luengo Kanacri, B. P., Berger, C., Yanagida, T., Salmivalli, C., Garandeau, C. F. (2024). A Chance to Be Kinder? Peer Status Profiles and Changes in Prosocial and Aggressive Behavior in Adolescence. *Merrill-Palmer Quarterly*. (In press).

III   Chávez, D. V., Palacios, D., Laninga-Wijnen, L., Salmivalli, C., Garandeau, C. F., Berger, C., & Luengo Kanacri, B. P. (2024). Do Adolescents Adopt the Prosocial Behaviors of the Classmates They Like? A Social Network Analysis on Prosocial Contagion. *Journal of Youth and Adolescence*, https://doi.org/10.1007/s10964-024-02037-z.

1 General Introduction

Helping, caring, sharing, supporting, comforting, and a wide variety of kind and generous actions – known as prosocial behaviors – are voluntary actions aiming to help and benefit others (Eisenberg et al., 2015). In adolescence, prosocial actions are a foundational marker of social well-being, enhancing social connections among youth and strengthening mental health (Hui et al., 2020). Besides, prosocial behaviors are linked to several positive developmental outcomes, such as positive peer relationships (Eisenberg et al., 2015), improved academic achievement (Caprara et al., 2000), friendship quality (Markiewicz et al., 2001), reduced risk for internalizing and externalizing problems (Memmott-Elison et al., 2020), increased social acceptance (Layous et al., 2012), and protection against aggressive behavior (Kokko et al., 2006).

Despite these extensive benefits, there is limited understanding of how prosocial behaviors evolve during adolescence, a phase characterized by increased psychological investment in the peer group and heightened peer influence (Laursen & Veenstra, 2023). Social and developmental psychologists have long acknowledged the critical role of peer relationships in the development of prosocial behavior (Newcomb et al., 1993). For instance, the use of positive and negative sociometric questions to assess peer status — the extent to which adolescents are liked/accepted or disliked/rejected by their peers— has been demonstrated to affect their behaviors distinctly. For instance, being nominated as liked and accepted has been positively associated with prosocial behaviors (Parkhurst & Hopmeyer, 1998), while being disliked and rejected correlates with antisocial behaviors, such as aggressive behavior (Gerber & Wheeler, 2009) and reduced prosocial behaviors (Quarmley et al., 2022).

However, existing studies on sociometric peer status and prosocial behavior have measurement shortcomings. First, regarding sociometric status, the use of cutoff values to classify individuals complicates the understanding of the development of prosocial behaviors as the cutoff values have an arbitrary nature and can lead to bias and misclassification of the adolescents whose scores are close to the cut-off (Leon-Perez et al., 2014). Second, the use of composite scores (e.g., subtracting most liked from least liked nominations) combining positive and negative nominations into one

score (e.g., social preference) often confounds relevant information regarding the unique experiences associated with acceptance/likeability and rejection/dislikeability. In fact, the weak correlations between these two variables support the idea that analyzing the two constructs is more appropriate than examining their composite score based on the standardized difference (Marks et al., 2021). Third, the lack of longitudinal studies with adolescent samples limits our ability to provide accurate conclusions on prosocial development or any behavioral change at this age, and many of the associations we know today using older or younger samples might not necessarily be applicable to young adolescents. Fourth, regarding prosocial behavior, past research has primarily relied on self-report measures as they offer unique individual views of different types of experiences. However, their subjectivity is questionable and potentially biased since they are based on the view of only one participant. Peer report measures, instead, have reported stronger associations with measures of peer status and behaviors than self-report measures (Bouman et al., 2012), providing a better measure of subjective experiences related to peer relationships and behavior than self-report measures.

This thesis comprises three empirical studies that employ peer nominations for measuring peer status, peer ratings for assessing prosocial behavior, and a clear separation of acceptance/likeability and rejection/dislikeability using three waves of data. This will allow the investigation of the longitudinal associations between peer status and prosocial behavior in a sample of Chilean adolescents. The first study aims to clarify the direction of influence between peer status (acceptance/likeability and rejection/dislikeability) and prosocial behavior by examining their bidirectional associations from a variable-oriented perspective. The second study uses a person-oriented approach and examines peer status profiles based on the sociometric scores of peer acceptance and rejection without using cutoff values. Moreover, it assesses the stability of these profiles over one academic year to predict changes in prosocial and aggressive behavior at the beginning of the next academic year based on stable status profiles. Although the current thesis focuses on prosocial behavior, this second study also includes aggressive behavior as an outcome variable, considering that both behaviors tend to coexist and play a role in the formation of peer status during adolescence (Berger et al., 2015). Given the consistent positive association between being liked and being prosocial (Parkhurst & Hopmeyer, 1998), the third study of this thesis incorporates a network perspective to examine prosocial influence by investigating the influence of liking ties in changing prosocial responses among peer classmates. In addition, considering that high-status peers have been an important factor in predicting the proliferation of negative behaviors among adolescents (Dijkstra et al., 2008; Laninga et al., 2017), this study also tests the role of highly liked peers in influencing prosocial behavior among peer classmates.

Overall, this doctoral thesis seeks to extend our understanding of the dynamic relationship between peer status – acceptance/likeability and rejection/dislikeability – and prosocial behavior during adolescence, offering insights that could guide interventions to promote positive peer relationships and foster socio-emotional development in this critical developmental stage.

2 Theoretical Background

2.1 The Development of Prosocial Behavior

Decades of research suggest that prosocial behavior is innate to humans, reflecting a natural predisposition for kindness from a very young age (Warneken & Tomasello, 2009). However, as children grow older, they become more selective about when and to whom they show prosocial behavior, adapting their actions to different contexts and recipients (Crone & Achterberg, 2022). This suggests that, despite an inherent ability to cooperate, various factors—such as individual characteristics, cognitive development, and situational context—can influence decisions to act prosocially (Lindenberg, 2006). When prosocial actions are particularly costly (e.g., sharing) (Carlo & Padilla-Walker, 2020), individuals with a more collective and collaborative worldview tend to prioritize others' welfare (Politi et al., 2021).

Although prosocial behavior is often studied as a global, unidimensional construct, research emphasizes its multifaceted nature (Padilla-Walker & Carlo, 2014). This means that prosociality includes various forms of behavior, such as helping, sharing, and comforting (Dunfield, 2014), and can be directed toward different targets, such as family members, friends, or strangers (Padilla-Walker et al., 2015). Even though prosocial actions are more commonly displayed among family and friends, a developmental study suggested that increases are also possible towards strangers, particularly across early to mid-adolescence (Padilla-Walker et al., 2018). The studies in this thesis aim to explain the development of prosocial behaviors among Chilean adolescents. In Chilean schools, students remain with the same classmates throughout primary education (grades 1–8), creating a stable environment in which peer relationships and prosocial behaviors can develop. Within this context, displaying prosocial behavior may require additional effort, as not all peers are close friends despite their familiarity with one another. In the three empirical studies, prosocial behaviors were rated by each peer individually (see Measure section 3.2), using multiple informants to minimize the influence of socially desirable responding.

2.2 Adolescence as a Critical Period for Prosocial Development

During adolescence, prosocial behaviors become increasingly important, as they are positively associated with several crucial developmental outcomes. These include fostering opportunities for friendship (Bowker et al., 2010), friendship quality (Markiewicz et al., 2001), enhancing well-being (Layous et al., 2012), boosting self-esteem (Zuffiano et al., 2014), and promoting civic engagement (Luengo Kanacri et al., 2014). Additionally, prosocial adolescents tend to have better peer relationships over the long term compared to less prosocial peers (Eisenberg et al., 2015), are less prone to internalizing and externalizing problems (Memmott-Elison et al., 2020), and often perform better academically (Caprara et al., 2000). Adolescence is also a period of critical inflection for social adjustment and development, where youth experience increased sensitivity to peers of the same age and tend to distinguish more between different contexts and recipients of prosocial behaviors compared to earlier ages (Crone & Achterberg, 2022).

Developmental researchers have suggested a normative decline in prosocial behavior during adolescence, meaning that it is more likely to decrease rather than increase during this period (Carlo et al., 2007; Luengo Kanacri et al., 2013; Malti et al., 2015). However, other researchers have suggested a certain stabilization at this age, especially when prosocial actions are directed toward family members (Padilla-Walker et al., 2015). Meanwhile, other studies highlighted several opportunities for increasing prosocial responses during adolescence (Fu et al., 2017), and these increases have been found to be directed toward strangers across early to mid-adolescence (Padilla-Walker et al., 2018), as well as toward friends (Padilla-Walker et al., 2015). The factors driving changes in prosocial behavior during this developmental stage, however, remain a topic of debate in longitudinal research.

Peer relationships during adolescence have been demonstrated to play a key role in the development of prosocial responses as youth spend many hours a day interacting with same-aged peers, friends, and affiliates (Busching & Krahé, 2020). Social learning theory considers prosocial behavior as a type of behavior learned through socialization processes. That is, youth learn about prosocial actions through observations, modeling, and reinforcement within their peer group on a daily basis (Bandura, 1977). For this reason, research has supported the claim that prosocial behavior can increase among youth through a mechanism of social learning and by observing other youths' prosocial actions (Van Hoorn et al., 2014). Learning through observation is possible among youth because adolescents' brains are greatly malleable and uniquely oriented to the social world (Telzer et al., 2018), providing a neural window for cognitive development.

Friendship relationships, both inside and outside classroom communities, are certainly significant in adolescents' life, providing a bond that, contrary to childhood

during which friends mainly provide fun and companionship, fulfills needs of attachment, trust, intimacy, and emotional support (Hartup & Stevens, 1997). However, peer relationships are diverse, and adolescents are surrounded by many peers other than their friends, and to date, there is a lack of research explaining changes in prosocial behaviors at this developmental phase and how youth social interactions can help to explain this development.

2.3   Sociometric Peer Status

An essential aspect of peer relationships is sociometric peer status (Cillessen & Marks, 2017), which reflects how adolescents are evaluated by their peers (i.e., liked/accepted or disliked/rejected), typically determined through peer nominations. In the seminal work of Coie et al. (1982) and Newcomb et al. (1993), sociometric peer status was calculated by combining both positive (liking/acceptance) and negative (disliking/rejection) nominations. They distinguished two key dimensions of sociometric classification, namely, *social preference* (like most minus like least) and *social impact* (like most plus like least). Social preference captures how much children are preferred by their peers, measuring likeability and acceptance. In contrast, social impact measures how socially noticeable children are within the peer group, indicating their prominence or salience.

Building this foundational work, children were categorized into five different sociometric status groups based on cutoff values set one standard deviation above or below the mean for standardized scores: sociometrically popular (liked by many, disliked by few), rejected (disliked by many, liked by few), neglected (neither liked nor disliked), controversial (liked by many, disliked by many), or average (falling around the mean levels of acceptance and rejection). Moreover, this classification allowed distinguishing between children who had no positive nominations from those who had mostly negative nominations and those who had both positive and negative nominations at the same time (e.g., controversial). For a graphical description of peer relationships based on sociometric scores, the dimensions of social preference and social impact, and five types of social status, see Figure 1.

The person-oriented approach used by Coie et al. (1982) has significantly contributed to understanding how different peer status subgroups vary in behavioral outcomes, as these status groups show different patterns in prosocial and aggressive behaviors. For example, sociometrically popular youth were often perceived by their peers as cooperative leaders with low levels of disruptive behavior. In contrast, rejected youth tended to display the opposite traits, such as being less cooperative and more aggressive. Controversial youth, on the other hand, exhibited a combination of behaviors: they were disruptive, prone to initiating conflicts, and

display leadership qualities, but they were less cooperative than their sociometrically popular counterparts (Coie et al., 1982).
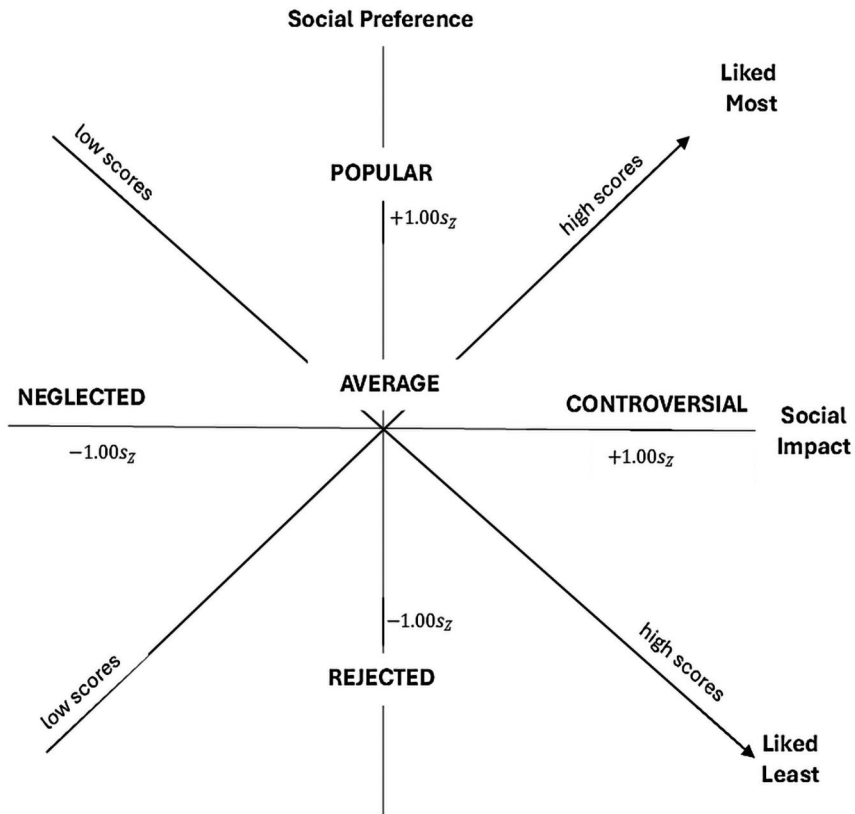
Figure 1. Graphical representations of peer relationships between positive and negative nominations, according to Coie et al. (1982). Note that Sz=standard deviation for standardized scores.

Subsequent studies have also supported the links between peer status profiles, individual characteristics, and social behaviors. For example, sociometric popularity has been positively associated with sociability and leadership qualities while negatively associated with aggression and disruptiveness (Gest et al., 2001). Another study found that both sociometrically popular and controversial groups exhibited higher communication skills compared to rejected and neglected groups (van der Wilt et al., 2018). Additionally, using peer status measures from 6th grade to predict behaviors in 8th grade, a study found that rejected and controversial profiles were

more likely to display socially irresponsible behaviors, such as breaking classroom rules, compared to sociometrically popular, neglected, and average groups. Furthermore, prosocial behavior decreased among rejected and neglected groups and increased among the sociometrically popular (Wentzel, 2003).

It is important to note that the use of sociometric peer status to refer to salience peer status has utilized social preference or sociometric popularity to represent likeability and acceptance and perceived popularity to represent visibility, prominence, and social dominance. Both are considered measures of high status, but they have unique behavioral implications (Cillessen & Rose, 2005; Parkhurst & Hopmeyer, 1998; van den Berg et al., 2020). Although this thesis does not focus on perceived popularity but rather on likeability and acceptance (sociometric popularity), it is important to acknowledge its influence on social behaviors, as it is consistently linked to more aggressive and less prosocial behaviors and can sometimes overlap with likeability when popular youth display prosocial behaviors (Laninga et al., 2019).

The distinctions in peer status derived from sociometric data can vary significantly depending on whether acceptance/likeability and rejection/dislikeability scores are combined or used separately. A more comprehensive approach would differentiate between individuals who are actively disliked and those who receive few or no nominations—whether positive or negative—providing a clearer picture of the relationship between status and prosocial behavior. Given that peer acceptance and rejection are only weakly negatively correlated in the data used for this thesis (for correlation details, see Table S1 in the Appendices), both measures are analyzed separately in the three empirical studies.

2.4 Prospective Associations Between Peer Status and Prosocial Behavior

Peer status scores – both acceptance/likeability and rejection/dislikeability – measured as continuous variables rather than categorical, show distinct associations with prosocial behavior. Higher acceptance or likeability scores are positively linked to prosocial actions, while higher rejection or dislikeability scores are associated with less prosocial behavior and negative outcomes such as aggressive behavior (Dijkstra & Gest, 2015). These associations can be partially explained by the fact that being kind, caring, and helpful to others is socially rewarding: prosocial individuals often experience more positive social interactions and, by doing so, receive favorable assessments compared to those who are less prosocial (Layous et al., 2012). Conversely, adolescents who are highly rejected by their peers are more likely to experience social exclusion (Buhs & Ladd, 2001), which deprives them of

opportunities to engage in prosocial behavior (Parker et al., 2006; Twenge et al., 2007). However, the question remains: Does being more (or less) prosocial predict whether one is liked (or disliked), or is it the other way around? This complex issue can only be understood by using longitudinal designs and a variable-oriented perspective. That is, a perspective that focuses on analyzing relationships between variables within populations measured over time.

Regarding the positive association between acceptance/likeability and prosociality, a study conducted with Chinese adolescents showed that a higher level of peer likeability predicted higher levels of prosocial behavior (Lu et al., 2018). In contrast, a study with Australian children aged 5 to 7 did not find support for this positive association. Assessing social preference using the composite score, the study found that acceptance/likeability was not significantly associated with prosocial responses two years later (Kuhnert et al., 2017). Similarly, another longitudinal study in an Italian sample of the same age found no significant effect of acceptance/likeability on prosocial behavior one year later (Caputi et al., 2012).

Regarding whether prosocial behavior predicts peer acceptance/likeability, some studies have supported this association. For instance, an experimental study with early Canadian adolescents found that students who performed kind acts experienced greater peer acceptance than those who did not behave kindly (Layous et al., 2012). However, contrasting evidence suggests that exhibiting outstanding prosociality, namely, displaying extreme levels of prosocial behavior, might elicit rejection over acceptance, especially when social comparison is at play (Boileau et al., 2021).

A recent meta-analysis supports the idea that peer rejection increases aggressive behavior while reducing prosocial behavior (Quarmley et al., 2022). However, most of the studies in this meta-analysis (37 out of 41) were conducted with adults rather than adolescents. Another meta-analysis of experimental studies suggests that the negative link between peer rejection and prosocial behavior, along with its positive link to aggression, may occur because rejection not only worsens mood but also heightens the likelihood of aggression toward the rejector as a means of regaining control (Gerber & Wheeler, 2009). Additionally, research has shown that social exclusion experienced in an experimental setting (e.g., not being chosen to work with) tends to elicit negative emotions—such as anger, hurt, sadness, and reduced happiness—which may further inhibit prosocial actions (Buckley et al., 2004).

Although less consistent, some studies suggest that peer rejection can lead to prosocial behavior under certain conditions, particularly when individuals are motivated to reconnect with others. Given the fundamental human need to belong (Baumeister & Leary, 1995), rejection often causes significant distress (Eisenberger et al., 2003; Schaan et al., 2020), which may drive individuals to seek new connections and relationships. From an evolutionary perspective, it is adaptive to repair or form new relationships after rejection to prevent further exclusion

(Baumeister & Leary, 1995; Weerdmeester & Lange, 2019). For example, research with undergraduates indicates that social exclusion may prompt individuals to seek new friendships, potentially increasing prosocial behavior (Maner et al., 2007). Thus, socially excluded individuals might engage in prosocial behaviors to restore social connections and regain a sense of belonging (DeWall & Richman, 2011).

Whether adopting a person-oriented perspective by distinguishing sociometric status profiles or a variable-oriented perspective by using continuous measures of peer acceptance/likeability and rejection/dislikeability—without relying on the standardized difference between acceptance ("who do you like most?") and rejection ("who do you like least?") scores—research has yet to fully clarify the prospective relationship between sociometric peer status and prosocial behavior. Although longitudinal studies on this topic are increasing, more evidence is still needed to disentangle the direction of influence between peer status and prosocial behavior, especially when the constructs of peer status are clearly separated into their positive (acceptance/likeability) and negative (rejection/dislikeability) dimensions. Furthermore, existing research has primarily focused on children and adults, leaving a significant gap in our understanding of how these dynamics play out among young adolescents.

2.5   Peer Influence and Prosocial Behaviors

'Change' is a key factor for understanding peer influence, as adolescents often modify their behavior in response to the actions of their friends and associates (Laursen & Veenstra, 2023). It is widely recognized that adolescence is a time of heightened sensitivity to peer influence (Veenstra & Laninga-Wijnen, 2022), during which the influence of primary caregivers diminishes, and peers increasingly become the main agents of socialization (Lam et al., 2014). Therefore, given that prosocial behavior often changes during this period, it is essential to examine how peer relationships influence these changes.

Peer influence on prosocial behavior has usually been examined within the context of friendships, focusing on whether adolescents modify their behavior to align with that of their friends. Two key aspects are important to understand the dynamic of this behavioral similarity. The first is the tendency of individuals to select friends who are already similar to them, known as selection or *homophily* effects. This means that prosocial adolescents may already be surrounded by similarly prosocial peers, so there's less room for positive influence to cause an increase. The second is the process by which friends become increasingly similar in their prosocial behaviors over time, referred to as the influence process. To accurately assess influence, it is essential to control for selection effects, preventing the misinterpretation of selection as a social influence (Steglich et al., 2010). This can

be effectively achieved using social network analysis. This methodology allows the examination of patterns and structures of relationships within a network to understand how these connections influence behaviors.

Network studies have shown inconsistent results regarding friends' influence on prosocial behavior. While some studies have found that adolescents are more likely to decrease rather than increase prosocial behavior as a result of friendship influence (Laninga-Wijnen et al., 2019; Logis et al., 2013), other studies have found no evidence for friendship influence on prosocial behavior in early adolescents (Dijkstra & Berger, 2018; Molano et al., 2013; Shin, 2017). These inconsistencies raise important questions about why friends do not consistently become more prosocial through their relationships and why prosocial behavior often decreases rather than increases. One possible explanation is that friends may unconsciously mimic each other's behaviors due to the perception-behavior paradigm (Chartrand & Bargh, 1999). Consequently, any decrease in prosocial behavior among them could be considered a deliberate (and even valued) choice as much as engaging in it.

While previous social network studies have provided valuable insights regarding prosocial influence among friends, they have largely overlooked the impact of peers beyond adolescents' close friends (Gommans et al., 2017). For instance, experimental research has begun to address this gap by exploring the influence of anonymous peers. More specifically, a study involving Korean college students found that anonymous confederates in an experimental study affected students' willingness to donate money to a campaign. This indicates that the prosocial behavior of anonymous individuals— who have no direct relationship with adolescents— can still significantly influence the participants' own prosocial actions (Park & Shin, 2017). Likewise, adolescents might also be influenced by the peers they like and admire. From a network perspective, this would bring the question of whether nominating someone as liked can influence an individual's own behavior. For example, adolescents may be drawn to peers who are not yet friends but whom they aspire to affiliate with or become closer to. Peers who are well-liked by classmates are often highly sought after as friends (Thomas & Bowker, 2013), and this is likely because they are perceived as prosocial and trustworthy (Parkhurst & Hopmeyer, 1998). By conforming to these peers' behaviors, adolescents may increase their chances of forming friendships and fostering stronger connections. Moreover, compared to friendships that are typically stable and involve a limited number of individuals, aligning with liked peers may expand adolescents' social opportunities and recreational activities. Therefore, peer influence within liking networks may function through mechanisms similar to those in friendships, such as imitation, but can also involve distinct processes such as *aspiration*, where individuals align their behaviors with the higher standards set by admired peers (Snijders & Lomi, 2019). Furthermore, adolescents are particularly attuned to peer

approval in the context of positive interactions (Cho & Hackel, 2022), and acceptance from liked peers likely boosts their self-esteem and sense of belonging.

Another significant mechanism driving peer influence and behavioral change among young adolescents is known as peer salience (Dijkstra & Gest, 2015). Adolescents who hold a high social position within their peer network are often seen as key influencers in shaping class norms through their behavior (Dijkstra et al., 2008; Laninga-Wijnen, 2019). For example, those perceived as the most popular in the class play a crucial role in predicting the spread of aggressive behavior (Dijkstra et al., 2008) and risk-taking attitudes among peers (Rambaran et al., 2013). The behaviors of these prominent peers serve as cues, which can lead others to adopt similar negative behaviors. This phenomenon is consistent with social cognitive theory (SCT), which posits that behaviors are learned through observation, modeling, and motivation (Bandura, 1967, 1999). According to SCT, individuals are not only influenced by the actions they observe but also by the social status of the person performing them. Certain situational factors can amplify the visibility or salience of specific behaviors, making them more likely to be imitated.

The influence of high-status peers on behavior is well-documented, with much of the previous research focusing predominantly on how perceived popularity can drive aggressive behaviors. However, high-status adolescents are also linked to promoting prosocial behaviors (Choukas-Bradley et al., 2015). While perceived popularity is still important in defining high status, research has shown that status can also be defined by measures of liking and acceptance, emphasizing how well-liked someone is (Ruschoff et al., 2015). Nevertheless, existing studies have largely focused on popularity (perceived popularity) rather than likeability (sociometric popularity), often overlooking its potential impact on prosocial behaviors, despite the consistent positive association observed with prosociality. Furthermore, the inconsistent findings from studies on friendship networks emphasize the importance of exploring the broader peer context beyond friendships, an area that remains underexplored.

2.6   The Need for Different Approaches to Understand Adolescents' Prosocial Development

Developmental researchers have observed varying trends in prosocial behavior during adolescence. Some studies have suggested a normative decline in prosociality during this phase (Carlo et al., 2007; Luengo Kanacri et al., 2013). In contrast, other research has reported increases in prosocial behavior (Fu et al., 2017; Padilla-Walker et al., 2018), while some others indicated stabilization (Malti et al., 2015). This thesis recognizes the complexity of prosocial development in adolescence and emphasizes

the need for diverse approaches to achieve a more comprehensive understanding of its emergence, promotion, and development.

Particularly when examining the relationship between prosocial behavior and peer status — how accepted or liked and how rejected or disliked adolescents are — the lack of longitudinal studies has made it difficult to understand how these variables might relate to each other over time. These inconsistencies may be related to variations in conceptualizations of prosocial behaviors and status variables, a clear separation of the status measures, and the methodological approaches utilized. Given that it is not yet clear to what extent peer status plays a role in explaining developmental changes of prosocial behavior from a longitudinal perspective, this thesis proposes an investigation that integrates three distinct methodological approaches: a variable-oriented approach, a person-oriented approach, and a network-oriented approach. The variable-oriented approach focuses on individual variables that are thought to contribute to explaining a particular outcome or phenomenon of interest (e.g., prosociality). By analyzing the relationships between these variables, it is possible to understand patterns, predict outcomes, and draw generalizable conclusions. Study I utilized a variable-oriented approach to disentangle the direction of influence between adolescents' prosocial behavior and peer status — both acceptance/likeability and rejection/dislikeability — and whether these associations were positive or negative. To achieve this purpose, Study I uses a cross-lagged panel model (CLPM) to test the bidirectional relationships between peer status and prosocial behavior across three waves.

The second perspective is the person-oriented approach, which focuses on individuals rather than variables. It aims to identify unobserved subgroups or profiles of individuals within a population based on patterns of responses across observed variables. This person-oriented perspective was taken in Study II by identifying sub-groups of adolescents based on two observed and separate variables, namely, peer acceptance/likeability and rejection/dislikeability, to predict further changes in prosocial and aggressive behavior. There has been a lack of studies examining longitudinal associations between peer status profiles and social behaviors (prosocial and aggressive) while clearly distinguishing between peer acceptance and rejection (not using composite scores) and without using cutoff values. Additionally, although many previous studies have assumed that continuous dimensions of peer status are stable during adolescence, high stability is only found in older samples (Jiang & Cillessen, 2005). The person-oriented approach of Study II used a novel approach to identify sub-groups of adolescents (profiles) that share similar levels of acceptance and rejection by using a latent profile analysis (LPA). This technique takes into consideration classification uncertainty, avoiding the arbitrary placement of cut-off points to determine class membership, and provides a modeling context where the error in group formation can be estimated (Nylund-Gibson et al., 2022). Further, a

latent transition analysis (LTA) allows the assessment of stability in the status profiles over a 6-month interval (Time 1 to Time 2) to predict prosocial and aggressive behavior at Time 3. Thus, LTA allows consideration of the stability and consistency of peer status profiles across two-time points.

Finally, Study III addresses the need to consider a network-oriented perspective to understand peer influence in prosocial behavior based on adolescents' liking preferences. Both Study I and Study II utilize sociometric measures of peer status as continuous variables, where independence among variables is the main assumption. In contrast, the main characteristic of the network perspective compared to a variable and person-oriented one is that it assumes interdependence — rather than independence — among the main study variables and the network structure of social ties between them (Snijders et al., 2010; Veenstra et al., 2013). This means that any potential change in prosocial behavior will depend on the ties that connect individuals, namely, the different degrees of adolescents' likeability assessed by peers' nominations. Peers' likeability – being liked and accepted by peers – has largely been positively associated with individuals' prosocial responses. However, the understanding of the influence of liked/accepted peers on adolescents' prosocial behavior is still limited. Although the socialization processes of prosocial behavior during adolescence have been previously studied, most research has focused on friendship networks or relied on experimental designs where ecological validity is more questionable. Additionally, studies on aggressive behavior have shown that high-status peers (e.g., those with perceived popularity) exert a stronger influence on their peers, encouraging similar behaviors. However, little is known about whether well-liked peers (e.g., liked by many peers) can represent a positive high status to influence prosocial behaviors among classmates and whether adolescents low in likeability are more susceptible to this influence regarding prosocial behaviors. Therefore, Study III addressed these gaps by using a network perspective and a social network analysis (SNA). This helps to understand the behavioral influence effect based on a tie between individuals, in this case, a liking tie, while controlling for selection effects, namely, the natural tendency to select individuals with similar characteristics.

This thesis aims to advance our understanding of the longitudinal relationship between prosocial behaviors with peer acceptance/likeability and rejection/dislikeability by employing three distinct perspectives: a variable-oriented approach using a cross-lagged panel model (CLPM), a person-oriented approach through latent profile analysis (LPA), and latent transition analysis (LTA), and a network-oriented approach utilizing a social network analysis (SNA).

3   Aim of the Thesis

The main aim of this thesis was to extend our knowledge on the longitudinal associations between sociometric peer status, namely, peer acceptance/likeability and peer rejection/dislikeability, and prosocial behavior in adolescence. In order to do so, three different methodological perspectives are taken: a variable-oriented, a person-oriented, and a network-oriented perspective.

The specific research questions addressed in this thesis are as follows:

1. Are peer acceptance and rejection antecedents or consequences of prosocial behavior in adolescence? (Study I)

2. a) What peer status profiles emerge based on peer acceptance and rejection? b) Are stable peer status profiles predictive of prospective changes in prosocial and aggressive behaviors (T2- T3)? (Study II)

3. a) Do adolescents adopt the prosocial behaviors of the classmates they like? b) Are more-liked peers more influential than less-liked ones regarding prosocial behavior? And c) Are less-liked peers more susceptible to being influenced in prosocial behavior? (Study III)

4 Method

4.1 Design and Participants

4.1.1 The ProCiviCo Data

This thesis uses longitudinal data collected as part of a larger research project testing the effects of an intervention designed to promote prosocial behavior and social cohesion among elementary school students in Santiago, Chile: the ProCiviCo Intervention Project (PROsocial behavior and CIVIC engagement, leading to social COhesion) (for details, see Luengo Kanacri & Jiménez-Moya, 2017; Luengo Kanacri et al., 2020; Palacios et al., 2019), which included eight elementary schools, four intervention schools and four control schools.

The data includes the first three waves of the ProCiviCo project, namely, the pre-intervention data collected in May 2017 (nT1 = 660) when students attended 7th grade, and the next two follow-up assessments, collected in October 2017 and in May 2018 (T2) when students were in Grade 7 and 8, respectively (Mage = 12.29, SD = 0.62; 55.1% males). In total, 16 classrooms participated in the project, where 26% of the students belonged to the low-middle socioeconomic class, 21% middle class, 9% to the low class, and 0.5% belonged to the middle-high class. For 43.5%, the information on SES was not available. Both intervention and control schools were used in Study I (16 classrooms), where it was possible to statistically control for the intervention, and only the control schools (7 classrooms) were used in Study II and III (for details, see selection of samples in 3.1.3).

Classroom size ranged from 36 to 45 students at T1 and T2 and from 33 to 44 at T3. Participation rate per classroom ranged from 95 to 100% at T1, from 93 to 100% at T2, and from 98 to 100% at T3. As the academic year starts in March in Chile, the first two measurements were collected when students attended the 7th grade, and the third (and last) measurement was collected when students attended 8th grade. Students' ages ranged from 11 to 15 years at T1. In Chilean elementary schools, the typical age range for 7th grade is 11-13 years old. In our sample, the age range was 11-15, as a few students had to repeat one or two years.

4.1.2 Procedure

Participating schools were selected according to socioeconomic heterogeneity criteria to incorporate students from different socioeconomic backgrounds and then were randomly assigned to the intervention (four schools; n=336) and control (four schools; n=324) conditions. Letters were sent home with children describing the purpose of the research, and a written parental informed consent was obtained at each assessment point while children's assent was ensured. Questionnaires and peer reports for students were administered in each classroom by three to four members of the research team during school hours. The response choices of the questionnaires were explained to students during data collection and were designed to take approximately 30 minutes to complete

The response choices of the questionnaires were explained to students during data collection. For the sociometric question, participants received a roster with the names of all students in their classroom and were instructed to nominate up to three who best fit the description. Both same- and cross-sex nominations were allowed. Self-nominations were discouraged during testing and discarded during data processing. The reasons for attrition were, in most cases, related to students' absence on the day of data collection due to illness. Ethical procedures regarding informed consent and questionnaires were approved by the Ethical Committee of the Universidad Católica de Chile and by the Chilean National Funding of Science and Technology (FONDECYT).

Table 1.   Summary of the samples and measures of the three empirical studies

	Study I	Study II	Study III
Design	Longitudinal	Longitudinal	Longitudinal
Data set	3-Waves ProCiviCo	3-Waves ProCiviCo	3-Waves ProCiviCo
Data collection	May 2017; October 2017, & May 2018	May 2017; October 2017, & May 2018	May 2017; October 2017, & May 2018
Classrooms	16	7	7
Prosocial behavior	Peer Ratings	Peer Ratings	Peer Ratings
Peer acceptance/likeability	Peer Nominations	Peer Nominations	Peer Nominations
Peer rejection/Dislikeability	Peer Nominations	Peer Nominations	Peer Nominations
Aggressive behavior	Peer Ratings	Peer Ratings	Peer Ratings
Control variables	SES, sex & Intervention Condition	–	Selection Effects were controlled for
Statistical analyses	Cross-Lagged Panel Model	Latent profile analysis (LPA) and latent transition analysis (LTA)	Bayesian Social Network Analysis (SNA)

* Summary of the samples and measures of the three empirical studies.

4.1.3 Selection of Samples

Considering that the main outcome variable of this thesis was prosocial behavior, and the data used in the three studies come from the evaluation of an intervention designed to promote prosocial behavior and social cohesion among elementary school students, the selection of samples in each study considered specific criteria (e.g., design and statistical analysis) to prevent bias in the results due to the confounding effects of the intervention.

For the case of Study I, in order to have more statistical power in the analysis, the data included the full sample, meaning data coming from both the intervention and control schools. To prevent the potential confounding effect of the intervention, the statistical approach of this study (variable-oriented using a CLPM) allowed to control for the intervention condition in all models, and furthermore, a multi-group analysis was conducted to examine whether the associations of the main variables differed between the intervention and control group.

Regarding Study II and III, only data from the four control schools were analyzed, in which seven classrooms participated. The reason behind this decision was the complexity of the statistical analysis (LPA/LTA in Study II and SNA in Study III), which did not enable control for the intervention condition.

4.2 Measures

4.2.1 Prosocial Behavior

Individual prosocial behavior was measured with peer ratings. At each wave, the participating students were asked to rate the frequency of four representative types of prosocial behavior ("He/she tries to comfort other classmates when they are sad"; "He/she shares with others things he/she likes", "He/she tries to understand the point of view of others"; "He/she helps others who are in need or have problems") displayed by each of their classmates on a five-point scale ranging from 1 (never) to 5 (almost always). A score of prosocial behavior was computed for each individual by averaging the ratings they received from all classmates across the four items. The Cronbach's alpha coefficients showed high reliability at each time point (T1 α=.96; T2 α =.95; and T3 α =.95).

4.2.2 Aggressive Behavior

As for prosocial behavior, at each wave, students rated the frequency of every classmate's engagement in three types of aggressive behavior ("He/she kicks, punches, and pushes other classmates"; "He/she insults other classmates," and

"He/she speaks badly behind other classmates"). Ratings were given on a five-point scale ranging from 1 (never) to 5 (almost always). Scores received on the three items received from all classmates were averaged to create a total aggression score for each student. Reliability across the three items was high at each time point (T1 α=.92, T2 α=.92, and T3 α=.91).

4.2.3   Control Variables

Study I used a cross-lagged panel model where it was possible to control for intervention conditions, socioeconomic status (SES), and sex. The complexity of an LPA and LTA in Study II did not allow the use of control variables, and for this reason, analysis with only control schools was conducted. For Study III, a Bayesian longitudinal network analysis was conducted, which provided more robust results.

4.2.4   Sociometric Measures

4.2.4.1   Peer Acceptance/Likeability and Peer Rejection/Dislikeability

One peer nomination question was used to measure peer acceptance/likeability (Bellmore & Cillessen, 2003). At each wave, students were presented with a roster of their classmates and asked to nominate up to three classmates who best fit the description: "With whom would you like to hang out at school during recess?" For each student, a proportion score of peer acceptance was calculated by dividing the total number of nominations received by the total number of students within each classroom (i.e., the total number of possible nominations). Cross-gender nominations were allowed.

As for acceptance/likeability, one peer nomination question was used to measure peer rejection/dislikeability (Bellmore & Cillessen, 2003). Students nominated up to three classmates at each wave by answering: "With whom would you *not* like to hang out at school during recess?" Cross-gender nominations were allowed. The scores were computed using the same procedure that was used for the peer acceptance scores.

4.2.5   Cultural Considerations on Sociometric Measures

The sociometric question used in this study was an approximation of peers' likeability/acceptance and dislikeability/rejection. In the Chilean context, it is not possible to ask directly, "Who do you like most?" (the most common measure of peer likeability/acceptance) because it has a romantic connotation. Instead, students were asked about their possible preferences for hanging (and not hanging) out, which

was the best approximation for likeability/acceptance and dislikeability/rejection and has been used in earlier studies on peer relations in this context (Berger et al., 2015; Berger & Rodkin, 2012; Palacios et al., 2019). As can be seen in Table S1 (see Appendices), it does correlate moderately and positively with prosocial behavior and negatively with aggressive behavior, which is consistent with what other studies have found with the "who do you like most" operationalization. It is worth noting that prior studies with Chilean adolescents have yielded findings that are very similar to those obtained with American and European samples regarding behavioral influence (Berger & Rodkin, 2012; Dijkstra & Berger, 2018).

4.3 Statistical Analysis

Given that the main outcome variable in the three studies was prosocial behavior, Study I used the full sample (16 classrooms) and statistically controlled for the intervention, whereas Study II and III only analyzed data from the four control schools (7 classrooms) to prevent bias in the results due to the confounding effects of the intervention. The main variables of this thesis associated with peer acceptance, rejection, and prosocial behavior were continuous variables.

The main goal of Study I was to test the bidirectional association between prosocial behavior with peer acceptance and rejection in adolescence using a cross-lagged panel model (CLPM). Data analysis was estimated using the Lavaan package in RStudio (Rosseel, 2012), and it was conducted in two separate models. Every model controlled for gender, SES, and group conditions (intervention vs control). Additionally, second-order autoregressive paths were included in the model (Little, 2013), representing delayed effects across the associations of prosocial behavior with peer acceptance and rejection from T1 to T3 (Newsom, 2015). To explore the potential moderating effects of gender in the cross-lagged associations, a multi-group path analysis was conducted, starting with the estimation of a freely estimated multi-group model (Model 0) where all parameters were estimated without constraints. Then, two subsequent models were estimated where: a) the autoregressive parameters were constrained to be equal (Model 1), and b) both autoregressive and cross-lagged parameters were constrained to be equal (Model 2). All the models controlled for experimental conditions and SES. Finally, given that the data came from the evaluation of an intervention designed to promote prosocial behaviors, and in order to test the robustness of findings, a sensitivity analysis with an additional multigroup analysis was estimated to test whether the cross-lagged paths hypothesized in this study were significantly different in the intervention group and in the control group.
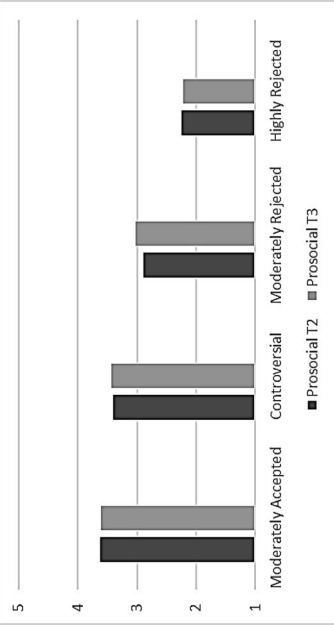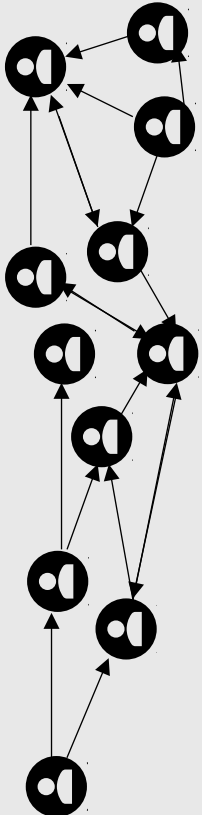
Study II aimed to test three different goals: a) examine peer status profiles using a latent profiles analysis (LPA), b) assess a 6-month stability of peer status profiles

using a latent transition analysis (LTA), and c) investigate changes in prosocial and aggressive behavior over the transition to a new academic year from 7th to 8th grade (from T2 to T3) among those with stable peer status profiles. LPA is a multivariate approach that takes into consideration classification uncertainty, which, in contrast to the use of cut-off scores, avoids the arbitrary placement of cut-off points to determine class membership and provides a modeling context where the error in group formation can be estimated (Nylund-Gibson et al., 2022). The data included the three waves of measurement of control schools (7 classrooms) collected in May 2017 (nT1=282), October 2017 (nT2=282), and May 2018 (nT3=275). In the first step, LPA was conducted to identify peer status profiles based on peer acceptance and rejection (Goal 1) using Bayesian information criterion (BIC), which is recommended for deciding on the number of latent profiles with continuous indicators (Nylund et al., 2007). In addition, the entropy value as a measure of classification accuracy was inspected (entropy value of .70 or higher indicates good accuracy; Reinecke, 2006). In the second step, LTA (Collins & Lanza, 2010) was conducted to assess the stability of the peer status profiles identified in the previous step (Goal 2). Differences in the stability estimates of the multinomial logistic regression predicting profile membership at T2 between the peer status profiles for statistical significance. In the third step, a three-step mover-stayer LTA (Nylund et al., 2007) was conducted to distinguish adolescents switching peer status profiles (i.e., movers) from adolescents remaining in the same peer status profile across time (i.e., stayers). Finally, changes in prosocial and aggressive behaviors were examined within the stable peer status profiles, taking the mean difference scores from T2 to T3 (Goal 3), i.e., positive values indicate an increase, while negative values indicate a decrease in prosocial/aggressive behavior. All analyses were conducted with Mplus Version 8.6 (Muthén & Muthén, 1998–2017) using the maximum likelihood estimation method with robust standard errors (MLR).

The main goal of Study III was to examine whether adolescents are influenced by the peers they like in their prosocial behavior. In addition, it was also investigated whether these effects were more likely 1) when the peers whom adolescents liked were also well-liked by classmates in general, and 2) when the adolescents themselves were not well-liked by classmates in general. To examine selection and influence of liked peers regarding prosocial behavior, a longitudinal social network analysis (SNA) was conducted using three waves of measurements collected in the control schools (7 classrooms). SNA is implemented in the RSienaTest package (version 1.2–12) in R (version 3.5.1), and Bayesian estimation methods (sienaBayes function; Ripley et al., 2023) were applied. For each of the three objectives, three different models were estimated. In the first model, it was tested whether adolescents are more likely to adopt the prosocial behaviors of the peers they like (*average alter effect*). The second model tests whether adolescents' tendency to adopt the prosocial

behaviors of the peers they like is particularly strong if these peers are well-liked by others. In this model, the *popAlt* parameter that describes the average indegree of liking nominations for the peers that adolescents like, and the *avAltPop* parameter, which is the interaction effect of the average alter effect and *popAlt* effect, were included. The third model tests whether peer influence in prosocial behavior varies as a function of adolescent's own likeability levels. To test this model, a parameter estimating the association between adolescents' own likeability (*indeg*), as well as an interaction term to assess whether peer influence in prosocial behavior was moderated by the adolescents' own likeability (*indeg x average alter*) were added.

Table 2. Different Methods Used in the Three Empirical Studies

APPROACH	GRAPHICAL REPRESENTATION	AIMS
STUDY I VARIABLE-ORIENTED (CLPM)	Prosocial Behavior T1 — Prosocial Behavior T2 — Prosocial Behavior T3; Peer Status T1 — Peer Status T2 — Peer Status T3	Peer-rated prosocial behavior and peer status (acceptance and rejection), assessed across three-time points, offer valuable insights into the longitudinal associations between these two variables.
STUDY II PERSON-ORIENTED (LPA/LTA)	Moderately Accepted, Controversial, Moderately Rejected, Highly Rejected — Prosocial T2, Prosocial T3	Help to identify subgroups of adolescents based on two distinct types of peer status: peer acceptance and peer rejection. This heterogeneity in peer status profiles serves as a predictor of future changes in social behaviors (prosocial and aggressive).
STUDY III NETWORK-ORIENTED (SNA)		Do adolescents adopt the prosocial behavior of the classmates they nominate as liked? SNA helps to understand the influence effect (*average alter*) in prosocial behavior based on a tie that connects individuals, in this case, a liking tie.

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4.4 Supplementary Analysis

This thesis examined how adolescents' prosocial and aggressive behaviors are linked to two dimensions of their peer status (i.e., whether they are accepted or rejected). More specifically, it assumes that peer acceptance and rejection are distinct constructs, not merely opposites on a single continuum, as low acceptance does not necessarily imply high rejection, and low rejection does not imply high levels of acceptance. The low correlation between peer acceptance and rejection in this thesis substantiates this assumption. While the literature highlights that high levels of acceptance and high levels of rejection lead to more and less prosocial behavior, respectively (with the opposite trend for aggressive behavior), it remains still unclear whether the opposite levels of each status dimension, namely, low levels of acceptance and low levels of rejection, are also inversely associated with both types of behaviors.

To examine differences in prosocial and aggressive behaviors across varying levels of both dimensions of peer status (see Table S6 and S7 in the Appendices), a series of ANOVAs and post hoc comparisons were conducted. Given the slight skewness in peer rejection scores, peer status levels were categorized into three groups (i.e., high, middle, and low rejected and accepted, respectively) based on the distribution of the proportion scores. With respect to prosocial behavior, the results revealed that adolescents who were highly liked consistently showed significantly higher levels of prosocial behavior than those with moderate or low likeability across all three time points (see Table S6). In contrast, highly rejected adolescents displayed significantly lower levels of prosocial behavior compared to those with moderate or low rejection scores. With respect to aggressive behavior, highly liked adolescents were notably less aggressive than their peers with moderate or low likeability scores. Conversely, highly rejected adolescents demonstrated notably higher levels of aggression compared to those with moderate or low rejection scores (see Table S7). These findings enhance our understanding of peer status dimensions and their nuanced effects on adolescent prosocial and antisocial behaviors.

5 Overview of the Studies

5.1 Study I

Chávez, D. V., Salmivalli, C., Garandeau, C. F., Berger, C., & Luengo Kanacri, B. P. (2022). Bidirectional Associations of Prosocial Behavior with Peer Acceptance and Rejection in Adolescence. *J Youth Adolescence*, 2022, 51, pp. 2355–2367.

While most research examining the associations between peer status—defined as peer acceptance and rejection—and prosocial behaviors has been cross-sectional, focused on children or young adults, and has operationalized status as the difference between acceptance and rejection, it remains unclear whether peer acceptance and rejection are antecedents or consequences of adolescents' prosocial behaviors. Study I aimed to investigate (a) whether adolescents' prosocial behavior predicts their peer status, (b) whether peer status affects their prosocial behavior, and (c) whether these prospective associations are positive or negative.

Peer nominations were used to measure peer acceptance and rejection, while peer ratings assessed four types of prosocial behaviors. The bidirectional associations between these distinct measures of peer status and prosocial behavior were analyzed using three waves of data, collected in May 2017 (nT1 = 660) when students attended 7th grade, with follow-up assessments in October 2017 and in May 2018 (T2) when students were in Grade 7 and 8, respectively (Mage = 12.29, SD = 0.62; 55.1% males). In total, 16 classrooms participated in the study.

The results revealed that prosocial behavior positively predicted future peer acceptance, while peer acceptance did not significantly affect future prosocial behavior across the three waves. The relationship between peer rejection and prosocial behavior was negative and bidirectional between Time 1 and Time 2. Between Time 2 and Time 3, at the start of a new academic year, prosocial behavior negatively predicted rejection, whereas rejection in the 7th grade positively predicted prosocial behavior at the beginning of the 8th grade. Multi-group panel analyses found no significant differences between boys and girls in the cross-lagged associations of prosocial behavior with peer acceptance and rejection. These findings suggest that prosocial behavior enhances peer acceptance among adolescents and

underscore the potential significance of the transition to a new academic year for the prosocial behavior of previously rejected students.

5.2   Study II

Chávez, D. V., Luengo Kanacri, B. P., Berger, C., Yanagida, T., Salmivalli, C., Garandeau, C. F. (2024). A Chance to Be Kinder? Peer Status Profiles and Changes in Prosocial and Aggressive Behavior in Adolescence. *Merrill-Palmer Quarterly*. **In Press.**

The person-oriented approach is important for associating peer status with social behaviors (e.g., prosocial and aggressive behaviors) as it enables the identification of adolescent groups at high risk for maladjustment, such as controversial youth who are both highly accepted and rejected, or neglected youth who receive few nominations of any kind. Despite efforts to identify these groups using arbitrary techniques like cutoff values, most research in this area has been variable-oriented, with little consideration of potential changes in status. However, examining the social behavior of youth who maintain stable peer status profiles over an academic year offers a more accurate strategy for predicting subsequent behavior.

Study II adopted a person-oriented approach to investigate the impact of stable peer status profiles on changes in prosocial and aggressive behaviors among early adolescents (ages 9 to 15). The study aimed to (a) identify peer status profiles based on peer acceptance and rejection (measured by nominations of peers youth like (or do not like) to hang out with) using a latent profile analysis (LPA); (b) assess the six-month stability of these profiles during one academic year (7th grade, T1-T2) using latent transition analysis (LTA); and (c) determine whether the most stable peer status profiles predict future changes in prosocial and aggressive behaviors as students transition from 7th to 8th grade (T2-T3).

Using three waves of data from 324 Chilean adolescents (56.3% male, Mage = 12.31, SD = 0.58), LPA identified four distinct profiles: moderately accepted, moderately rejected, controversial, and highly rejected. Analysis of the six-month stability of these profiles using LTA within the same academic year (7th grade, Waves 1 and 2) revealed that the moderately accepted group was highly stable, with an 87% probability of remaining accepted at T2, followed by the highly rejected (78%), controversial (69%), and moderately rejected (49%) groups. Notably, the moderately rejected group had a 35% probability of transitioning to the accepted group. As the new academic year began (transition from 7th to 8th grade), prosocial behavior increased in the moderately rejected group, but not in the highly rejected group. Aggressive behavior decreased among the highly rejected and controversial groups. These findings suggest that the transition to a new academic year provides

an opportunity for behavioral change, emphasizing the significance of stable peer status in predicting shifts in both prosocial and aggressive behaviors.

5.3   Study III

Chávez, D. V., Palacios, D., Laninga-Wijnen, L., Salmivalli, C., Garandeau, C. F., Berger, C., & Luengo Kanacri, B. P. (2024). Do Adolescents Adopt the Prosocial Behaviors of the Classmates They Like? A Social Network Analysis on Prosocial Contagion. *J Youth and Adolescence*, **2024; https://doi.org/10.1007/s10964-024-02037-z.**

Study III examined the role of peer influence in shaping adolescents' prosocial behavior, focusing on the dynamics of who influences whom. While the influence of friends on prosocial behavior has been previously studied, results have been inconsistent, with some social network studies finding no significant evidence of friendship influence. Social network studies are valuable for assessing influence while accounting for peer selection (homophily). However, they have overlooked the broader peer context that may also significantly impact adolescents' prosocial behavior. This study aimed to investigate whether adolescents' prosocial behavior is influenced by peers they like and whether this influence is stronger when: 1) the liked peers are also well-liked by their classmates, and 2) the adolescents themselves are less well-liked by their peers. To address these questions, a stochastic actor-oriented model (SAOM; Snijders et al., 2010) was employed to analyze longitudinal social network data across three waves.

The analysis revealed that adolescents were influenced by the prosocial behavior of the peers they liked, particularly when these peers were well-liked by the broader peer group. These influence processes could go in two directions. An upward influence when adolescents become more prosocial over time and a downward influence when adolescents become less prosocial over time to resemble the peers they like. Noticeably, adolescents who were initially relatively high in prosocial behavior increased their prosociality when their liked peers exhibited high levels of prosocial behavior, confirming a contagion effect based on liking ties. Conversely, adolescents with lower likeability were more susceptible to this influence than those who were more well-liked. Altogether, these findings highlight the use of a network perspective to explore liking ties and influence among peers, suggesting that peers that adolescents like have an important influence on their prosocial behavior, especially if these peers are also well-liked by other classmates.

Table 3. Summary of the main findings across the three empirical studies with 3-waves of data

	Study I	Study II	Study III
Research questions	Are peer acceptance and rejection antecedents or consequences of prosocial behaviors in adolescence?	a) What peer status profiles emerge based on peer acceptance and rejection using an LPA? b) Are stable peer status profiles predictive of prospective changes in prosocial and aggressive behaviors (T2-T3)?	a) Do adolescents adopt the Prosocial Behaviors of the Classmates They Like? b) Are highly liked ones more influential than less liked ones? And c) Are lowly-liked peers more susceptible to be influenced in PB?
Method	Cross-Lagged Panel Model (CLPM)	Latent Profile Analysis (LPA) and Latent Transition Analysis (LTA)	Bayesian Social Network Analysis (SNA)
Main findings	Being prosocial during adolescence predicted more acceptance over time, but peer acceptance did not predict further prosocial behaviors. The association between peer rejection and prosociality was bidirectional: less prosociality predicted more rejection over time and rejected peers behaved less prosocially but only from t1 to t2. From t2 to t3, rejected youth increased their prosocial responses.	Four peer status profiles were found (moderately accepted, moderately rejected, controversial, and highly rejected). High stability was found for the moderately accepted (87%), followed by the highly rejected (78%), controversial (69%), and moderately rejected (49%). From T2-T3, from the two stable rejected profiles, only the moderately rejected predicted increases in prosocial behavior. The highly rejected and controversial profile reduced their aggressiveness.	Adolescents adopted the prosocial behavior of the classmates they like. This conformity in PB developed in two directions: upwards and downwards, meaning that youth could increase or decrease in prosociality based on their liking preferences. Well-liked and prosocial youth were particularly influential in increasing PB among peers, whereas lowly liked were particularly susceptible to being influenced by PB.
Conclusion	Peer acceptance/likeability is a positive consequence of youths' prosocial behaviors: prosocial youth are rewarded with more acceptance over time. Peer rejection was negative and bidirectionally associated with PB, except when a new academic year begins. That is, when youth transition to a new academic year (from 7th to 8th grade), rejected peers were able to increase their prosocial behavior.	The beginning of a new academic year (T3) seems to be an important part of peers' dynamic to change their behavior. While youth in the highly rejected profile–with higher levels of aggressive behavior–stopped being aggressive, moderately rejected peers increased their prosocial responses. Controversial peers (both liked and disliked) did not increase in prosociality, but they decreased in aggressiveness.	Peers' likeability represents an important aspect of peer interactions that helps to explain the socialization of prosocial behavior during adolescence. This influence was mostly in a downward direction, meaning that adolescents tended to decrease (rather than increase) PB based on their liking preferences. However, increases in PB occurred for those adolescents who were prosocial to begin with, and nominated other prosocial and well-liked peers.

6   Discussion

This thesis investigated the relationship between sociometric peer status – both peer acceptance/likeability and rejection/dislikeability – and prosocial behavior in adolescents from a longitudinal perspective, where three different approaches were utilized. First, the variable-oriented approach (Study I) helped to disentangle the direction of influence between prosocial behavior with peer acceptance/likeability and rejection/dislikeability. Using a CLPM, it investigated bidirectionally whether peer acceptance and rejection are antecedents or consequences of prosocial behavior over time. Second, the person-oriented approach (Study II) explored peer status profiles based on the sociometric scores of peer acceptance/likeability and rejection/dislikeability without the arbitrary use of cutoff values and incorporating measurement error through an LPA. Besides, given the lower stability of peer status among younger adolescents (Cillessen et al., 2000), only stable profiles over one academic year were selected using an LTA to more accurately predict prosocial and aggressive behaviors. Finally, the network-oriented approach (Study III) allowed to examine a likeability network in which the influence of prosocial behavior among peers can be assessed. Based on liking preferences and using SNA, this perspective also helped to examine the moderating role of both high and low-liked peers in influencing prosocial behaviors (and being susceptible to be influenced), respectively, by their nominated liked peers.

The research and results presented in this thesis suggest that peer acceptance/likeability and rejection/dislikeability are two distinct measures of peer status, each representing unique peer experiences with different impacts (positive and negative) on adolescents' prosocial behavior. Similarly, adolescents' prosocial behavior can differentially affect peer status, with the clearest effect observed in adolescents low in prosociality, who experienced increased rejection or dislikeability over time. However, the results of this thesis also suggest that there are important opportunities for rejected adolescents to behave prosocially toward peers, and this was particularly observed in youth with moderate levels of rejection compared to those highly rejected by peers. Although statistically significant effects were found across the three empirical studies, it should be kept in mind that these effects were

small. The following sections summarize these results and their implications for studying prosocial development in adolescence.

6.1 Disentangling the Direction of Influence Between Peer Status and Prosocial Behaviors

Are peer acceptance/likeability and rejection/dislikeability antecedents or consequences of prosocial behaviors in adolescence? This question was answered in Study I using the two peer status variables as continuous measures and taking a bidirectional and longitudinal perspective with three waves of data. Regarding the prospective association between peer acceptance/likeability and prosocial behavior, the analysis revealed that prosocial behavior positively predicted future peer acceptance, while peer acceptance did not predict prosocial behavior over time. This finding contradicts some earlier studies suggesting that exceptional prosocial behavior (i.e., outstanding prosocial individuals) can, in some cases, lead to social rejection (e.g., Boileau et al., 2021). Instead, the results of this study indicate that engaging in positive actions like sharing, helping, and comforting others enhanced adolescents' peer acceptance/likeability. However, being accepted/liked did not lead to increased prosocial behavior. One possible explanation might be that well-liked and accepted adolescents may not feel the need to engage in more prosocial behavior because they are content with their current status, or they may already be highly prosocial, leaving little room for further increase (a potential ceiling effect). As other research has suggested, the behavior of accepted adolescents is driven by hedonic goals, which means that they are "fun-seeking" and tend to seek direct gratification, which may contribute to their acceptance but does not necessarily lead to an increase in prosocial behavior (Dijkstra et al., 2015).

Regarding the longitudinal associations between prosocial behavior and peer rejection/dislikeability, the study found evidence of a bidirectional relationship. Adolescents who engaged in less prosocial behavior were more likely to experience increased peer rejection. This negative prospective link between prosocial behavior and peer rejection was particularly strong from T2 to T3, a period characterized by the transition to a new academic year. Interestingly, while being rejected predicted a decrease in prosocial behavior from T1 to T2, it also predicted an increase in prosocial behavior from T2 to T3. This means that adolescents who were rejected at the end of one academic year (T2) increased their prosocial behavior at the beginning of the next academic year (T3). This behavior may be an attempt to change their peers' perceptions and reduce social aversion as a strategy to reconnect with them and form new friendships, which is also consistent with previous research suggesting that earlier rejection can lead to increased prosociality (e.g., DeWall & Richman, 2011).

In conclusion, the findings of this study support the idea that prosocial behavior can both positively predict acceptance/likeability and negatively predict rejection/dislikeability. However, the reverse effect—how peer status influences prosocial behavior—remains less clear. While acceptance did not significantly predict future prosocial behavior, rejection had a complex relationship: it negatively affected prosocial behavior within the same school year but positively influenced it as students transitioned to a new school year. The start of a new academic year may offer rejected adolescents a "fresh start," motivating them to engage in more prosocial behavior compared with other times of the year. This is particularly important as the beginning of an academic year might be an optimal time for interventions aimed at promoting positive peer interactions, especially among lower-status students who may be more receptive to behavioral change during this period. Finally, the low correlation between acceptance/likeability and rejection/dislikeability, and their differential associations with prosocial behavior, suggest that these two measures of peer status should not be viewed as merely opposite ends of a continuum (such as social preference) but rather as distinct experiences in adolescents' lives.

6.2   Peer Status Profiles, Stability, and Changes in Adolescents' Behaviors

Sociometric peer status measures have long been used to assess peer relationships and their connection to behavioral outcomes, such as aggression and prosocial behavior (Coie et al., 1982; Newcomb et al., 1993). However, the traditional method of categorizing individuals into status groups using arbitrary cutoff values has made it challenging to fully understand the link between these peer status profiles and social behaviors. Additionally, most studies use sociometric data from a single assessment point to predict behavioral changes, assuming that peer status remains stable throughout adolescence without testing this assumption. This approach may lead to inaccurate conclusions, as peer status can shift due to the dynamic nature of peer relationships (Cillessen & Rose, 2005). As a result, observed changes in social behaviors may not be attributable to baseline peer status but rather to shifts in peer status over time. A more accurate strategy would be to examine behavioral changes in adolescents whose peer status has remained stable across an entire academic year, allowing for a clearer understanding of the relationship between status and behavior.

To address these limitations, Study II adopted a person-oriented approach, exploring the emergence of peer status profiles based on peer acceptance and rejection. This approach used a technique that accounts for measurement error without relying on cutoff scores (LPA). The study also examined the stability of these profiles over one academic year (two time points) and their ability to predict

future changes in prosocial and aggressive behavior at T3 (LTA). LPA showed that four peer status profiles were identified: *moderately accepted* (high on like most; low on like least), *moderately rejected* (low on like most; high on like least), *controversial* (high on both like most and like least), and *highly rejected* (low on like most; very high on like least). These four profiles differed from the original five-profile classification proposed by Coie et al. (1982) and Newcomb et al. (1993), and the identification of two distinct rejected profiles—moderately rejected and highly rejected—expands this research by not revealing a group of neglected adolescents (neither liked nor disliked) or a group of average-status adolescents (scoring around the mean on both like and dislike). Instead, the moderately accepted group consisted of adolescents with average acceptance levels rather than those at the extremes, while only the highly rejected group exhibited a clear rejected/disliked profile. Specifically, the moderately accepted group comprised students with average acceptance and below-average rejection scores, whereas the moderately rejected group consisted of adolescents with average rejection levels and below-average acceptance scores. Concurrently, these four profiles differ in their associations with prosocial and aggressive behavior, as can be seen graphically in Figure S2 and S3 (see Appendices). The differences are clearer when comparing the moderately accepted and highly rejected, where the tendency for their behavioral correlates is completely opposite. That is, the moderately accepted was found to be highly prosocial and lowly aggressive, whereas the highly rejected was highly aggressive and lowly prosocial. Although the moderately accepted and controversial profiles exhibited higher levels of prosocial behavior at T2 and T3 compared to the two rejected profiles, the controversial group also displayed higher levels of aggressive behavior than both the accepted and moderately rejected groups. Tables S4 and S5 in the Appendices show the mean differences in prosocial and aggressive behaviors, respectively.

For those adolescents with a controversial status profile, namely, those who are highly liked and disliked by peers, the behavioral correlates evidenced in this thesis are consistent with previous studies suggesting that these youth clearly exhibit a combination of both prosocial and aggressive behaviors (Newcomb et al., 1993). Interestingly, their prosocial behaviors look similar to the adolescents in the moderately accepted profile, and they were as aggressive as the rejected youth (See Table S4 in the Appendices for statistical differences in prosocial behavior). However, in terms of statistical differences, they were significantly less prosocial than the moderately accepted youth, more prosocial than moderately rejected youths, and significantly more aggressive than the youth in the moderately accepted profile (see Table S5 in the Appendices for statistical differences in aggressive behavior).

LTA assessed the stability of these four profiles, taking into account a 6-month interval where adolescents remain in the same academic year. The results indicated

that the moderately accepted profile was the most stable, with a high probability of students remaining in this profile over a 6-month period (7th grade from T1 to T2). The highly rejected profile was the second most stable, followed by the controversial and moderately rejected groups. Contrary to our expectations, the differences in stability across these profiles were not statistically significant, likely due to the relatively small sample size. While there was a general tendency for adolescents to maintain the same profile over time, a notable proportion, particularly within the moderately rejected group, shifted to the accepted profile (35.8%). These findings suggest that peer status is not highly stable, even within the same school year, especially for young adolescents with moderate rejection levels.

Longitudinally, changes in prosocial and aggressive behavior varied across the four stable profiles. At the beginning of the new academic year, results showed that the moderately rejected profile was the only one that showed a significant increase in prosocial behavior during the transition to a new academic year. Conversely, the controversial and highly rejected groups were the only ones that exhibited a significant decrease in aggressive behavior from T2 to T3. The rise in prosocial behavior within the moderately rejected group aligns with previous studies suggesting that early rejection may motivate individuals to reconnect by displaying more prosocial behavior (e.g., DeWall & Richman, 2011). The transition to a new academic year might provide an ideal opportunity for such adolescents to pursue peer acceptance by increasing prosocial actions. Similarly, despite their historically high levels of aggression, highly rejected and controversial adolescents may also view the start of a new academic year as a chance to reduce aggressive behaviors toward others.

6.3   Prosocial Influence Based on Liking Ties

The final goal of this thesis was to investigate the power of liking ties to assess peer influence in prosocial behavior. Additionally, the study examined whether these effects were more likely under two specific conditions: 1) when the adolescents' liked peers were also generally well-liked by their classmates, and 2) when the adolescents themselves were not generally well-liked by their classmates. A network perspective was employed to address these objectives. In this research, a "liking tie" was used to connect peer classmates and measure prosocial influence—a relationship that had not been previously examined.

Results of this study showed that peer influence on prosocial behavior occurred within adolescents' liking networks, demonstrating that adolescents adjusted their prosocial behaviors to align with those of the classmates they nominated as liked. This finding supports the idea of contagion processes driven by liking nominations. These influences operated in two directions: *upward*, where adolescents become

more prosocial over time, and *downward*, where they become less prosocial over time, to match the behavior of their liked peers. The findings also revealed that those who were already moderately or highly prosocial increased their prosocial behaviors in response to the prosocial actions of their liked peers. However, consistent with previous research (Laninga-Wijnen et al., 2019), there was a stronger tendency for adolescents to become less prosocial when influenced by peers who displayed lower levels of prosocial behavior. Additionally, adolescents with lower likeability were more susceptible to the influence of the peers they liked than those who were highly liked. Susceptibility to peer influence among lower-status individuals has been observed in relation to undesirable behaviors, such as alcohol misuse (DeLay et al., 2022). This study expands on previous research by demonstrating that conformity to prosocial behaviors, can also be influenced by the (low)social status of the individual who is influenced.

The two directions of influence, namely, *upward* and *downward*, are interesting findings to discuss. The *upward* influence, on the one hand, highlights the influence of well-liked peers in shaping prosocial behavior. As can be seen in Table S4 (see Appendices), highly liked adolescents were perceived as significantly more prosocial than those with middle or low likeability, indicating that the prosocial influence of well-liked peers tends to drive upward behavior changes. This means that adolescents adopted the prosocial behaviors of peers they like, particularly when these peers are also highly valued by the broader group. This process is guided by social reinforcement models, where adolescents are more likely to repeat prosocial actions if they receive positive feedback and rewards, such as increased likeability, after performing them.

According to theories of instrumental learning, behaviors that lead to positive and rewarding outcomes are more likely to be adopted than those that do not (Cho & Hackel, 2022). Therefore, increases in prosocial behavior based on highly liked peers may be therefore motivated by certain *aspirations* to match the higher standards set by peers' behaviors (Snijders & Lomi, 2019). Adolescents who show more liking toward peers with higher levels of prosocial behavior—and consequently become more prosocial themselves—might anticipate rewards like more connections and friendship opportunities. Additionally, they might believe that imitating well-liked peers could enhance their own status (basking in reflected glory, Dijkstra et al., 2010). This aligns with research showing that the anticipation of social acceptance activates brain regions associated with reward processing and social cognition (Powers et al., 2013). If positive outcomes influence emotions and prosocial behavior (Cho & Hackel, 2022), this reinforcing cycle may encourage other adolescents to engage in similar behaviors, especially when the reinforcement comes from a valued peer (Bandura, 1999).

The *downward* influence, on the other hand, may be explained by mechanisms similar to the *upward* influence, such as the desire to affiliate with and receive positive reinforcement from liked peers or the satisfaction of being similar to them. Some researchers have suggested a normative decline in prosociality during adolescence (Carlo et al., 2007; Luengo Kanacri et al., 2013), and thus, refraining from prosocial behavior might be viewed as an active—and even valued—choice, just as much as engaging in it. Here, it is important to acknowledge that anyone can refrain from prosocial behavior, as being prosocial requires socio-cognitive skills, such as understanding others' perspectives and adjusting behavior to fit the situation. Thus, adolescents with lower levels of prosocial behavior may struggle to increase their prosociality if they lack these skills, making it difficult for their peers to notice and report any change. Another potential explanation for this downward influence relates to a statistical factor: since the adolescents in this study had average to high prosocial behavior scores, a downward shift in behavior was more likely than further increases.

6.4   A Chance to Be Kinder? Towards a more Comprehensive Way to Study Prosocial Behavior using Different Approaches

The findings of this thesis suggest that in order to foster prosocial behaviors and thus enhance positive relationships among young adolescents, the role of both accepted and rejected peers is crucial. Regarding peer acceptance, our results indicate that being highly accepted did not help develop prosocial behavior in an "upward" direction over time (see Study I and Study II). The positive association between the two variables was clear and consistent across the three time points, and for this reason, increases in prosociality were more difficult to find, likely due to a "ceiling" effect. Highly liked peers may be the ones already equipped with sufficient prosocial attitudes and social skills, and therefore, they do not have room for improvement. However, we could show that they played an essential role (as role models) for the rest of their classmates (less-liked peers), to the extent that these classmates also display certain levels of prosociality themselves. As Study III showed, the peers who were liked and accepted by the majority of their classmates (and were also highly prosocial) had a higher ability to positively influence others to behave more prosocially themselves.

With respect to peer rejection, we found in Study I that rejection was negatively associated with prosocial behavior between Time 1 and Time 2, as expected. Surprisingly, this negative relationship changed into a positive association between the end of the school year and the beginning of the new school year (transition from Time 2 and Time 3). This implies that the transition to a new academic year might

motivate rejected adolescents to reach peer acceptance by increasing prosocial actions. However, the person-oriented approach of Study II revealed that this positive change in prosocial behavior was inherent only for the moderately rejected group (compared to the accepted, highly rejected, and controversial groups). This finding indicates that the level of rejection plays an essential role in explaining increases in prosocial behavior. The predominance of variable-oriented studies in the literature may explain why a consistent positive association between peer rejection and aggressive behavior has been observed, potentially overlooking the differences between highly and moderately rejected adolescents. Indeed, the use of mean proportion scores of peer rejection in Study I somehow hides the different degrees of rejection that might affect their behaviors differently. Indeed, only Study II provided a clearer picture of what type of rejected adolescents are able to change their behavior by increasing prosociality when the rejection was low to moderate. These findings thus underscore the importance of recognizing that the consequences of peer rejection on social behavior can vary depending on the intensity of peer rejection. As this thesis suggests, adopting a person-oriented approach (without using arbitrary cut-off values) reveals that moderately and highly rejected youth have different experiences and behaviors in school.

The potential to improve prosocial behavior in students who are not (yet) highly rejected suggests they may still have some resources to grow. This aligns with previous findings that some rejected youth, motivated by a desire to reconnect with peers, engage in prosocial behavior to form friendships (Cuadrado et al., 2016; Maner et al., 2007). The transition to a new academic year offers moderately rejected adolescents an opportunity to build positive peer interactions through prosocial behavior, improving their relationships with classmates. Therefore, the longitudinal design utilized revealed chances to be kinder for adolescents with varying levels of peer rejection/dislikeability. In contrast, highly rejected peers, while maintaining the lowest levels of prosociality and the highest levels of aggression, still reduced their aggression during this transition. A possible explanation for this finding could be that highly rejected adolescents lack the social and personal skills to behave in a prosocial manner but still show some improvements in reducing their antisocial behavior. This reduction may also reflect a desire to improve peer relations despite limited opportunities for prosocial interactions due to their lack of friendships. Nevertheless, these findings underscore the need to address the varying experiences of rejection to better support adolescents in improving their social behaviors.

In sum, our results suggest that treating acceptance and rejection as a unidimensional construct or, in other words, as the opposite end of a continuum may overlook important implications for research and practice. Figure 2 illustrates peer acceptance and rejection as two distinct dimensions and their relationships with prosocial and aggressive behavior based on the findings of this thesis. Specifically,

these findings suggest that high acceptance and low rejection (right side of the figure), despite their independent dimensions, are the most favorable conditions to promote positive relationships, with a higher display of prosocial behavior and less aggressive behavior. Conversely, low acceptance and high rejection (left side of the figure) are the least favorable conditions for positive relationships, with more levels of aggression and less prosocial behavior compared to more accepted and less rejected, respectively. Highly accepted adolescents, while already high in both acceptance and prosocial behavior, may not experience further individual growth in prosociality; however, they have the potential to positively influence their classmates. Similarly, adolescents with low to moderate levels of rejection seem to have the potential for personal growth in prosocial behavior.
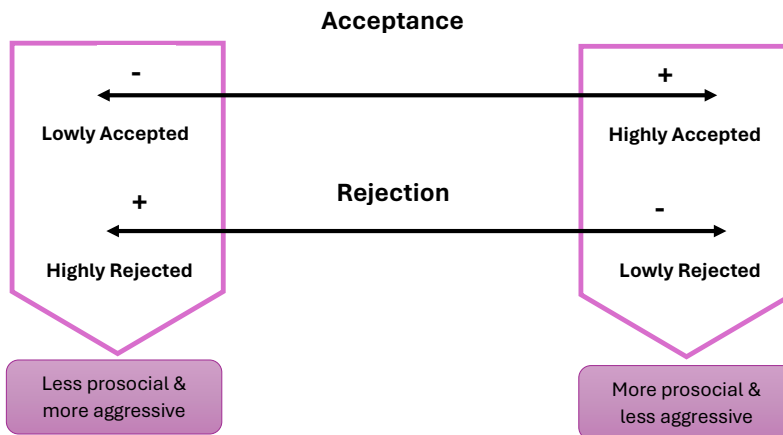
Figure 2. Degrees of likeability and dislikeability leading to more (or less) prosocial and aggressive behavior.

6.5   Strengths and Limitations

One of the major strengths of this thesis is the use of longitudinal designs. Three measurement points were utilized in the three empirical studies that comprised this thesis, allowing me to address different research questions in a sample of Chilean adolescents (ProCiviCo Intervention). Besides, the three empirical studies have methodological strengths that help to shed light on a complex phenomenon – prosocial behavior in adolescence – and extend our knowledge of prosocial development from three different perspectives: a variable-oriented (CLPM), a person-oriented (LPA/LTA), and a network-oriented perspective (SNA).

    Another strength is the use of peer ratings for measuring prosocial behavior. Unlike self-reports, peer-reported measures rely on multiple adolescents for

addressing prosocial responses, and are not influenced by socially desirable responding. Thus, they captured the strength of the reputation of being prosocial in a more reliable manner. The use of peer nominations to measure peer acceptance and rejection is also a strength of the three studies since it separates the examination of two different measures that were usually used as a composite score (the difference between peer acceptance and rejection). The weak correlations between these two variables for the whole sample and for both girls and boys support the idea that analyzing the two constructs separately is more appropriate than examining their composite score based on the standardized difference (Marks et al., 2021).

Despite these strengths, it is important to consider some limitations of the thesis. First, even though we recognized that peer nominations are a valuable and reliable measure to assess peer status, these nominations were limited to only three classmates, which prevented the selection of other peers who might also fit the description for acceptance and rejection. With more or unlimited nominations, some participants may have obtained higher acceptance or rejection scores, which could have affected further analysis (e.g., class membership or liking indegree score). However, it is worth noting that a comparison between limited and unlimited nominations has been suggested to yield comparable findings (Gommans & Cillessen, 2015).

Second, one of the four items used to measure prosocial behavior ("He/she tries to understand the point of view of others") was more closely aligned with empathic prosociality rather than actual behavior. However, we chose to retain this item, as Cronbach's alpha for the average prosocial behavior remained high, and its removal did not significantly impact the overall reliability of the measure. Another limitation of this thesis is its exclusive focus on individual differences, without considering classroom- or school-level differences. This is a limitation given the nested structure of the data—students within classrooms within schools— where the relationship between peer status and prosocial behavior may eventually vary more significantly between classrooms than between individual students. Consequently, not accounting for this higher-level variance in the analysis, potentially limited the understanding of how contextual factors influence these associations. Additionally, both the variable- and person-oriented approaches used in this research revealed that prosocial responses were observed in rejected adolescents. However, both studies utilized the same data set. Thus, these are not independent pieces of evidence but only differential approaches that call for replication by using other samples.

Finally, this thesis was unable to control for the overlap between peer acceptance/likeability (sociometric popularity) and perceived popularity, which measures salience and reputation. Although some research has highlighted that these two indicators of high status are distinct and have different implications for behavior (Parkhurst & Hopmeyer, 1998), there may still be some overlap between popularity

and likeability that could partially explain changes in prosocial behavior. However, we cannot be sure whether the current effects (e.g., social contagion) are explained by popularity rather than likeability.

6.6 Practical Implications

6.6.1 Social and Emotional Education: The Important Role of Highly Liked Peers

The results of this thesis may have important practical implications within school settings, particularly for educational interventions aiming to promote positive youth development, with a focus on developing prosocial behaviors among students along with reductions in aggressive behaviors. For instance, this thesis suggests that highly liked and prosocial adolescents (particularly those who are well-liked by the peer group in general) could be targeted in interventions whose main goal is promoting better peer relationships, fostering prosociality, and reducing aggressiveness. Researchers and school practitioners should keep in mind that it is not just about creating awareness of the negative and undesirable behaviors such as school bullying and aggressive behaviors, but more importantly, on having positive "role models" that can, in daily life interactions, show desirable conduct. Liked and highly liked peers have this potential by displaying mostly positive behaviors and less negative behaviors.

Targeting high-status peers in educational interventions has been demonstrated to be effective in diminishing maladaptive behaviors such as sexual risk behavior (see Pedlow & Carey, 2004) and school conflict (Paluck et al., 2016). Moreover, past research has shown that targeting highly connected students (e.g., social referent seeds) has been the most effective strategy in encouraging others to take a public stance against different forms of school conflict (Paluck et al., 2016). Interventions aiming to promote prosocial behaviors could indirectly improve prosocial attitudes and behaviors by effectively targeting a key source of influence that could work as a role model. Particularly, the findings of Study III highlight the potential of highly liked and prosocial adolescents to be involved in campaigns that aim to change peers' behavior to promote a more prosocial environment.

School-based social and emotional learning (SEL programs) also point in that direction by decreasing problematic behavior and enhancing students' socio-emotional competencies and positive behaviors (e.g., Durlak et al., 2011; Taylor et al., 2017). Among those socio-emotional skills, prosocial behavior has been identified as an important protective factor against various types of violence and aggressive behavior (see Eisenberg et al., 2015; Malti et al., 2011). Therefore, the results addressed in this thesis might contribute to supporting social-emotional

interventions in the direction of promoting a better school climate by redirecting their behavior in a more constructive and formative way.

Considering that Study II found a controversial peer status profile that is relatively high in prosocial and aggressive behavior, this thesis suggests that controversial youth might also be important to actively incorporate in social-emotional interventions as they have high levels of prosocial behavior that can be fostered and high levels of aggressive behavior that can be reduced.

Finally, teachers and school practitioners in schools might also consider a rearrangement of the classroom seats to promote more peer acceptance and likeability. Seating arrangements (e.g., pairing low-status youth with high-status peers) have already been tested in a randomized control trial, increasing peer acceptance and reducing externalizing behavior (van den Berg & Stoltz, 2018). Thus, pairing lowly liked or rejected youth with highly liked-prosocial peers within classrooms might help to both integrate them, on the one hand, and prevent the downward direction of prosociality, on the other hand, in daily-based interactions.

6.6.2 Cultural Aspects: Towards a More Prosocial Chilean Society

Chilean society is among the most unequal societies in the world in terms of socioeconomic status, and this aspect is also reflected in a segregated educational system. In the past, market-oriented reforms were drastically implemented in education (Valenzuela et al., 2014), resulting in a mix of fully private schools, public schools, and a hybrid model with both options, the subsidized schools. Despite this segregated system, all schools are subject to the same national standards for academic assessments. In addition, the extreme degrees of marketization of education in Chile have led to negative consequences, including heightened competition between schools (e.g., adopting a business-like approach), increased educational inequities (e.g., social and academic segregation), disparities in student achievement, and discriminatory practices (OECD, 2004).

While acknowledging the high inequality in the Chilean system, developing a culture in educational environments that promotes caring attitudes and prosocial behaviors toward others within and between school settings seems crucial and urgent. Although important efforts have been made to reduce aggressive and violent behaviors in schools (Varela et al., in press), positive youth development (PYD) theorists have emphasized the importance of fostering caring school communities by building adolescents' positive personal competencies and social skills (Luengo Kanacri et al., 2020; Taylor et al., 2017). This means that schools should strongly focus on strengthening positive values that help to build supportive contexts and provide opportunities for constructive student-context interactions. School-based

social and emotional learning (SEL) goes in that direction, providing a theoretical framework to promote social competencies, protective mechanisms for youth's positive adjustment, and reducing the risk factors (Durlak et al., 2011). However, as in any segregated context regarding socio-economic status, values such as individuality and competition are highlighted and emphasized, which poses a threat to the goals addressed from a PYD and SEL framework.

Therefore, the results of this thesis have important implications for developing prosocial behaviors and positive attitudes and reducing aggressive behavior among Chilean adolescents. First, by considering the degree to which adolescents are liked/accepted or disliked/rejected as important attributes in the peer ecology of Chilean adolescents, it was possible to explain changes associated with the development of prosocial behavior of adolescents, and both practitioners and researcher who aims to promote prosociality and positive relationships within schools should be aware of it. For instance, the changes in adolescents' behavior into a positive direction were predicted from T2 to T3 in both Study I and Study II, which highlights the beginning of a new academic year as a key part of the school year where adolescents changed their behavior in a more desirable manner. Specifically, using the absolute mean score for prosocial behaviors and peer rejection, the results of a study I suggested that even though peer rejection was negatively and bi-directionally associated with prosocial behaviors within a school year, it predicted increases in prosocial behavior after the summer holidays (measured at T3). These increases in prosociality were also found in Study II, where prosocial responses increased for rejected adolescents. However, the use of a person-oriented approach in this study allowed to identify that only the moderately rejected students – compared to highly rejected ones – were able to increase in prosocial behavior. Likewise, the highly rejected (and lowly liked) and controversial status profiles (liked and disliked) significantly changed their behavior by reducing their aggressiveness, which can also be seen as contributing to a desirable outcome, with the possibility of reinforcing their behavior in a desirable way.

These results underscore the beginning of a new academic year as a crucial opportunity for promoting, teaching, and reinforcing social and emotional competencies to guide adolescents toward more positive behaviors. This "fresh start" is especially relevant given the growing diversity in Chilean classrooms, where building connections with classmates is increasingly essential. As research has shown, the need to be connected, liked, and accepted is a fundamental aspect of human development (Baumeister & Leary, 1995). Thus, fostering prosocial behavior can play a key role in helping students re-establish meaningful connections with their peers.

It should be noted that the participating schools mostly belonged to the middle and low-middle class, a combination of public schools and subsidized schools. This

means that they were more similar than dissimilar in terms of SES, and there were no significant differences in prosocial behavior among students belonging to different SES. Finally, considering that previous studies conducted with Chilean adolescents have addressed similar patterns in terms of peers' development compared to those in Western societies (e.g., Europe and the USA), the results of this thesis suggest that, despite recognizing the particularities of the Chilean society as a special case for studying and fostering prosocial behaviors, these results might also reflect similar patterns compared to western societies that call for future replicational studies.

6.7   Future Research

This thesis offers important suggestions for future research on prosocial behavior in adolescents, particularly when incorporating peer status—acceptance/likeability and rejection/dislikeability—either as a predictor or outcome. Both Study I and Study II highlight the start of a new academic year as a promising context for promoting positive interactions by increasing prosocial behavior and reducing aggressiveness among students. However, Study I focused only on between-person associations. Future research should incorporate within-person associations using a random intercept cross-lagged panel model (RI-CLPM) to explore how increases in an adolescent's acceptance (relative to their average level of acceptance) might lead to more prosocial behavior. Additionally, future studies should account for the nested structure of schools and classrooms to assess potential differences in the relationship between status and prosocial behavior, as there may be between-school variance that can be accounted for in a variable-oriented approach. This is particularly relevant given the cultural differences and levels of segregation within Chilean society, which may impact school communities and lead to varying effects on the development of prosocial behavior.

The results of Study II revealed that peer status is not necessarily stable during adolescence, with some adolescents changing their status over the course of one academic year. While the primary aim of the study was to predict changes in prosocial and aggressive behavior based on stable peer status, these findings suggest new directions for future research. Specifically, adolescents with moderate —not high—levels of rejection had the highest likelihood (35.8%) of transitioning to an accepted status, thereby improving their rejection situation. This dynamism in peer status offers an opportunity to explore the factors that allowed them to *leave* the rejected status and *join* the accepted status, which could offer valuable insights for predicting both prosocial and aggressive behavior.

Finally, it is important to note that peer rejection in this study was based on nominations from classmates, a common method in this field. Future research should

investigate how self-perceived rejection is linked to subsequent behavior, as existing literature indicates that the impact on aggressive behavior can differ based on adolescents' own perceptions of rejection (Malamut et al., 2022). Additionally, two specific areas that warrant further exploration are outlined below: examining prosocial norms and conducting experimental studies to investigate the relationship between prosocial behaviors and peer status.

6.7.1   Potential for Studying Prosocial Norms and Coexistence Within Classrooms

How can stressing the salience (prosocial) behavior of highly liked peers account for better relationships within classroom contexts? Extensive literature on peer norms has suggested the role of high-status peers in setting behavioral norms within classrooms (Dijkstra et al., 2008; Laninga-Wijnen, 2019). This effect has been conceptualized as peer norm salience, that is, the extent to which high-status peers behave in a given way, measured as the within-classroom correlation between a specific behavior (e.g., bullying) and peer-rated status (e.g., popularity) (Dijkstra & Gest, 2015). The evidence has suggested that the effects of a salience-based norm are stronger than the aggregated average score for the behavior of all peers (descriptive norm), which means that the association between high-status and a given behavior, has a stronger influence on an adolescent's actions, compared to the typical behavior of all peers.

This thesis suggests the potential for studying prosocial norms in classrooms based on the role of highly liked and prosocial peers. As Study III suggests, well-liked adolescents influence prosocial behavior when many students nominate them as liked (social reinforcement). This means that their high status, combined with their high levels of prosociality, have the potential to explain the development of prosocial behavior at a higher level: the classroom level. Therefore, when the goal is to promote a better social climate in classrooms by increasing prosocial behaviors among students, the potential positive norm of well-liked peers (as prosocial role models) should not be ignored, and further research is needed to investigate this power. Additionally, this could eventually work for both perceived popular (identified by nominations for "the most popular" classmates) and likable peers to the extent that these two types of social status are prosocial and well-known among peers. As another study showed, prosocial-popular peers can also be role models for setting prosocial norms in classrooms as long as they do not engage in aggressive behavior (Laninga-Wijnen et al., 2019). Therefore, peer norm salience based on well-liked and prosocial peers could be an alternative theoretical and methodological approach to weigh the impact of well-liked adolescents in setting prosocial norms in the classrooms.

6.7.2   Experimental Designs Using the Status of Peers

Previous experimental investigations have examined the effects of peer status on behaviors, such as reducing school conflict through interventions involving "social referent" peers (Paluck et al., 2019) and fostering prosocial behaviors using high-status confederates (Choukas-Bradley et al., 2015). Study III further highlights the significant role that well-liked peers play in promoting prosocial behavior among their peers. Recent studies have revealed both similarities and differences between high-status peers identified as the most popular in a class (e.g., popularity) and those who are most liked (e.g., likability) (Laursen et al., 2023; van den Berg et al., 2020). Although some efforts have been made to combine both perceived and sociometric popularity into a single framework (van den Berg et al., 2015), the similarities between popularity and likability to predict prosocial behaviors remain still underexplored. This thesis suggests that experimental designs could enhance our understanding of how these two high-status peers could influence prosocial behaviors. Key questions for future research include: What specific attributes within each status profile make peers more influential in promoting prosocial behavior? What factors contribute to the effectiveness of perceived popular peers in fostering prosocial behaviors? Additionally, it would be valuable to delve deeper into the motivations behind behaviors that help to enhance peer status. Future research could explore whether specific attributes associated with popular adolescents (e.g., reputation, being "cool") and liked adolescents (e.g., being kind and fun) are significant predictors (or not) of prosocial behavior development based on their high status.

Finally, considering that the emphasis of this thesis is on encouraging desirable behaviors such as prosociality, an experimental design (or a vignette study) could be used to test whether these "desirable behaviors" are indeed more socially rewarding than other behaviors. As this research has shown, adolescents who exhibit prosocial behavior tend to be more liked and accepted over time. However, it is not clear whether adolescents aimed to reach more acceptance by behaving more prosocial, or whether this is a natural effect of being kind. It would also be interesting to investigate whether ceasing aggressive behavior, particularly for those who are not necessarily popular, might also lead to social rewards.

6.8   Conclusion

This thesis highlights the dynamic nature of the longitudinal association between peer status –acceptance/likability and rejection/dislikeability– and prosocial behavior in young adolescents. By employing diverse methodological approaches—variable-, person-, and network-oriented—this research provides a more nuanced understanding of prosocial development and highlights key opportunities for

positive behavioral change. For instance, greater chances to be kinder were observed among youth with moderate levels of rejection, who exhibited greater potential for prosocial growth at the beginning of 8th grade (Studies I and II). Similarly, even when no increases in prosocial behavior were found, highly rejected (and low in acceptance) and controversial (both highly liked and highly rejected) adolescents showed potential for improvement by reducing their aggressive behaviors during this transitional period (Study II). Finally, chances to be kinder were found among young adolescents who increased their prosocial behavior to conform with that of their liked peers, the ones who were also most liked by the whole group (Study III). Highly liked and accepted peers were consistently prosocial both concurrently and longitudinally, highlighting the important role they play in promoting positive social dynamics, particularly in classrooms where accepted and rejected peers coexist. Highly liked and accepted peers have the potential to model key prosocial behaviors—such as helping, caring, sharing, and comforting—and to strengthen connections within the peer network, especially among those with low to moderate levels of rejection. Encouraging interactions between highly accepted and rejected peers offers a promising avenue for fostering positive relationships and providing rejected youth with valuable exposure to prosocial behaviors. These interactions not only help enhance the social status and connections of rejected adolescents but also offer them opportunities to develop and reinforce essential social skills. In this way, highly accepted peers can serve as role models who inspire and guide their peers in need of social and emotional support, ultimately creating more inclusive and supportive classroom environments.

Abbreviations

$CLPM_1$	Cross-Lagged Panel Model
LPA_2	Latent Profile Analysis
LTA_3	Latent Transition Analysis
SCT_4	Social Cognitive Theory
SEL_5	Social Emotional Learning
SNA_6	Social Network Analysis
PB_7	Prosocial Behavior
PYD_8	Positive Youth Development

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Appendices

Table S1. Correlations among the main variables of this thesis across 3 time points.

	1	2	3	4	5	6	7	8	9	10	11	12
1. Prosociality T1												
2. Prosociality T2	.83**											
3. Prosociality T3	.80**	.86**										
4. Aggression T1	-.44**	-.36**	-.30**									
5. Aggression T2	-.39**	-.41**	-.31**	.89**								
6. Aggression T3	-.36**	-.32**	-.34**	.88**	.89**							
7. Acceptance/Likeability T1	.47**	.41**	.37**	-.24**	-.23**	-.14*						
8. Acceptance/Likeability T2	.42**	.47**	.43**	-.25**	-.28**	-.18**	.56**					
9. Acceptance/Likeability T3	.39**	.38**	.45**	-.25**	-.23**	-.23**	.52**	.55**				
10. Rejection/Dislikeability T1	-.48**	-.48**	-.38**	.57**	.53**	.50**	-.11*	-.12*	-.14*			
11. Rejection/ Dislikeability T2	-.46**	-.53**	-.41**	.51**	.55**	.53**	-.14**	-.11	-.13*	.72**		
12. Rejection/ Dislikeability T3	-.45**	-.54**	-.57**	.39**	.44**	.52**	-.14*	-.16**	-.09	.59**	.71**	

Notes: * Correlations are significant at the 0.05 level.
Notes: ** Correlations are significant at the 0.01 level.
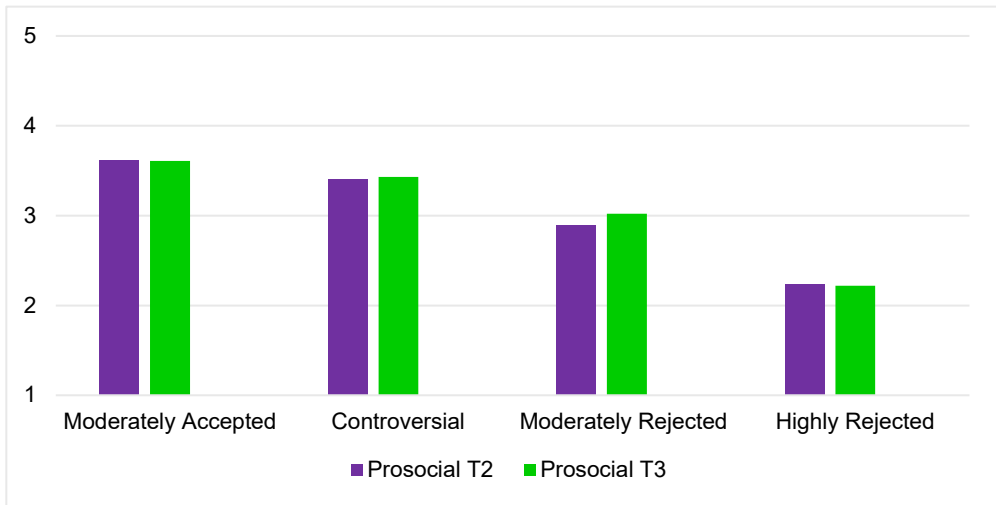
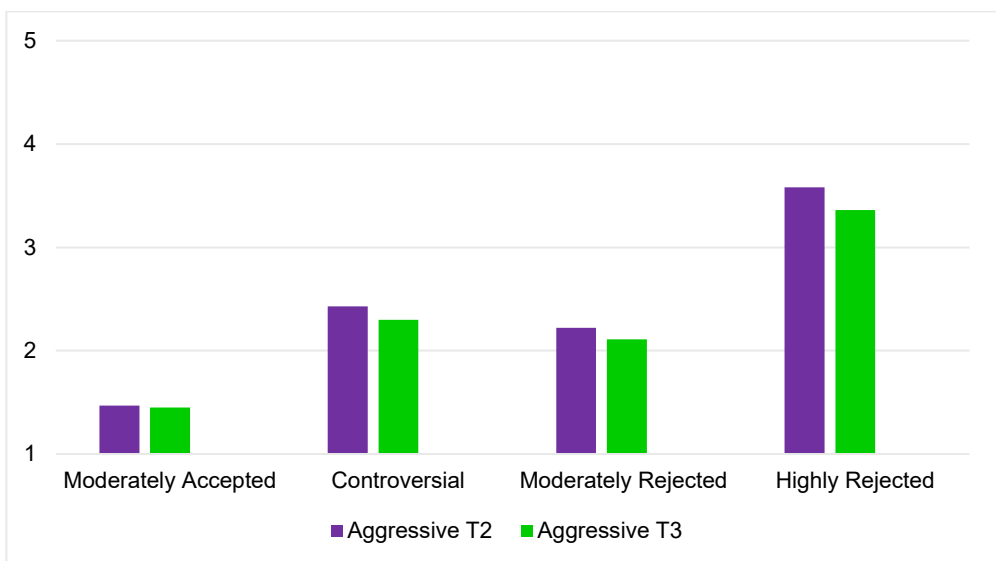**Figure S2.** Differences in Prosocial Behavior T2-T3 based on Stable Peer Status Profiles.

Figure S3. Differences in Aggressive Behavior T2-T3 based on Stable Peer Status Profiles.

Table S4. Mean Differences between Stable Peer Status Profiles in **Prosocial Behavior** at Time 3.

Transition	Reference Profile at Time 1	Time 3		Comparison Profile at Time 1								
		M	SD	Moderated Rejected			Controversial			Highly Rejected		
				Diff	SE	p	Diff	SE	p	Diff	SE	p
Stayer (n = 149)	Mod. Accepted	3.61	0.34	**-0.58**	**0.09**	**<.001**	-0.17	0.09	.055	**-1.39**	**0.14**	**<.001**
	Mod. Rejected	3.02	0.24				**0.41**	**0.08**	**<.001**	**-0.81**	**0.15**	**<.001**
	Controversial	3.43	0.21							**-1.22**	**0.14**	**<.001**
	High Rejected	2.22	0.25									

Note. Diff = Mean difference of comparison profile at Time 1 minus reference profile at Time 1

Table S5. Mean Differences between Stable Peer Status Profiles in **Aggressive Behavior** at Time 3.

Transition	Reference Profile at Time 1	Time 3		Comparison Profile at Time 1								
		M	SD	Moderately Rejected			Controversial			Highly Rejected		
				Diff	SE	p	Diff	SE	p	Diff	SE	p
Stayer (n = 149)	Mod. Accepted	1.45	0.13	**0.67**	**0.07**	**<.001**	**0.85**	**0.08**	**<.001**	**1.91**	**0.04**	**<.001**
	Mod. Rejected	2.11	0.22				0.19	0.10	.059	**1.25**	**0.08**	**<.001**
	Controversial	2.30	0.23							**1.06**	**0.09**	**<.001**
	High Rejected	3.36	0.06									

Note. Diff = Mean difference of comparison profile at Time 1 minus reference profile at Time 1

Table S6. Supplementary Analysis – Post Hoc Comparisons in **Prosocial Behavior** Grouped by Peer Status Across 3 Time Points.

Comparison HIGH STATUS VS LOW/MIDDLE STATUS		Mean Difference [CI lower-upper bound]	SE	ANOVA F (df)	Bonferroni p-value
High Likeability T1	Low LikeabilityT1	0.59 [0.41–0.76]	0.07	31.78 (2)	<.001**
	Middle Likeability T1	0.19 [0.04–0.35]	0.06		.009*
High Likeability T2	Low LikeabilityT2	0.57 [0.40–0.74]	0.07	33.77 (2)	<.001**
	Middle Likeability T2	0.34 [0.19–0.49]	0.06		<.001**
High Likeability T3	Low LikeabilityT3	0.48 [0.32–0.64]	0.07	27.72 (2)	<.001**
	Middle Likeability T3	0.29 [0.14–0.44]	0.06		<.001**
High Rejection T1	Low Rejection T1	-0.47 [-0.64–-0.30]	0.07	23.38 (2)	<.001**
	Middle Rejection T1	-0.14 [-0.30–-0.03]	0.07		.150
High Rejection T2	Low Rejection T2	-0.53 [-0.69–-0.37]	0.06	34.70 (2)	<.001**
	Middle Rejection T2	-0.33 [-0.49–-0.17]	0.06		<.001**
High Rejection T3	Low Rejection T3	-0.54 [-0.68/-0.40]	0.06	47.93 (2)	<.001**
	Middle Rejection T3	-0.41 [-0.57/-0.26]	0.06		<.001**

Note: Status groups were binned using the following cutting points: Likeability T1=Low (<=0.024), Middle (0.025-0.071), and High (0.072+); Likeability T2= Low (<=0.023), Middle (0.024-0.068), and High (0.069+); Likeability T3= Low (<=0.023), Middle (0.024-0.059), and High (0.060+); Rejection T1= Low (<=0.001), Middle (0.001-0.049), and High (0.050+); Rejection T2= Low (<=0.001), Middle (0.001-0.048), and High (0.049+); Rejection T3= Low (<=0.001), Middle (0.001-0.047), and High (0.048+).
* The mean difference is significant at the 0.05 level.
** The mean difference is significant at the 0.01 level.

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