Latent Profiles of Students at Social-Emotional Risk:

Heterogeneity Among Peer-Rejected Students in Early Elementary School

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Abstract

A latent profile analysis was applied to explore heterogeneity in the social and classroom behaviors of 224 peer-rejected elementary school students (56% White, 68% male, Grades 1 – 4, M_{age} = 8.1 years). Profile indicators included teacher ratings of social skills and problem behaviors on the Social Skills Improvement System (SSIS) and peer nominations of prosocial, aggressive, and withdrawn behavior. Four profiles emerged. Two profiles were characterized by elevated externalizing problems by peer and teacher report, one with multiple co-occuring difficulties (multi-problem, 21% of the sample) and one characterized primarily by aggression (domineering, 32% of the sample). Another profile was characterized by deficits in social skills and viewed by teachers as internalizing and disruptive (internalizing-dysregulated, 26% of the sample.) The final profile was non-distinct on teacher ratings but defined by low rates of prosocial behavior by peers (teacher preferred, 21% of the sample.) Group comparisons revealed that students in the multiproblem and internalizing-dysregulated profile classes had lower-quality relationships with teachers and more academic difficulties than students in the other two profile classes. The findings are discussed in terms of implications for identifying peer-rejected students for Tier 2 interventions and tailoring those interventions to enhance impact.

Latent Profiles of Students at Social-Emotional Risk: Heterogeneity Among Peer-Rejected Students in Early Elementary School

Ten to fifteen percent of elementary school students experience peer rejection, making school highly stressful, and contributing to emotional distress, internalizing and externalizing behavior problems, school disengagement, and elevated risk for long-term maladjustment (Ladd, 2006; Ve´ronneau et al., 2010). Accumulating evidence suggests that early school-based intervention can improve children's social adjustment and promote more positive outcomes for peer-rejected children (Gresham et al., 2006), fueling efforts to identify and support vulnerable children using multi-tiered systems of support (MTSS; Rodriguez et al., 2016). MTSS is an umbrella term that can encompass both academic and social-emotional supports and emphasizes whole-child, whole-school, team-based decision making with evidence-based supports at all levels. At the Tier 1 (universal) level, schools implement whole school approaches such as school-wide positive behavior support or social-emotional learning (SEL) programs to support the social, emotional, and behavioral adjustment of all students. At Tier 2, MTSS models advocate the identification of students who require more intensive support to improve social and behavioral adjustment beyond that provided by Tier 1 universal programming.

Social skills training is frequently used as a Tier 2 intervention, second in prevalence only to interventions that target disruptive behavior (Majeika et al., 2020; Rodriguez et al., 2016). However, researchers have noted that the classroom teachers who play a key role in identifying students for Tier 2 intervention may emphasize selective dimensions of student social difficulties that affect their classroom adjustment and miss other features that weigh heavily in peer evaluations (Hoffman et al., 2015) thereby limiting the effective tailoring of social skills training (Kern et al., 2020; Majeika et al., 2020). Peer rejected children are heterogeneous in

terms of their behavioral characteristics (Ladd, 2006) which complicates the assessment challenge. Understanding the diverse characteristics that characterize peer-rejected students from both teacher and peer perspectives may assist schools in more effectively tailoring Tier 2 interventions in ways that address the multi-faceted needs of these students. The present study addressed this need by applying latent profile analyses to teacher and peer reports of the behaviors of a large sample of peer-rejected elementary school students.

Importance of Intervening to Reduce Peer Rejection and Improve Peer Relations

Children who are chronically rejected by their peers (named by many classmates as "liked least" and few as "liked most") demonstrate heightened behavior problems (Sturaro et al., 2011), emotional problems (Ladd, 2006), and academic difficulties (Fite et al., 2013). Many lack close friends and suffer social exclusion or victimization, increasing their risk for social-emotional adjustment difficulties (He et al., 2018). Long-term studies reveal stability of peer rejection over time and associations with negative outcomes in adolescence and adulthood, including elevated rates of school drop-out, unemployment, economic hardship, antisocial activity, and physical and mental health problems (Almquista & Brännströmb, 2014; Mrug et al., 2012; Ve´ronneau et al., 2010). Although peer rejection typically reflects child behaviors or characteristics that classmates find aversive, rejection serves as a predictor, as well as a consequence of, behavior problems (Ladd, 2006). Multiple studies have documented longitudinal pathways in which peer rejection impedes growth in prosocial skills and increases subsequent risk for escalating externalizing and internalizing problems, highlighting the need for early detection and prevention (Haselager et al., 2002; Sturaro et al., 2011; Van Lier & Koot, 2010). Teachers can influence the course of peer relations in positive ways when they are attuned to peer dynamics and provide support for struggling students (Hamm et al., 2011), but teachers can

also increase student maladjustment when they develop conflictual student relationships that escalate peer dislike over time (DeLaet et al., 2014; Hughes & Im, 2016). Understanding both peer and teacher perceptions of peer-rejected children may thus be important for Tier 2 intervention design.

Identifying Peer-rejected Children for Tier 2 Intervention

A central feature of MTSS models is the use of systematic assessment and referral processes to identify students in need of Tier 2 interventions (Mitchell et al., 2011). The goal is to address social maladjustment early, to provide the intervention necessary to build social skills, reduce problem behaviors, and enhance peer relationships. Ideally, assessment processes identify the children most in need of intervention and guide the tailoring of intervention to meet each child's needs (Majeika et al., 2020).

Teachers are typically a key source of information for determining Tier 2 intervention needs, but teacher ratings have limitations that weaken their utility for identifying and characterizing social-emotional maladjustment. Teachers are most likely to identify children exhibiting high rates of externalizing problems for services; they tend to under-identify high-risk children characterized by internalizing problems who are more often overlooked or undetected by teachers (Bradshaw et al., 2008). "Squeaky wheels" or students who disrupt classroom activities and instruction may frequently receive services over those who may have similar levels of risk but are largely not disruptive to educational routines. Teachers may have a difficult time being attuned to those children who withdraw from the social milieu (Rubin et al., 2009).

Similarly, teachers often have difficulties accurately identifying peer-rejected children (Ahn & Rodkin, 2014; Hoffman et al., 2015). Studies document that teacher ratings are only moderately correlated with peer sociometric nominations. For example, McKown and colleagues

(2011) found that the correlation between peer social preference and teacher estimates of social preference was only $r = .51$. Similarly, studies find relatively small correlations between peer social preference and teacher ratings of children's social skills and problem behaviors (*r*s ranging from -.31 to -.37, McKown et al., 2011; Ogden, 2013). Longitudinal studies document the important role that teachers play in shaping student's peer relations (Hughes & Im, 2016) but also suggest that peer ratings are stronger predictors of later social maladaptation than are teacher ratings, creating a need to improve on the screening for and assessment of peer-rejected children beyond the typical use of teacher ratings alone (Clemans et al., 2014).

Approaches to Characterizing Risk

Adequately characterizing the risk of peer-rejected children likely requires a person-centered rather than a variable-centered approach, given evidence of the multiple and heterogeneous child characteristics associated with rejection. Person-oriented approaches such as cluster analyses and latent profile analyses consider how sets of characteristics may exist within or among groups of children with the goal of identifying distinct subgroups within a population (DiStefano & Kamphaus, 2006).

Consistent with a person-centered approach, prior research has identified several combinations of risk factors that increase risk for peer rejection. For example, cluster analyses suggest that about half of the children who are rejected in elementary school are characterized by high rates of externalizing problems (aggression, impulsivity, disruptive behavior) with low rates of prosocial behavior (Cillessen et al., 1992; French, 1988; Waas, 2006). Some studies have identified another smaller subgroup with elevated social withdrawal, described as shy and passive with poor social skills (Bierman et al., 1993; Cillessen et al., 1992; French, 1990). A subgroup that is non-distinct behaviorally also emerges frequently. An interview study conducted

by Bierman and colleagues (1993) suggests that rejected children who appear behaviorally non-distinct to teachers may often be viewed as atypical and insensitive by peers, described as "oddballs" with peculiar or annoying habits.

Since those cluster analytic studies were conducted, methodological advances have facilitated the use of latent profile analyses (LPA) for person-centered approaches, with several advantages over the cluster analytic approach. LPA uses statistical modeling with probabilistic weighting to identify subgroups who are similar on latent variables representing underlying subgroups within a population (Muthén & Muthén, 2017). As noted by DiStefano and Kamphaus (2006), LPA also provides statistical indices to support the selection of subpopulations that are lacking in cluster analyses, providing a more objective foundation for identified subgroups. The present study utilized LPA to better understand subgroups within a large sample of peer-rejected elementary school students.

Present Study

Driven by the need for more information to guide the identification and description of peer-rejected students for Tier 2 interventions, the present investigation had two research aims. The first aim was to identify and describe meaningful subgroups of students within a sample of children identified as rejected in peer sociometric nominations. Using an approach that included both teacher ratings and peer nominations, the study sought to identify the distinctive features and social and behavioral risk factors that defined the different latent profiles that emerged. Peer and teacher perspectives were considered together, recognizing their intertwined influences on student social adjustment and the corresponding value of a multifaceted approach to characterizing the behavioral challenges of peer-rejected students in need of Tier 2 supports. The second aim was to understand the associated school problems experienced by children in

different profile classes, including difficulties in student-teacher relationships and academic functioning.

Method

Procedures

All study procedures followed the American Psychological Association standards for the ethical conduct of research and had the approval of the university IRB. Sociometric surveys were used to identify peer-rejected children who were invited to participate in the study, as described below. Additional measures were then collected to characterize their social behaviors, quality of relationships with teachers and peers, and academic engagement.

Screening and Recruitment Process

Each year for four consecutive years, all students in participating classrooms were invited to participate in a sociometric survey which was used to identify peer-rejected children. Parents or children could opt out, but relatively few did; the mean classroom participation rate was 87% (range = 65% to 100%), well above the 50% minimum recommended by McKown et al. (2011). After schools opted into the study, classrooms were randomly selected each year to participate, and teacher consent was pursued. Across the four years of the study, only two teachers opted not to participate and their classrooms were not included. The survey was computer administered in a group setting using the SELWeb software (McKown et al., 2016). Children listened to questions via headphones and responded individually. Each item presented them with a list of the students in their classroom (first names and last initials only). They were prompted verbally to click the names of children in their class who fit a particular description and they could make unlimited choices for each item. Children were asked to identify classmates the “liked most” and those they “liked least”. “Like least” nominations were standardized within class and subtracted

from standardized “like most” nominations to create social preference scores. Scores were calculated into proportions (the number of nominations received divided by the number of raters) and then standardized within each classroom. Names of all students in the classroom appeared on the roster for sociometric nominations, but those who opted out did not complete the survey themselves. Peer nomination data were collected in the fall (late September to middle of October) starting six weeks after the start of school.

To recruit the target sample of peer-rejected children, students were rank ordered by social preference score within each classroom. Recruitment proceeded by contacting parents to attain full informed consent for study participation, starting with the child with the lowest social preference score and proceeding until one child was recruited from each classroom. In cases in which two children had equivalent social preference scores (e.g., within .25 standard deviation), a 3-item teacher screen (child social skills, peer relations, behavior problems, each rated on a 3-point scale from “no concerns” to “significant concerns”) was used to determine rank order. Students were excluded from eligibility for the study if they had a special education classroom placement outside of the regular classroom for more than 50% of the school day or had limited English language skills. Most participants in the final sample had the lowest (75%) or second lowest (22%) social preference score in their classroom. A continuous social preference score was used to identify children based on evidence of superior reliability when compared with a categorical approach (Jiang & Cillessen, 2005), but only almost all children (98%) met all of the categorical criteria for rejected status (e.g., standardized social preference score less than -1, like most nominations less than 0, and like least nominations more than 0).

Additional Data Collection

Following parent informed consent for study participation, teachers were sent rating

forms through Qualtrics to describe the social behavior of these students and their relationships with them (measures described below). Parent consent enabled the linking of the peer nominations collected about these children with teacher data for study use.

Participants

Selected participants included 224 peer-rejected elementary school students (grades 1 – 4; 57% White, 17% Black, 20% Latinx, 5% multiracial; 68% male). Children in the sample had a mean social preference score of -1.79 (SD = 0.44, range = -3.07 to -0.96). They were distributed across grade levels (23% in first grade, 39% in second grade, 21% in third grade, 17% in fourth grade) and were, on average, 8.1 years old (SD = 1.1, range = 6.2 to 10.9 years).

Measures

Teacher ratings and peer nominations describing student social behavior were used to identify profiles of rejected children. Profile classes were then compared on the quality of their relationships with teachers (rated by teachers), the quality of their relationships with peers (rated by teachers and peers), and their academic functioning (rated by teachers).

Social Behavior Ratings

Profiles were defined by teacher ratings and peer nominations describing student social behavior. Teachers rated social skills and problem behaviors using the Social Skills Improvement System (SSIS, Gresham & Elliott, 2008). Items were rated on a 4-point scale (*never* = 0 to *almost always* = 3). Social skill scales tapped communication skills (e.g., takes turns in conversation, makes eye contact when talking; 7 items; $\alpha = .71$), empathy (e.g., shows concern for others, tries to comfort others; 6 items; $\alpha = .90$), social engagement (e.g., interacts well with other children, participates in games or group activities; 7 items; $\alpha = .83$), cooperation (e.g., follows directions, follows classroom rules; 6 items; $\alpha = .84$), responsibility (e.g., acts

responsibly when with others, takes care when using other people's things; 6 items; α = .85), self-control (e.g., stays calm when teased, makes a compromise during conflict; 7 items; α = .91), and assertion (e.g., expresses feelings when wronged, says when there is a problem; 7 items; α = .71). Problem behaviors included internalizing (e.g., withdraws from others, acts sad or depressed; 7 items; α = .79) and externalizing (e.g., bullies others, fights with others; 12 items; α = .91).

Peer nominations of prosocial, withdrawn, and aggressive social behavior were collected using the SELweb platform, as described above. Nominations for "is friendly and nice to everyone" and "cooperates, helps, shares, and takes turns" were averaged to reflect prosocial behavior. Nominations for "plays alone, doesn't have anyone to play with" and "is shy and seems sad" were averaged to reflect social withdrawal. Nominations for "starts fights, does mean things, or teases others" and "says mean things about others" were averaged to reflect aggressive behavior. In each case, nominations were standardized within classroom.

Interpersonal Relationships

Profile classes based on social behavioral descriptions were compared on the quality of relationships children had with teachers and peers. Teachers provided ratings of student-teacher relationship quality using an abbreviated version of the Student-Teacher Relationship Scale (STRS; Pianta, 2001). This measure included s subscale reflecting student-teacher closeness (e.g., I share an affectionate, warm relationship with this child, this child openly shares his/her feelings and experiences with me; 8 items; α = .83), and a subscale reflecting student-teacher conflict (e.g., this child and I always seem to be struggling with each other, dealing with this child drains my energy; 8 items; α = .89). Items were rated on a 5-point scale (*definitely does not apply* to *definitely applies*). Total subscale scores were analyzed.

Teachers also rated the quality of peer relations with the Child Behavior Scale (Ladd & Profilet, 1996). Using a 6-point scale (*almost never* = 1 to *almost always* = 6), they rated 6 items describing positive peer relations (e.g, liked, has friends, frequently chosen as a playmate) and negative peer relations (disliked, left out, teased and picked on). Positive items were reverse-coded, so that the summed total represented problematic peer relations ($\alpha = .87$).

Peer nominations of "like most" and "like least" as described above were also used to compare profile classes on dimensions of peer relationships. Teacher ratings of student peer relation problems were significantly, but only modestly, correlated with these peer nominations, $r = -.21$ with like most and $r = .27$ with like least.

Academic Functioning

Profile classes were also compared on their academic functioning, assessed with three teacher-rating scales. Teachers completed the 9-item learning behaviors scale of the School Readiness Questionnaire (Bierman et al., 2008), rating each item on a 6-point scale (from *strongly disagree* to *strongly agree*). Items described focused engagement in learning activities (e.g., this child is enthusiastic about learning things, this child listens carefully to teacher's instructions and directions, $\alpha = .92$). Teachers also rated learning enablers, completing the academic motivation and engagement subscales of the Academic Competence Evaluation Scales (DiPerna & Elliott, 1999). The 10 items comprising these subscales were rated on a 5-point scale (*far below* to *far above grade level*) and tapped motivation (e.g., is motivated to learn, persists when task is difficult) and learning engagement (e.g., speaks in class when called upon, participates in class discussions). Items were averaged ($\alpha = .94$). Finally, teachers completed the academic performance items from the SSIS (Gresham & Elliott, 2008), which included 7 items rating the child's academic performance in areas of reading, math, and overall academic

performance on a 5-point scale (from lowest 10% to highest 10%). An average item score was used in analyses ($\alpha = .95$).

Plan of Analyses

In the current study, latent profiles were analyzed using Mplus version 8.1 (Muthén & Muthén, 2017) and based on variables describing social behavior, including teacher-rated social skills (communication, empathy, engagement, cooperation, responsibility, self-control, assertion) and problem behaviors (internalizing, externalizing) and peer-nominated behaviors (prosocial, withdrawn, aggressive). LPA models with 1 to 6 profile solutions were calculated and model fit was assessed for each solution using Bayesian information criterion (BIC), Akaike information criterion (AIC), Consistent AIC (CAIC), and the Lo-Mendell-Rubin test (LMR) while also taking into account parsimony, profile size, and the interpretability of the profiles. Three children were missing teacher ratings; Mplus used full information maximum likelihood methods to manage this missing data.

Then, we examined the social behavioral characteristics associated with profile membership and explored associations of profile membership with quality of interpersonal relations (teacher-student closeness and conflict, peer problems, peer liking, and peer disliking) an academic functioning. For these analyses, children were assigned to profile classes based on posterior probabilities. ANCOVAs (with child sex and age controlled) and subsequent Bonferonni post-hoc comparisons were conducted to identify significant differences among the profile classes in these various domains of school adjustment.

Results

Descriptive Analyses

Means, standard deviations, and correlations for the social behaviors included in the profile analyses are shown in Table 1. The social skill scales were positively inter-correlated and inversely correlated with internalizing and externalizing problems. Peer nominated prosocial behavior was inversely correlated with peer nominated aggression. Significant cross-rater correlations emerged between several teacher-rated social skill scales (empathy, cooperation, responsibility, self-control) and peer-nominated prosocial behavior, between teacher-rated internalizing problems and peer-nominated social withdrawal, and between teacher-rated externalizing problems and peer-nominated aggression. Only the assertion scale did not show the expected associations; it was positively correlated with externalizing and peer-nominated aggression and inversely correlated with peer-nominated prosocial behavior.

Latent Profile Analyses

Table 2 provides the information criteria for LPA models with 1-6 profiles. Although BIC and AIC continued to improve incrementally through the 6-profile solution, the LMR and aLMR tests were significant only for the 4-profile solution indicating a significant improvement in model fit with the addition of a fourth profile (non-significant LMR and aLMR tests for the 5-profile and 6-profile solutions indicate no subsequent significant improvement in data fit). Inspection of the 5-profile classes revealed that the added profile was created primarily by a split of the fourth profile (described below), creating two smaller profile classes that included fewer than 15% of the sample and that showed similar characteristics and were differentiated only by small elevations in teacher-rated competencies. These two new profiles were not meaningfully different from each other on any dimensions and did not provide new information with regard to distinct student characteristics. Hence, we judged the 4-profile solution as more parsimonius and

meaningful in terms of identifying children representing distinct profiles within the rejected group.

Descriptive statistics for all four profiles are summarized in Table 3. Profile 1 included 21% of the sample (72% male) and was characterized by the lowest levels of all teacher-rated social skills except for assertion, as well as elevated levels of internalizing and externalizing problems. Peers described children in this profile as aggressive and low in prosocial behavior. Profile 1 was subsequently labelled "multi-problem". Profile 2 (26% of the sample, 59% male) had moderately low scores on the teacher-rated social skills, with particularly low scores on empathy and engagement, and moderately low prosocial peer nominations. Their teacher-rated internalizing problems and peer-nominated social withdrawal scores were higher than any other group, and teachers reported moderately elevated externalizing problems. Profile 2 profile was labelled "internalizing-dysregulated". Students in this group were the highest rated in internalizing problems and social withdrawal on both teacher and peer measures. In addition, behavioral dysregulation was evident in elevated teacher ratings on externalizing behaviors and diminished teacher ratings on scales of self-controlled and responsible behavior. Profile 3 (32% of the sample, 83% male) was distinguished by the highest teacher-rated score on assertion, and by peer-nominated low prosocial and elevated aggression scores that were as high as the multi-problem profile. Profile 3 was labelled "domineering". Profile 4 (21% of the sample, 52% male) had the highest social skill ratings and the most favorable prosocial and lowest aggression nominations in the sample, despite being rejected by peers and viewed by peers as deficient in prosocial behavior. Profile 4 was labelled "teacher preferred". A chi-square analysis indicated significant sex differences in profile membership, X^2 (2) = 15.97, p = 0.001, with girls less likely to be in the multi-problem and domineering profiles and more likely to be in the internalizing-

dysregulated and teacher-preferred profiles. There were no significant differences in grade levels across the profiles, X^2 (9) = 10.15, p = 0.34. Rates of IEP were elevated across profiles (19% to 37% relative to the national norm of 14%) but there were no significant differences in IEP status across the profiles, X^2 (3) = 5.85, p = 0.12.

Because the sample consisted only of peer-rejected children, group comparisons provide information only about relative strengths and difficulties of children in different profile classes. To provide normative comparisons, Table 4 shows the proportion of children in each profile class who had scores on the SSIS that were in the high risk range defined as a standard deviation or more from national norms (Gresham & Elliott, 2008) or peer nomination scores that were one standard deviation or more from the class mean. The majority (over 85%) of the children in the multi-problem profile exhibited deficits in areas of teacher-rated communication, cooperation, responsibility, and self-control skills, and elevated externalizing problems; peers viewed almost all as deficient in prosocial behavior (91%) and elevated in aggression (89%). A substantial number (over 70%) of students in the internalizing-dysregulated profile exhibited elevated deficits in teacher-rated communication skills and engagement, along with elevated internalizing and externalizing problems; peers noted significant deficits in prosocial behavior for 55% and high elevations in social withdrawal for 43%. Teacher ratings indicated fewer risk factors for children in the domineering profile, although most (67%) exhibited significant elevations in teacher-rated externalizing problems and half were distinguished by deficits in cooperation and responsibility. In contrast, peers viewed most children in this profile as extremely low in prosocial behavior (85%) and high in aggression (82%). Children in the teacher-preferred profile did not show consistent patterns of social skill deficits or problem behaviors by teacher or peer report.

School Adjustment

The next set of analyses examined profile differences in areas of school adjustment, including relationship quality with teachers as well as peers, and in academic functioning.

Relationship Quality

The results of group comparisons (ANCOVAs and Bonferonni post-hoc comparisons) on measures of relationship quality are shown in Table 5. Teachers described lower levels of closeness and perceived more peer problems for children in the multi-problem and internalizing-dysregulated classes relative to the domineering and teacher-preferred classes. For children in the multi-problem and internalizing-dysregulated classes, the mean item score was about 3, reflecting a "neutral, not sure" rating regarding a close relationship; for the other two groups, the mean item score was about 4, reflecting "somewhat applies" for a close relationship. No significant group differences emerged on peer nominations of "like most". Teachers rated the highest levels of conflict with multi-problem children (average item rating about 4 = somewhat applies) and the lowest levels of conflict with teacher-preferred children (average item rating about 1 = definitely does not apply); children in the other two profile classes experienced levels of teacher-student conflict in between those two groups (average rating item between 2 = mostly does not apply to 3 = neutral, not sure). Similarly, multi-problem children received the highest levels of "like least" nominations from peers and teacher-preferred children the lowest levels, with the other two groups scoring in between.

Academic Functioning

As shown in the lower part of Table 5, there were significant differences between each of the profile classes on ratings of learning behavior, with the multi-problem class receiving the lowest scores (average item rating between 2 = disagree and 3 = mildly disagree that the child

shows positive learning behaviors), followed by the internalizing-dysregulated class (average item rating = 3), followed by the domineering class (average item rating near 4 = mildly agree), with the teacher-preferred class receiving the highest scores (between 4 and 5 = agree). Similarly, on teacher-rated learning enablers and academic performance, children in the multi-problem and internalizing-dysregulated classes had mean ratings in the lowest third of the class, scoring significantly lower than those in the domineering and teacher-preferred classes, who scored in the average range.

Discussion

Schools recognize the importance of addressing social-behavioral difficulties in the early elementary years to prevent escalating school maladjustment (Mitchell et al., 2011). Correspondingly, social skills training is a frequently used Tier 2 intervention approach, focused on social skills selected to meet the needs of individual students (Kern et al., 2020; Majeika et al., 2020). Teachers play a central role in identifying students in need of Tier 2 social skills training and specifying the skills and problem behaviors that most need attention (Rodriguez et al., 2016). Yet, teachers often struggle to accurately identify peer-rejected students and describe the behaviors and characteristics associated with peer dislike (Hoffman et al., 2015). In the present study, teacher ratings and peer nominations were in close alignment when describing children in the multi-problem profile class which comprised 21% of the rejected sample, exhibiting deficits in prosocial skills and elevated externalizing problems, along with strained student-teacher relationships and poor academic functioning. Teachers also recognized the peer difficulties of children in the internalizing-dysregulated profile class (26% of the sample), identifying the social skill deficits that loomed centrally in peer perceptions and also describing notable internalizing problems and moderate externalizing problems along with poor academic

functioning. Teachers appeared less aware of the peer rejection of children in the other two profile classes including the domineering class (32% of the sample) and the teacher preferred class (21% of the sample). In the following sections, we discuss the factors that might contribute to the varying levels of teacher awareness of the peer difficulties of students in the different profile classes and the implications for effective Tier 2 interventions.

Multi-problem vs. Domineering Profiles of Aggressive Rejected Children

Consistent with prior research on peer rejection, many of the rejected children in this sample exhibited elevated aggression. However, the concurrent characteristics of aggressive children in different profile classes varied considerably, affecting teacher awareness of their peer problems. Peers and teachers both readily identified the elevated aggression and low prosocial skills of children in the multi-problem profile class, with rates of elevated externalizing problems reported for most of these children (89% by peers; 100% by teachers). Teachers noted problematic peer interactions occurred “often” to “very often” for these children. In contrast, whereas peers rated children in the domineering class as equally high in aggression and low in prosocial skills as children in the multi-problem class, teachers rated children in the domineering class as having significantly fewer externalizing problems and considerably better social skills. Teachers described children in the domineering profile class as effective and assertive communicators who showed high levels of positive social engagement. Teachers also described closer and less conflictual relationships with children in the domineering class than children in the multi-problem class, perceived that they only “sometimes” had problematic interactions with peers, and rated them as average in academic performance.

It seems likely that teachers over-estimated the peer standing of children in the domineering group because these children displayed more well-controlled behavior in the

classroom, were less oppositional with adults, and were better students. Teachers may not observe the aggression that is exhibited in peer contexts, such as on the playground or during lunch. Children in this profile class fit the description of "effective" aggressors who are able to use aggression to dominate peers and attain their social goals despite eliciting dislike (Farmer et al., 2012). Hence, evidence of their rejection by peers is likely to be more nuanced and covert than the direct victimization experienced by children in the multi-problem profile class (Farmer et al., 2012).

Given the more positive teacher ratings given to children in the domineering profile class, these children are likely to be under-identified for Tier 2 intervention, despite the negative ratings they receive from peers. In their longitudinal study, Clemans and colleagues (2014) found that peer ratings of aggression were stronger predictors than teacher ratings of subsequent adolescent antisocial behavior, suggesting that the social hostility and peer aggression displayed by these students in their peer interactions and their corresponding peer rejection warrant attention despite their reduced level of classroom behavior problems.

Teacher-Peer Perceptions of Children in the Internalizing-dysregulated Profile Class

Prior studies using cluster analysis have sometimes identified a subgroup of rejected children who are characterized by elevated social withdrawal (French, 1988) but this group is often small and poorly defined (Cillessen et al., 1992) or fails to emerge as a clear subgroup (Haselager et al., 2002). In the present study, a profile characterized by elevated internalizing problems (teacher ratings) and social withdrawal (peer nominations) included 26% of the rejected sample. Importantly, children in this profile class demonstrated significant deficits in prosocial skills reported by teachers and peers, and difficulties with self-control and focused attention, reflected in moderately elevated externalizing problems, poor learning engagement,

and below average academic performance. This profile is consistent with research suggesting that shyness or social withdrawal alone rarely elicits peer dislike, whereas social disengagement combined with impulsive, insensitive, and intrusive social behavior is likely to do so (Pope & Bierman, 1999). Teachers were aware of the significant peer difficulties experienced by these children, suggesting this group of children would be identified for Tier 2 intervention by teachers. Whereas girls were less likely than boys to be in the profile classes characterized by overt aggression (e.g., the domineering and multi-problem profiles, 17% and 28% girls respectively), girls were more likely to be in this internalizing-dysregulated profile (41% girls) and the teacher-preferred profile (48% girls). This pattern of findings is consistent with prior research findings in which boys' aggression more often involves overt physical and verbal fighting, whereas girls' aggression more often involves more emotionally dysregulated, moody, and oppositional behavior (McEachern & Snyder, 2012).

The Teacher-Preferred Profile

Prior studies that used cluster analyses to identify subgroups of peer-rejected children have found a subgroup that appears behaviorally non-distinct, raising questions about the reasons for the peer dislike (Cillessen et al., 1992; French, 1988; Waas, 2006). Similarly, the factors contributing to the peer rejection of children in the teacher-preferred profile class were not clear in this study. Children in this profile had average relationships with teachers and were rated as average in their academic engagement and performance, although 25% received special education services. For most of the social skill and problem behaviors rated by teachers and peers, fewer than one-third of the children in this profile class showed rates of above average difficulties. Hence, we can only speculate about the reasons for the strong peer dislike. Based upon an interview study conducted by Bierman et al. (1993) and anecdotal information from

study personnel, it seems likely that many of the children in this profile were unusual or "quirky" in ways that adults did not mind, but peers viewed as peculiar, awkward, or annoying. Children in this profile class may be more likely than the rejected children with more skill deficits and behavior problems to experience improved peer relations over time (Haselager et al., 2002). Nonetheless, if teachers had more awareness of their peer difficulties, they would be in a better position to intervene in ways that could improve classroom dynamics and the peer status of these children (Farmer et al., 2018).

Implications for Intervention

Study findings have several implications for intervention. First, the findings are consistent with prior studies showing teachers are often unaware of the social adjustment difficulties experienced by some peer-rejected children (Ahn & Rodkin, 2014; Hoffman et al., 2015). Teachers appear especially likely to underestimate the peer difficulties of peer-rejected students represented by the teacher-preferred and domineering profile classes, and hence may fail to take action that could address their rejection by peers and off-set the associated negative developmental influences. Providing teachers with professional development support aimed at increasing their recognition of student social dynamics and peer relations has proven effective in strengthening their attunement to the overall social climate of their classes (Hamm et al., 2011). For example, in a study of 26 teachers who participated in a randomized control trial of an intervention that was designed to help foster a more positive adjustment to middle school, teachers in the intervention group were significantly more attuned to the social dynamics than in control schools. Teachers in the intervention schools had students with better overall adjustment. Although the findings on teacher attunement in this study were focused on an older group of students, the finding that teachers can be taught about student social dynamics and enact better

strategies to help students is promising for helping students who experience social difficulties in the school context.

Second, in addition to their involvement in Tier 2 interventions, teachers can influence peer dynamics by providing universal social-emotional learning programs and via management strategies that work as an "invisible hand" to shape classroom peer interactions (Farmer et al., 2018). Teachers can promote peer liking and reduce disliking by modeling positive behavior toward vulnerable children, providing emotional support in teacher-student relationships, setting classroom expectations for interpersonal acceptance and respect, and adjusting seating and grouping arrangements to increase opportunities for positive peer interaction (Braun et al., 2020; Farmer et al., 2018; Mikami et al., 2012). These sorts of contextual supports may be especially valuable for peer-rejected students who fit the domineering and teacher-preferred profiles who show few social skill deficits. These students may benefit more from programming that encourages and supports social skill performance, such as increased supervision and reinforcement support in less structured peer interaction contexts such as the cafeteria and playground. They may also benefit from active teacher efforts to increase opportunities for positive peer interactions by adjusting classroom seating, strategically pairing learning partners, and arranging other supported peer activities (Farmer et al., 2018).

Finally, the findings suggest that assessments of student social functioning that consider both peer and teacher perspectives and recognize the varied profiles that characterize the intervention needs of peer-rejected students will create a stronger foundation for the design of tailored Tier 2 social skill training programs than the current use of teacher referrals alone.

Study Limitations

This study had a few limitations that should be noted. First, the study focused on data collected at a single time point and did not examine pathways across time. Additional research is needed to examine how students in varying profiles progress over time in terms of the stability of their peer rejection, social experiences, and overall adjustment to school. The present study did not include student self-report. Understanding students' own perceptions of their placement within the social context of their class or grade and their feelings of loneliness or victimization may be important indicators of the emotional impact of peer rejection and may require attention in intervention. Relatedly, the inclusion of direct assessments of the children's social cognitive skills may have illuminated aspects of social-emotional functioning that were not revealed by the teacher and peer ratings used in this study. This study did not include measures of the social context or peer group dynamics characterizing the elementary classrooms of the peer-rejected participants. It would have been interesting to see whether classroom levels of externalizing or internalizing problems affected peer nominations and profile identification. Prior research has shown that peer social preference is affected by classroom levels of problem behaviors, with aggressive children likely to be more accepted in classrooms characterized by higher levels of aggression and conversely with withdrawn children more accepted in classrooms characterized by higher levels of withdrawal (Powers et al., 2013; Stormshak et al., 1999). Unfortunately, no data on classroom levels of child behavior problems were collected in this study and so this question could not be addressed. Prior research has also demonstrated that characteristics of the centrality of social networks within classrooms may have a differential effect on how teachers identify students who are popular or victimized (Madill et al., 2016). Because the present study did not examine social networks and their characteristics (like centrality or behavioral profile

composition), questions related to teacher identification of students in different classroom contexts were not addressed.

Implications and Future Directions

The present findings suggest that as many as half of the elementary school students who are rejected by peers may go undetected by teachers, limiting teacher efforts to intervene in ways that could improve their peer standing or to recommend Tier 2 interventions to build their social skills and facilitate school adjustment. One solution to this problem would involve the increased use of peer sociometric screening surveys in schools to detect significant social adjustment difficulties. Recent advances in methodology and technology now make sociometric surveys easy to conduct. For example, the SELWeb platform used in this study made it possible to conduct full-school screenings in a day or two using the school computer lab. Interviews were quick and private, as students listened to questions through headphones and answered individually. Scores were available to download almost immediately after administration. Although concerns have been raised about the potential negative impact of sociometric surveys on children's feelings or peer status, multiple studies have shown no negative impact on student feelings of distress, behavior, or peer status (Bell-Dolan, Foster, & Christopher, 1992; Mayeux, Underwood, & Risser, 2007). This is probably because elementary children talk freely amongst themselves about who they like and dislike and readily share these opinions with their teachers and parents. Given the importance of peer relations as an index of social-emotional well-being and the value of early school-based interventions to support children who are rejected by peers, the broader use of carefully-designed peer sociometric screening is worth careful consideration (Bell-Dolan & Wessler, 1994), rather than relying so heavily on teacher ratings to identify children in need of Tier 2 social support interventions.

This research also raises questions about the extent to which teachers could become more attuned and more sensitive in their ability to identify peer-rejected students if they were provided with more information and training about what to look for. Studies have examined the ways in which teachers may increase their attunement to the social dynamics of their classrooms (Hamm, 2011) yet studies have focused on the transition to middle school, not early elementary grades. Future research should investigate possibility that earlier training on managing classroom social dynamics may assist students with receiving needed supports to ameliorate later risk. Teachers may benefit from and increased awareness of the factors outside of student classroom behavior that influence peer evaluations and generate peer dislike.

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Table 1

Descriptive Statistics and Correlations between All Variables

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
Teacher Ratings														
1. Communication	1.60	0.43	--											
2. Empathy	1.45	0.59	.59	--										
3. Engagement	1.45	0.46	.59	.60	--									
4. Cooperation	1.37	0.51	.50	.28	.28	--								
5. Responsibility	1.39	0.56	.60	.51	.41	.72	--							
6. Self Control	1.26	0.64	.52	.58	.42	.42	.66	--						
7. Assertion	1.51	0.48	.26	.32	.47	.04	.07	-.08	--					
8. Internalizing	0.94	0.55	-.31	-.27	-.54	-.11	-.21	-.23	-.24	--				
9. Externalizing	1.21	0.62	-.47	-.45	-.24	-.62	-.75	-.73	.20	.21	--			
Peer Nominations														
10. Prosocial	-1.18	0.61	.11	.14	.06	.29	.31	.21	-.16	.05	-.36	--		
11. Withdrawal	0.34	0.97	-.13	-.10	-.31	.06	.01	-.04	-.22	.32	-.10	.11	--	
12. Aggressive	1.21	1.18	-.20	-.19	-.02	-.36	-.46	-.35	.21	-.05	.57	-.60	-.11	--
13. Social Pref	-1.79	0.44	.08	.00	.07	.17	.13	.05	-.03	-.07	-.22	.46	-.12	-.39

Note. Social pref = social preference. Teacher ratings represent average item scores. Peer nominations represent classroom z-scores. Correlations greater than .13 are $p < 0.05$; correlations greater than .16 are $p < 0.01$; correlations greater than .21 are $p < 0.001$.

Table 2

Latent Profile Fit Statistics

Model	LL	AIC	BIC	VLMR	ALMR	Entropy	< 15%
1 Profile	-2441.15	4930.31	5012.184				0
2 Profiles	-2153.96	4381.93	4508.160	237.987	566.325	0.84	0
3 Profiles	-2040.82	4181.64	4352.227	268.113	223.113	0.88	0
4 Profiles	**-1957.75**	**4041.51**	**4256.444**	**-355.36***	**163.81***	**0.87**	**0**
5 Profiles	-1888.74	3929.47	4188.758	5.945	136.103	0.90	2
6 Profiles	-1861.04	3900.08	4203.718	54.615	141.798	0.91	3

Note. LL = Model Likelihood; AIC = Akaike's Information Criterion; BIC = Bayesian Information Criterion; VLMR = Vong Lo-Mendell-Rubin test; ALMR = Adjusted Lo-Mendell-Rubin test; < 15% = number of profiles with less than 15% of the cases. Bolding indicates the number of profiles selected.
* $p < 0.05$.

Table 3

Profile Means and Standard Deviations for the Selected Profile Solution

Variables	Profile 1 Multi-problem (N = 46)	Profile 2 Internalizing-dysregulated (N = 58)	Profile 3 Domineering (N = 72)	Profile 4 Teacher-preferred (N = 48)	F-values df (3, 215)	
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	F	p-value
Teacher Ratings						
Communication	1.20 (0.27) [1]	1.39 (0.32) [2]	1.77 (0.28) [3]	1.99 (0.40) [4]	62.08	<.001
Empathy	1.01 (0.50) [1]	1.14 (0.42) [1]	1.63 (0.46) [2]	1.99 (0.52) [3]	45.80	<.001
Engagement	1.18 (0.33) [1]	1.12 (0.36) [1]	1.73 (0.31) [2]	1.69 (0.47) [2]	47.76	<.001
Cooperation	0.91 (0.27) [1]	1.27 (0.35) [2]	1.41 (0.39) [2]	1.90 (0.51) [3]	52.18	<.001
Responsibility	0.78 (0.31) [1]	1.24 (0.34) [2]	1.40 (0.34) [3]	2.14 (0.34) [4]	127.64	<.001
Self Control	0.48 (0.36) [1]	1.18 (0.45) [2]	1.40 (0.46) [2]	1.94 (0.42) [3]	94.32	<.001
Assertion	1.63 (0.42) [2,3]	1.17 (0.40) [1]	1.73 (0.40) [3]	1.45 (0.49) [2]	22.12	<.001
Internalizing	1.05 (0.55) [2]	1.34 (0.42) [3]	0.68 (0.43) [1]	0.72 (0.52) [2]	23.4	<.001
Externalizing	2.05 (0.33) [1]	1.16 (0.32) [2]	1.22 (0.38) [2]	0.42 (0.26) [3]	189.76	<.001
Peer Noms						
Prosocial	-1.49 (0.49) [1]	-1.05 (0.58) [2]	-1.45 (0.46) [1]	-0.66 (0.57) [3]	28.39	<.001
Withdrawn	0.23 (0.83) [1,2]	0.76 (1.07) [1]	-0.00 (0.73) [2]	0.47 (1.10) [1,2]	5.77	<.001
Aggressive	2.13 (0.94) [1]	0.67 (0.78) [2]	1.88 (0.88) [1]	0.00 (0.69) [3]	69.72	<.001
Demographics					χ^2	p-value
Male	72%	59%	83%	52%	15.97	.001
IEP	37%	36%	21%	27%	5.22	.16
White	48%	60%	63%	54%	2.89	.41
Latinx	15%	19%	19%	29%	3.13	.37
Black	30%	17%	10%	15%	8.80	.03
Multiracial	7%	3%	8%	0%	4.81	.18

Note. Peer Noms = peer nominatinos. SD = standard deviation. Different superscripts in the same row indicate significant differences at $p < 0.05$ based on post-hoc comparisons. Lower superscripts indicate more maladjustment.

Table 4

Percent of Profile Members Showing Clinical Levels of Skill Deficits or Problem Behaviors

Variables	Profile 1 Multi-problem (N = 46)	Profile 2 Internalizing-dysregulated (N = 58)	Profile 3 Domineering (N = 72)	Profile 4 Teacher-preferred (N = 48)
Teacher Ratings				
Communication	87%	77%	18%	24%
Empathy	67%	63%	18%	9%
Engagement	74%	84%	11%	39%
Cooperation	96%	56%	44%	20%
Responsibility	94%	65%	46%	7%
Self Control	98%	63%	38%	7%
Assertion	9%	47%	6%	28%
Internalizing	50%	79%	22%	26%
Externalizing	100%	72%	67%	2%
Peer Nominations				
Prosocial	91%	55%	85%	33%
Withdrawn	17%	43%	11%	23%
Aggressive	89%	31%	82%	6%

Note: Note: Cutoffs for high risk on SSIS scales were based upon guidelines provided by the SSIS developers and indicate scores that deviated 1 standard deviation or more from published national norms, below that cut-off for social skills and above for problem behaviors. High risk on peer nominations was indicated by deviations of 1 standard deviation or more relative to classroom sociometric means, below that cut-off for prosocial and above for aggression and isolated.

Table 5

Analysis of Variance Summary for Teacher Rating Comparisons

Variables	Profile 1 Multi-problem (N = 46)	Profile 2 Internalizing-Dysregulated (N = 58)	Profile 3 Domineering (N = 72)	Profile 4 Teacher-Preferred (N = 48)	F-values df (3, 215)	
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	F	p-value
Student-Teacher Relationship						
STRS: Closeness	3.43 (0.75) [1]	3.32 (0.72) [1]	3.81 (0.61) [2]	4.05 (0.71) [2]	12.41	<.001
STRS: Conflict	3.82 (0.68) [1]	2.62 (0.68) [2]	2.44 (0.84) [2]	1.36 (0.34) [3]	98.90	<.001
Peer Relationships						
Peer Problems	4.12 (0.80) [1]	3.86 (0.76) [1]	3.20 (0.72) [2]	3.04 (0.87) [2]	22.73	<.001
Like Most	-1.43 (0.53)	-1.46 (0.46)	-1.43 (0.50)	-1.37 (0.59)	0.36	0.79
Like Least	2.05 (0.72) [1]	1.72 (0.65) [2,3]	1.97 (0.49) [1,2]	1.63 (0.59) [3]	5.87	<.001
Academic Engagement						
Learning Behaviors	2.57 (0.81) [1]	3.22 (0.97) [2]	3.70 (0.91) [3]	4.48 (0.82) [4]	37.85	<.001
Learning Enablers	2.01 (0.67) [1]	1.95 (0.59) [1]	2.53 (0.76) [2]	2.63 (0.81) [2]	12.91	<.001
Academic Perf.	2.19 (1.00) [1]	2.36 (0.95) [1,2]	2.74 (0.99) [1,2]	2.83 (1.19) [2]	4.56	.004

Note. Like Most and Like Least are peer nominations. Other measures here are teacher ratings. Academic Perf = academic performance. SD = standard deviation. Different superscripts in the same row indicate significant differences at $p < 0.05$ based on post-hoc comparisons. Lower superscripts indicate more maladjustment.