Social and emotional information processing in preschoolers: Indicator of early school success?

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Abstract

To better connect emotional development and social cognition literatures, the intersection of preschoolers' emotion and behaviour response choices to hypothetical peer conflicts was examined among 305 4 ½-year-olds in private childcare and Head Start. Latent class analyses identified five subgroups of children with connections between their emotion and behaviour response choices (*Happy/Passive, Sad/Socially Competent, Angry/Passive, Angry/Aggressive, Sad/Passive*). Subgroup membership differed across gender and economic risk status, and was also a predictor of early school success (i.e., social competence, classroom adjustment, and academic readiness). Overall, even after accounting for the associations between known predictors of young children's behaviour and school success (i.e., gender and SES), membership in the subgroups at preschool was uniquely predictive of both concurrent and later social competence, classroom adjustment, and academic readiness. Further, preschool social competence partially mediated contributions of subgroup membership on kindergarten classroom adjustment. These findings are discussed in relation to existing social information processing and emotional development literatures, including potential implications for understanding young children's early school success.

Keywords

preschool; readiness; classroom adjustment; social information processing; latent class analysis

A wealth of research has shown associations between social information processing (SIP) and young children's social competence and behavioural adjustment (Denham & Almeida, 1987; Youngstrom et al., 2000). We aim to extend this existing literature in three ways. First, the emotional mechanisms involved in children's SIP sequences have seen less attention, particularly with preschool-aged children. However, successful SIP also requires skills in understanding and handling emotions (Denham, Bouril, & Belouad, 1994; Dodge, Laird, Lochman, & Zelli, 2002; Lemerise & Arsenio, 2000). This emotional facet of SIP works in concert with its more behavioural aspect; children consider their emotions when selecting behavioural solutions to social difficulties. Thus, in this study, using a latent class methodological approach, we identified subgroups of young children based on their emotional and behavioural choices in response to hypothetical social problems.

Second, we sought to pinpoint likely differences in these subgroups by gender and economic risk status. Third, although previous studies have examined the associations between school

success and SIP for older children (Dubow, Tisak, Causey, Hrysnko, & Reid, 1991; Rotheram, 1987), few have examined these relations in children younger than five-years-old (cf. Bierman et al., 2008; Youngstrom et al., 2000). For that reason, we explored how subgroup membership based on SIP processes predicted early school success (i.e., social competence, classroom adjustment, and academic readiness).

The role of emotions in SIP

Both emotion knowledge and emotional expressiveness underlie many aspects of SIP. In the first two steps of SIP, external social cues are encoded and interpreted in light of internal responses, including others' and one's own emotions (Crick & Dodge, 1994; Lemerise & Arsenio, 2000). Such emotion knowledge can then guide behaviour response choices (Dodge et al., 2002). Accurate emotion labelers generate more socially competent SIP strategies, which in turn predict multiple raters' reports of social competence (Arsenio, Cooperman, & Lover, 2000; Denham et al., 1994). The converse is true for children with behaviour problems, even after accounting for cognitive abilities (Cook, Greenberg, & Kusché, 1994).

Research with older children has shown that SIP deficits are exacerbated by negative emotions (Orobio de Castro, Slot, Bosch, Koops, & Veerman, 2003). In preschoolers' emotionally volatile world, it follows that identification of one's emotional response in specific peer contexts, as one of the "emotion processes" highlighted by Lemerise and Arsenio (2000), would be an important link between experienced emotion and enacted behaviours (i.e., response decisions). To our knowledge, however, only two studies have explored this intersection of emotional and behavioural SIP choices with a young sample (i.e., Denham et al., 1994; Garner & Lemerise, 2007).

Denham and colleagues (1994) examined this linkage using the Challenging Situations Task (CST), in which preschoolers indicate the emotions they would feel and the responses they would enact in response to unambiguous peer provocation (see Methods for details). In their study, preschoolers' emotion-behaviour choice combinations were related to their emotional displays in the preschool classroom and their broader social competence. For instance, children who reported sadness *in combination with* a socially competent behaviour response choice exhibited more positive emotions in the classroom, and obtained higher sociometric ratings and lower teacher ratings of sadness/fearfulness. Children with higher rates of reporting anger *in combination with* aggression exhibited less positive emotions in the classroom. Thus, the intersection of emotion and behaviour choices has been shown to relate to preschoolers' adaptive social outcomes. In this study we broaden that focus to include indices of school success.

Variables influencing SIP outcomes: Gender and economic risk

Individual factors such as gender or economic risk also may be important to consider in children's processing of social information. Previous research has found that boys tend to choose more aggressive and fewer socially competent behaviour responses, and report more angry reactions to peer provocation than girls. In contrast, girls tend to react to peer provocation with more sadness than boys (e.g., Burgess, Wojslawowicz, Rubin, Rose-Krasnor, & Booth-LaForce, 2006).

Children in contexts of economic risk often experience greater levels of stress, which impacts their adjustment (Attar, Guerra, & Tolan, 1994). Given the potential for children in economic risk to generate fewer, lower quality SIP responses (Suarez-Morales & Bell, 2006; these authors also found differences favoring girls), we considered preschool centre status (Head Start or private childcare) as a proxy for economic risk. Beyond main effects, we

expected to see gender and economic risk differences in children's subgroup membership that reflect the intersection of their emotion and behaviour response choices on the CST.

Relations between SIP and early school success: Social competence, classroom adjustment, and academic readiness

The outcomes of importance for this study are *social competence, classroom adjustment,* and *academic readiness.* Social competence can be defined as skills associated with successful interactions with peers and teachers -- cooperating, taking into account others' feelings, refraining from either aggression directed at, or withdrawal from, one's peers. *Classroom adjustment* can be defined as young children's behaviors and attitudes associated with learning in the classroom environment, such as positive attitudes about school, and abilities to participate both cooperatively and self-directedly in classroom activities (Ladd, Birch, & Buhs, 1999).

These two sets of abilities go hand-in-hand – without either, experiences in the early years of schooling are apt to be less positive. The classroom is a very social place, and social competence undergirds classroom adjustment: A socially competent child may be able to pay more attention to academic tasks, plan better, and devote more resources to learning than a less socially competent one, *because* they can benefit more from teachers' instructions, giving and getting academic information from peers, sharing academic resources with peers, and modeling peers' learning skills (Ladd, Buhs, & Seid, 2000). Conversely, children who demonstrate classroom adjustment more accepted by classmates and teachers, and are given more instruction and positive feedback by teachers. Thus, we view both *social competence* and *classroom adjustment* as crucial outcomes for a successful introduction to schooling, and likely highly related.

Further, young children's academic readiness is defined as mastery of certain basic skills which help ensure success in the new learning environment of formal schooling (Hair, Halle, Terry-Humen, Lavelle, & Calkins, 2006). We center our thinking on literacy and numeracy, which reflect attainment of specific pre-academic readiness milestones. Such readiness, or its lack, often sets children on a cycle of success or failure in both academic and social domains (McClelland, Acock, & Morrison, 2006).

We consider that children's abilities to process social information help grease the cogs of a successful school experience – their social competence, classroom adjustment, and academic readiness. It is likely that certain SIP patterns promote social competence and classroom adjustment, as well as academic readiness; inclusion of all three aspects of school success is a strength of this study.

The current study

Using the CST (Coy, Speltz, DeKlyen, & Jones, 2001; Denham et al., 1994; Zahn-Waxler et al., 1994), we sought to capture the emotional and behavioural facets of young children's SIP. Further, to assure developmental appropriateness, we focused on unambiguous, peer provocation scenarios from the CST (see Appendix Table A1).[1] We extended earlier work by utilising a subgroup approach (e.g., Bergman & Magnusson, 1997; Richters, 1997), with a larger, more socio-economically diverse sample from Head Start and private childcare settings. Specifically, we aimed to (1) identify subgroups of children characterised by specific patterns of emotion and behaviour responses; (2) examine how subgroups differ in

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[1]Due to the situational specificity of SIP (Dodge, Laird, Lochman, and Zelli, 2002), one peer entry situation included in the original measure is not examined here.

their composition of gender and economic risk; (3) examine the association between subgroup membership and early school success; and (4) explore the possibility that relations between SIP patterns at the beginning of their last year of preschool and kindergarten classroom adjustment are mediated via social competence at the end of their last year of preschool.

Based upon previous work, we expected to find subgroups characterised by sad/socially competent and angry/aggressive response patterns. We also expected girls would be more likely to report sadness in combination with socially competent response choices, and that children at greater economic risk status would be more likely to report anger in combination with aggression. Further, we hypothesised that, even when controlling for demographic factors, children in the sad/socially competent subgroup would demonstrate the most positive social competence and classroom adjustment, and greater academic readiness. In contrast, we expected children in the angry/aggressive subgroup would demonstrate lower levels of social competence, classroom adjustment, and academic readiness. Finally, we imagine that the impact of subgroup membership on kindergarten classroom adjustment will be mediated by preschool social competence.

Method

Data for the current study were part of a larger study focused on developing a portable assessment battery for measuring the social and emotional aspects of school success. Head Start and private childcare centres in Virginia, selected due to variability in race, ethnicity, and income, were included. Within these sites, participants were recruited at parent and teacher meetings and via flyers posted in classrooms.

Participants

We pooled data from the first and third wave of our three waves of longitudinal data to ensure that all data were from children around the same age (approximately 4½-years-old). Children began participation in the study at differing ages, but after pooling data the present study included 305 children who completed at least 1 story on the social cognitive measure at age 4½ (217 from wave 1, $M_{age} = 55.54$ mos, $SD = 3.70$, and 88 from wave 3, $M_{age} = 53.16$ mos, $SD = 3.97$; a maximum of five children had incomplete data on any story). Approximately half of the children were female (49.5%), with a majority Caucasian or African American (43.6% Caucasian, 37.7% African-American, and 18.4% other) and 13% were Latino/a. These race and ethnic variables differed by preschool type, χ^2 (N= 305, 6) = 94.55, $p < .001$, with Caucasians and non-Latino families overrepresented in the private childcare group. and African-Americans overrepresented in the Head Start group, χ^2 (N= 305, 2) = 47.00, $p < .001$. Because confidentiality agreements with participating centres precluded our asking families about their income directly, economic risk status was broadly classified by children's enrollment in private childcare ($n = 158$; 52%) versus Head Start ($n = 147$; 48%).

Kindergarten data were collected for the subsample of children (n = 107) who were still in the area, and in schools that gave consent for research. Kindergartners remaining in the study, and those who could not be followed, did not differ on any CST measure, demographic characteristic, or age-four teacher measures.

Procedure

During their last preschool year, children completed the CST individually with the tester, in a quiet room within their Head Start or childcare centre. At the end of the school year, teachers rated children's social competence and classroom adjustment. Kindergarten

teachers also completed social competence, classroom adjustment, and academic readiness questionnaires. For each participating child in their classroom, teachers were compensated for completing questionnaires; preschool teachers were paid $20, and kindergarten teachers were paid $25 (they completed more questionnaires, most of which are not the focus of this study). Children received a sticker each time they participated.

Measures

Challenging Situations Task (CST)—Children's ability to predict their own behaviour decisions and their attendant emotions to three problematic peer provocation situations was assessed using the Challenging Situations Task (CST) (see Denham et al., 1994). The CST is a pictorial forced choice measure. Forced-choice methodology was used to minimise both verbal and coding requirements for this component of our assessment battery, as well to focus children's propensity to respond in the aforesaid theoretically meaningful ways, rather than their free production of emotion and behaviour choices.

The scenarios were presented in a random order to the child via a 3×4 inch (7.6 × 10.2 cm) picture and a short verbal description of the transgression situation (see Appendix, Table A1). Children were presented with four emotion choices using schematic drawings and verbal labels of 'happy,' 'sad,' 'angry,' and 'just okay' and asked to point to how they would feel in the situation (see Appendix, Table A2).

Children were then asked to report what they would do in this situation, and presented with four schematic drawings depicting a socially competent, aggressive, passive, or dysregulated/crying behavioural response choice appropriate for that situation and asked which would be their chosen response (see Appendix, Table A2). Previous studies have utilised this measure in preschool populations to understand the social cognitive processes underlying behavioural disorders (Coy et al., 2001; Zahn-Waxler et al., 1994), in cross-cultural comparisons (Cole & Tamang, 1998), and in examinations of intervention effects within Head Start settings (Bierman et al., 2008). Children's emotional and behavioural choices were utilised as the observed indicators of subgroup membership in latent class models (described below); these scores represented the number of times each choice was made in response to the three stories.

Social Competence: Social Competence and Behaviour Evaluation (SCBE-30) —The 30-item version of the Social Competence and Behaviour (SCBE-30 Teacher Report; LaFreniere & Dumas, 1996) measures the social-emotional competence of 3- to 6-year-olds. Teachers provided ratings on child behaviours such as "easily frustrated" (Angry/Aggressive factor), "avoids new situations" (Anxious/Withdrawn factor), and "comforts or assists children in difficulty" (Sensitive/Cooperative factor). In the current sample, SCBE-30 subscales demonstrated excellent internal consistency (α = .89 to .95). LaFreniere and Dumas also demonstrated construct and convergent validity of the measure in a nationally representative sample, via moderate associations with measures of internalizing and externalizing disorders (see also Denham et al., 2003). Finally, in a multi-national study, the SCBE-30 showed structural equivalence across diverse demographic groups (LaFreniere et al., 2002). For the social competence aggregate, standard scores for the three scales were summed, with anger/aggression and anxiety/withdrawal reversed. Alphas were .78 for the end of preschool and .74 for the end of kindergarten.

Classroom adjustment: Teacher Rating Scale of School Adjustment (TRSSA) —This 52-item measure (Ladd, Kochenderfer, & Coleman, 1997) taps young children's behavioural and relational adjustment to classroom settings. Teachers provided ratings of various classroom behaviours, such as "follows teacher's directions" (Cooperative

Participation), "works independently" (Self-Directedness), "likes going to school" (School Liking), or "initiates conversations with the teacher" (Comfort with Teacher) on a 3-point Likert scale. In the current sample, subscales' internal consistency was high (α = .78 to .93). In diverse samples, subscales have demonstrated concurrent relations with sociometric ratings of mutual friendships and peer acceptance, as well as predictions to classroom achievement at the end of kindergarten (see also Ladd, Buhs, & Seid, 2000; Ladd, Kochenderfer & Coleman, 1997).

Classroom adjustment: Preschool Learning Behaviours Scale (PLBS)—The PLBS (McDermott, Leigh, & Perry, 2002) is a 29-item teacher behaviour rating instrument assessing preschool children's approaches to learning. Teachers rated children's observable behaviours that occurred during classroom learning activities over the previous two months on a 3-point Likert scale. The instrument yields three learning behaviour dimensions: Competence Motivation (i.e., reluctant to tackle a new activity), Attention/Persistence (i.e., tries hard, but concentration soon fades and performance deteriorates), and Attitudes Toward Learning (i.e., doesn't achieve anything constructive when in a sulky mood). In this study, the PLBS demonstrated good internal consistency (α = .78 to .92). Multi-method, multi-source validity analyses further substantiated the PLBS dimensions for preschool children, and reliability estimates were similar for both Caucasian and non-Caucasian portions of the sample (Fantuzzo, Perry, & McDermott, 2004).

For Classroom Adjustment, standard scores for all seven PLBS, and TRSSA scales were summed. Alphas were .91 for the end of preschool and .90 for the end of kindergarten. Aggregate scores for social competence and classroom adjustment are used in all subsequent analyses. [2]

Academic readiness: ECLS-K Academic Rating Scale—Kindergarten teachers completed the Academic Rating ECLS-K (ARS, U.S. Department of Education, National Center for Education Statistics, 2002–2005), which includes ratings of kindergarteners' academic level in 1) Language and Literacy (e.g., "reads simple books independently"), 2) General Knowledge (e.g., "forms explanations based on observations and explorations"), and 3) Mathematical Thinking (e.g., "shows an understanding of the relationship between quantities"). Teachers compared each child to their same age peers on 1 – 5 point scales, in the spring of their kindergarten year. Internal consistency reliability for the three scales in this sample ranged from .85 to .92; a Kindergarten Academic Readiness aggregate was created by summing the standard score for each scale (α = .92).

Analytic method

We used Latent Class Analysis (LCA; Lazarsfeld & Henry, 1968) to identify subgroups of preschoolers with particular emotional and behavioural responses to the SIP measure. This approach allowed us to better understand how social competence, classroom adjustment, and academic outcomes varied with children's choice of particular *combinations* of emotion and behaviour responses. In general, the latent class model posits that there is an underlying categorical variable that divides a population into subgroups, called latent classes. Each individual's latent class membership is unknown but can be inferred from a set of categorical items. In the present study, four-year-olds' emotion and behaviour response choices to the three hypothetical peer conflict scenarios in the CST were utilised as the observed indicators in the creation of the latent class models.

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[2]Aggregates were used because preliminary analyses had shown that for both social competence and classroom adjustment, scales could be subsumed in one principal component accounting for 65 to 69 percent of variance in the individual scales, and that subsequent subgroup analyses were very similar to those reported here,

Results

Descriptive information

Challenging Situations Task—Table 1 presents the descriptive statistics for the emotion and behaviour responses for the three scenarios in the CST. In general, children most often indicated that they would be "angry" or "sad" in each of the CST scenarios, and very few chose the "just ok" response. As for behaviours, most children chose either passive or socially competent responses, and very few chose "cry".

Concerning main effects of gender, boys chose angry responses and girls sad responses on scenario two (where the protagonist was aggressed against) more often than expected by chance, χ^2 ($N = 302, 3) = 15.61$, $p < .001$, and girls chose crying as a behaviour response more than boys on scenario three (where the protagonist's soccer ball was taken), χ^2 ($N = 299, 3) = 8.23$, $p < .05$. As for main effects of economic risk, children attending private childcare more often chose sad emotion responses and those in Head Start more often chose happy responses (χ^2 ($N = 302, 3) = 9.19$, $p < .05$, and χ^2 ($N = 299, 3) = 13.98$, $p < .001$, respectively).

Latent class analysis (LCA)

Model building and selection—The model identification and model selection processes utilised here are discussed in detail in Collins and Lanza (2010). We based our model-selection procedure on three main criteria including statistical fit, interpretability and distinctness of the latent classes, and the overall fit of the solution with our conceptual framework. Only models that were well-identified (i.e., different starting values resulted in a clear maximum of the log-likelihood function) are considered and reported below. For identified models a number of specific information criteria, entropy R-squared, and conceptual interpretation of the classes were used together to guide the model selection process (see Table 2). In general, a lower information criterion is an indicator of better model fit. For entropy R-squared, values closer to 1.0 indicate better overall classification certainty. Using multiple indicators of fit helps optimise the balance between model fit and parsimony.

Two sets of parameters are estimated in a latent class model: (1) the probability of membership in each latent class, and (2) item-response probabilities for each response category given membership in a particular latent class. Membership probabilities range from zero to 1.0, indicating the proportion of the sample that belongs to each latent class. Similar to factor loadings in factor analysis, item-response probabilities are used to label the subgroups or latent classes.[3]

LCA models—Using emotion and behaviour response categories of the three hypothetical scenarios as indicators of class membership, we ran 1–6 class models. With the exception of the 6-class model, all models were well-identified.[4] Table 2 depicts relevant fit statistics. Given the pattern of fit statistics, we carefully reviewed the 3–5 class models for interpretability. Because our goal was to sufficiently describe the heterogeneity of emotion/behaviour combinations within the population, we chose the 5-class model, as it presented

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[3]Item-response probabilities of .25 for all four possible response categories for an item in a latent class indicate an equal chance of responding with any category given membership in that latent class. This pattern suggests a particular affect/behavioural response for that item does not discriminate children in that latent class from others. Item-response probabilities closer to zero or 1.0 are helpful in discriminating a given class.

[4]The 6-class model could not be sufficiently identified with these data because it did not provide sufficient information (e.g., enough participants) to estimate a model this complex.

classes that fit well within our conceptual framework.[5] See Figure 1 for the item response probabilities and prevalence rates for the 5-class model.

Children in the first latent class had increased probabilities of responding "happy" for the emotion and "passive" for the behaviour, and therefore were labeled *Happy/Passive*. Children in the second latent class were likely to choose "sad" for the emotion and as compared to the other subgroups, the most likely to choose "socially competent" for the behaviour; we labeled this class *Sad/Socially Competent*. Compared to children in the other classes, children in the third latent class had increased probabilities of choosing "angry" for their emotion response and "passive" for their behaviour response and therefore this class was labeled *Angry/Passive*. Children in the fourth class had a high probability of choosing "angry" for the emotion and compared to the other classes were most likely to choose "aggressive" for the behaviour (greater than 50% chance). They were also least likely to choose "passive" (less than 20% chance vs. over 40% chance for other classes); this class was labeled *Angry/Aggressive*. Similar to the second class, children in the fifth class had a high probability of choosing "sad" for the emotion, but instead of "socially competent" they were more likely to choose "passive" for the behaviour; this class was labeled *Sad/Passive*.

To determine whether membership in these classes was related to demographic classification and early school success, we employed a classify/analyze approach in which we used the posterior probabilities obtained from the LCA model to assign each child to the subgroup for which he/she had the highest probability of membership (Lanza, Lemmon, Schafer, & Collins, 2007). Posterior probabilities indicate the probability of an individual belonging to each of the specified classes given their observed data and the parameter estimates in the final LCA model. Average posterior probabilities of membership in the assigned classes ranged from .82–.90, which are acceptable values for class assignment (Nagin, 2005).

Demographic composition of latent classes—We explored gender and economic risk (i.e., Head Start vs. private childcare) differences among the classes. Table 3 presents this information, including overall chi-square tests of independence. If significant differences were found among classes, follow-up analyses were conducted for each pair-wise comparison to determine where differences were located. We found significant differences by gender and economic risk status. The *Angry/Passive* class had a larger proportion of males and smaller proportion of females in comparison to *Sad/Passive, Sad/Socially Competent*, and *Happy/Passive* classes. Compared to children in the *Sad/Socially Competent* class, a significantly larger proportion of males and smaller proportion of females were in the *Angry/Aggressive* class. For economic risk status, a greater proportion of private childcare to Head Start children was in the *Sad/Prosocial* class, compared to all other classes except *Angry/Passive*, which had similar proportions across groups.

Associations between latent classes and early school success—For these analyses, we dummy coded the assigned latent classes and used them as categorical predictors in path analyses. Denham and colleagues' (1994) work suggests that children choosing *Sad/Socially Competent* combinations are more likely to show adaptive social-emotional outcomes. We therefore utilised the *Sad/Socially Competent* group as our reference group for these analyses, facilitating comparisons to the subgroup most likely related to positive outcomes. We aimed to determine whether class membership predicted teacher-rated social competence and classroom adjustment in preschool and kindergarten, and academic readiness in kindergarten, after accounting for the associations between the

[5]For further information regarding our methodology (including the balance of using statistical fit and the conceptual interpretation of the latent classes to guide the model selection process), see Collins & Lanza (2010). For simplicity of presentation, not all models are presented here; information regarding the 3- and 4-class models are available to interested colleagues upon request.

classes and the aforementioned demographic factors. Full-information maximum likelihood estimation in AMOS 16.0 was utilised to account for missing data across measures.

All demographic variables, along with dummy-coded class membership (with *Sad/Socially Competent* as the reference group), were entered into a path model as predictors of the outcomes of interest (Table 4). Overall, it appears that even after accounting for the association between known predictors of children's classroom adjustment and academic readiness s (i.e., gender and economic risk), membership in these latent classes was uniquely predictive of both concurrent and later school success. Overall, children who were members of any of the classes other than *Sad/Socially Competent* demonstrated relatively poorer classroom adjustment and academic readiness. Specifically, children in the *Happy/Passive*, *Sad/Passive*, *Angry/Passive,* and *Angry/Aggressive* classes showed at least marginally less positive preschool social competence and classroom adjustment as compared to children in the *Sad/Socially Competent* class. At kindergarten, these negative associations between class membership and both social competence and classroom adjustment remained at least marginally significant for children in the *Sad/Passive Angry/Passive*, and *Angry/Aggressive* classes. In the prediction of kindergarten academic readiness, the associations were similar, with children in the *Happy/Passive, Sad/Passive, and Angry/Passive* classes exhibiting fewer academic readiness skills than the *Sad/Socially Competent* children; there was no association with academic readiness for the *Angry/Aggressive* children, relative to the *Sad/ Socially Competent* subgroup.

Mediation of associations between CST latent class memberchip and kindergarten classroom adjustment by earlier social competence—Next, we used a modeling approach to investigate possible indirect or mediated effects of CST latent class membership, via preschool social competence, on kindergarten classroom adjustment. To demonstrate mediation, any direct relation between predictor (here CST class latent membership) and outcome variable (here kindergarten classroom adjustment) must be lessened when the significant relation of the predictor and mediator (preschool social competence) is accounted for. Given Table 4's analyses demonstrated relations between CST latent class membership and both preschool social competence and kindergarten classroom adjustment, we then investigated whether preschool social competence did in fact predict kindergarten classroom adjustment, the last requirement of statistical mediation; in a regression analysis, after contributions of gender and economic risk, social competence contributed to variance in kindergarten classroom adjustment, $\beta = .35$, $p < .001$. Because the requirements for assessing mediation were satisfied, we then calculated the pathways in the mediation model shown in Figure 2, and followed up with Sobel's (1982) tests of significance of mediation.

As can be seen in Figure 2, after accounting for all pathways between the variables in the model, membership in *Sad/Passive*, *Angry/Passive*, and *Angry/Aggressive* uniquely predicted lower levels of preschool social competence (ps < .01, .05, and .10), and the *Angry/Passive* Class also directly predicted lower levels of kindergarten classroom adjustment, in comparison to the *Sad/Prosocial* Class ($p < .05$). The path from preschool social competence to kindergarten classroom adjustment also remained significant ($p < .001$). Sobel's tests showed that the association between *Sad/Passive*, *Angry/Aggressive*, and *Angry/Passive* class membership and kindergarten classroom adjustment were at least partially mediated by preschool social competence, z's = −2.42, −1.75, and −1.66, ps < .05, . 09, and .10, respectively.

Discussion

In the current study, our goals were to(1) identify subgroups of children characterised by specific social cognitive profiles (i.e., patterns of emotion and behaviour responses); (2) examine how subgroups differ in their composition of gender and economic risk, and (3) examine the association between subgroup membership and early school success (i.e., classroom adjustment and academic readiness). Our findings show that children's responses to the CST, a measurement tool designed to capture children's emotional and behavioural responses to hypothetical peer provocation, could be described using a subgroups approach.

Thus, findings confirmed previous findings regarding linkages between emotion and behaviour choices, but present analyses used a more sophisticated latent model, which accounted for measurement error and allowed the exploration of other previously un-researched linkages. One of the advantages of LCA is that it does not require examination of every possible combination of emotion-behaviour. Instead, it provides a model-based approach to concisely (and more parsimoniously) describe the underlying groups that exist in the data (Lanza et al., in press). We found that a five-class latent model, combining children's emotion and behaviour responses to hypothetical peer provocation, fit the data well based on empirical and interpretability criteria.

We also extended earlier investigations of young children's SIP to a larger, more socioeconomically diverse sample. It is noteworthy that, in comparison to the *Sad/Socially Competent* group, children in all subgroups except the *Angry/Passive* subgroup are at greater economic risk. Thus, our findings suggest that children's SIP sequences may be impacted by their more challenging developmental contexts as early as preschool.

Further, interpretable subgroup differences were found across genders. Boys were more likely to be members of the *Angry/Aggressive* class, with girls more likely to be members of the *Sad/Socially Competent* class, in support of our hypothesis. When confronted with a social problem, boys have been found to endorse more aggressive themes, whereas girls choose friendly or relationship-oriented choices (Zahn-Waxler, et al., 1994); our work's contribution is identifying the emotion/behaviour *combination* that was more/less prevalent in boys/girls, going beyond isolating only behaviours that differed.

Developmentally appropriate models of preschoolers' SIP and early school success

We consider SIP a key aspect of early school success (Denham, 2006). Previously, preschoolers' emotion-behaviour linkages have been related to their expressiveness and social competence (Denham et al., 1994), aspects of their classroom adjustment. We extended these findings to include links to broader indices of social competence, classroom adjustment, and academic readiness. Moreover, our findings are among the first to examine how preschoolers' SIP may relate to indicators of later school success in kindergarten.

Latent class membership was associated with teachers' reports of school success, controlling for gender and risk status, both concurrently and across time. More than this, we were able to show with the subgroups approach that the *combination* of emotion-behaviour responses predicts classroom adjustment and early academic readiness. That is, not all children who choose "angry" have the poorest outcomes, and not all children who respond "sad" have the best outcomes. For example, the "sad" choice in combination with the "passive" behavioural response was associated with more negative adjustment, whereas "sad" in combination with the "socially competent" behavioural choice was associated more positive preschool classroom adjustment. Further, we were able to identify multiple groups who chose similar emotions, but different behaviours (e.g., Angry/Passive vs. Angry/Aggressive).

Earlier research has shown that children's self-directed, cooperative participation partially mediates the relation between social rejection and school success at kindergarten, specifically with respect to children's emotional adjustment (i.e., school avoidance and loneliness; Buhs & Ladd, 2001). Children in our passive subgroups (i.e., *Happy/Passive*, *Angry/Passive*, and *Sad/Passive)* may struggle with such relationship and emotional challenges, and these deficits may be associated with these groups' diminished social competence and less autonomous, independent participation in the classroom. In contrast, as hypothesised, the *Sad/Socially Competent* subgroup demonstrated greatest school success according to preschool and kindergarten teachers, extending previous findings that preschoolers' social competence and classroom adjustment is associated with sad emotion choices and, along with these emotion choices, with socially competent behaviour choices.

Approximately 11 percent of all children in our sample reported anger paired with aggression, and this pattern was associated with classroom adjustment difficulties. Intervention impact studies with young children, like those with older populations, demonstrate links between improvement in both emotional and behaviour response choices and school behaviour outcomes through early elementary school (Denham & Burton, 2003; Elias, Gara, Schuyler, Branden-Miller, & Sayette, 1991). Early identification of such "angry aggressors" may help us better target intervention and prevention resources.

Finally, we were able to model longitudinal pathways from CST subgroup membership in preschool to kindergarten classroom adjustment, via preschool social competence. Latent classes pairing negative emotions and either passive or aggressive behaviors predicted diminished preschool social competence in comparison to the Sad/Prosocial class. These classes' relations to kindergarten classroom adjustment were at least marginally mediated by a strong relation between preschool teachers' views of children's social competence and kindergarten teachers' views of their classroom adjustment (even the Angry/Passive class, which showed a direct negative relation with kindergarten classroom adjustment in comparison with the Sad/Prosocial class). These findings substantiate our notions that social competence supports classroom adjustment. Further, they extend our regression analyses, pointing to a developmental trajectory from SIP differences, to preschool social competence, to classroom adjustment in kindergarten.

In short, this analytic approach allowed us to isolate the specific combinations of emotion-behavioural choices that were linked to poorer or more positive outcomes. Our model extends previous reports examining linkages between children's emotion and behaviour self-reports in response to hypothetical peer challenge, and highlights the need for continued integration of emotional processes within SIP, especially for understanding school success.

Role of emotions in SIP

In this research, we highlighted the importance of considering the emotional components of SIP. Blair (2002) has described interrelations among cognition and emotion as central to accurately understanding children's functioning at school entry, and researchers and professionals alike are increasingly aware of the importance of emotions in young children's education (Hamre & Pianta, 2005). Functionalist theories argue that emotional features of a situation serve to direct cognitive processing, due to their communicative and motivational functions (e.g., Barrett & Campos, 1987). Further, emotion knowledge and related emotional control processes appear earlier in development than cognitive control processes (Blair, 2002; Leerkes, Paradise, O'Brien, Calkins, & Lange, 2008). Thus, incorporating measurement of young children's emotion in SIP measurement models adds explanatory power.

Emotional experience while encoding social cues should relate to the child's subsequent behavioural response generation in meaningful ways (Arsenio et al., 2000; Crick & Dodge, 1994; Denham et al., 1994; Coy et al., 2001). Further, understanding one's own and others' emotions is an important school-related competence (Garner & Waajid, 2008; Izard, Trentacosta, King, & Mostow, 2004). As already noted, our current findings corroborate the role emotion plays in preschoolers' processing of social cues.

Future Directions

Although this study has important implications for early detection of young children's SIP strengths and weakness, it has several limitations. First, our SIP measurement may be confounded with language ability. Efforts were made to ensure that the measure was developmentally appropriate—by requiring, for instance, receptive rather than expressive responses from the child—but without a measure of expressive language in our study (which we were not allowed to administer), the strength of our conclusions is diminished.

Second, our findings rely upon the measurement of children's school success based entirely on teacher's reports. Although teachers' perceptions are important early risk indicators, future work could also examine the relations between children's emotion and behaviour response choices and their independently observed classroom behaviours, and their academic readiness as measured via direct assessments conducted by non-teachers. These findings would give further credence to the implications of our study for predicting early school success.

Future work exploring these subgroups of children should also include an index of children's emotion knowledge. Although we have shown recently that emotion knowledge is associated with sad emotion choices and prosocial behaviour choices (blinded reference), as well as early school success, better understanding of our subgroups' emotion knowledge may provide further clarity on the origins of these emotion-behaviour response patterns.

Further, although the strength of our measurement model lies in the subgroups approach, we found several latent classes not specifically hypothesised, including *Happy/Passive*, *Angry/Passive*, and *Sad/Passive* (and *passive* was the most prevalent behaviour choice). Perhaps these subgroups differ from others on some temperamental dimension, such as wariness, or the choice of passively moving away from provocation is developmentally appropriate. Again, further research is warranted.

Last, we focused specifically on children's affect and behaviour response choices within hypothetical examples of overt peer provocation. A burgeoning literature has also begun to recognise the importance of relational aggression for young children's social relationships (e.g., Ostrov, Ries, Stauffacher, Godleski, & Mullins, 2008). Scenarios focused on relational aggression should be added to the CST.

Emotion self-awareness and relationship skills, as indexed by the CST, are two core social-emotional competencies central to success in school. Our results highlight the importance of measuring such emotional and behavioural components of children's social cognitions, and provide evidence that they may be useful indicators of early school success in preschool settings; children who are struggling in the classroom environment may also be lacking requisite SIP skills. Thus, our findings support the importance of targeted social-emotional curricula for school success (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011).

References

Akaike H. Factor analysis and AIC. Psychometrika. 1987; 52:317–332.

Andrews RL, Currim IS. A comparison of segment retention criteria for finite mixture logit models. Journal of Marketing Research. 2003; 40:235–243.

Arsenio WF, Cooperman S, Lover A. Affective predictors of preschoolers' aggression and peer acceptance: Direct and indirect effects. Developmental Psychology. 2000; 36:438–448.10.1037/0012-1649.36.4.438 [PubMed: 10902696]

Attar BK, Guerra NG, Tolan PH. Neighborhood disadvantage, stressful life events, and adjustment in urban elementary-school children. Journal of Clinical Child Psychology. 1994; 23:391–400.

Barrett, KC.; Campos, JJ. Perspectives on emotional development II: A functionalist approach to emotions. In: Osofsky, JD., editor. Handbook of infant development (Second edition). Oxford, England: John Wiley and Sons; 1987.

Bergman LR, Magnusson D. A person-oriented approach in research on developmental psychopathology. Development and Psychopathology. 1997; 9:291–319. [PubMed: 9201446]

Bierman KL, Domitrovich CE, Nix RL, Gest SD, Welsh JA, Greenberg MT, Gill S. Promoting academic and social-emotional school readiness: The Head Start REDI program. Child Development. 2008; 79:1802–1817.10.1111/j.1467-8624.2008.01227.x [PubMed: 19037951]

Blair C. School readiness: Integrating cognition and emotion in a neurobiological conceptualization of children's functioning at school entry. American Psychologist. 2002; 57:111–127. [PubMed: 11899554]

Buhs ES, Ladd GW. Peer rejection as an antecedent of young children's school adjustment: An examination of mediating processes. Developmental Psychology. 2001; 37:550–560. [PubMed: 11444490]

Burgess KB, Wojslawowicz JC, Rubin KH, Rose-Krasnor L, Booth-LaForce C. Social information processing and coping strategies of shy/withdrawn and aggressive children: Does friendship matter? Child Development. 2006; 77:371–383. [PubMed: 16611178]

Cole P, Tamang B. Nepali children's ideas about emotional displays in hypothetical challenges. Developmental Psychology. 1998; 34:640–646.10.1037/0012-1649.34.4.640 [PubMed: 9681255]

Collins, LM.; Lanza, ST. Latent class and latent transition analysis: With applications in the social, behavioural, and health sciences. New York, New York: Wiley; 2010.

Cook ET, Greenberg MT, Kusché CA. The relations between emotional understanding, intellectual functioning, and disruptive behaviour problems in elementary-school-aged children. Journal of Abnormal Child Psychology. 1994; 22:205–219. [PubMed: 8064029]

Coy K, Speltz ML, DeKlyen M, Jones K. Social-cognitive processes in preschool boys with and without oppositional defiant disorder. Journal of Abnormal Child Psychology. 2001; 29:107–119.10.1023/A:1005279828676 [PubMed: 11321626]

Crick NR, Dodge KA. A review and reformulation of social information-processing mechanisms in children's social adjustment. Psychological Bulletin. 1994; 115:74–101.

Denham SA. Social-emotional competence as a support for school readiness: What is it and how do we assess it? Early Education and Development. 2006; 17:57–89.

Denham SA, Almeida MC. Children's social problem-solving skills, behavioural adjustment, and interventions: A meta-analysis evaluating theory and practice. Journal of Applied Developmental Psychology. 1987; 8:391–409.

Denham SA, Bouril B, Belouad F. Preschoolers' affect and cognition about challenging peer situations. Child Study Journal. 1994; 24:1–21.

Denham, SA.; Burton, R. Social and emotional prevention and intervention programming for preschoolers. New York: Springer; 2003.

Dodge KA, Laird R, Lochman JE, Zelli A. Multidimensional latent-construct analysis of children's social information processing patterns: Correlations with aggressive behaviour problems. Psychological Assessment. 2002; 14:60–73.10.1037/1040-3590.14.1.60 [PubMed: 11911050]

Dubow EF, Tisak J, Causey D, Hryshko A, Reid C. A two-year longitudinal study of stressful life events, social support, and social problem-solving: Contributions to children's behaviour and academic adjustment. Child Development. 1991; 62:583–599.10.2307/1131133 [PubMed: 1914627]

Durlak JA, Weissberg RP, Dymnicki AB, Taylor RD, Schellinger KB. The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. Child Development. 2011; 82:405–432.10.1111/j.1467-8624.2010.01564.x [PubMed: 21291449]

Elias MJ, Gara MA, Schuyler TF, Branden-Miller L, Sayette MA. The promotion of social competence: Longitudinal study of a preventive school-based program. American Journal of Orthopsychiatry. 1991; 61:409–417. [PubMed: 1951648]

Fantuzzo J, Perry MA, McDermott P. Preschool Approaches to Learning and Their Relationship to Other Relevant Classroom Competencies for Low-Income Children. School Psychology Quarterly. 2004; 19:212–230.10.1521/scpq.19.3.212.40276

Garner PW, Lemerise EA. The roles of behaviour adjustment and conceptions of peers and emotions in preschool children's peer victimization. Development and Psychopathology. 2007; 19:57–71.10.1017/S0954579407070046 [PubMed: 17241484]

Garner PW, Waajid B. The associations of emotion knowledge and teacher-child relationship to preschool children's school-related developmental competence. Journal of Applied Developmental Psychology. 2008; 29:89–100.10.1016/j.appdev.2007.12.001

Hair E, Halle T, Terry-Humen E, Lavelle B, Calkins J. Children's school readiness in the ECLS-K: Predictions to academic, health, and social outcomes in first grade. Early Childhood Research Quarterly. 2006; 21:431–454.10.1016/j.ecresq.2006.09.005

Hamre BK, Pianta RC. Can instructional and emotional support in the first-grade classroom make a difference for children at risk of school failure? Child Development. 2005; 76:949–967. [PubMed: 16149994]

Izard CE, Trentacosta C, King R, Mostow A. An emotion-based prevention program for Head Start children. Early Education and Development. 2004; 15:407–422.

Ladd GW, Birch SH, Buhs ES. Children's social and scholastic lives in kindergarten: Related spheres of influence? Child Development. 1999; 70:1373–1400.10.1111/1467-8624.00101 [PubMed: 10621962]

Ladd GW, Buhs ES, Seid M. Children's initial sentiments about kindergarten: Is school liking an antecedent of early classroom participation and achievement? Merrill-Palmer Quarterly. 2000; 46:255–279.

Ladd GW, Kochenderfer BJ, Coleman CC. Classroom peer acceptance, friendship, and victimization: Distinct relational systems that contribute uniquely to children's school adjustment? Child Development. 1997; 68:1181–1197. [PubMed: 9418233]

LaFreniere PJ, Dumas JE. Social Competence and Behaviour Evaluation children ages 3 to 6 years: The short form (SCBE-30). Psychological Assessment. 1996; 8:369–377.10.1037/1040-3590.8.4.369

LaFreniere P, Masataka N, Butovskaya M, Chen Q, Dessen MA, Atwanger K, Frigerio A. Cross-cultural analysis of social competence and behavioural problems in preschoolers. Early Education and Development. 2002; 13:201–219.10.1207/s15566935eed1302_6

Lanza, ST.; Lemmon, D.; Schafer, JL.; Collins, LM. PROC LCA & PROC LTA User's Guide Version 1.1.3 beta. University Park, PA: The Pennsylvania State University, The Methodology Center; 2007.

Lazarsfeld, PF.; Henry, NW. Latent structure analysis. Boston: Houghton Mifflin; 1968.

Leerkes EM, Paradise M, O'Brien M, Calkins SD, Lange G. Emotion and cognition processes in preschool children. Merrill-Palmer Quarterly. 2008; 54:102–124.10.1353/mpq.2008.0009

Lemerise EA, Arsensio WF. An integrated model of emotion processes and cognition in social information processing. Child Development. 2000; 71:107–118.10.1111/1467-8624.00124 [PubMed: 10836564]

McClelland MM, Acock AC, Morrison FJ. The impact of kindergarten learning-related skills on academic trajectories at the end of elementary school. Early Childhood Research Quarterly. 2006; 21:471–490.10.1016/j.ecresq.2006.09.003

McDermott PA, Leigh NM, Perry MA. Development and validation of the Preschool Learning Behaviours Scale. Psychology in the Schools. 2002; 39:353–365.10.1002/pits.10036

Nagin, D. Group-based modeling of development. Cambridge, MA: Harvard University Press; 2005.

Orobio de Castro B, Slot NW, Bosch JD, Koops W, Veerman JW. Negative feelings exacerbate hostile attributions of intent in highly aggressive boys. Journal of Clinical Child and Adolescent Psychology. 2003; 32:56–65. [PubMed: 12611030]

Ostrov JM, Ries EE, Stauffacher K, Godleski SA, Mullins AD. Relational aggression, physical aggression and deception during early childhood: A multimethod, multi-informant short-term longitudinal study. Journal of Clinical Child and Adolescent Psychology. 2008; 37:664–675. [PubMed: 18645756]

Richters J. The Hubble hypothesis and the developmentalist's dilemma. Development and Psychopathology. 1997; 9:193–229. [PubMed: 9201442]

Rotheram MJ. Children's social and academic competence. Journal of Educational Research. 1987; 80:206–211.

Schwartz G. Estimating the dimension of a model. The Annals of Statistics. 1978; 6:461–464.

Sclove SL. Application of model-selection criteria to some problems in multivariate analysis. Psychometrika. 1987; 52:333–43.

Sobel ME. Asymptotic confidence intervals for indirect effects in structural equation models. Sociological Methodology. 1982; 13:290–312.

Suarez-Morales L, Bell D. Relation of childhood worry to information processing factors in an ethnically diverse sample. Journal of Clinical Child and Adolescent Psychology. 2006; 35:136–147. [PubMed: 16390309]

Rock, Donald A.; Pollack, Judith M., editors. U.S. Department of Education, National Center for Education Statistics. Early Childhood Longitudinal Study-Kindergarten Class of 1998–99 (ECLS-K), Psychometric report for kindergarten through first grade, NCES 2002–05. Educational Testing Service, Elvira Germino Hausken, project officer; Washington, DC: 2002.

Youngstrom E, Wolpaw JM, Kogos JL, Schoff K, Ackerman B, Izard C. Interpersonal problem-solving in preschool and first grade: Developmental change and ecological validity. Journal of Clinical Child Psychology. 2000; 29:589–602.10.1207/S15374424JCCP2904_11 [PubMed: 11126636]

Zahn-Waxler, C.; Cole, PM.; Richardson, DT.; Friedman, RJ.; Michel, MK.; Belouad, F. Social problem-solving in disruptive preschool children: Reactions to. 1994.
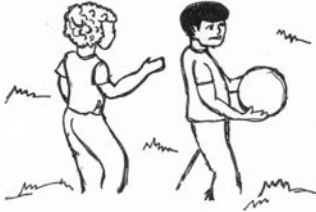
Appendix

Challenging Situation Task

Table A1

Challenging Situation Task scenarios and behaviour response choices

Scenario	Stimuli	Behavioural choices	
1. Taylor was building a very tall tower of blocks. Bobbie knocked it down.		**1a**	Build another tower?
		1b	Hit Bobbie or yell?
		1c	Cry?
		1d	Go find someone else to play with?
2. Taylor is having a good time playing in the sandbox when Bobbie hits her/him.		**2a**	Tell him it's not a nice thing to do?
		2b	Hit?
		2c	Cry?
		2d	Go play somewhere else?

Scenario	Stimuli	Behavioural choices	
3. Taylor was kicking a soccer ball. soccer ball. Bobbie came and took the		**3a**	Ask Bobbie to play with you?
		3b	Grab the ball back or yell?
		3c	Cry?
		3d	Go play something else?

Note: For all scenarios, emotion response choices included: (1) happy (2) sad (3) mad (4) just ok. Behavioural response choices included: (1) socially competent (2) aggressive (3) crying (4) passive.

Table A2

Emotion and Behaviour Response Choices

Emotion Choices:

"Angry"   "Just ok"   "Happy"   "Sad"

Behaviour Choices Pictorial Examples from Scenario One:

"Build another tower?"   "Hit or yell at Bobbie?"

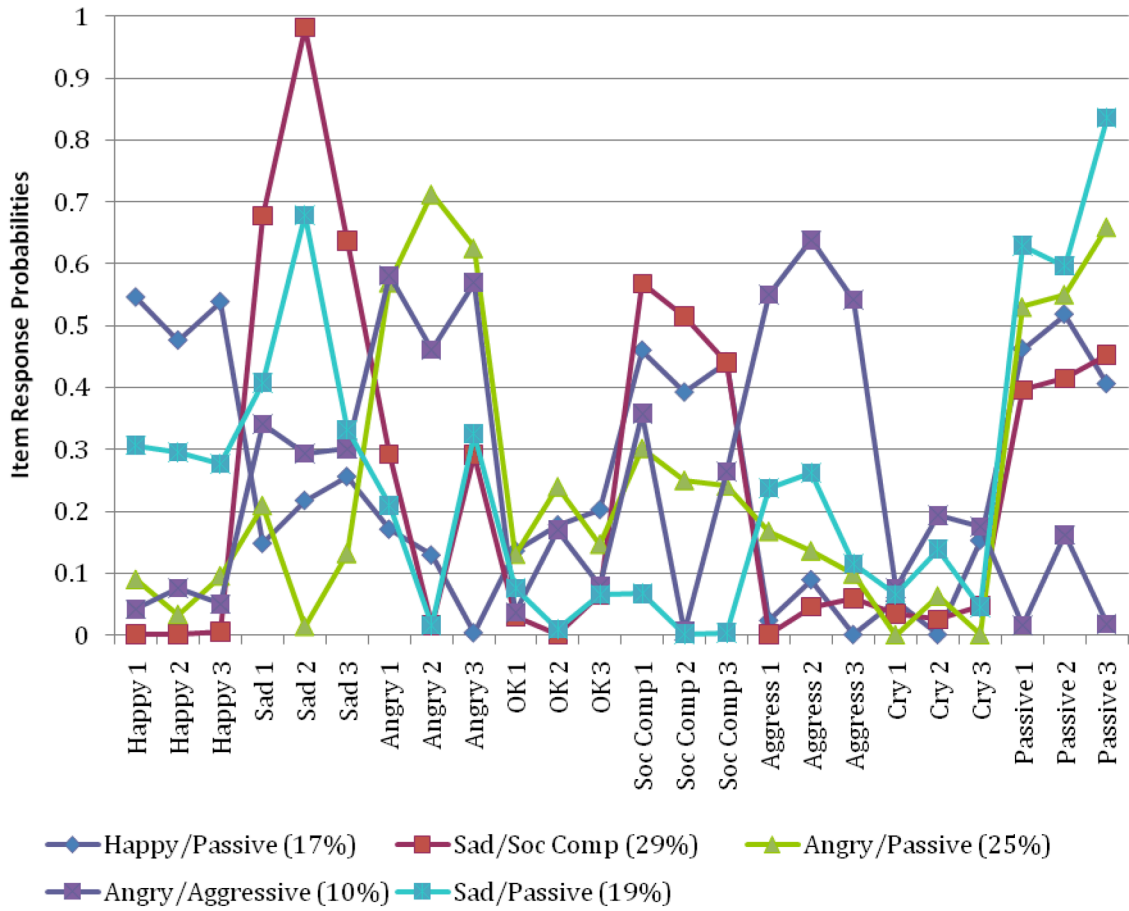"Cry?"   "Go find something else to play with?"
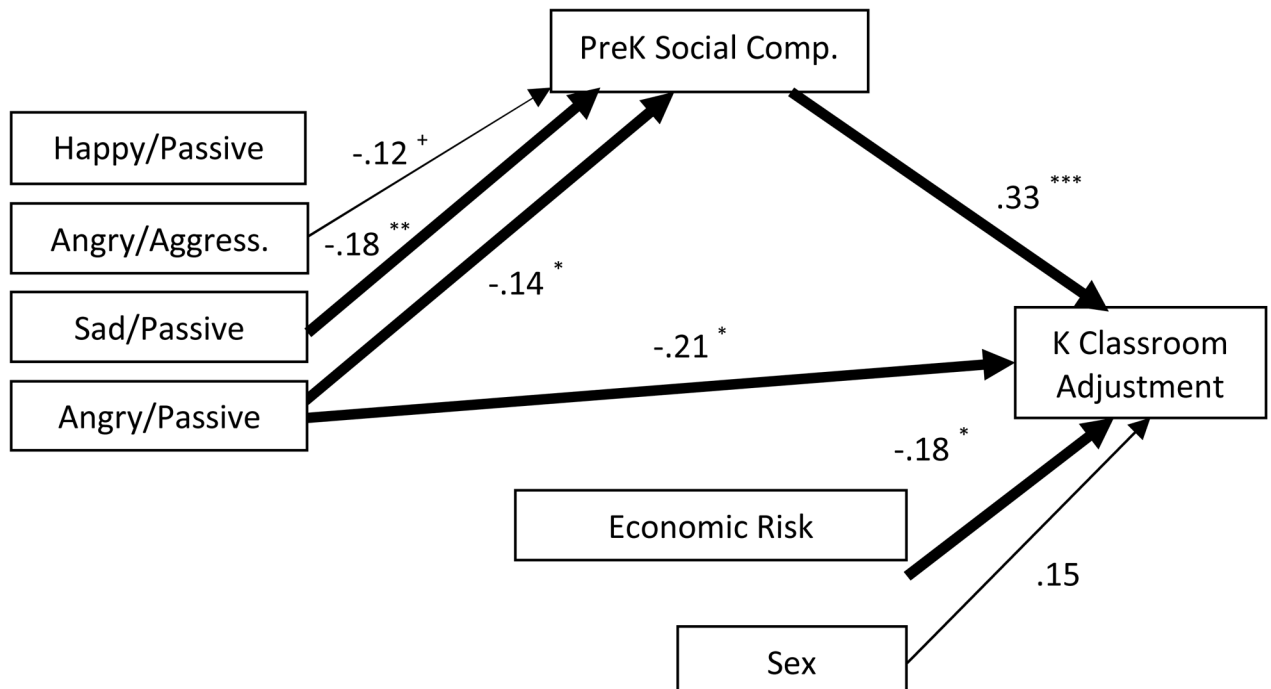
Figure 1.
LCA classes

Figure 2.
Mediation model from LCA classes to preschool social competence and kindergarten classroom adjustment.
Note. Bolded lines represent significant paths, nonbolded lines marginal paths; nonsignificant paths (all classes were allowed to predict preschool social competence and kindergarten classroom adjustment) are omitted.

Table 1

Percentage of emotion and behavioural responses for Challenging Situations Task peer provocation scenarios

	Emotion Percent			**Behaviour Percent**
Scenario 1 (Blocks)				
Sad	38	Socially Competent		37
Angry	36	Aggressive		15
Happy	18	Crying		4
OK	8	Passive		44
Scenario 2 (Sandbox)				
Sad	48	Socially Competent		28
Angry	26	Aggressive		18
Happy	15	Crying		7
OK	11	Passive		47
Scenario 3 (Soccer)				
Sad	36	Socially Competent		29
Angry	36	Aggressive		12
Happy	17	Crying		7
OK	11	Passive		52

Note. In the total sample, $N = 299$–304 for affect responses. $N = 299$–303 for behaviour responses.

Table 2

Fit statistics for LCA models

No. of classes	G sq.	df	AIC	BIC	AIC3	ABIC	Entropy R^2
1	1176.33	4077	1212.33	1279.3	1230.33	1222.21	1
2	1070.12	4058	1144.12	1281.77	1181.12	1164.42	.72
3	995.48	4039	1107.48	1315.82	1163.48	1138.21	.64
4	947.49	4020	1097.49	1376.51	1172.49	1138.65	.73
5	900.22	4001	1088.22	1437.93	1182.22	1139.81	.79

Note. G sq. = G-square statistic; df = degrees of freedom; AIC = Akaike Information Criteria (Akaike, 1987); BIC = Bayesian Information Criteria (Schwartz, 1978; lower AIC, BIC indicates more optimal model fit); AIC3 = Akaike Information Criteria 3 (Andrews & Currim, 2003); ABIC = Adjusted Bayesian Information Criteria (Sclove, 1987).

Table 3

Demographic information for each assigned class.

		Percent of Assigned Social Problem Solving Classes					
		Happy/Passive	Sad/Socially Competent	Angry/Passive	Angry/Aggress	Sad/Passive	χ^2
Total N		50	90	75	35	55	
Total %		17	29	25	11	18	
Gender	Boys	42_c	40_{bd}	65_{abc}	60_d	44_a	14.2**
	Girls	58	60	35	40	56	
Economic Risk Status	Private Childcare	42_c	67_{abc}	55	37_a	42_b	15.3**
	Head Start	58	33	45	63	58	

Note. The proportions in the same row within the demographic factor of interest (i.e., gender, risk status) that share subscripts differ at $p < .05$. That is, the composition of male to female or private childcare to Head Start differs across subgroups.

Table 4

Classes predicting four-year-old & kindergarten outcomes (N = 305)

Baseline Variable	Preschool Social Competence (SCBE-30)			Outcome Variables Preschool Classroom Adjustment (PLBS, TRSSA)		
	B	SE	β	B	SE	β
Intercept	-1.75 **	.64	---	-4.88 ***	1.39	---
Sex (1=male, 2=female)	.90	.29	.18 **	2.63	.63	.24 ***
High Economic Risk (1=Private Childcare, 2=Head Start)	.74	.29	.15 *	1.73	.63	.15 **
Happy/Passive	-.79	.44	-.12 +	-2.40	.96	-.16 *
Sad/Passive	-1.34	.43	-.20 **	-3.31	.93	-.23 ***
Angry/Passive	-.73	.40	-.12 +	-1.62	.86	-.12 +
Angry/Aggressive	-.99	.50	-.12 *	-2.62	1.09	-.15 *

Baseline Variable	Kindergarten Social Competence (SCBE-30)			Kindergarten Classroom Adjustment (PLBS, TRSSA)			Kindergarten Academic Readiness (ECLS-K)		
	B	SE	β	B	SE	β	B	SE	β
Intercept	1.78	1.00 +	---	1.42	2.24	---	2.25	1.13	---
Sex (1=male, 2=female)	.19	.45	.04	2.18	1.01	.20 *	.04	.51	.01
High Economic Risk (1=Private Childcare, 2=Head Start)	-.82	.46	-.17 *	-1.87	1.02	-.17 +	-.80	.51	-.15
Happy/Passive	-.82	.69	-.13	-1.79	1.54	-.12	-1.74	.78	-.24 *
Sad/Passive	-1.10	.67	-.18 +	-3.10	1.59	-.22 *	-2.01	.76	-.28 **
Angry/Passive	-1.38	.62	-.25 *	-2.89	1.38	-.22 *	-1.48	.70	-.23 *
Angry/Aggressive	-1.50	.79	-.20 +	-2.86	1.76	-.17 +	-.41	.89	-.05

Note. All regressions use Sad/Socially Competent as the reference group. B = Regression Weight; SE = Regression Weight Standard Error; β = Standardised Regression Weight;

+ $p < .10$,

* $p < .05$,

** $p < .01$,

*** $p < .001$.