**Abstract Title Page**
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**Title:** Contributions of social-emotional readiness and classroom quality to social-emotional trajectories across elementary school

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## Abstract Body

*Limit 4 pages single-spaced.*

### Background / Context:

*Description of prior research and its intellectual context.*

There is growing consensus among researchers and practitioners that children's social-emotional readiness makes unique contributions to their successful transition to and progress through school. However, many children still begin school ill-prepared for the behavioral demands they will encounter in the classroom (Rimm-Kaufman, Pianta, & Cox, 2000), and low-income children in particular may be at risk for low school readiness (Ryan, Fauth, & Brooks-Gunn, 2006). Understanding and supporting social-emotional functioning is an important goal because (1) social-emotional skills are themselves central components of healthy development across childhood; (2) they predict outcomes in adulthood such as educational attainment, reduced substance use, and reduced crime involvement (Jones, Greenberg, Crowley, & the Conduct Problems Prevention Research Group, in press; Moffitt et al., 2011); and (3) they support learning and academic progress over time (Zins, Weissberg, Wang, & Walberg, 2004). Furthermore, recent work indicates that the immediate and sustained impacts of several early childhood interventions are at least partly explained by intervention effects on "non-cognitive" behavioral skills, which highlights the potential long-term benefits of fostering social-emotional development (Heckman, Rodrigo, & Savelyev, 2013; Nix, Bierman, Domitrovich, & Gill, 2013).

Although longitudinal associations between social-emotional readiness and later outcomes have been documented, the extent to which social-emotional readiness predicts rates of change in learning and development over time is not yet well-understood. Two perspectives offer competing hypotheses regarding the developmental trajectories of children who begin school with different levels of skill. Under the skill-begets-skill hypothesis, initially higher-skilled children are expected to show greater gains across time, which results in widening or diverging skill trajectories between initially higher- and lower-skilled children (Heckman, 2008). Alternatively, under the catch-up hypothesis, initially lower-skilled children are expected to show greater growth relative to higher-skilled children once they begin school, which results in diminishing or converging skill trajectories over time (Barnett, 2011). To date, research testing the skill-begets-skill and/or catch-up hypotheses generally has focused on *academic* readiness as a predictor of *academic* trajectories. More research is needed to understand the extent to which social-emotional functioning of initially higher- and lower-skilled children diverges or converges across the school years.

Classroom experiences, such as interactions among teachers and students, also have been shown to predict children's social-emotional and academic competence across the early school years (Mashburn & Pianta, 2010). Furthermore, a few studies indicate that classroom experiences may interact with children's early skills, such that certain experiences are more or less beneficial for certain children. When experiences are more beneficial for initially higher-skilled children, skill trajectories would be expected to increasingly diverge over time as higher-skilled children pull further ahead and lower-skilled children fall further behind. In contrast, when experiences are more beneficial for initially lower-skilled children, skill trajectories would be expected to increasingly converge as lower-skilled children catch up in whole or in part to initially higher-skilled children. Some empirical work suggests classroom conditions under which trajectories would diverge or converge. For example, one line of research indicates that children with lower initial reading skills benefit differentially from instruction in text decoding

and phonics, whereas higher-skilled children benefit differentially from instruction in text comprehension (Connor et al., 2004; Juel & Minden-Cupp, 2000). In the behavioral domain, a few recent studies suggest that skill differences might widen over time between children with higher and lower behavioral skills in classrooms with lower instructional or emotional support, whereas differences would remain constant or might even be reduced in higher-quality classrooms (Curby et al., 2011; Vitiello et al., 2012; Williford et al., 2013). Given the limited research to date, particularly in low-income samples and regarding social-emotional skills, more work examining the interactive effects of the classroom context and children on children's developmental trajectories over time is warranted.

**Purpose / Objective / Research Question / Focus of Study:**
*Description of the focus of the research.*

This study examines the joint contributions of social-emotional readiness and classroom experiences to children's social-emotional trajectories in elementary school. Specifically, using a sample of 1292 rural, mostly poor children in Pennsylvania and North Carolina, this study examines: (1) the contributions of children's prosocial behavior, inattention, and conduct problems to their developmental trajectories in these same domains; (2) the effects of classroom management, emotional support, and instructional support in kindergarten through third grade classrooms on children's social-emotional functioning; and (3) the interactive effects of social-emotional readiness and classroom experiences on social-emotional trajectories from kindergarten to grade 3.

**Setting:**
*Description of the research location.*

Research was conducted in six high-poverty, rural counties in the U.S. Three counties in North Carolina and three counties in Pennsylvania were identified to represent the Black South and Appalachia, respectively.

**Population / Participants / Subjects:**
*Description of the participants in the study: who, how many, key features, or characteristics.*

Data were drawn from a large-scale longitudinal study of children and families living in high-poverty, rural counties in North Carolina and Pennsylvania. Target counties included no towns with a population greater than 50,000, were not adjacent to metropolitan areas, and had high rates (i.e., roughly 50%) of free and/or reduced price lunch eligibility among children in elementary school. Low-income families were oversampled in both North Carolina and Pennsylvania, and African American families were also oversampled in North Carolina (but not in Pennsylvania because 95% of target communities were White).

**Intervention / Program / Practice:**
*Description of the intervention, program, or practice, including details of administration and duration.*

This study did not test the efficacy of an intervention. However, natural variation in classroom quality (i.e., classroom management, emotional support, and instructional support)

from kindergarten to grade 3 was examined as a predictor of social-emotional trajectories and moderator of the longitudinal effects of social-emotional readiness.

**Research Design:**
*Description of the research design.*

This study utilized a longitudinal, non-experimental design.

**Data Collection and Analysis:**
*Description of the methods for collecting and analyzing data.*

Children's prosocial behavior, inattention, and conduct problems were assessed in the year prior to kindergarten by parent and/or preschool teacher report, and they were assessed again each spring in kindergarten through grade 3 by teacher report. Children's prosocial behavior and conduct problems were assessed by the Strengths and Difficulties Questionnaire (Goodman, 1997), and children's inattention was assessed with items from the ADHD subscale of the Disruptive Behavior Disorders Rating Scale, which was based on DSM diagnostic criteria (Pelham, Evans, Gnagy, & Greenslade, 1992).

Classroom management, emotional support, and instructional support were assessed by observers with the Classroom Assessment Scoring System (CLASS; Pianta, La Paro, & Hamre, 2008) each fall from kindergarten through grade 3. Because the three domains of teacher-student interactions were strongly intercorrelated (*r*s = .42 - .67), and because additional analyses (not reported here) indicated that patterns of results were similar across all domains of interactions, a single composite representing classroom quality was created by averaging scores across the three domains. In addition, given that classroom observations occurred over multiple years, across-time average scores were created for each child that captured the child's experience of quality up to a given timepoint. Specifically: in kindergarten, the classroom quality score equaled the classroom quality composite from kindergarten; in first grade, it equaled the average of the classroom quality composites from kindergarten and first grade; in second grade, it equaled the average of the classroom quality composites from kindergarten, first grade, and second grade; and in third grade, it equaled the average of the classroom quality composites from kindergarten, first grade, second grade, and third grade.

Trajectories of prosocial behavior, inattention, and conduct problems from kindergarten to grade 3 were examined in separate growth curve models. In the first set of models, school-entry behavior was entered as a predictor of the intercept at grade 3 and slope for linear time (i.e., school-entry inattention predicted inattention trajectories, school-entry prosocial behavior predicted prosocial trajectories, and school-entry conduct problems predicted conduct problems trajectories). In the second set of models, average classroom quality and its interaction with school-entry behavior were tested as additional predictors. Non-significant interactions were trimmed from final models. All models controlled for the effects of several covariates and their interactions with linear time: state, family income-to-needs, whether the primary caregiver completed college, whether the primary caregiver was married, whether the child was Black, child's sex, and child's age at kindergarten entry.

**Findings / Results:**
*Description of the main findings with specific details.*

Table 1 presents results of the first set of models, where school-entry prosocial behavior, inattention, and conduct problems were predictors of prosocial, inattention, and conduct problem trajectories, respectively. School-entry behavior was positively associated with behavior in grade 3 (i.e., positive effect at the intercept) for all three domains of social-emotional functioning, indicating small to moderate stability (standardized betas .18 - .29) of children's behavior across the early school years. In addition, in all three models, school-entry behavior *negatively* predicted the slope for time, indicating that the effect of school-entry behavior decreased over time. In other words, the trajectories of children who started with different levels of school-entry behavior converged somewhat over time. For example, consistent with the catch-up hypothesis, children who entered kindergarten with low levels of prosocial behavior showed greater growth over time compared to children who entered kindergarten with higher levels of prosocial behavior.

Table 2 presents results of the second set of models, where school-entry behavior, classroom quality, and their interaction were tested as predictors of social-emotional trajectories. Similar patterns were seen for prosocial and conduct problem trajectories. Specifically, school-entry behavior and classroom quality were associated with levels of prosocial behavior and conduct problems in the expected directions. However, these variables did not significantly predict slope for time, nor did school-entry behavior and classroom quality significantly interact to predict intercept or slope.

A different pattern of results was seen for inattention trajectories. The interaction between school-entry inattention and classroom quality significantly predicted intercept and slope for inattention. As shown in Figure 1, trajectories of inattention appeared to converge among children who experienced lower-quality classrooms across kindergarten to grade 3. In grade 3 (i.e., at the intercept), the effect of school-entry inattention was greater among children who experienced higher-quality kindergarten to grade 3 classrooms relative to children who experienced lower-quality classrooms.

## Conclusions:

*Description of conclusions, recommendations, and limitations based on findings.*

Fostering early social-emotional functioning and improving classroom experiences for children are two promising policy levers through which low-income children may be supported as they progress through school. Research suggests that achievement and behavioral gaps between higher- and lower-income children are present at school entry and in fact increase over time. It is thus important to identify the child-level and classroom-level factors that might counter this trend. Although this study is non-experimental, results contribute to the literature on the extent to which social-emotional readiness and certain classroom experiences may reduce skills gaps (i.e., encourage catch-up) among rural, mostly low-income children. Evidence regarding the role of social-emotional readiness in supporting learning and development over time is particularly critical as access to universal preschool expands across many states and as increased attention is paid to curricula implemented in Head Start and other early childhood education settings.

## Appendices

*Not included in page count.*

### Appendix A. References

*References are to be in APA version 6 format.*


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## Appendix B. Tables and Figures

*Not included in page count.*

Table 1

*Effects of school-entry behavior on social-emotional trajectories*

| | Inattention | | Prosocial Behavior | | Conduct Problems | |
|---|---|---|---|---|---|---|
| | β | *SE* | β | *SE* | β | *SE* |
| Intercept | -0.12 | 0.07 | 0.16* | 0.07 | -0.14 | 0.07 |
| Time (grade 3 = 0) | 0.00 | 0.03 | 0.05 | 0.03 | -0.06* | 0.03 |
| Time squared | -0.01 | 0.01 | -0.03* | 0.01 | 0.00 | 0.01 |
| School-entry behavior | 0.25* | 0.03 | 0.18* | 0.03 | 0.29* | 0.03 |
| Time*School-entry behavior | -0.04* | 0.01 | -0.03* | 0.01 | -0.03* | 0.01 |

*Note*. Standardized estimates and standard errors shown above. Covariate effects on intercept and slope were included in models but are not shown above. * $p < .05$.

Table 2

*Effects of school-entry behavior and classroom quality on social-emotional trajectories*

| | Inattention | | Prosocial Behavior | | Conduct Problems | |
|---|---|---|---|---|---|---|
| | β | *SE* | β | *SE* | β | *SE* |
| Intercept | -0.09 | 0.07 | 0.11 | 0.08 | -0.10 | 0.08 |
| Time (grade 3 = 0) | 0.01 | 0.03 | 0.03 | 0.03 | -0.05 | 0.03 |
| Time squared | -0.01 | 0.01 | -0.03* | 0.01 | 0.00 | 0.01 |
| School-entry behavior | 0.26* | 0.03 | 0.23* | 0.02 | 0.34* | 0.02 |
| Class quality | -0.01 | 0.04 | 0.09* | 0.02 | -0.06* | 0.02 |
| School-entry behavior*Class quality | 0.14* | 0.04 | | | | |
| Time*School-entry behavior | -0.04* | 0.01 | | | | |
| Time*Classroom quality | 0.02 | 0.01 | | | | |
| Time*School-entry behavior*Class quality | 0.05* | 0.01 | | | | |

*Note*. Standardized estimates and standard errors shown above. Covariate effects on intercept and slope were included in models but are not shown above. * $p < .05$.

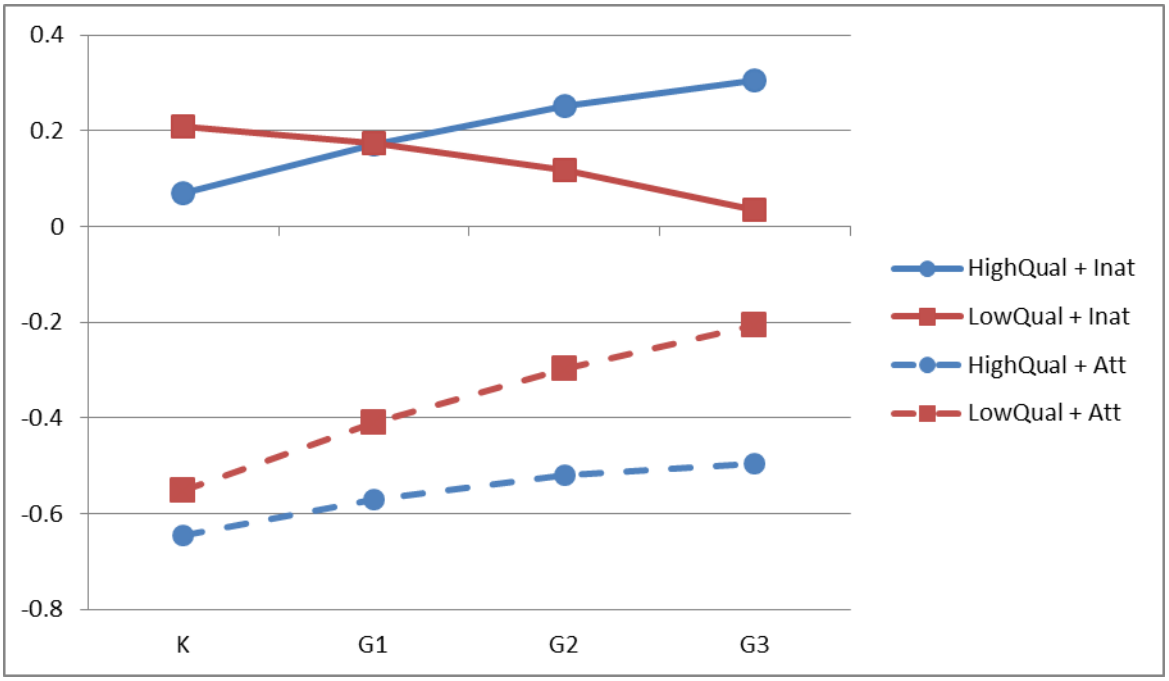


*Figure 1*. Inattention trajectories converge over time among children who experience lower quality classrooms across kindergarten to third grade. High or low = +/- 1 SD from the sample mean.