

ABSTRACT

Title of Document: INFORMANT DISCREPANCIES: UNDERSTANDING DIFFERENCES IN PARENT AND TEACHER RATINGS OF CHILDREN'S EXECUTIVE FUNCTIONS AND SOCIAL SKILLS

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Researchers and practitioners in the field of psychology frequently use parent and teacher rating scales in the assessment, diagnosis, and treatment of young children. However, research has shown that agreement between parents and teachers on rating scales is low to moderate. The present study examined this phenomenon, termed “informant discrepancy”, for the Behavior Rating Inventory of Executive Functions (BRIEF) and the Social Skills Improvement System (SSIS). Parents and teachers completed these scales for the same sample of 73 Kindergarten children. Results indicated that parent-teacher agreement was low at the scale and item levels, within-informant correlations were higher than between-informant correlations, mean differences in parent and teacher ratings may be explained by differences in the home and school contexts, and informants identified different children as having significant problems with executive functions and social skills. Implications of the findings for research and practice are discussed.

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AND TEACHER RATINGS OF CHILDREN'S EXECUTIVE FUNCTIONS AND
SOCIAL SKILLS

By

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Chapter 1: Introduction

Researchers and practitioners routinely use measures from multiple informants in assessing children. These measures may be used to diagnose the child with a certain condition, answer questions about eligibility for services, or evaluate the effectiveness of a particular intervention. However, when assessed on the same psychological construct, different informants (child, parent, and teacher) often do not agree (De Los Reyes & Kazdin, 2005). Indeed, informants' clinical reports in youth assessments exhibit only low-to-moderate correspondence, ranging from .20s to .60s (Achenbach, McConaughy, & Howell, 1987). This phenomenon has been termed "informant discrepancy" and is pervasive in both practice and research.

Informant discrepancy is a problem because when informants disagree they also yield inconsistent conclusions regarding important issues, such as identifying risk and protective factors, determining efficacious and effective treatments, and making plans for an individual's treatment (De Los Reyes, Salas, Menzer, and Daruwala, 2013). Also, best practices in psychological assessment involve collecting information from multiple informants (parents, teachers, and children) but no particular informant has been shown to consistently provide the best data when predicting outcomes for youth (De Los Reyes, 2013). Practitioners and researchers thus have little guidance in how to interpret informant discrepancies. Often it is unknown whether discrepancies occur due to differences in item content, measurement error, rater bias, or the fact that different informants observe the child in different contexts (De Los Reyes, Thomas, Goodman, and Kunder, 2013). Finally, informant discrepancies are important because they may explain many mixed findings in psychological research (De Los Reyes and Kazdin,

2005). Researchers often assume they are measuring the same phenomenon when using different methods. However, outcome measures for the same child may differ depending on the method used (self-report, other-report, observation, or performance-based tests).

According to the National Institute of Mental Health Strategic Plan (2008), intervention development research must incorporate various perspectives (doctors, social workers, psychologists, teachers, families, etc.) and take into account the diverse systems in which interventions are delivered (schools, the workplace, and communities at large). Interventions are not a “one size fits all” solution. Rather, interventions need to be personalized to meet the needs of different individuals and tailored to meet the demands of different settings (NIMH, 2008). In order to accomplish this goal, school psychologists should be able to utilize information from both parents and teachers to assess the child and plan effective treatments.

The present study examines discrepancies between parent ratings and teacher ratings on two measures routinely used by school psychologists, the Social Skills Improvement System (SSIS; Gresham, 2010) and the Behavior Rating Inventory of the Behavior Rating Inventory of Executive Functions (BRIEF; Roth, Isquith, & Gioia, 2005). Although informant discrepancies have been reported for these measures, a framework for understanding how to interpret these discrepancies for practitioners has yet to be proposed.

This aim of this study is to improve our understanding of informant discrepancies on the BRIEF and the SSIS scales. Parent and teacher versions of these scales were examined for within-informant correlations (e.g. parent-rated Inhibition and parent-rated Shift on the BRIEF scale), between-informant correlations (e.g. parent-rated Inhibition

and teacher-rated Inhibition on the BRIEF scale), means, and variability. Scales were then be examined at the item level to determine if parent-teacher agreement is higher when items are easier for the informant to observe. Finally, the children identified with low social skills and deficits in executive functioning by parents versus teachers were compared. As DSM V criteria often require that the child exhibit problems in more than one setting (e.g. ADHD), a child may not qualify for a disorder if he or she only exhibits problems according to one informant. The number of children identified and which children are identified, thus, has implications for the diagnosis, assessment, and treatment of children in schools.

Chapter 2: Literature Review

Early research on informant discrepancy sought to describe the correlations observed between various informants (self, parent, teacher, clinician, etc.) on the same measure. The most extensive research detailing these correlations was a 1987 meta-analysis conducted by Achenbach, McConaughy, and Howell. In this meta-analysis, Achenbach and colleagues sought to evaluate relations between data obtained from different informants on children's behavioral and emotional problems. In their review of 119 published studies, the authors found that the correlations between ratings of children's behavioral/emotional problems were higher (about .60) when the informant played similar roles with respect to the child (i.e. pairs of teachers). Correlations were much lower (ranging from .24 to .42) for ratings between different types of informant (i.e. parent/teacher pairs). Achenbach and colleagues conclude that low correlations between different informants are not due to issues in the reliability of the measures. Rather, they suggest that each type of informant contributes a considerable amount of variance not accounted for by others.

Meyer and colleagues (2001) also reviewed studies for a wide array of contrasts (self vs. parent, self vs. clinician, self vs. teacher, parent vs. teacher, etc.) for children, adolescents, and adults. The authors similarly found relatively low to moderate associations between independent methods of assessing similar constructs. Specifically, correlations between parent and teacher reports of child's behavioral and emotional problems were low, ranging from .16 to .29. In line with Achenbach and colleagues (1987), they conclude that each assessment method identifies useful data not available from other sources. Parents and teachers each contribute unique information about a

child's profile of strengths and deficits. Rather than discounting one source of information, we need to integrate data from the parent and teacher in a meaningful way.

Now that it is widely accepted that informant discrepancies occur, researchers have started theorize why informants disagree and explicitly test these hypotheses. Informants may disagree for four primary reasons: 1) measurement error, 2) rater bias, 3) a real difference in the child's behavior in different contexts, and 4) a real difference in the expectations for the child's behavior in different contexts. First, variations among multiple informants' reports can be seen as measurement error, or variations around a "true" score mean (Edgeworth, 1888). Although this hypothesis was previously accepted, it has not been strongly supported by research. The low to moderate correlations between various pairs of informants on various measures cannot be completely accounted for by measurement error. Second, informant discrepancies may occur because of rater bias. The rater may be biased for many reasons, including his or her mood, response style, and goals for the assessment. An informant's third-party report may also be biased because of his or her psychopathology. In line with this hypothesis, Hughes and Gullone (2010) examined discrepancies in mother and father reports of adolescents internalizing symptoms. They found that the mother's depressive and stress symptoms were associated with higher discrepancies for the reports of their sons but not daughters, and that the father's depressive and stress symptoms were associated with higher discrepancies for the reports of their daughter but not sons. Although parent's depressive and stress symptoms had a significant effect, parent symptoms only accounted for a small amount of the variance between informant reports. Therefore, rater bias alone is not a sufficient explanation for why informant discrepancies occur.

A third explanation for informant discrepancies is that they occur because of a real difference in the child's behavior in different contexts. According to De Los Reyes (2013), most informant discrepancies occur because of two realities. First, informants systematically vary in where they observe the behavior being assessed. Different informants (parent versus teacher) observe the child in different contexts (home versus school). Second, children systematically vary in where they express the behavior being assessed. Informants may disagree because children may express certain behaviors in some settings and not in others. For instance, a child may act reserved around his or her peers in school, but act very social around his or her family at home. Informant discrepancies are thus expected when the child expresses the assessed behavior differently across contexts. In this way, informant discrepancies may yield different, but not necessarily conflicting, conclusions.

De Los Reyes and Kazdin (2005) proposed the Attribution Bias Context (ABC) model as a theoretical framework for explaining informant discrepancy. According to the model, informant discrepancies may occur because of differences in informant's attributions, differences in informant's perspectives, and the clinical assessment process. Informants may make different attributions of the child's behavior because of the actor-observer phenomenon. This phenomenon states that we are more likely to attribute internal causes for other's behaviors and attribute external causes for our own behaviors. Therefore, observers are more likely to attribute causes of the child's problem to the child's disposition, whereas children are more likely to attribute the causes to the context of the environment. Observer informants' attributions are most similar to each other and most discrepant from the attributions of the child.

Discrepancies among informants are also influenced by the perspective informants have with regard to whether or which of the child's behaviors warrant treatment. Discrepancies among informants' perspectives may lead to discrepancies in the information of children's behaviors that informants will access from memory and use to rate the child's behavior and emotional problems. Informant discrepancies also occur because informants' attributions and perspectives may be discrepant from the goal of the clinical assessment process.

Most importantly, informant ratings may differ because the parent and teacher view the child in different contexts. De Los Reyes, Henry, Tolan, and Wakschlag (2009) tested this assumption empirically in their study of informant discrepancy in measures of children's disruptive behavior. In this study, De Los Reyes and colleagues examined patterns of observed preschool disruptive behavior across varying social contexts in the laboratory and whether they related to parent-teacher discrepancies of disruptive behavior in a sample of 327 preschoolers. The researchers observed four patterns of disruptive behavior: (a) low across parent and examiner contexts, (b) high with parent only, (c) high with examiner only, and (d) high with parent and examiner. They found that observed disruptive behavior specific to the parent context was related to parent-identified disruptive behavior. Similarly, observed disruptive behavior specific to the examiner context was uniquely related to teacher-identified disruptive behavior. Further, observed disruptive behavior across both parent and examiner-contexts was associated with disruptive behavior as identified by both informants. These findings support the hypothesis that informant discrepancies indicate true differences in the context in which children's behavior occurs.

Another study by De Los Reyes and Beidel (2013) examined informant discrepancies in adult social anxiety disorder assessments. The researchers examined discrepancies between patients' and clinicians' reports of Social Anxiety Disorder, including both generalized SAD and SAD subtypes. They also assessed patients using social interaction tasks and found that patients fit into two categories: a) context-specific social skills deficits and b) cross-context social skills deficits. Importantly, patient-clinician agreement was associated with both a greater likelihood of being diagnosed with *generalized* SAD and increased social skills deficits *across* contexts. Notably, clinical severity did not account for these relationships. Informants agreed more on behavior that occurred across contexts and less about behavior that was context-specific. These findings support the explanation that informant discrepancies reflect a real difference in one's behavior in different contexts.

A final explanation for informant discrepancies is that they reflect a real difference in the expectations for a child's behavior in different settings. For instance, a child may show significant executive function deficits in school, but not at home, because of the expectations for executive functions (EF) in school. In school, students are expected to inhibit their responses (e.g. not yell out an answer), shift appropriately (e.g. switch to different subjects and activities throughout the day), and regulate their emotions (e.g. take a test even if they are feeling upset). As students are expected to show high levels of executive functions at school, EF may be more relevant to the school context. Some children may show problems with EF in school, but not show similar problems at home. If this is the case, we should expect informant discrepancies to occur.

Informant discrepancy is a documented phenomenon with implications for diagnosis, assessment, and treatment planning. Most researchers now agree that different informants (e.g. parent and teacher) disagree because they view children in different contexts (e.g. home and school), there are different expectations for behaviors in these contexts, and children act differently in these contexts. Although significant progress has been made in explaining informant discrepancy, considerable work needs to be done in order to provide a framework for interpreting these discrepancies. De Los Reyes and colleagues have developed the Operations Triad Model (OTM; De Los Reyes, Thomas, Goodman, & Kundey, 2013) as a framework for examining informant discrepancies. When informants' reports yield different outcomes, this could be the result of either Diverging Operations or Compensating Operations. In the case of Diverging Operations, informants' reports reflect real and meaningful differences in the individual's expression of symptoms or behavior across different contexts. In the case of Compensating Operations, informants' reports are due to measurement error in one or both reports (De Los Reyes Thomas, Goodman, & Kundey, 2013). The OTM framework allows researchers to make hypotheses about informant discrepancies that can then be tested with empirical research.

A framework is still needed, however, to interpret discrepancies when they occur in practice. The present study is an initial step towards developing this framework. When informants disagree, practitioners and researchers need to interpret the discrepancy for that individual child. The discrepancy may occur because of: a) measurement error, b) rater bias, c) the child acts differently in these settings because there are different task demands, or d) there are different expectations for these settings and informants judge the

child's behavior based on these expectations. We need to recognize that parents and teachers each provide valuable information about the child that is useful for assessment, making a diagnosis, planning interventions, and evaluating intervention effectiveness. Rather than relying on one informant's report or interpreting all differences as measurement error, we need a framework to understand these discrepancies and why they occur.

Chapter 3: Hypotheses

This study evaluated the influence of multiple informants on the BRIEF and the SSIS. These measures are widely used by practitioners and include versions for the child/adolescent, parent, and teacher to complete. The BRIEF is a measure of executive functions, defined as “a set of neural mechanisms that are responsible for cueing, directing, and coordinating multiple aspects of perception, emotion, cognition, and action” (McCloskey and Perkins, 2012). The SSIS Social Skills scale is a measure of social competence, defined as “the ability to achieve personal goals in a social interaction while simultaneously maintaining positive relationships with others over time and across situations” (Rubin and Rose-Krasnor, 1992).

The study addressed the following questions and hypotheses:

Preliminary Hypothesis. There will be low to moderate agreement between parent and teacher ratings on the BRIEF (the BRI, MCI, and GEC), and parent and teacher versions of the SSIS Social Skills scale, as reported in prior research.

Hypothesis 1. The correlations between the measures will be higher for within-informant comparisons than between-informant comparisons.

Hypothesis 2a. The means of the SSIS Social Skills scale and its component subscales will be higher for parent ratings than teacher ratings, meaning that parents will report higher levels of social skills, on average, than teachers. Variability on the SSIS Social Skills scale will be higher for teacher ratings than parent ratings.

Hypothesis 2b. The means of the Behavior Rating Inventory (BRI) and its component subscales will be higher for teacher ratings than parent ratings, meaning that

teachers will report higher levels of executive function deficits, on average, than parents. Variability on the BRI scale will be higher for teacher ratings than parent ratings.

Hypothesis 3. The number of children identified as having “Well Below Average/Below Average” social skills and in the “Elevated” range for executive function deficits will vary by the informant used. Different children will be identified depending on the informant criteria applied.

Exploratory Question. How do correlations between parents and teachers on specific items relate to how relevant the item is to the classroom and home context and how available the item is to be observed in these contexts?

Preliminary Hypothesis. Low-Moderate Correspondence Between Raters

It was hypothesized that correspondence between parent and teacher ratings would be low to moderate on both the BRIEF and the SSIS scales. Prior research has documented low correspondence between parents and teachers on the BRIEF and the SSIS. In a review of the BRIEF (Gioia, Isquith, Guy, & Kenworthy, 2000), moderate agreement was reported between parents and teachers. Consistent with patterns showing higher rater agreement when items refer to more observable behaviors (Achenbach, McConaughy, & Howell, 1987), Gioia and colleagues reported that rater correspondences in the emotional control and flexibility to shift scales were particularly low. A review of informant agreement on the SSIS (Gresham, Elliott, Cook, Vance, & Kettler, 2010) showed greater agreement between pairs observing children in the same contexts (mother-father dyads and teacher-teacher dyads) than pairs observing children in different contexts (parent-teacher dyads). Additionally, agreement between parent and teacher pairs on the various Social Skills scales averaged a modest .30, consistent with widely

reported findings that agreement across informants in different settings tend to be as low as .20 (American Educational Research Association, 1999). These findings support the hypothesis of low correlations between informants on both the BRIEF and the SSIS. Informant discrepancy is not a problem, but rather the reality, in clinical assessment.

Hypothesis 1. Higher within-informant correlations than between-informant correlations

It was hypothesized that within-informant correlations would be higher than between-informant correlations for the measures. Correlations are expected to be highest (0.5-0.6) between the subscales of the BRIEF and the subscales of the SSIS that are rated by the same informant. These correlations are expected to be highest because they are rated by the same informant and measure components of the same construct. Correlations are expected to be second highest, in absolute terms, between behavioral regulation (BRI) and social skills (SSIS), as rated by the same informant (0.4-0.5). As the BRI scale is negatively worded and the SSIS is positively worded, correlations should be negative. These absolute correlations are expected to be second highest because they are rated by the same informant and measure constructs that are positively associated. Correlations are hypothesized to be lowest (0.2-0.3) between parents and teacher ratings on the same subscales of the BRIEF and the SSIS. These correlations are hypothesized to be lowest on the basis of prior findings of informant discrepancies. In summary, it is hypothesized that correlations between different subscales and scales as rated by the same informant will be higher than correlations on the same subscale as rated by different informants.

This hypothesis is based on research documenting low correspondence between independent raters on the same measure. In a meta-analysis of cross-method agreement, Meyer and colleagues (2001) found only low to moderate associations between

independent methods of assessing similar constructs. The correlation between parent and teacher ratings of specific behavioral and emotional problems was .16 and the correlation between parent and teacher ratings of summed behavioral and emotional problems was .29. In line with these findings, it was predicted that there would be low to moderate correspondence between parent and teacher ratings.

It is important to note that this hypothesis conflicts with the Multitrait Multimethod Matrix (MTMM) framework. This framework is a way to establish convergent validity, the extent to which theoretically related concepts are related in reality, and discriminant validity, the extent to which concepts that should not be theoretically related are not theoretically related in reality. Construct validity is established when the measure meets the standards for both convergent validity and discriminant validity. According to the MTMM, there should be higher correlations between different raters of the same construct than between different constructs rated by the same informant (Eid and Nussbeck, 2009). If parent BRI and teacher BRI measure the same construct (executive function deficits), then they should be highly correlated. Likewise, if the parent BRI and the parent SSIS measure different constructs (executive functions versus social competence), then they should not be as highly correlated. Given the research on informant discrepancy, however, the opposite hypothesis was proposed. Within-informant comparisons on different constructs are expected to be higher than between-informant comparisons on the same construct.

Hypothesis 2. Mean ratings and variability of ratings on the SSIS and BRI

Differences in the means of parent and teacher ratings on the SSIS Social Skills Scale and the Behavior Rating Inventory (BRI) were hypothesized. Prior research has

found that parents show a *positivity bias* when evaluating their children, tending to overestimate their children's cognitive and social competencies (Keogh, Juvonen, & Bernheimer, 1989; Cole, Gondoli, & Peeke, 1998; Grigorenko, Geiser, Slobodskaya, & Francis, 2010). As such, parents are expected to report higher levels of social skills and lower levels of executive function deficits, on average, than teachers. Practitioners should be aware of this finding when interpreting results from parents and teachers, as the parent's rating *may* overestimate the child's competencies. Researchers should also be aware of this finding, as relying on parent report alone *may* not be sufficient.

The mean of the SSIS Social Skills scale, and its component subscales, are expected to be higher for parent ratings than teacher ratings. Parents are expected to report higher levels of social skills, on average, than teachers based on the positivity bias hypothesis, and Gresham, Elliott, Cook, Vance, and Kettler (2010)'s finding that the mean of parents' ratings was higher on the Social Skills scale than the mean of teachers' ratings ($M_p=99$, $M_t=94$, respectively). Higher mean scores on the BRI, and its component subscales were expected for teacher ratings than parent ratings. Teachers were expected to report higher levels of executive function deficits, on average, than parents, in concordance with the positivity bias hypothesis.

Variability on the SSIS Social Skills scale and the BRI scale was expected to be higher for teacher ratings than parent ratings. Differences in the variability of ratings are also expected because teachers observe a wider range of behavior than parents. Teachers may view a child's behavior from a different perspective than the parent, as related to the ABC model. The teacher may view the child as compared to his or her peers, and rate his or her behaviors accordingly. They also view a wider range of behaviors in the classroom

context, and may be more confident in rating the extreme ends of a behavior. The parent, however, may view the child in settings where he or she is alone or around a few peers, such as siblings, and rate his or her behavior accordingly. They may be less likely to rate the child on the low or high extreme ends of behavior. Thus, the variability of teacher ratings is expected to be greater than the variability of parent ratings. This hypothesis is also based on research documented in the SSIS manual. Gresham and Elliot (2008) found that teachers showed more variability in ratings than parents on the Social Skills scale. Based on a sample of 550 teacher ratings and 2,000 parent ratings of children aged 5-12, teacher ratings of social skills were more variable than parent ratings, but this difference was not statistically significant (Social Skills Teacher SD=22.0, Social Skills Parent SD=18.1). Based on the manual, teacher ratings on each of the Social Skills component subscales were more variable than parent ratings on these subscales.

Hypothesis 3. Children identified by parent versus teacher ratings

Given that there is low-moderate correspondence between raters, it is expected that the number of children identified will differ based on the informant used. It is also expected that different informants will identify different children for needing treatment. This is supported by prior research, which has found that the DSM diagnosis children receive depends on the informant used (Munkvold, Lundervold, Lie, and Manger, 2009). Munkvold and colleagues (2009) found that the prevalence of Oppositional Defiant Disorder (ODD) in a sample of 7007 children (ages 7-9) differed based on the criteria applied. When using the *or-rule* (parent or teacher reported at least 4 ODD symptoms), 2.6% of the sample met the criteria for ODD. When using the *and-rule* (parent and teacher reported at least 4 ODD symptoms), only 0.2% of the sample met the criteria for

ODD. Additionally, 1.4% of the sample received a diagnosis of ODD based on teacher report only and 1.3% of the sample received a diagnosis of ODD based on parent report only.

This is clear evidence, therefore, that the criteria applied to making diagnostic decisions has implications for the number of children identified. Also, *different* children are identified by different informants, as shown by the finding that parents and teachers agreed on the diagnosis for only 0.2% of children. The present study examined this hypothesis for the SSIS and BRIEF scales. Specifically, the number of children and the specific children identified as having deficits in executive functions and deficits in social skills was expected to differ based on the criteria applied: teacher only, parent only, the or-rule, and the and-rule.

Exploratory Question. Item-level analysis for the BRI and SSIS

Parent-teacher agreement was examined at the item level for the BRI and the SSIS Social Skills scale. Patterns of high and low agreement were examined to gain insight about the reasons that parents and teachers agree and disagree. It is hypothesized that parents and teachers will agree more on items that are easier to judge, meaning they are easily observable in both the classroom and home contexts. This is consistent with prior research documenting an association between self-peer agreement and item ratability (Ready, Clark, Watson, & Westerhouse, 2000). Specifically, Ready and colleagues (2000) found a moderate correlation (.47) between self and peer report on the Schedule for Nonadaptive and Adaptive Personality (SNAP; Clark, 1993). The level of self-peer agreement, however, varied for the subscales of the SNAP. Self-peer agreement was lowest for the Eccentric Perceptions, Mistrust, and Entitlement scales. On these

scales, items were judged as difficult for a peer to rate because they were based on internal experiences (e.g. mistrusting a partner). Based on these findings, it is expected that parent-teacher agreement is higher on items that are external to the child than items that are internal to the child. For example, the item “Makes eye contact when talking” on the Communication scale of the SSIS is external to the child and easily observable by parents and teachers. However, the item “Forgives others” on the Empathy scale of the SSIS is internal to the child and may be difficult for parents and teachers to rate.

According to Funder (1995), the accuracy of perceptions is determined by four criteria: 1) Availability, 2) Relevance, 3) Detection, and 4) Utilization (see Figure 1). The accuracy of an informant’s rating depends on the relevance and availability of that behavior in the environment and the informant’s ability to detect and utilize that behavior to make a judgment about the child. It is expected that parents and teachers will agree more on items that are both relevant to their respective contexts (home and school) and available to be observed in that context. For example, consider the item “Completes tasks without bothering others” on the Cooperation scale of the SSIS. This item is included on both the parent and teacher scales. However, this item is more relevant to the school environment than the home environment, and more available for teachers to observe than for parents to observe. If a child bothers his or her peers in the classroom, the teacher is likely to notice this behavior and use this information when rating the child. It is likely that there will be low levels of agreement between parents and teachers on the item.

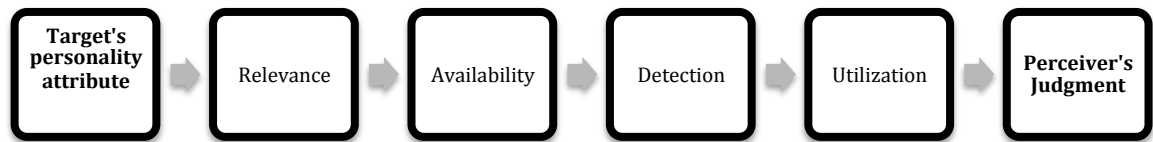


Figure 1. Funder (1995)'s model of accurate personality judgment

Chapter 4: Method

Participants

This study is part of a larger research project conducted by Dr. Hedy Teglassi and a team of graduate students. The sample consists of 73 Kindergarteners, their parents, and their teachers from nine schools in the DC metro area and one school in the Chicago area. Of the schools participating in the study, seven were private Christian schools, two were public schools, and one was a laboratory school under a public research university. The Kindergarten sample included 35 males and 38 females (Mean Age = 70.04 months; Age range = 60-83 months). The sample was somewhat diverse but the majority of children were White (68.5% White, 11% Asian, 9.6% African American, 8.2% Hispanic, and 2.7% Unknown).

There was not a significant effect of the child's gender on parent-rated executive functions, teacher-rated executive functions, or parent-rated social skills. However, there was a significant effect of gender for teacher-rated social skills, $t(71) = -3.11, p < .01$, with girls receiving higher scores than boys. There was not a significant effect of age on parent-rated executive functions, teacher-rated executive functions, or parent-rated social skills. However, the child's age significantly predicted teacher-rated social skills, $b = .27, t(71) = 2.34, p < .05$. There was not a significant effect of race on parent-rated executive functions, teacher-rated executive functions, parent-rated social skills, or teacher-rated social skills.

Complete data from 73 parents and 23 teachers was obtained. As each teacher rated multiple children, children's ratings were nested by teachers and within schools. The Intraclass Correlation Coefficient was calculated to test for significant differences

between schools (see table below). Negative ICC values were not interpreted. As shown in the table below, the school the child attended did not have a significant effect on the teacher's rating of his or her executive functions or social competence. The lack of cluster effects at the school level may be a result of the homogeneity among schools. Most of the schools that participated in this study were private, religious-based institutions.

Intraclass Correlation Coefficients*

Scale	ICC: Schools
BRI Composite	-.06
BRI: Inhibit	-.06
BRI: Shift	-.09
BRI: Emotional Control	-.05
Social Skills Composite	.01
SSIS: Communication	.04
SSIS: Cooperation	.09
SSIS: Assertion	-.13
SSIS: Responsibility	.13
SSIS: Empathy	-.04
SSIS: Engagement	.03
SSIS: Self Control	-.003

*Data were excluded from the analysis if there was only one child with complete data from that school. The dataset for this analysis includes 5 schools and 14 teachers ($n= 64$ children).

Procedure

Ten schools from the Chicago and DC metro areas agreed to participate in this study. Teachers completed the teacher consent forms and parent consent forms were sent home with kindergarten students. After consenting to the study, parents and teachers completed the Behavioral Rating Inventory of Executive Functions (BRIEF; *See Appendix A*), as a measure of the child's executive functioning, and the Social Skills Improvement System (SSIS; *See Appendix B*), as a measure of social competence. See below for a description of each measure.

Measures

Behavior Rating Inventory of Executive Functioning (BRIEF). The Behavior Rating Scale of Executive Functions (BRIEF; Roth, Isquith, and Gioia, 2005) was completed by both the guardian and teacher of each child. The BRIEF assesses executive function behaviors in the school and home environments. The informant rates the frequency that the child engaged in a behavior in the past six months. Statements are negatively worded on the BRIEF, meaning high scores indicate a lack of executive functions. The BRIEF includes eight clinical scales: Inhibit, Shift, Emotional Control, Initiate, Working Memory, Plan/Organize, Organization of Materials, and Monitor. These scales are clustered to form two indices: the Behavioral Regulation Index (BRI) and the Metacognition Index (MCI). The BRI includes the Inhibit, Shift, and Emotional Control subscales. The MCI includes the remaining five subscales. All eight clinical scales from both indices combine to form the Global Executive Composite (GEC) score.

Social Scales Improvement System (SSIS). The SSIS (Gresham & Elliott, 2008) was completed by both the guardian and teacher of each child. The SSIS is a multi-informant measure of social competence. The informant rates the frequency that the child engaged in a behavior in the past six months. Statements are positively worded on the SSIS, meaning that high scores indicate a high level of social skills. The Social Skills Composite is comprised of seven subscales: Communication, Cooperation, Assertion, Responsibility, Empathy, Engagement and Self-Control. The informant rates the frequency of a behavior occurring in the past six months.

Chapter 5: Results

Preliminary Hypothesis. Low-Moderate Correspondence Between Raters

Spearman and Pearson correlations were run on the parent and teacher versions of the BRIEF total scales (the BRI, MCI, and GEC) and the parent and teacher versions of the SSIS Social Skills scale. Spearman correlations examine rank-order differences, and thus allow for a test of informant correspondence. As expected, there was low agreement between parent and teacher ratings for both scales. Spearman correlations between parent and teacher ratings were low and non-significant, ranging from .10 to .16. The Spearman (Pearson) correlations between parent and teacher rated behavioral regulation (BRI) was .13 (.24), between parent and teacher rated metacognition (MCI) was .10 (.14), between parent and teacher rated executive functions (GEC) was .13 (.18), and between parent and teacher rated social skills (SSIS Social Skills) was .16 (.17). Of all parent-teacher scale correlations, only the Pearson correlation for parent rated behavioral regulation and teacher rated behavioral regulation (BRI) was significant ($r = .24, p < .05$).

Hypothesis 1. Within-informant correlations will be higher than between-informant correlations.

Spearman and Pearson correlations were run on the parent and teacher versions of the BRIEF subscales and the parent and teacher versions of the SSIS subscales. Correlations were examined for all within-informant and between-informant comparisons. The pattern of correlations generally fit the hypothesized pattern. Correlations were highest for some, but not all, of the within-informant subscale associations (e.g. parent-rated Inhibit and parent-rated Shift). Correlations were second highest, in absolute terms, for within-informant scale associations (e.g. parent-rated BRI

and parent-rated SSIS), and lowest for between-informant subscale associations (e.g. parent-rated Inhibit and teacher-rated Inhibit).

For the BRIEF, all but three of the within-informant subscale correlations were significant. The three non-significant correlations occurred on the parent form of the BRIEF. Spearman correlations ranged from .10 to .62 on the parent-rated BRIEF subscales (see *Table 1*). The highest correlation for parent ratings was between the Working Memory scale and the Plan/Organization scale. On the teacher form of the BRIEF, all correlations between subscales were significant (see *Table 2*). These correlations ranged from .27 to .87. The highest correlation for teacher ratings was also between the Working Memory scale and the Plan/Organization scale.

For the SSIS, Spearman and Pearson correlations among all parent subscales and among all teacher subscales were significant. Parent-rated Spearman correlations among the subscales ranged from .20 to .71 (see *Table 3*). The highest correlation for parent ratings was between the Communication scale and the Responsibility scale. Teacher-rated Spearman correlations among the subscales ranged from .29 to .89 (see *Table 4*). The highest correlation for teacher ratings was also between the Communication scale and the Responsibility scale.

Table 1. Within-rater Spearman (Pearson) correlations on the BRIEF Parent Form

Scale	Inhibit	Shift	Emotional Control	Initiate	Working Memory	Plan/Org	Org. of Materials	Monitor
Inhibit	1	.27* (.32**)	.42** (.46**)	.37** (.42**)	.53** (.53**)	.47** (.57**)	.44** (.42**)	.59** (.66**)
Shift		1	.40** (.33**)	.24* (.28*)	.27* (.28*)	.29* (.27*)	.10 (.08)	.30** (.33**)
Emo. C			1	.35** (.32**)	.16 (.15)	.25* (.24*)	.15 (.08)	.30* (.29*)
Initiate				1	.56** (.48**)	.59** (.57**)	.39** (.45**)	.39** (.39**)

W. Mem					1	.62** (.56**)	.44** (.42**)	.50** (.50**)
Plan/Org						1	.44** (.49**)	.57** (.61**)
Org of M							1	.41** (.41**)
Monitor								1

* Significant at the $p < .05$ level

** Significant at the $p < .01$ level

Table 2. Within-rater Spearman (Pearson) correlations on the BRIEF Teacher Form

Scale	Inhibit	Shift	Emotional Control	Initiate	Working Memory	Plan/Org	Org. of Materials	Monitor
Inhibit	1	.42** (.48**)	.53** (.67**)	.51** (.59**)	.56** (.62**)	.53** (.59**)	.62** (.49**)	.85** (.88**)
Shift		1	.52** (.75**)	.70** (.68**)	.59** (.58**)	.67** (.73**)	.47** (.59**)	.52** (.61**)
Emo. C			1	.38** (.50**)	.27** (.44**)	.34* (.53**)	.36** (.39**)	.54** (.65**)
Initiate				1	.81** (.85**)	.85** (.90**)	.56** (.68**)	.68** (.78**)
W. Mem					1	.87** (.87**)	.69** (.69**)	.70** (.74**)
Plan/Org						1	.81** (.77**)	.69** (.79**)
Org of M							1	.67** (.66**)
Monitor								1

* Significant at the $p < .05$ level

** Significant at the $p < .01$ level

Table 3. Within-rater Spearman (Pearson) correlations: SSIS Social Skills Parent Form

Scale	Communication	Cooperation	Assertion	Responsibility	Empathy	Engagement	Self-Control
Comm	1	.65** (.67**)	.30** (.36**)	.62** (.64**)	.40** (.40**)	.48** (.53**)	.57** (.54**)
Coop		1	.20* (.27*)	.71** (.80**)	.41** (.48**)	.32** (.44**)	.44** (.51**)
Assert			1	.36** (.45**)	.34** (.38**)	.51** (.54**)	.30** (.34**)
Resp				1	.50** (.49**)	.53** (.53**)	.57** (.56**)
Emp					1	.53** (.59**)	.54** (.56**)
Eng						1	.58** (.60**)
Self C.							1

* Significant at the $p < .05$ level

** Significant at the $p < .01$ level

Table 4. Within-rater Spearman (Pearson) correlations: SSIS Social Skills Teacher Form

Scale	Communication	Cooperation	Assertion	Responsibility	Empathy	Engagement	Self-Control
Comm	1	.81** (.81**)	.47** (.52**)	.86** (.86**)	.73** (.68**)	.71** (.45**)	.81** (.57**)
Coop		1	.35** (.39**)	.84** (.84**)	.66** (.62**)	.50** (.17)	.70** (.34**)
Assert			1	.50** (.53**)	.53** (.59**)	.57** (.33**)	.29* (.18)
Resp				1	.74** (.70**)	.58** (.31**)	.78** (.50**)
Emp					1	.62** (.27*)	.67** (.32**)
Eng						1	.60** (.78**)
Self C.							1

* Significant at the $p < .05$ level

**Significant at the $p < .01$ level

The second highest correlations, in absolute terms, occurred within-informants between the BRI and the SSIS Social Skills scales (see Table 5). The Spearman correlation between parent ratings of behavioral regulation and parent ratings of social competence was significant ($r = -.54, p < .01$). The Spearman correlation between teacher ratings of behavioral regulation and teacher ratings of social competence was also significant ($r = -.57, p < .01$).

Table 5. Within-rater Spearman (Pearson) correlations on the BRI and SSIS Social Skills

Scale	Social Skills-Parent	Social Skills-Teacher
BRI-Parent	-.54** (-.50**)	
BRI-Teacher		-.57** (-.48**)

**Significant at the $p < .01$ level

The lowest correlations occurred between informants on the same subscale of the BRIEF and SSIS. For the BRIEF, correlations between informants on the same subscale were all in the low range and mostly non-significant, ranging from .01 to .36 (see Table 6). The two significant correlations between parent and teacher ratings were on the

Inhibit scale ($r = .36, p < .01$) and the Monitor scale ($r = .25, p < .05$). For the SSIS, correlations between informants on the same subscale were all in the low range and all non-significant, ranging from $-.07$ to $.14$ (see *Table 7*).

Table 6. Between-rater Spearman (Pearson) correlations: BRIEF Parent and Teacher

Scale	Inhibit-T	Shift-T	Emotional Control-T	Initiate-T	Working Memory-T	Plan/Org -T	Org. of Materials-T	Monitor -T
Inhibit-P	.36** (.34**)							
Shift-P		.09 (.13)						
Emo. C-P			.04 (.18)					
Initiate-P				.01 (-.002)				
W. Mem-P					.12 (.11)			
Plan/Org-P						.13 (.14)		
Org of M-P							.16 (.15)	
Monitor-P								.25* (.26*)

* Significant at the $p < .05$ level

** Significant at the $p < .01$ level

Table 7. Between-rater Spearman (Pearson) correlations: Social Skills Parent and Teacher Forms

Scale	Communication -T	Cooperation -T	Assertion-T	Responsibility-T	Empathy-T	Engagement -T	Self-Control-T
Comm-P	.14 (.19)						
Coop-P		-.02 (.05)					
Assert-P			.05 (.09)				
Resp-P				.12 (.18)			
Emp-P					.07 (.16)		
Eng-P						-.07 (-.06)	
Self C.-P							.11 (.05)

Hypothesis 2. Mean ratings and variability of ratings on the SSIS and BRI.

Hypothesis 2a. A paired samples t-test was conducted to test the hypothesis that the mean of the SSIS Social Skills scale is significantly higher for parent ratings than teacher ratings, meaning that parents report higher levels of social skills than teachers. There was a significant difference in the scores for parent ratings ($M = 96.33$, $SD = 13.18$) and teacher ratings ($M = 101.44$, $SD = 14.00$); $t(72) = -2.48$, $p < .05$. However, the mean differences did not occur in the expected direction. Parents rated children's social skills significantly lower, on average, than teachers.

Paired samples t-tests were conducted to test the hypothesis that the mean of the SSIS Social Skills subscales are higher for parent ratings than teacher ratings. There was a significant difference in the scores for five of the seven subscales (see *Table 8*). As hypothesized, mean ratings of assertion were significantly higher for parent ratings than teacher ratings. Contrary to the hypothesis, mean ratings of responsibility, engagement, and self-control were significantly lower for parent ratings than teacher ratings. Mean ratings of communication, cooperation, and empathy did not significantly differ between parent ratings and teacher ratings.

Table 8. Mean differences on the Social Skills Scale for Parent and Teacher Forms

Scale	Parent Mean	Teacher Mean	<i>t</i> -value (<i>df</i>)	Significance
Communication	15.95	16.00	-.12 (72)	.91
Cooperation	12.60	12.49	.21 (72)	.83
Assertion	14.48	13.34	2.2 (72)	.03*
Responsibility	12.03	13.07	-2.25 (72)	.03*
Empathy	12.79	12.52	.54 (72)	.59
Engagement	14.70	16.08	-2.04 (72)	.04*
Self-Control	11.26	14.3	-4.09 (72)	.00*
Social Skills Composite	96.33 (SD=13.18)	101.44 (SD=14.00)	-2.48 (72)	.02*

An *F*-test of equality of variances was run to test the hypotheses that variability on the SSIS Social Skills scale is higher for teacher ratings than parent ratings. There was not a significant difference in the scores for teacher ratings (*SD*= 13.99) and parent ratings (*SD*=13.18). Teacher ratings of social skills were not significantly more variable than parent ratings of social skills.

Hypothesis 2b. A paired samples *t*-test was conducted to test the hypothesis that the mean of the BRI is significantly higher for teacher ratings than parent ratings, meaning that teachers report higher levels of executive function deficits, on average, than parents. This hypothesis was rejected; there was not a significant difference in the scores for parent ratings (*M*= 51.69) and teacher ratings (*M*=53.62).

Paired samples *t*-tests were conducted to test the hypothesis that the mean of the BRI subscales are higher for teacher ratings than parent ratings. There was only a significant difference in scores for the Inhibit subscale of the BRI (see *Table 9*). As hypothesized, mean ratings of inhibition were significantly higher for teacher ratings than parents. Teachers, on average, rated more problems with inhibition than parents. Contrary to the hypothesis, mean ratings of shift and emotional control did not significantly differ between parent ratings and teacher ratings.

Table 9. Mean differences on the BRI for Parent and Teacher Forms

Scale	Parent Mean	Teacher Mean	<i>t</i>-value (<i>df</i>)	Significance
Inhibit	51.97	56.26	2.5 (72)	.02*
Shift	50.16	50.00	-.12 (72)	.90
Emotional Control	51.19	52.49	.70 (72)	.48
BRI Composite	51.69 (<i>SD</i> =7.82)	53.62 (<i>SD</i> =13.76)	-1.47 (72)	.15

An F -test of equality of variances was conducted to test the hypothesis that variability on the BRI is higher for teacher ratings than parent ratings. This hypothesis was confirmed. There was a significant difference in the scores for teacher ratings ($SD=13.76$) and parent ratings ($SD=7.82$); $F(72,72)=3.10, p < .001$. Teacher ratings of executive function deficits were significantly more variable than parent ratings of executive function deficits.

Hypothesis 3. Children identified by parent versus teacher ratings

The frequency of children scoring in the “Elevated” range for executive function deficits and in the “Well Below Average/Below Average” range for social skills for the parent and teacher scales were calculated. Then, the ID numbers of these children were compared to determine if the same children were identified by each method. As hypothesized, the number of children identified as having significant deficits in executive functioning depends on the informant, ranging from 1 child identified when both informants are required to agree to 19 children identified when either of the informants’ reports are used (see *Table 10*). The number of children identified as having “Below Average” social skills also depends on the informant, ranging from 5 children identified when both informants are required to agree to 16 children identified when either of the informants’ reports are used. It is clear that different informants identify different children as having significant problems in terms of EF and social skills. Parents and teachers agreed on only 1 out of 19 identified cases that a child exhibited elevated EF deficits and they agreed on 5 out of 16 identified cases that a child was below average in social skills. Parents and teachers agreed on 7 out of 25 identified cases that a child exhibited any problems (elevated EF deficits or below average social skills).

Table 10. Children identified with EF deficits and below average social skills

Number of children identified as:	Parent rating only	Teacher rating only	Parent or teacher rating	Parent and teacher rating
Elevated range on the GEC	5	15	19	1
Below average on Social Skills	11	10	16	5
Either Elevated range on the GEC or Below average on Social Skills	12	20	25	7

Exploratory Question. Item-level analysis for the BRI and SSIS

Spearman correlations were run for 64 items with identical wording on the parent and teacher forms of the BRI and the SSIS. Correlations were only run for items with identical wording, because the manuals for both forms did not state which items were comparable between parents and teachers. Most item-level correlations between parent and teachers were not significant, with the exception of the Inhibit scale of the BRI. Six of the ten identical items on the Inhibit scale were significantly correlated between parent and teacher ratings.

Item-level correlations were then examined if they were significant and above .30. This cutoff was determined based on the meta-analysis by Meyer and colleagues (2001) that correlations between parent and teacher reports of child's behavioral and emotional problems range from .16 to .29. Although a correlation of .30 is still in the low-moderate range, a correlation above .30 between parent and teacher reports is a *relatively* high correlation. Among the 64 identical items on the BRI and Social Skills scales, 8 items were significantly correlated above .30 for parent and teacher ratings (see Table 11). Notably, five of the eight items that met this criterion were on the Inhibit scale of the BRI.

Table 11. Significant parent-teacher item-level correlations above .30

Item	Spearman (Pearson) Correlation	Scale	Subscale
Gets out of seat at the wrong times.	.39** (.42**)	BRI	Inhibit
Gets out of control more than friends.	.35** (.45**)	BRI	Inhibit
Acts too wild or “out of control”.	.38** (.46**)	BRI	Inhibit
Has trouble putting the brakes on his or her actions.	.35** (.41**)	BRI	Inhibit
Is impulsive.	.34** (.37**)	BRI	Inhibit
Has trouble getting used to new situations (classes, groups, and friends).	.31** (.31**)	BRI	Shift
Follows your directions.	.31** (.30**)	SSIS	Cooperation
Resolves disagreements with you calmly.	.33** (.30**)	SSIS	Self-Control

* Significant at the $p < .05$ level

** Significant at the $p < .01$ level

Two items were significantly correlated between parents and teachers on the SSIS Social Skills scale, “Follows your directions” on the Cooperation subscale and “Resolves disagreements with you calmly” on the Self Control Scale. As informants also rate the importance of each item (“1=Not important, 2=Important, 3=Critical”) on the SSIS, these items were further examined for importance ratings. Ten cases were randomly selected, and the mean importance ratings assigned by parents and teachers on the identical items of the two subscales were calculated. Both parents and teachers rated the item “Follows your directions” as most important on the Cooperation subscale (see Table 12). Parents and teachers rated the item “Resolves disagreements with you calmly” as most important on the Self Control subscale (see Table 13).

Table 12. SSIS Mean Importance Ratings, Cooperation Subscale (n=10)

Item	Mean Parent Rating	Mean Teacher Rating
Follows your directions	2.7	2.6
Completes tasks without bothering others	2.3	2.2
Pays attention to your instructions	2.6	2.5
Follows household/classroom rules	2.5	2.3

Table 13. SSIS Mean Importance Ratings, Self Control Subscale (n=10)

Item	Mean Parent Rating	Mean Teacher Rating
Resolves disagreements with you calmly	2.4	2.1
Stays calm when teased	2.2	1.9
Takes criticism without getting upset	2	2
Responds appropriately when pushed or hit	2.3	2.2
Makes a compromise during a conflict	2.1	2.1

Chapter 6: Discussion

Informant discrepancies are pervasive in psychological practice and research. However, these discrepancies may not be problematic. Rather, informant discrepancies may occur because different informants view the child in different contexts, and there are different expectations for the child's behavior in each context (De Los Reyes, 2013). Rather than relying on one informant's report or interpreting differences as measurement error, practitioners need a framework for interpreting discrepancies when they occur. The current study is a first attempt to develop this framework.

Parents and teachers completed the BRIEF and SSIS, two measures routinely used by school psychologists, for 73 Kindergarten children. Potential causes and implications of informant discrepancies were examined. Results are summarized by six main findings:

1. Parent-teacher agreement is low for behavior rating scales that are commonly used by school psychologists.

As hypothesized, there was low agreement between parent and teacher ratings of children's executive function deficits and social skills. Pearson correlations on parent and teacher scales of executive function deficits were all in the low range (-.002 to .34) and most were non-significant. Correlations were somewhat lower than expected, based on Gioia and colleagues (2010)'s finding that parent-teacher correlations on the BRIEF total scales were in the moderate range (.32-.34). Pearson correlations on parent and teacher ratings of social skills were all in the low range (-.07 to .14) and all were non-significant. Correlations on social skills ratings were lower than expected, based on Gresham and colleagues (2010)'s finding that parent-teacher correlations averaged .30 for the Social Skills subscales. Although these low correlations may be due to a small

sample size, these findings align with prior research of low-moderate agreement between different informants on the same construct. School psychologists should be aware that the assessment method used (e.g. parent rating versus teacher rating) has implications for assessment results. This highlights the importance of using a multi-method and multi-informant approach when conducting evaluations for students.

2. The Multi-trait Multi-method Matrix (MTMM) does not represent the reality of assessment for school psychologists.

According to the MTMM, construct validity is established when a measure meets the standards for both convergent validity and discriminant validity. For instance, correlations between different raters on the same construct (e.g. Parent Inhibit and Teacher Inhibit) should be *high* while correlations between different constructs for the same rater (e.g. Parent BRI and Parent SSIS) should be *low*. Results from this study, however, contradict the MTMM theory. Correlations were higher within one rater of different constructs than between two raters of the same construct. The MTMM may not be the best approach, then, to assess the construct validity of behavior rating scales commonly used by school psychologists. Future research is needed to establish an appropriate framework for assessing a measure's construct validity when method variance is high. This framework is essential for ensuring that the measures school psychologists use indeed measure what they purport to measure.

3. There are significant differences in mean ratings between parent and teacher reports, and these differences may be due to differences in the home and classroom contexts.

There were significant differences between the mean rating of parents and the mean rating of teachers on the Inhibit scale of the BRI and on four of the seven subscales

of the SSIS (Assertion, Responsibility, Engagement, and Self-Control). As hypothesized, teachers rated more problems, on average, with inhibition than parents. Teachers also rated assertion lower, on average, than parents. Contrary to the hypothesis, teachers rated responsibility, self-control, and engagement higher, on average, than parents. Mean differences, therefore, cannot be completely accounted for by the *parental positivity bias hypothesis*. Rather, mean differences may occur because children act differently in home versus school and the expectations for children's behavior differ in these contexts.

Teachers may have rated assertion lower than parents and self-control higher than parents because children are expected to exhibit high levels of self-control and low levels of assertion at school. In school, Kindergarten children are told to abide to the classroom rules and follow structured routines. At home, children generally have more freedom over their environment and more time for unstructured play. Therefore, teachers may rate assertion lower than parents and self-control higher than parents because children actually are less assertive and show more self-control in school than they do at home.

4. Teachers show significantly more variability in ratings of children's executive functions than parents, and this has implications for assessment.

As hypothesized, teachers showed significantly more variability in their ratings of executive function deficits than parents. This was expected, as teachers observe a wide range of behaviors and are more likely to rate a child at the extreme ends of a behavior. Teachers also have a larger comparison sample than parents. Parents may compare their child's behavior to that of a sibling or family relative, whereas teachers may rate the child's behavior in comparison to other children in their class and children in classes taught previously. Importantly, teachers showed more variability in their ratings of

executive functions, but not in their ratings of social skills, than parents. This lends support to the hypothesis that executive functions are especially relevant to the classroom context. As students are expected to engage in high levels of behavioral regulation and metacognition at school, teachers observe a wider range of executive function behaviors. Practitioners should be aware of this finding when interpreting assessment results from parents and teachers.

5. Different children are identified with problems in executive functions or deficits in social skills, depending on the criteria applied.

Different children were identified with elevated deficits in executive functions and below average social skills, depending on the criteria applied (parent report, teacher report, either parent or teacher report, or both parent and teacher report). The number of children identified also significantly varied depending on the decision rule. This has significant implications for children, parents, school psychologists, and school systems at large. The decision criteria applied affect *which* children and *how many* children will be diagnosed with a psychological disorder, eligible for special education services, or needing an intervention.

6. There was low agreement between parent and teachers on most items, but relatively high agreement on items related to children's inhibitory control.

There was very low agreement between parents and teachers on most items of the BRI and Social Skills scale. Eight items with moderate parent-teacher correlations were examined. Importantly, six of these eight items occurred on the BRI, a measure of executive function deficits. There may be high levels of agreement on the BRI because behaviors that are problematic (e.g. impulsive behaviors) are relevant and likely to be

observed by both informants. Teachers and parents are both more likely to notice a child's behavior and be concerned about behaviors that disrupt the classroom or home environment. This is consistent with prior research that the majority of teacher referrals for social-emotional concerns are for externalizing problems (defiance, physical aggression, and ADHD), especially at the elementary school level (Briesch, Ferguson, Volpe, & Briesch, 2013). Five of these eight items with higher levels of agreement measured deficits in inhibitory control, a trait highly relevant to both the school and home contexts. Students are expected to inhibit behaviors that are inappropriate at school, such as getting out of their seat, and at home, such as stopping before crossing the street. There may be higher levels of agreement between parents and teachers on these items, then, because the trait is highly relevant and available to be observed in both contexts.

Only two items on the SSIS showed significant moderate correlations between parents and teachers. Parents and teachers also generally rated these items as the most important item on their component subscales. This lends preliminary support to the hypothesis that parents and teachers tend to agree more when rating behaviors that are important to both the school and home contexts.

Conclusion

Parents and teachers completed the BRIEF, a measure of executive functions, and the SSIS, a measure of social skills, for Kindergarten children. Importantly, parents and teachers completed both measures for the *same* children. Parent-teacher agreement was low at the scale, subscale, and item levels on ratings of executive function deficits and social skills. Potential causes of low agreement were explored by examining differences in mean ratings, variability of ratings, and item-level correlations. Findings support prior

research that parents and teachers disagree because: a) children behave differently at home than at school and b) parents and teachers observe children's behaviors in their respective contexts.

Results from this study have important implications for diagnosis, assessment, and intervention for children in schools. In terms of diagnosis, the number of children identified as exhibiting difficulties differs, depending on the informant criteria applied, and different informants identify *different* children. The criteria applied for executive function deficits, for instance, could result in 1 out of 73 children identified or 19 out of 73 children identified. This difference has drastic consequences for the Type 1 and Type 2 error rates in eligibility and diagnostic decisions, the number of children identified as needing services and the financial burden of providing these services. This finding also stresses the importance of using a multi-method and multi-informant approach to make important diagnostic decisions for children.

In terms of assessment, the results of this study indicate that method variance is high for behavior rating scales commonly used by school psychologists. This suggests that measures should be designed to account for contextual variability in children's behavior, rather than ignore this variability exists. Measures could be designed, for example, to assess social skills critical to functioning in the home context, social skills critical to functioning in the school context, and social skills critical to functioning in both contexts. Assessment tools that account for contextual variability will allow assessors to meaningfully interpret results. Contextual assessments also provide more guidance on making recommendations for the child and designing interventions. Context-

specific interventions could be designed to address the child's unique strengths and areas of concern in each intervention setting.

There are four major limitations to this study that warrant discussion. First, this study did not examine measurement equivalence, or the extent to which the same construct (social skills/executive functions) is being measured for different groups (parents and teachers). It is unknown if the results of this study were due to actual differences between parent and teacher ratings, or were an artifact of measurement invariance between parent and teacher forms. Future studies are needed to determine if the parent and teacher forms of the SSIS and BRIEF are equivalent measures. Second, the results from this study are mainly correlational, and causal explanations for informant discrepancies cannot be determined. Third, only children with complete data from parents and teachers were included in this study. This limited the sample size, and likely resulted in a selection bias. Notably, the rate of executive function deficits and below average social skills was higher in this sample than in the general population. Fourth, rating scales are just one method of assessing children's executive functions and social skills. Future studies should compare reports of parents and teachers to observational methods and performance measures of executive functions and social skills. These studies will be important in understanding the causes and implications of discrepancies among different methods of assessment.

Appendices

Appendix A

The BRIEF: Comparison of Parent and Teacher Versions

BRIEF: Inhibit

The Inhibit scale assesses a child's ability to control impulses and stop behavior at the appropriate time.

Parent -10 Items	#	Teacher-10 Items	#
Interrupts others	41	Identical.	42
Gets out of seat at the wrong times	43	Identical.	45
Gets out of control more than friends.	44	Identical.	47
Acts too wild or "out of control".	54	Identical.	57
Has trouble putting the brakes on his or her actions.	55	Identical.	58
Gets in trouble if not supervised by an adult.	56	Identical.	59
Acts wilder or sillier than others in groups (birthday parties, recess).	38	Need to be told "no" or "stop that".	9
Blurts things out.	49 (83-T)	Does not think before doing.	38 (79-P)
Becomes too silly.	59	Is impulsive.	43 (82-P)
Talks at the wrong time.	65 (85-T)	Does not think of consequences before acting.	69

BRIEF: Shift

The Shift scale assesses a child's ability to move freely from one activity/situation to another; transition; problem-solve flexibly. Keys aspects of shifting include the ability to make transitions, problem-solve flexibly, switch or alternate attention and change focus from one mindset or topic to another.

Parent-8 Items	#	Teacher-10 Items	#
Resists or has trouble accepting a different way to solve a problem with schoolwork, friends, chores, etc.	5	Identical.	5
Becomes upset with new situations.	6	Identical.	6
Acts upset by a change of plans.	12	Identical.	13
Is disturbed by a change of teacher or class.	13	Identical.	14
Resists change of routine, food, places, etc.	23	Identical.	24
Has trouble getting used to new situations (classes, groups, friends).	30	Identical.	30
Thinks too much about the same topic.	39	Identical.	40

Tries the same approach to a problem over and over when it does not work.	8	Cannot get a disappointment, scolding, or insult off his/her mind.	4
		Gets stuck on one topic or activity.	53 (84-P)
		After having a problem will stay disappointed for a long time.	62

BRIEF: Emotional Control

The Emotional Control scale assesses a child's ability to modulate emotional responses appropriately.

Parent-10 Items	#	Teacher-9 Items	#
Overreacts to small problems.	1	Identical.	1
Has explosive, angry outbursts.	7	Identical.	7
Has outbursts for little reason.	25	Identical.	26
Mood changes frequently.	26	Identical.	27
Reacts more strongly to situations than other children.	45	Identical.	48
Mood is easily influenced by the situation.	50	Identical.	51
Angry or tearful outbursts are intense but end suddenly.	62	Identical.	64
Small events trigger big reactions.	64	Identical.	66
Becomes upset too easily.	70	Identical.	72
Becomes tearful easily.	20		

BRIEF: Initiate

The Initiate scale assesses a child's ability to begin an activity and to independently generate ideas or problem-solving strategies.

Parent-8 Items	#	Teacher-7 Items	#
Is not a self-starter	3	Identical.	3
Needs to be told to begin a task even when willing	10	Identical.	10
Has trouble coming up with ideas for what to do in play or free time	16	Has problems coming up with different ways of solving a problem	34
Has trouble getting started on homework or chores	47	Identical.	50
Has trouble organizing activities with friends	48	Has trouble thinking of a different way to solve a problem when stuck	70
Does not take initiative	61	Identical.	63
Complains that there is nothing to do	66	Does not show creativity in solving a problem	19

Lies around the house a lot (“couch potato”)	71		
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BRIEF: Working memory

The Working memory scale assesses a child’s ability to hold information when completing a task, when encoding information, or when generating goals/plans in a sequential manner.

Parent-10 Items	#	Teacher-10 Items	#
When given three things to do, remembers only the first or last	2	Identical.	2
Has a short attention span	9	Identical.	8
Has trouble concentrating on chores, schoolwork, etc.	17	Identical.	18
Is easily distracted by noises, activity, sights, etc.	19	Identical.	21
Has trouble with chores or tasks that have more than one step	24	Identical.	25
Needs help from an adult to stay on task	27	Identical.	28
Forgets what he/she was doing	32	Identical.	31
When sent to get something, forgets what he/she is supposed to get	33	Identical.	32
Has trouble finishing tasks (chores, homework)	37	Identical.	39
Has trouble remembering things, even for a few minutes	57	Identical	60

BRIEF: Plan/organize

The Plan/organize scale assesses a child’s ability to anticipate future events; to set goals; to develop steps; to grasp main ideas; to organize and understand the main points in written or verbal presentations.

Parent-12 Items	#	Teacher-10 Items	#
Does not bring home homework, assignment sheets, materials, etc.	11	Identical.	12
Has good ideas but cannot get them on paper	15	Identical.	17
Does not connect doing tonight’s homework with grades	18		
Forgets to hand in homework, even when completed	22	Identical.	23
Gets caught up in details and misses the big picture	28	Identical.	29
Has good ideas but does not get the job done	35	Identical.	35

Becomes overwhelmed by large assignments	36	Identical.	37
Underestimates time needed to finish tasks	40	Identical.	41
Starts assignments or chores at the last minute	46	Identical.	49
Does not plan ahead for school assignments	51	Identical	52
Written work is poorly organized	53	Identical	56
Has trouble carrying out the actions needed to reach goals (saving money for special item, studying to get a good grade)	58		

BRIEF: Organization of materials

The Organization of materials scale assesses a child's ability to put order in work, play, and storage spaces (e.g., desks, lockers, backpacks, and bedrooms).

Parent-6 Items	#	Teacher-7 Items	#
Leaves playroom a mess	4	Backpack is disorganized	20
Keeps room messy	29	Cannot find clothes, glasses, shoes, toys, books, pencils, etc.	16
Cannot find things in room or school desk	67	Identical	67
Leaves a trail of belongings wherever he/she goes	68	Identical.	68
Leaves messes that others have to clean up	69	Identical.	71
Has a messy closet	72	Has a messy desk	73
		Loses lunch box, lunch money, permission slips, homework, etc.	11

BRIEF: Monitor

The Monitor scale assesses ability to check work and to assess one's own performance and the ability to keep track of the effect of one's own behavior on other people.

Parent-8 Items	#	Teacher-9 Items	#
Does not check work for mistakes	14	Identical.	15
Makes careless errors	21	Identical.	22
Has poor handwriting	31	Leaves work incomplete	36
Is unaware of how his/her behavior affects or bothers others	34	Identical.	33
Does not notice when his/her behavior causes negative reactions	42	Identical.	44
Has poor understanding of own strengths and weaknesses	52	Identical.	54

Work is sloppy	60	Identical.	61
Does not realize that certain actions bother others	63	Identical.	65
		Is unaware of own behavior when in a group	46
		Talks or plays too loudly	55

Appendix B

Social Skills on the SSIS: Comparison of Parent and Teacher Versions

Communication

Parent-7 Items	#	Teacher-7 Items	#
Says “thank you”	4	Identical.	24
Takes turns in conversations	10	Identical.	20
Speaks in appropriate tone of voice	14	Identical.	14
Uses gestures or body appropriately with others	20	Identical.	40
Says “please”	24	Identical.	4
Responds well when others start a conversation or activity	30	Identical.	10
Makes eye contact when talking	40	Identical.	30

Cooperation

Parent-6 Items	#	Teacher-6 Items	#
Follows your directions	17	Identical.	2
Completes tasks without bothering others	27	Identical.	7
Pays attention to your instructions	7	Identical.	17
Follows household rules	2	Follows classroom rules	37
Works well with family members	12	Participates appropriately in class	12
Follows rules when playing games with others	37	Ignores classmates when they are distracting	27

Assertion

Parent-7 Items	#	Teacher-7 Items	#
Asks for help from adults	5	Identical.	1
Questions rules that may be unfair	25	Identical.	5
Stands up for herself/himself when treated unfairly	45	Identical.	11
Says when there is a problem	11	Identical.	15
Expresses feelings when wronged	1	Identical.	25
Stands up for others who are treated unfairly	15	Identical.	35
Says nice things about herself/himself without bragging	35	Identical.	45

Responsibility

Parent-6 Items	#	Teacher-6 Items	#
Is well-behaved when unsupervised	16	Identical.	6

Takes responsibility for her/his own actions	26	Identical.	16
Respects the property of others	22	Identical.	32
Takes care when using other people's things	6	Identical.	26
Does what she/he promised	32	Acts responsibly when with others	22
Takes responsibility for his or her own mistakes	42	Takes responsibility for part of a group activity	42

Empathy

Parent-6 Items	#	Teacher-6 Items	#
Tries to comfort others	28	Identical.	3
Forgives others	13	Identical.	8
Shows concern for others	38	Identical.	38
Tries to understand how you feel	3	Feels bad when others are sad	13
Tries to make others feel better	8	Shows kindness to others when they are upset	18
Tries to understand how others feel	18	Is nice to others when they are feeling bad	28

Engagement

Parent-7 Items	#	Teacher-7 Items	#
Makes friends easily	23	Identical.	9
Interacts well with other children	29	Identical.	19
Joins activities that have already started	9	Identical.	23
Invites others to join in activities	39	Identical.	29
Starts conversations with peers	19	Identical.	39
Introduces himself/herself to others	33	Identical.	43
Starts conversations with adults	43	Participates in games or group activities	33

Self-Control

Parent-7 Items	#	Teacher-7 Items	#
Stays calm when teased	31	Identical.	21
Takes criticism without getting upset	34	Identical.	31
Resolves disagreements with you calmly	21	Identical.	36
Responds appropriately when pushed or hit	44	Identical.	41
Makes a compromise during a conflict	36	Identical.	44
Stays calm when disagreeing with others	46	Identical.	46
Tolerates peers when they are annoying	41	Uses appropriate language when upset	34

References

- Achenbach T. (2011). Commentary: Definitely more than measurement error: But how should we understand and deal with informant discrepancies? *Journal of Clinical Child & Adolescent Psychology*, 40, 80-86
- Achenbach, T. M., McConaughy, S. H., & Howell, C. T. (1987). Child/adolescent behavioral and emotional problems: implications of cross-informant correlations for situational specificity. *Psychological Bulletin*, 101, 213-232.
- Allan, N. P., Hume, L. E., Allan, D. M., Farrington, A. L., & Lonigan, C. J. (2014). Relations between inhibitory control and the development of academic skills in preschool and kindergarten: A meta-analysis. *Developmental Psychology*, 50, 2368-2379.
- American Educational Research Association, American Psychological Association, & National Council on Measurement in Education (1999). *Standards for educational and psychological testing*. Washington, DC: American Educational Research Association.
- Borsboom, D., Mellenbergh, G. & van Heerden, J. (2004). The Concept of Validity, *Psychological Review*, 111.
- Briesch, A. M., Ferguson, T. D., Volpe, R. J., & Briesch, J. M. (2013). Examining teachers' perceptions of social-emotional and behavioral referral concerns. *Remedial and Special Education*, 34, 249-256.
- Clark, L., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment*, 7, 309-319.

- Cillessen, T. & Bellmore, A.D. (2011). Social skills and social competence in interactions with peers. In P.K. Smith & C.H. Hart (Eds.), *Blackwell Handbook of Social Development*, Oxford: Blackwell.
- De Los Reyes, A. & Aldao, A. (In press). Introduction to the Special Section: Implementing Physiological Measures in Clinical Child and Adolescent Assessments, *Journal of Clinical Child and Adolescent Psychology*, 0, 1-17.
- De Los Reyes, A. (2013). Strategic objectives for improving understanding of informant discrepancies in developmental psychopathology research. *Development and Psychopathology*, 25, 669-682.
- De Los Reyes, A., Bunnell, B.E., & Beidel, D.C. (2013). Informant discrepancies in adult social anxiety disorder assessments: Links with contextual variations in observed behavior. *Journal of Abnormal Psychology*, 122, 376-386.
- De Los Reyes, A., Ehrlich, K. B., Swan, A. J., Luo, T. J., Van Wie, M., & Pabón, S. C. (2013). An experimental test of whether informants can report about child and family behavior based on settings of behavioral expression. *Journal Of Child And Family Studies*, 22, 177-191.
- De Los Reyes, A., Lerner, D., Thomas, S., Daruwala, S., & Goepel, K. (2013). Discrepancies between parent and adolescent beliefs about daily life topics and performance on an emotion recognition task. *Journal Of Abnormal Child Psychology*, 41, 971-982.
- De Los Reyes, A., Salas, S., Menzer, M.M., & Daruwala, S.E. (2013). Criterion validity of interpreting scores from multi-informant statistical interactions

- as measures of informant discrepancies in psychological assessments of children and adolescents. *Psychological Assessment*, 25, 509-519.
- De Los Reyes, A., Thomas, S.A., Goodman, K.L. & Kundey, S.M. (2013). Principles underlying the use of multiple informants' reports. *Annual Review of Clinical Psychology*, 9, 123-149.
- De Los Reyes, A., Henry, D. B., Tolan, P. H., & Wakschlag, L. S. (2009). Linking informant discrepancies to observed variations in young children's disruptive behavior. *Journal Of Abnormal Child Psychology*, 37(5), 637-652.
- De Los Reyes, A., & Kazdin, A. E. (2005). Informant discrepancies in the assessment of childhood psychopathology: A critical review, theoretical framework, and recommendations for further study. *Psychological Bulletin*, 131, 483-509.
- Dinnebeil, L. A., Sawyer, B. E., Logan, J., Dynia, J. M., Cancio, E., & Justice, L. M. (2013). Influences on the Congruence between Parents' and Teachers' Ratings of Young Children's Social Skills and Problem Behaviors. *Early Childhood Research Quarterly*, 28(1), 144-152.
- Dirks, M., De Los Reyes, A., Briggs-Gowan, M., Cella, D., & Wakschlag, L. (2012). Annual Research Review: Embracing contextual variability in children's behavior- theory and utility in the selection and use of methods and informants in developmental psychopathology.
- Egeland, J., & Fallmyr, Ø. (2010). Confirmatory Factor Analysis of the Behavior Rating Inventory of Executive Function (BRIEF): Support for a distinction between Emotional and Behavioral Regulation. *Child Neuropsychology*, 16(4), 326-337.
- Eid, M., & Nussbeck, F. W. (2009). The multitrait-multimethod matrix at 50.

Methodology, 5,71.

Ganesalingam, K., Yeates, K., Taylor, H., Walz, N., Stancin, T., & Wade, S. (2011).

Executive functions and social competence in young children 6 months following traumatic brain injury. *Neuropsychology*, 25(4), 466-476.

Funder, D. C. (1995). On the accuracy of personality judgment: A realistic approach. *Psychological Review*, 102, 652-670.

Gioia, G. A., Isquith, P. K., Retzlaff, P. D., & Espy, K. A. (2002). Confirmatory factor analysis of the Behavior Rating Inventory of Executive Function (BRIEF) in a clinical sample. *Child Neuropsychology*, 8, 249–257.

Gioia, G. A., Isquith, P. K., Guy, S. C., & Kenworthy, L. (2000). TEST REVIEW Behavior Rating Inventory of Executive Function. *Child Neuropsychology*, 6(3), 235-238.

Gresham, F. M., Elliott, S. N., Vance, M. J., & Cook, C. R. (2011). Comparability of the Social Skills Rating System to the Social Skills Improvement System: Content and Psychometric Comparisons across Elementary and Secondary Age Levels. *School Psychology Quarterly*, 26(1), 27-44.

Gresham, F. M., Elliott, S. N., & Kettler, R. J. (2010). Base rates of social skills acquisition/performance deficits, strengths, and problem behaviors: An analysis of the Social Skills Improvement System—Rating Scales. *Psychological Assessment*, 22(4), 809-815.

Gresham, F.M., Elliott, S.M., Cook, C.R., Vance, M.J., & Kettler, R. (2010). Cross-Informant agreement for ratings for social skill and problem behavior ratings: An

- investigation of the social skills improvement system-rating scales. *Psychological Assessment*, 22, 157-166.
- Gresham, F. M., & Elliott, S. N. (2008). *Social Skills Improvement System-Rating Scales Manual*. Minneapolis, MN: Pearson Assessments.
- Hart Blanton, H. & Jacard, J. (2006). Arbitrary Metrics in Psychology, *American Psychologist*, 61, 27-41.
- Hart Blanton, H. & Jacard, J. (2006). Arbitrary Metrics Redux, *American Psychologist*, 61, 62-71.
- Hughes, E. K. & Gullone, E. (2011). Discrepancies between adolescent, mother, and father reports of adolescent internalizing symptom levels and their association with parent symptoms, *Journal of Clinical Psychology*, 66, 978-995.
- Isquith, P., Roth, R., & Gioia, G. (2013). Contribution of rating scales to the assessment of executive functions. *Applied Neuropsychology. Child*, 2(2), 125-132.
- Kraemer, H. C., Measelle, J. R., Ablow, J. C., Essex, M. J., Boyce, W., & Kupfer, D. J. (2003). A New Approach to Integrating Data From Multiple Informants in Psychiatric Assessment and Research: Mixing and Matching Contexts and Perspectives. *The American Journal Of Psychiatry*, 160(9), 1566-1577.
- Krause, M. S. (2012). Measurement validity is fundamentally a matter of definition, not correlation. *Review of General Psychology*, 16, 391-400.
- McAuley, T., Chen, S., Goos, L., Schachar, R., & Crosbie, J. (2010). Is the behavior rating inventory of executive function more strongly associated with measures of impairment or executive function?. *Journal Of The International Neuropsychological Society*, 16(3), 495-505.

- McCloskey, G., & Perkins, L. A. (2012). *Essentials of Executive Function Assessment*. Hoboken, N.J.: John Wiley & Sons.
- Meyer, G. J., Finn, S. E., Eyde, L. D., Kay, G. G., Moreland, K. L., Dies, R. R., & ... Reed, G. M. (2001). Psychological testing and psychological assessment: A review of evidence and issues. *American Psychologist*, 56(2), 128-165.
- Mitsis, E. M., McKay, K. E., Schulz, K. P., Newcorn, J. H., & Halperin, J. M. (2000). Parent–teacher concordance for DSM-IV attention-deficit/hyperactivity disorder in a clinic-referred sample. *Journal Of The American Academy Of Child & Adolescent Psychiatry*, 39, 308-313.
- Munkvold, Lundervold, Lie, and Manger (2009). Should there be separate parent and teacher-based categories of ODD? Evidence from a general population. *The Journal of Child Psychology and Psychiatry*, 50, 1264-1272.
- Ready, R., Clark, L.A., Watson, D. & Westerhouse, K. (2000). Self- and Peer-Reported Personality: Agreement, trait ratability, and the “self-based heuristic”, *Journal of Research in Personality*, 34, 208-224.
- Renk, K., & Phares, V. (2004). Cross-informant ratings of social competence in children and adolescents. *Clinical Psychology Review*, 24, 239-254.
- Rescorla, L. A., Achenbach, T. M., Ivanova, M. Y., Bilenberg, N., Bjarnadottir, G., Denner, S., & ... Verhulst, F. C. (2012). Behavioral/Emotional Problems of Preschoolers: Caregiver/Teacher Reports from 15 Societies. *Journal Of Emotional And Behavioral Disorders*, 20, 68-81.
- Rimm-Kaufman, S. E., Curby, T. W., Grimm, K. J., Nathanson, L., & Brock, L. L. (2009). The contribution of children’s self-regulation and classroom quality to

- children's adaptive behaviors in the kindergarten classroom. *Developmental Psychology*, 45, 958-972.
- Roth, R. M., Isquith, P. K., & Gioia, G. A. (2005). *Behavior rating inventory of executive function: Professional manual*. Lutz, FL: Psychological Assessment Resources.
- Rubin, K. H., & Rose-Krasnor, L. (1992). Interpersonal problem solving and social competence in children. In V. B. Van Hasselt, M. Hersen (Eds.) , *Handbook of social development: A lifespan perspective* (pp. 283-323). New York, NY US: Plenum Press.
- Silver, C. H. (2014). Sources of data about children's executive functioning: Review and commentary. *Child Neuropsychology*, 20(1), 1-13.
- Teglasi, H., Nebbergall, A., & Newman, D. (2012). Construct Validity and Case Validity in Assessment, *Psychological Assessment*, 24, 464-475.
- Toplak, M. E., West, R. F., & Stanovich, K. E. (2013). Do performance-based measures and ratings of executive function assess the same construct?. *Journal Of Child Psychology And Psychiatry*, 54, 131-143
- Toplak, M. E., Bucciarelli, S. M., Jain, U., & Tannock, R. (2009). Executive functions: Performance-based measures and the Behavior Rating Inventory of Executive Function (BRIEF) in adolescents with attention deficit/hyperactivity disorder (ADHD). *Child Neuropsychology*, 15, 53-72.
- Waschbusch, D., & Willoughby, M. (2008). Parent and Teacher Ratings on the IOWA Conners Rating Scale. *Journal Of Psychopathology & Behavioral Assessment*, 30(3), 180-192.

