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Review of measures of social and emotional development

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ABSTRACT

This paper provides a critical review of measures of social and emotional development in early childhood for use within large-scale national surveys of child well-being and evaluations of early childhood interventions and initiatives. Key literature on social and emotional development was reviewed and organized around four commonly used subdomains: *social competence*, *emotional competence*, *behavior problems*, and *self-regulation*. Six measures, out of 75 which met criteria for more systematic review, were identified as good candidates for broader use with children birth to age five, based on their having a majority of 10 key features of strong assessments. The review also examines whether executive function is captured by measures of social and emotional development. Implications for enhancing the usefulness and effectiveness of social and emotional measures in the field and implications for future measures development are considered.

Children's social and emotional development during the early childhood years lays the foundation for their development through middle childhood, adolescence, and beyond (see, for example, Denham, 2006; Denham & Brown, 2010; National Research Council and Institute of Medicine, 2000; Raver, 2002). Consequently, policymakers and practitioners are placing a growing emphasis on promoting positive social and emotional development for young children as part of state and federal initiatives (Fox & Smith, 2007; Head Start Bureau, 2001; U.S. Department of Education, & U.S. Department of Health and Human Services, 2011; U. S. Department of Health and Human Services, 2012, 2015). Initiatives that focus on young children's social and emotional development may involve early childhood interventions, curricula, and/or professional training connecting the development of social and emotional competencies to the foundational support of a child's developing self-regulatory system (Bodrova & Leong, 2006; Jones & Bouffard, 2012; Weissberg, Durlak, Domitrovich, & Gullotta, 2015; Williford, Whittaker, Vitiollo, & Downor, 2013).

One of the challenges of determining the effectiveness of these initiatives is having good measures with which to assess progress in the social and emotional domain over the early childhood years. This lack is due, in part, to weak consensus in the field about which constructs and measurement approaches should be used to capture children's social and emotional development (Carter, Briggs-Gowan, & Davis, 2004; Zaslow et al., 2006). Furthermore, while there are many measures of social and emotional development that are available for use in small-scale or specialized studies, there are fewer measures that have been developed for more large-scale use in, for example, national (or international) surveys of children's well-being that would elicit valid responses from a diverse population of young children, as well as their parents and teachers (Fitzgerald, 2007; Richardson, 2010; UNICEF Innocenti Research Centre, 2007). Indeed, the lack of adequate measurement in the social and emotional domain, including indicators of mental health and measures of specific social, intellectual, and emotional skills, has been noted as a significant gap in the nation's data collection systems for almost two decades (Federal Interagency Forum on Child and Family Statistics, 1997, 2015a).

The purpose of this paper is to provide a critical review of selected extant measures of social and emotional development in early childhood and evaluate the quality and characteristics of those measures. The present review comes out of work performed primarily to inform the development and inclusion of measures of social and emotional development within large-scale national surveys of child well-being, and in reports such as *America's Children: Key National Indicators of Well-being* (Federal Interagency Forum on Child and Family Statistics, 2015a). Building from this work, the current review is also relevant to broader applications in the field, as it raises issues that are common to measures of different social and emotional constructs, as well as identifies measurement gaps. In this article, we first define social and emotional development and briefly discuss the early development of skills associated with social and emotional competence. Next, we highlight four subdomains of social and emotional development that are commonly used by researchers to study social and emotional development that guided our review of measures. Finally, we describe the methods for and results of our review of measures, followed by a discussion of challenges and future directions.

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Social and emotional development

The Center on the Social Emotional Foundations for Early Learning (CSEFEL) defines early social and emotional development as "the developing capacity of the child from birth through five years of age to form close and secure adult and peer relationships; experience, regulate, and express emotions in socially and culturally appropriate ways; and explore the environment and learn—all in the context of family, community, and culture" (Yates et al., 2008, p.2). The emergence of social and emotional skills begins at birth and early experiences influence how children begin to understand their world and themselves. For instance, when infants' needs are consistently met by adults, they are better able to regulate their emotions, pay more attention to their surroundings, and develop secure relationships (Eisenberg, Spinrad, & Eggum, 2010; National Research Council and Institute of Medicine, 2009).

It is generally accepted that from infancy to school entry, children follow a fairly typical continuum of social and emotional skills acquisition (Kagan, Britto, Kauerz, & Tarrant, 2005; National Scientific Council on the Developing Child, 2007). To illustrate, in infancy (0–12 months), babies become aware that they are separate from adult caregivers; learn to be comforted and soothed by caregivers and to self-sooth; participate in social interactions such as smiling, responding to their name, and exchanging vocalizations; and express a variety of emotions from delight to sadness to fear or anxiety. In toddlerhood (ages 1–2), young children become adept at recognizing and interacting with a variety of people; focus attention and play more independently; express (both verbally and non-verbally) a greater range of emotions, including defiance, anger, and frustration; recognize the changing emotional states of others; and act more assertively in social interactions, such as through directing the play of others. Preschoolers (ages 3–4) begin to develop emotional connections outside the family in the form of friendships; understand the difference between socially acceptable and unacceptable behavior; persist with challenging tasks without becoming unduly frustrated; pay attention for increasingly longer periods of time; avoid interrupting others and display delay-of-gratification skills around turn taking and toy sharing; identify and articulate their own and other people's feelings; increasingly manage their own strong emotions in socially appropriate ways; and solve some social problems independently (Han & Kemple, 2006; Hemmeter, Ostrosky, & Fox, 2006; National Association for the Education of Young Children, 2009).

The value of healthy social and emotional development in young children is well established (Isakson, Higgins, Davidson, & Cooper, 2009; National Research Council, 2008; Thompson & Lagattuta, 2006). Research has shown that as children continue to develop social and emotional skills, they gain the confidence and competence needed to build relationships across settings, problem solve, and cope with challenges (Parlakian, 2003). There is also research to suggest that early social and emotional competencies are linked to later academic achievement, whereas social and emotional problems or challenges are linked to academic difficulties (Blair & Diamond, 2008; Konold & Pianta, 2005; National Research Council and Institute of Medicine, 2000; Raver, 2002; Romano, Babchishin, Pagani, & Kohen, 2010).

Indeed, skills within the social and emotional domain are believed to lay a critical foundation for later life success across a wide variety of outcomes. For example, a recent study found that children who, in kindergarten, are better at resolving conflicts with peers, understand emotions, and are helpful and cooperative with others are more likely to become well-adjusted adults who have jobs and contribute positively to society (Jones, Greenberg, & Crowley, 2015). Significant associations between early childhood social and emotional functioning and outcomes in education, employment, criminal activity, substance use, and mental health were found 13–19 years later, even after controlling for important child, family, and contextual characteristics. Likewise, researchers have found that children who demonstrate better self-control across the early childhood years have better physical health, lower substance dependence, better socioeconomic outcomes, and lower rates of criminal offences in early adulthood (ages 26–32) than peers and siblings with lower self-control (Moffitt et al., 2011). Collectively, this research suggests that there are specific social and emotional competencies that parents, caregivers, educators, and policymakers should be promoting in early childhood for the sake of long-term individual and societal well-being.

Subdomains of social and emotional development

Scholars of social and emotional development have many ways to denote the important skills and competencies. However, despite the differences in terminology, there tends to be a smaller set of categories, or subdomains, into which individual social and emotional skills are classified. We reviewed over a dozen scholarly sources that provided overviews or conceptual frameworks for the social and emotional domain to help us identify a way to organize and evaluate the measures of social and emotional development for our review (Chen, 2011; Denham, 2006; Denham, Blair, Schmidt, & DeMulder, 2002; Denham & Brown, 2010; Eisenberg, Valiente, & Eggum, 2010; Halle et al., 2014; Jones, Bailey, & Jacob, 2014; Jones & Bouffard, 2012; Kagan, Moore, & Bredekamp, 1995; National Research Council, 2008; Raver, 2008, 2012; Schmidt, Demulderb, & Denham, 2010; Stevenson-Hinde, 2011; U. S. Department of Health and Human Services, 2012). From this review, we identified four common subdomains of social and emotional development: *social competence*, *emotional competence*, *behavior problems*, and *self-regulation*. Of the 15 sources we reviewed, 11 mentioned *social competence* or a similar term (e.g., social functioning; U.S. Department of Education, & U.S. Department of Health and Human Services, 2012) as an important and distinct subdomain; five mentioned *emotional competence* or a similar term (e.g., emotional processes; Jones & Bouffard, 2012); four mentioned *behavioral* problems or a term relatively similar (e.g., maladjustment; National Research Council, 2008); and seven identified *self-regulation* or a similar term (e.g., self-management; Denham & Brown, 2010). No other terminology or classification met with a similar level of agreement across sources. Here we provide a brief definition of each subdomain and examples of how that subdomain is operationalized and measured in the field.

Social competence

The subdomain of social competence is defined in the early childhood literature as the degree to which children are effective in their social interactions with others, including making and sustaining social connections, demonstrating cooperative skills and flexibility, and adjusting behavior to meet the demands of different social contexts (Fabes, Gaertner, & Popp, 2006; Han & Kemple, 2006; Rose-Krasnor, 1997). Specific constructs in this domain reflect children's pro-social skills and abilities, including the ability to recognize social cues; interact positively with peers and adults through cooperation, listening, taking turns, and initiating and maintaining conversations; engage in social problem-solving; understand the rights of others; treat others equitably; distinguish between incidental and intentional actions; and balance one's own needs with the needs of others. Measures designed to assess these specific constructs may include adult-report of a child's ability to greet people with an appropriate verbal salutation, an observation of a child not interacting during group activities, or a child's response to questions, such as asking what he or she (or others) would say to a gift-giver after receiving a birthday present he/she did not like.

Emotional competence

Emotional competence is defined in the early childhood literature as the ability to understand the emotions of self and others, read emotional cues and react to others' emotions, regulate one's own emotions, and understand the consequences of one's own emotional expressiveness

(Denham, Caverly, et al., 2002; Shields et al., 2001). The ability to manage one's own feelings (emotion regulation), and the ability to understand others' feelings (emotion understanding) are examples of specific constructs that fall within this subdomain. Measures designed to assess children's emotional competence might ask a parent or teacher to report about (or have an observer document) a child's ability to show affection to familiar adults; understand the feelings of others when they are happy, sad or mad; articulate their own emotional state; or regain control after a tearful episode.

Behavior problems

Behavioral functioning falls along a continuum. Behaviors that are developmentally inappropriate or that impede a child's ability to adapt and function in their families, early care and education settings, or with a peer group are considered problematic (Campbell, 1998). These may include internalizing emotions or behaviors (e.g., worry, anxiety, sadness, and extreme shyness or social withdrawal) or externalizing behaviors (e.g., roughness, hostility, disruptiveness, noncompliance, and aggression). When considering this subdomain, we note that problematic behavior may occur in children who also demonstrate social or emotional competencies. The presence of behavior problems does not preclude the presence of other competencies in the social and emotional domain. However, the absence of behavior problems should not be construed as the presence of social and emotional competencies; both positive and negative aspects of social and emotional skills need to be assessed in their own right.

As discussed by Campbell in the next article of this issue, tools which are designed to assess behavior problems are needed in order to identify problems that go beyond normal developmental variation, and which may require intervention. Measures designed to assess whether children exhibit behavior problems may ask about whether a child is exceedingly argumentative, bossy, anxious, or prone to physical outbursts or conflict, or may inquire about whether a child is prone to feelings of inferiority or self-consciousness, has somatic complaints, is often shy in social situations, or displays hypersensitivities. These measures are often parent or teacher report, since they tend to be low-frequency behaviors that are hard to capture efficiently by direct observation.

Self-regulation

Self-regulation (also referred to in the literature as self-control or self-management; Chen & Rubin, 2011; Denham & Brown, 2010) is generally defined in the early childhood literature as the ability to focus attention, manage emotions, and control behaviors (Blair & Razza, 2007; McClelland & Cameron, 2012). This area of development is highly inter-related to other aspects of social and emotional functioning and to executive function, as discussed below. Specific skills classified within the self-regulation subdomain include the ability to shift and focus attention in a social situation as needed, activate and inhibit behavior as required, and modulate behavioral and emotional reactivity in social interactions. Measures designed to assess children's self-regulation might include adult-report of whether or not a child can refrain from interrupting others when speaking, or maintain eye contact with a person despite minor distractions.

Executive function: A related – and foundational – area of development

The social and emotional subdomain of self-regulation has strong linkages to another, yet distinct, developmental domain: executive functioning. Executive function encompasses primarily cognitive processes (e.g., working memory, attention, and inhibitory control) that serve in planning and executing novel problem solving and goal-directed activity (Diamond, 2006). However, as with the social and emotional domain, there is a lack of consensus in the research literature as to the definition – and measurement – of executive function (Bailey & Jones, 2013; Bailey, Jones, & Partree, 2015; Liew, 2012). Nevertheless, there is growing recognition of the importance of executive function to the development of both cognitive and emotional capacities (Blair & Razza, 2007; Center on the Developing Child, 2011; Hongwanishkul, Happaney, Lee, & Zelazo, 2005; Riggs, Jahromi, Razza, Dillworth-Bart, & Mueller, 2006).

Executive function is recognized as both a mediator and moderator of developmental outcomes and the field is currently exploring the inter-relationships among emotion regulation, self-regulation, and executive function processes (Bailey & Jones, 2013; Bailey et al., 2015; Liew, 2012; Riggs et al., 2006; Williford et al., 2013; Willoughby, Wirth, & Blair, 2011). For example, the ability to control the expression of emotions – or to act upon those emotions – develops in tandem with executive function during early childhood (Carlson & Wang, 2007). Whereas executive function is seen as a support for self-regulation, it differs from self-regulation in that it focuses primarily on the processes required for the conscious control of thought and action – including working memory and cognitive flexibility – but does not directly incorporate emotion processes including emotion regulation. For example, a measure of working memory may include observing whether a child can complete a task that involves several steps (as age appropriate). Self-regulation, in contrast, incorporates skills and competencies related to adapting to and suppressing reactivity in social situations and adhering to social norms.

Just as the conceptual distinctions between executive function and self-regulation are not necessarily clear, neither is there consistency or precision in the measurement of these distinct constructs (Bailey & Jones, 2013; Bailey et al., 2015; Burman, Green, & Shanker, 2015; McClelland & Cameron, 2012). For example, measures designed to assess the development of executive function include reports of whether a child remembers and follows instructions modified mid-way through a task or can wait before entering into new activities when asked to do so. Therefore, the mapping of executive function in the literature and how it is distinguished from other, related competencies in both social and cognitive development is a complex and ongoing process (Bailey et al., 2015; Beauchamp & Anderson, 2010; Sasser, Bierman, & Heinrichs, 2015). As we will see in the review of existing measures that follows, as well as in the commentary by Willoughby in the next article in this issue, this correspondence may lead researchers to use the same measure to capture two or more theoretically distinct developmental competencies.

The current review

Social and emotional competencies are important building blocks to children's overall development and future success. Researchers, practitioners, and policymakers are all interested in the accurate measurement of this important domain of development in order to track children's well-being over time and to determine the effectiveness of targeted interventions (Darling-Churchill & Lippman, 2016-in this issue). However, social and emotional development encompasses a complex and multifaceted set of skills and competencies that do not lend themselves to consistent measurement within the empirical literature (Zaslow et al., 2006). The lack of consensus in the field regarding measurement approaches (Zaslow et al., 2006), coupled with the recognition of a lack of adequate measures of social and emotional competencies within our national surveys of child well-being (Federal Interagency Forum on Child and Family Statistics, 1997, 2015a; Fitzgerald, 2007), was a central motivation for the current review. In response, our goal was to identify extant measures of social and emotional development that have strong psychometric properties as well as other features that would make them good candidates for broader use with children birth through age five. A review of 15 scholarly sources on social and emotional development provided the basis for organizing the review of measures according to four subdomains (social competence, emotional competence, behavior problems, and self-regulation).

Method

Identification of measures

Measures of social and emotional development were identified through Internet keyword searches, as well as contacting key informants. Search terms included "child assessments," "social emotional development," and "early childhood" along with "compendia," "compendium," "collection," and "tools." From this search, 11 measures compendia were identified and reviewed (Atkins-Burnett & Meisels, 2001; Caselman & Self, 2008; Center for Human Resource Research, 2004; Denham, Ji, & Hamre, 2010; Halle, Zaslow, Wessel, Moodie, & Darling-Churchill, 2011; Malone et al., 2010; Ringwalt, 2008; Slentz, Early, & McKenna, 2008; Sosna & Mastergeorge, 2005; Southern California Academic Center of Excellence on Youth Violence Prevention, n.d.; Williams, 2008). In addition, input regarding tools and approaches to measuring social and emotional development was also solicited from 19 early childhood development researchers.[1] A total of 120 measures were identified through this process.

While we used multiple approaches to develop a comprehensive listing of existing measures to include in the review, we cannot claim that it is an exhaustive list. For example, the inclusion/exclusion criteria for this review (described in more detail below) omitted observational measures of social and emotional development from review because they were not feasible for national survey data collection. In addition, although we believe we reviewed the most well-known measures of social and emotional development in early childhood, we acknowledge that there may be lesser known, but high-quality, measures that we did not include, or measures which have emerged since the review was completed. Indeed, during the course of the writing of this special issue, several measures that were not previously identified were shared with the authors. Each was considered in light of the criteria discussed below, and those that demonstrated strengths or evidence of promise are discussed also below in the review of measures.

Inclusion/exclusion criteria for measures review

A set of inclusion and exclusion criteria were developed and applied to all potential measures. Those that were included in the review 1) addressed one or more of the subdomains of social and emotional development; 2) were designed to be used with children ages birth to five (including measures that covered only part of that age span); 3) utilized a mode of administration that might be feasible for a national survey data collection; and 4) were currently being used in national surveys or showed promise for such use. Measures that were excluded failed to meet the above criteria.

In addition, physiological/biological measures such as sleep regulation were excluded, as were measures of attachment and those designed exclusively to screen for behavior problems or developmental delays.[2] Measures of attachment, while quite often used with very young children, assess characteristics of a relationship and cannot be seen as assessing characteristics of the child alone. Screeners were excluded from this review as they are designed to identify children in need of additional assessment within a narrow range of development. While screeners are important tools to evaluate whether a child may be at risk for a developmental delay (Moodie et al., 2014), they cannot be used to describe young children's normal social and emotional development. This decision was also influenced by recommendations from research experts and the literature that suggests that measures which capture the whole spectrum of social and emotional development (from negative to positive and across subdomains) may be more predictive of positive educational outcomes than measures that identify only children at-risk (Denham, 2006).

Based on the inclusion/exclusion criteria, a total of 72 measures (out of the 120 measures initially identified) were evaluated as part of an earlier review (Federal Interagency Forum on Child and Family Statistics, 2015b). Subsequent to that review, three additional measures were brought to our attention, bringing the total number of measures reviewed for this special issue to 75.

Identification of subdomains

Each of the 75 measures was classified according to whether it addressed one or more of the four subdomains identified in our earlier review of scholarly sources on social and emotional development: social competence, emotional competence, behavior problems, and self-regulation. To determine subdomain classification, one researcher reviewed the individual items from each measure, deciding whether the items addressed a particular subdomain based on the definition for each subdomain. When items for a measure were not available, the researcher reviewed published information from manuals, websites, or journal articles, as well as information gathered from personal correspondence with measures developers. Then, a second researcher reviewed the measures using the same review procedure. The inter-rater reliability between the first and second coder was 0.89. Where differences between the first and second coder did occur, they most often concerned the emotional competence subdomain which includes emotion/mood regulation and thus overlaps to some extent with self-regulation. The initial coder sometimes noted the self-regulation subdomain, but not the emotional competence subdomain, for items involving emotion/mood regulation. To reconcile the differences, the first author of this paper and a senior advisor to the project reviewed the discrepancies between the first and second coder and took an inclusive approach, assigning both subdomains where relevant content was present in individual measurement items.

Documenting information about measures

Measures that met the inclusion criteria for the review were summarized in a descriptive table referred to as an inventory of measures ("inventory").[3] Descriptive information about the characteristics of the measures was collected from a variety of sources, including developers' websites and manuals, validation studies, published compendia of social and emotional measures, literature reviews, journal articles, personal communications with federal survey staff, and information from technical/psychometric reports produced for particular national surveys. Information collected for each measure and reported in the inventory included the psychometric properties of the measure (especially reliability and validity of the measure based on the norming sample) and also a variety of other characteristics and features that might help determine the usefulness of a measure for large-scale application. These additional features include 1) the target age range for which the measure was developed; 2) mode of administration (parent and/or teacher report; trained assessor); 3) the number of items; 4) subscales (if any) and number of items in each subscale; 5) sample items

[1] Researchers who provided input include Clancy Blair, NYU; Elena Bodrova, McREL; Sally Atkins-Burnett, Mathematica Policy Research; Kimberly Boller, Mathematica Policy Research; Susan Campbell, University of Pittsburgh; Dina Castro, UNC Chapel Hill; Flavio Cunha, University of Pennsylvania; Susanne Denham, George Mason University; Celene Domitrovich, Collaboration for Social and Emotional Learning (CASEL); Nancy Eisenberg, Arizona State University; Marsha Gerdes, The Children's Hospital of Philadelphia; Walter Gilliam, Yale University; Neal Halfon, UCLA; Stephanie Jones, Harvard University; Michelle Maier, MDRC; Samuel Meisels, Erikson Institute; Cybele Raver, NYU; Catherine Snow, Harvard University; and Mike Willoughby, RTI International (formerly UNC Chapel Hill).

[2] A developmental screener is a tool used to evaluate whether a child may be at risk for a developmental delay or disorder, whereas a developmental assessment is a tool used to measure skills and abilities and may be used to determine their progress over time (Halle et al., 2011). For further discussion of distinctions between assessments and screeners, see *Early Childhood Assessment: Why, What and How* (National Research Council, 2008).

[3] The inventory is available upon request from the corresponding author.

(if publicly available) and types of response categories; 6) languages in which the measure is available and information about the sample used for validation in each language; 7) duration of time needed to administer the measure; 8) copyright information; 9) cost; 10) whether a short form is available; and 11) whether the measure has been previously included in or considered for large surveys or studies (both federal and non-federal studies).

Criteria by which measures were evaluated

To identify the strongest candidates for use by the field, the measures were subsequently reviewed in light of 10 key criteria selected from among the numerous descriptive characteristics noted above. Some criteria are related to the quality of the measure (e.g., reliability and validity) while other criteria are related to how easily the measure could be used (e.g., time of administration). All of the criteria are considered significant when choosing a measure for use in programs and in research (Halle et al., 2011; National Research Council, 2008). The 10 key criteria included 1) strength of reliability statistics (internal consistency, inter-rater reliability, test–retest reliability), 2) strength of validity statistics (construct validity, content validity, convergent/concurrent validity, predictive validity), 3) size and diversity of the norming/validation sample, 4) availability of the measure in languages other than English, 5) whether the measure requires a trained administrator, 6) availability of a parent and/or teacher form, 7) comprehensiveness of coverage of the domain (i.e., whether the measure covers two or more of the subdomains of social and emotional development), 8) length of time to administer, 9) whether the measure has a cost for use, and (10) whether the measure covers a wide age range in early childhood.

For each measure, each key criterion was rated as "strong," "moderate," or "weak." Definitions for these three rating categories for each of the 10 key criteria are detailed in Table 1. For some criteria, only two dichotomous options were possible (e.g., availability in languages other than English, yes or no); in these cases, the measure was given a rating of "strong" when the criterion was met, and "moderate" when the criterion was not met. There was one exception to this rule. If the measure required a trained administrator, the measure was rated as "weak" in the context of inclusion within a large-scale survey (see Table 1).

Results

Characteristics of the strongest social and emotional measures

Of the 75 measures examined for this review, we identified those that were the strongest candidates for future use in large-scale surveys,

Table 1
Definitions of criteria for rating characteristics of measures.

Criteria	Strong ●	Moderate ⊗	Weak ○
Reliability[A]	"Acceptable" reliability for TWO OR MORE types of reliability.[B] Also considered to be "acceptable" are instances where no actual statistic was provided by the source, but the source described the criterion using language similar to "acceptable" (e.g., "good evidence," "adequate").	"Acceptable" reliability for ONE type of reliability[B] (but does not meet criteria for "strong/high"). Also considered to be "acceptable" are instances where no actual statistic was provided by the source, but the source described the criteria using language similar to "acceptable" (e.g., "good evidence," "adequate").	Does not meet criteria for "moderate."
Validity[A]	"Strong/high" (or "provides evidence") for TWO OR MORE types of validity[B]; OR, one "strong/high" AND one "moderate." Considered to be "moderate" are instances where significant relationships were found but no actual statistic was provided by the source.	"Strong/high" OR "moderate" for ONE type of validity[B] (but does not meet criteria for "strong/high"). Considered to be "moderate" are instances where significant relationships were found but no actual statistic was provided by the source.	Does not meet criteria for "moderate." Demonstrates evidence of poor predictive validity. This condition also precludes a measure from being recommended even if six other criteria are rated "strong."
Size and diversity of the of the norming/validation sample	Large sample (>300) AND diverse with respect to race/ethnicity AND diverse with respect to SES; AND a U.S. sample.	Diverse with respect to race/ethnicity OR diverse with respect to SES (but does not meet criteria for "strong") OR large sample (>300).	Does not meet criteria for "moderate."
Availability in languages other than English	Available in other languages.	Not available in other languages.	NA
Requirement for a trained administrator	Does not require trained administrator/observer	NA	Requires trained administrator/observer.
Parent/teacher form	Has a parent form. If the measure requires a trained administrator, then this criterion is automatically "NA," not applicable.	Has teacher form only (no parent form). If the measure requires a trained administrator, then this criterion is automatically "NA," not applicable.	NA
Covers a range of social and emotional subdomains	Covers two or more of the subdomains.	Covers only one subdomain.	NA
Length of time to administer[C]	Less than 10 minutes	10–20 minutes	More than 20 minutes
Cost/requirement for purchase	Purchase not required	Purchase required	NA
Covers a wide age range	Spans 4 or more years.	Does not meet criteria for "strong".	NA

Notes.
[A] The reliability and validity information for each measure was interpreted based on the definitions of the different types of reliability and validity, and a set of criteria for each type, presented in *Understanding and Choosing Assessments and Developmental Screeners for Young Children: Profiles of Selected Measures* (Halle et al., 2011). Evaluative terminology used in this chart draws from the rating scheme defined in Halle et al., 2011, which was based upon review of a number of federal and non-federal resources including Administration for Children and Families (2003), Carmines and Zeller (1979), Lewis-Beck (1995), and National Research Council (2008).
[B] This includes reliability/validity statistics that are "acceptable" or "strong/high" with isolated exceptions for subgroups/subscales within the full measure.
[C] If the duration is unknown, information about the number of items is provided and the measure is not rated for this criterion.

Table 2
Identified strong measures of social and emotional development in early childhood, by age group.

Name of measure	Social and Emotional Subdomains				Executive function	Criteria									
	Social competence	Emotional competence	Behavior problems	Self-regulation		Reliability	Validity	Size and diversity of norming/ validation sample	Availability in languages other than English	Requirement for a trained administrator	Parent/ teacher form	Covers 2 or more subdomains	Length of time to administer	Cost /purchase requirement	Covers a wide age range
Covers children age 3 or less only															
Infant Toddler Social Emotional Assessment (ITSEA)	X	X	X	X		●	●	●	●	●	●	●	○	⊗	⊗
Covers children across the 0–5 age span															
Behavior Assessment System for Children, Second Edition (BASC-2)	X		X	X	X	●	●	●	●	●	●	●	⊗	⊗	●
Child Behavior Check List (CBCL)			X	X		●	●	●	●	●	●	●	⊗	⊗	●
Devereux Early Childhood Assessment Clinical Form (DECA-C)	X	X	X	X		●	●	●	⊗	●	●	●	⊗	⊗	●
Preschool Learning Behaviors Scale (PLBS)				X	X	●	●	●	●	●	⊗	⊗	●	⊗	⊗
Social Skills Rating System (SSRS)	X	X	X			●	●	●	⊗	●	●	●	No info; 58 items	⊗	●

Note. The reliability and validity information collected for the SSRS includes some information from the ECLS-K and ECLS-K: 2011 studies (which use selected and adapted items from the SSRS) as well as from documentation for the full measure. More extensive profiles of each measure can be found in Appendix A.
1. ● = strong; ⊗ = moderate; ○ = weak.

and also more broadly in the field. A measure was deemed one of the stronger candidates if it was rated "strong" on reliability and validity as well as at least four additional criteria. That is, a measure needed to receive a rating of "strong" on the majority of the 10 key criteria noted above, with ratings of "strong" on reliability and validity required for consideration as a candidate measure. Table 2 displays the six measures (out of the 75 evaluated) that were found to have a "strong" rating on six or more of the 10 key criteria, including strong evidence of reliability and validity. More detailed profiles of each of these six measures are provided in Appendix A. An additional three measures were considered "promising," meeting a rating of "strong" on five out of the 10 key criteria, including strong evidence of reliability and validity.[4] Below, we summarize information about particular criteria for the six strongest candidate measures of social and emotional development.

Measures with strong psychometric properties

Of the 75 measures reviewed, 11 had strong reliability and validity. However, only six measures had consistently strong psychometric properties (i.e., a rating of "strong" for reliability, validity, and the size/diversity of the norming/validation sample), as well as enough other key criteria to make them strong candidates for wide use in the field. These measures are the Infant Toddler Social Emotional Assessment (ITSEA; Carter, Briggs-Gowan, Jones, & Little, 2003); the Behavior Assessment System for Children, Second Edition (BASC-2; Reynolds & Kamphaus, 2002); the Child Behavior Check List (CBCL; Achenbach, 1991, 1992); the Devereux Early Childhood Assessment Clinical Form (DECA-C; LeBuffe & Naglieri, 2003); the Preschool Learning Behaviors Scale (PLBS; McDermott, Leigh, & Perry, 2002); and the Social Skills Rating System (SSRS; Gresham & Elliott, 1990)[5]. It is important to note that while all six measures met our criteria of strong psychometric properties, not all measures had comparable information. For example, none of the measures except the DECA-C had evidence of predictive validity (see Appendix A).

Measures that address diversity

When considering whether a measure would be useful with a diverse child population, we looked at whether the norming or validation sample was diverse, and whether the measure was available in a language other than English. Of the 75 measures we reviewed, 29 were available in a language other than English. Four of the six measures noted in Table 2 were rated as "strong" for the size and diversity of the norming sample and for availability of the measure in a language other than English: the ITSEA, BASC-2, CBCL, and PLBS. However, our scoring criteria did not take into account whether the measure was *validated* in a language other than English. It is equally important to determine that a measure available in another language has been validated in that language (Halle et al., 2011).

Measures with the most ease of administration

The focus of the initial measures review was conducted to inform the use of social and emotional measures within large-scale national surveys. With this context in mind, ease of administration was evaluated on several criteria, including whether a trained administrator was needed, cost of the measure, and time needed for administration. Ease of administration is relevant for the field at large since access to high-quality measures at no or little cost is important, and the cost of carrying out data collection can be significant if specially trained administrators are required.

Of the 75 measures we reviewed, 29 required a trained administrator. Nearly all of the six strongest measures did not require a trained administrator and had parent and/or teacher report protocols available. However, it should be noted that research experts advocate for the value and benefit of direct observation tools to capture important subdomains of social and emotional development (Federal Interagency Forum on Child and Family Statistics, 2013a). This point is also emphasized in the collection of papers presented in the next article in this issue.

There was more variability across all the measures with regard to cost. Likewise, the length of administration time varied across measures, ranging from 8 to 30 minutes (or 66–162 items) for the strongest measures. Of the six strong candidate measures, the PLBS was the only one which had both a short administration time (i.e., 10 minutes or less) and strong psychometric properties.

Measures with the best coverage of the 0–5 age range

Thirteen of the 75 measures we reviewed were appropriate for use across at least 4 years of the birth to five age span. However, of the six strongest measures, only one was specifically designed to measure social and emotional development during infancy and toddlerhood (the ITSEA; Carter et al., 2003). Of the remaining five, all but the PLBS covered at least 4 years within the full age range of birth to five (see Table 2). A closer examination of these measures and the age ranges for which they are appropriate would be necessary for use in studies with particular age spans.

Coverage of subdomains of social and emotional Development

Given the interest of some researchers, policymakers, and program developers in having a tool which collects information about multiple aspects of social and emotional development, the degree to which measures provided coverage across multiple subdomains was also investigated. Five of the six strongest measures (all but the PLBS) cover multiple subdomains. The most comprehensive coverage is provided by the ITSEA and the DECA-C, which address all four subdomains (see Table 2). The BASC-2 and the SSRS each cover three of the four subdomains; the BASC-2 addresses social competence, behavior problems, and self-regulation, and the SSRS covers social competence, emotional competence, and behavior problems.

Two of the six strongest measures cover only one or two of the four subdomains. The CBCL evaluates maladaptive behavior (both internalizing and externalizing behaviors) and self-regulation in preschool-age children. Because it is comprised entirely of negatively focused items (e.g., "argues a lot," "clings to adults," "impulsive or acts without thinking"), the CBCL does not fully measure social or emotional competence. Finally, the PLBS mainly captures self-regulation (see Table 2 and Appendix A).

Another way of thinking about coverage of the social and emotional domain is to consider how many of the "strong candidate" measures address each of the subdomains. Five of the six measures identified as "strong" in Table 2 address behavior problems and self-regulation. Four of the six measures address social competence. Three of the six measures address emotional competence.

Overlap with measurement of executive function

As Table 2 indicates, there is some overlap in coverage of social and emotional subdomains and measurement of executive function among the six strongest measures. Two of the six have items which tap into dimensions included under executive function: the BASC-2 and the PLBS, with the overlap being between the subdomain of self-regulation and executive function.

[4] The three "promising" measures were the Minnesota Preschool Affect Checklist-Revised/Shortened (MPAC-R/S; Denham et al., 2012), the Penn Interactive Preschool Play Scales (PIPPS; Fantuzzo & McWayne, 2002), and the Preschool Self-Regulation Assessment (PSRA; Smith-Donald, Raver, Hayes, & Richardson, 2007).

[5] The SSRS has been replaced by the SSIS-RS (Gresham, F.M., & Elliott, S.N. (2008) Social Skills Improvement System: Rating Scales. Bloomington, MN: Pearson Assessments) based on research to improve its psychometric properties. For more information, please refer to the commentary by Campbell et al (this issue; see subsection on Emotional Competence) in which the SSIS-RS is discussed, and also Federal Interagency Forum on Child and Family Statistics, 2015a,b).

Discussion

Our review started with a careful examination of key literature which identified four subdomains of social and emotional development. From this foundation, we were able to determine whether a particular scale or instrument was assessing all commonly recognized aspects of social and emotional development. Furthermore, we used a multifaceted set of criteria, including and prioritizing a measure's psychometric properties, to assess the quality and value of a particular measure for use in large-scale surveys and other studies. Considerations related to the practical aspects of data collection, including the cost of a measure, the requirement of a specialized administrator, and/or the length of time it takes to collect data using a particular instrument, are relevant not only for large-scale survey administration but also for many research contexts in the field at large. In addition, the current review emphasized and evaluated the applicability of extant measures for use with diverse child populations; this is increasingly important at both national and local levels.

Of the 75 measures that were reviewed, we identified six which appear to have the greatest number of strong characteristics for use in large-scale survey studies and the early childhood field more broadly. However, as our analysis of the measures indicates, there were very few measures that had the "winning" combination of strong psychometric properties, usefulness with a diverse child population, and ease of administration. Perhaps the best candidates among them are the DECA-C and SSRS, which both combine a broad coverage of the subdomains of social and emotional development with strong psychometric properties and ease of administration. Nevertheless, two drawbacks of both of these measures are the length of time to administer and limited availability in multiple languages. The ITSEA is a very promising measure for those researchers most concerned with measuring social and emotional development in the earliest years of life. Importantly, it is the only measure among the six strongest that was specifically designed to capture social and emotional development during infancy and toddlerhood. The paucity of high-quality measures of social and emotional development during the infant and toddler years is a longstanding issue (Cabrera, Linver, & Brooks-Gunn, 2007).

Current challenges and future considerations for social and emotional measures in early childhood

This review of measures underscores several challenges that face the research, policy, and practice communities when trying to track child well-being across the early childhood years. These challenges include not only the overall scarcity of measures for use with very young children, as alluded to above, but also those related to comprehensive coverage of the subdomains of social and emotional development, appropriateness for use with diverse populations, developmental continuity between assessments of abilities at earlier and later ages, ensuring strength of psychometric properties as well as ease of administration, and the seeming overlap in operationalization of distinct competencies. We consider each of these challenges and also their implications for future measures development and use in the following sections.

Comprehensive coverage of subdomains of social and emotional development

As suggested by our review, there are very few strong measures which address all four subdomains of social and emotional development. However, overall, the subdomains of social and emotional development were well-represented across the full set of selected measures. There is some debate about how many or which subdomains are the most critical to measure in large-scale surveys in order to get an accurate picture of a child's social and emotional development (Federal Interagency Forum on Child and Family Statistics, 2013a, 2013b). It could be argued that there should only be two subdomains (one for social development and another for emotional development), with positive and negative aspects captured within each of these two main categories, rather than separating out "behavior problems" as a separate subdomain, for example. Nevertheless, there is a growing consensus that it is important to capture children's strengths as well as possible limitations in the social and emotional domain.

This review suggests that even among the measures that have the strongest psychometric properties and other features that make them strong candidates for use in the field, comprehensive coverage of all aspects of social and emotional development, across both strengths and limitations, is rare within a single measure. This issue is important because many researchers have limited resources and a desire to minimize respondent burden, which may lead them either to measure one subdomain of social and emotional development very thoroughly with a larger set of questions, or attempt to measure multiple subdomains with a smaller set of items (Moore, Halle, Vandivere, & Mariner, 2002). Although a priority for the current review was to determine comprehensive coverage of the social and emotional domain by extant measures, users in the broader field will want to consider coverage across the subdomains of social and emotional development in light of other factors, such as the purpose of the study, the psychometric properties of the measures, respondent burden, and time and resource constraints (see also articles by Darling-Churchill & Lippman, 2016-in this issue and Jones et al., 2016-in this issue).

Appropriateness for use with diverse child populations

The young child population is becoming increasingly more diverse (Child Trends Databank, 2014). Consequently, there is a priority to consider the cultural and linguistic appropriateness of measures for use with young children (National Association for the Education of Young Children & National Association of Early Childhood Specialists in State Departments of Education, 2003), and to validate them for use with diverse populations (Halle et al., 2011). We found from our review that some measures are available in multiple languages, but it is not always clear if these measures have been adequately tested for validity within these other language communities. Using a large and diverse norming sample is another way to insure a measure's appropriateness for use with a diverse child population. Validation in multiple languages with an appropriate norming sample is an additional hurdle that many extant measures have not currently crossed (Fitzgerald, 2007; Moodie et al., 2014).

Developmental continuity of assessments for a wide age range

Social and emotional competencies are demonstrated in distinct ways in infancy compared to at age five. As a result, the modality or metric used to capture competencies will necessarily vary over time. These time-sensitive issues are a challenge to those researchers or policymakers who are interested in tracking growth over a longer developmental trajectory. Attention, therefore, needs to be paid to calibrating across early childhood assessments to link early indices of social and emotional well-being with later ones (Fitzgerald, 2007).

Decisions regarding thresholds or benchmarks for social and emotional development across the entire early childhood age span present yet additional challenges (Darling-Churchill & Lippman, 2016-in this issue). First, there is the natural variability in child development within and across the early childhood years. Furthermore, expectations for what a young child should know and be able to do with regard to social and emotional competencies can vary in different policy spheres (e.g., across states), across different program settings (e.g., child care, Head Start, or public pre-kindergarten), and with regard to multiple cultural perspectives (Chen & Rubin, 2011; National Research Council, 2008). More work is clearly needed to develop measures that can capture continuity and change across the early childhood years, from birth through at least age five if not age eight.

Strong psychometric properties and ease of administration

The criteria used to review the quality and appropriateness of extant measures for use in large-scale survey studies required examination of

both the strength of a measure's psychometric properties and the ease of administration. We found a very limited number of measures showing strengths in both of these areas. Some work has been done to determine how to create strong "short forms" of longer measures, and even how to sample items of a longer measure over time for use in longitudinal survey studies (Briggs-Gowan, Carter, Irwin, Wachtel, & Cicchetti, 2004; Moore et al., 2002). However, it is clear that more development work is needed to provide the field with concise yet psychometrically sound measures of social and emotional development (Hirsh-Pasek, Kochanoff, Newcombe, & de Villiers, 2005; Raver, 2002).

Operational distinctions between subdomains

An area of weakness across measures identified in our review was that the same item or type of item was sometimes used to capture multiple domains of social and emotional development. This occurred most often with the same or similar item being counted for both the emotional competence and self-regulation subdomains. Given the importance of conceptual distinctions between subdomains noted in conceptual models of social and emotional development, it is troubling that operational definitions are not equally distinct. Future measures development should help clarify the operational distinctions between subdomains (Jones et al., 2016-in this issue). In addition, further clarity of conceptual definitions of the subdomains is necessary.

Overlap with the operationalization of executive function

As suggested by our review, there is often a lack of distinction between the subdomains of self-regulation and executive function, with the strongest overlap occurring in measures that tap into "emotional control," sometimes referred to as the ability to regulate emotional responses appropriately (Gioia, Espy, & Isquith, 2003). It is possible that the overlap we found in measures of self-regulation and executive function is due to the fact that some measures of self-regulation were developed before executive function was identified as a separate developmental function to be singled out for study in the field (Campbell et al., 2016–in this issue). Nevertheless, many measures of executive functioning are dependent upon behavioral manifestations of cognitive flexibility and inhibitory control, which cannot always be easily distinguished from manifestations of behavioral and emotional control. Just as more work is needed on the measurement of social and emotional competencies, more work is needed to better articulate the definition and measurement of executive function and how it distinguishes itself from other developmental competencies (Bailey & Jones, 2013; Jones et al., 2016-in this issue).

Summary and conclusion

The accurate measurement of young children's social and emotional competencies over the first 5 years of life is important to many stakeholders, including parents, practitioners, policymakers, and researchers. Within the field at large, there is a need to gain consensus on which constructs and measurement approaches should be used to determine competencies in the early years of life for the social and emotional domain (Zaslow et al., 2006). Furthermore, there is a desire to improve upon our current measurement and tracking of young children's social and emotional development within our national survey data system (Federal Interagency Forum on Child and Family Statistics, 1997, 2015a; Fitzgerald, 2007). This review aimed to provide guidance to researchers and other stakeholders on the current status of measures of social and emotional development that are likely candidates for use in large-scale surveys of child well-being, as well as for other purposes more broadly.

Out of the 75 measures that were reviewed, six were identified as "strong" candidates for use in studies of child well-being; while each was rated strong for its psychometric properties, each had different strengths with respect to ease of administration and adequacy for use with a diverse child population. Measures also varied in their coverage of four subdomains of social and emotional development. We found that the measurement of negative behaviors and self-regulation are more common (at least among the most "promising" or "strongest" measures) than are measures of emotional competence. This may be an artifact of the measurement format that was favored by this review (i.e., parent or teacher report rather than direct observation or direct assessment).

We acknowledge that conclusions drawn from this review of measures are limited by decisions we made for inclusion of measures in our review (that limited an initial set of 120 measures to 75 measures) and by our selection criteria for "strong" measures (that reduced the pool of 75 measures down to six "strong" measures). Our goal to inform the inclusion of social and emotional measures in large-scale surveys of child well-being constrained our review to measures that could be administered in survey format, and thus eliminated from consideration more time-intensive and directly administered measures. The primary reliance on indirect reports of parents and teachers is a limitation of all large-scale, survey-style studies, yet they do serve important purposes and provide important information nonetheless. However, both observational measures and direct assessments of children's abilities are important to include in both national and more localized studies of child well-being. Observational measures, while often more time consuming to administer, are essential tools to include for capturing an accurate, holistic view of young children's social and emotional limitations and assets (Martin-McDermott & Fox, 2007). It is highly likely that a less restrictive set of selection criteria permitting the inclusion of observational and direct assessment measures would have identified a larger group of "strong" measures for use with young children.

We further acknowledge that conclusions drawn from this review of measures, especially those regarding overlap in operationalization across subdomains of social and emotional development *and* with the distinct domain of executive function, might be somewhat controversial and warrant further discussion and debate in the field. Some of this discussion and debate is evident in the commentaries provided in this special issue, as well as in the overall discussion by Jones and colleagues (2016-in this issue). We welcome the continued discussion, as it is part of the important function of advancing the field of social and emotional measures development, both conceptually and practically.

In sum, this review of measures highlights the need for the field to clarify what skills and competencies encompass social and emotional development across the early childhood years. It also marks progress in efforts to articulate more clearly how social and emotional skills and competencies are distinguished from each other operationally across subdomains—as well as from other, important developmental competencies such as executive function. By continuing the conceptual and methodological work of developing strong measures of young children's social and emotional development, we will enhance the usefulness and effectiveness of such measures in both research and practice.

Appendix A. Measures Profiles

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