Executive Functions and Social Interactions: Developing Social Scenarios

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EXECUTIVE FUNCTIONS AND SOCIAL INTERACTIONS:
DEVELOPING SOCIAL SCENARIOS

by

Mackenzie Waite

A thesis submitted to the Graduate College
in partial fulfillment of the requirements
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The aim of this study was to develop a series of vignettes to form the basis for an assessment of executive functions (EFs) for 9 – 12 year old children. Although EFs are necessary for effective social communication and positive social interactions, currently, most EF assessments focus on impersonal activities. Little research exists that incorporates real-time processing using ecologically valid social scenarios. The current study aims to develop realistic scenarios that children could encounter in daily life. Ethnographic interviews were conducted with six participants, who worked in a school with 9-12 year old children, to gain their perspective on social interactions. Findings from the interviews were systematically analyzed using content analysis, and several positive and negative themes emerged from the data. Predominate themes identified included: talking, cooperative play, non-cooperative play, organized games, jealousy, and excluding peers from a group. Using these themes along with additional features of social interactions consistently revealed among participants (e.g., boys engage in more physical conflict than girls do, conflict more likely to occur in unstructured environments) were used to develop eight social scenarios. Based on a measure of ecological validity, seven of the scenarios were determined to be realistic and were hypothesized to incorporate specific EF skills, such as inhibition, mental flexibility, and working memory.
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Mackenzie Waite
# TABLE OF CONTENTS

ACKNOWLEDGMENTS ........................................................................................................... ii

LIST OF TABLES .................................................................................................................. vi

CHAPTER

I. INTRODUCTION ...................................................................................................................... 1

II. REVIEW OF LITERATURE .................................................................................................... 7

   Executive Functions ............................................................................................................. 7

   Social Communication and Executive Functions ............................................................... 12

   Social Communication Assessment ...................................................................................... 17

   Scripted social scenarios and social tasks ........................................................................... 22

   Assessment of executive functions in social interactions .................................................. 25

   Executive Function Assessment Tasks .............................................................................. 29

   Gaps in the Research ........................................................................................................... 32

   Current Research Goals and Objectives ............................................................................ 38

III. METHODOLOGY .................................................................................................................. 40

   Theoretical Framework ....................................................................................................... 40

   Participants .......................................................................................................................... 41

   Procedure ............................................................................................................................. 44

   Review of literature procedure .......................................................................................... 44

   Data collection procedure ................................................................................................. 46

   Data analysis procedure ..................................................................................................... 50

   Inter-rater Reliability Measure .......................................................................................... 53

   Validity Measure ................................................................................................................. 55
CHAPTER

IV. RESULTS ........................................................................................................56

Common Social Interactions ................................................................. 56

Types of interactions ............................................................................ 57

Context of interactions ......................................................................... 58

Other trends in participant perceptions .............................................. 59

Interactions across student populations ......................................... 62

Social Vignettes ......................................................................................... 63

Scenario one ............................................................................................... 64

Scenario two ............................................................................................... 66

Scenario three ............................................................................................ 68

Scenario four ............................................................................................... 69

Scenario five .............................................................................................. 70

Scenario six ............................................................................................... 72

Scenario seven .......................................................................................... 74

Scenario eight ............................................................................................ 76

Ecological Validity Measure ................................................................. 76

V. DISCUSSION ................................................................................................. 78

Summary ........................................................................................................ 78

Future Research ......................................................................................... 85

APPENDICES

A. Recruitment Flyer ...................................................................................... 89

B. HSIRB Approval Letter ............................................................................. 90
Table of Contents – continued

APPENDICES

C. Ethnographic Interview Template...........................................................91
D. Data Analysis Chart Template.................................................................92
E. Reliability Coding...................................................................................93
F. Ecological Validity Measure...................................................................95
G. Data Coding and Analysis Forms ...........................................................98

BIBLIOGRAPHY.............................................................................................112
LIST OF TABLES

1. Participant Characteristics .................................................................43
2. Sample Interview Questions ...............................................................48
3. Inter-rater Reliability .........................................................................54
4. Additional Features of Social Interaction .............................................61
5. Results of Ecological Validity Measure ...............................................77
CHAPTER I

INTRODUCTION

This study was designed to develop a series of vignettes to form the basis for an assessment of executive functions (EFs) for 9 – 12 year old children. Executive functions (EF) are cognitive capacities that are responsible for a person’s ability to use purposeful, organized, strategic, self-regulated, goal-directed processing of emotions, thoughts, and actions necessary to cue mental operations such as language, reasoning, and visuospatial representation (McCloskey, Perkins & Van Divner, 2009). Although EFs are necessary for effective social communication and positive social interactions, currently, most EF assessments focus on impersonal activities such as verbal or visuospatial sorting tasks. Little research exists that incorporates real-time processing using ecologically valid social scenarios. The goal of this current study is to develop scenarios that children could realistically encounter daily.

Executive functions have been discussed in the social communication literature as being one key component to successful social interactions and positive peer relationships (Timler, 2008; Hyter 2012, Coggins, 2003; Olswang, Coggins & Timler, 2001). Hyter’s (2012), and Hyter and Sloane’s (2013) conceptual model suggests that social communication is comprised of interdependent relationships among social cognitive abilities (e.g., perspective taking and intention reading), EF, its reciprocal relation - affect regulation, and pragmatic language, with working memory being the “glue” that holds the other components together. These skills allow one to understand others’ viewpoints, adapt to different communicative contexts using mental flexibility, hold on to information
while processing additional information, and carry out communicative goals in a given interaction (Hyter, 2012; Timler, 2008), but could be impeded by dysregulated affect (Hyter & Sloane, 2013).

Without the essential executive skills included in models by McFall (1982), Crick and Dodge (1994), Hyter (2012), and Hyter and Sloane (2013), a child may struggle to meet the demands of a given social scenario necessary for successful social communication. These functions guide a child’s behavior by manipulating and holding information using memory, planning, and reasoning about interpersonal goals before formulating responses in various contexts (Olswang et al., 2001). Coggins et al. (2003) argued that impaired social communication might in part be the result of deficits in underlying executive functions.

Many tools currently available to assess executive functions are reviewed in Chapter II; however, these tools are largely limited to assessing EF in the verbal and visuospatial domains, and they rarely incorporate real-life scenarios or interpersonal activities (Gerlach, Spreng, Gilmore & Schacter, 2011; Henry & Bettenay, 2010; McCloskey et al., 2009). Many tasks that are reviewed are limited, in that they assess one’s capacity to utilize EF during academic-based activities, and do not rate the ability to use these same skills in naturalistic contexts. This study aims to develop a process for assessing these functions as they relate to social interactions, a process that has been justified by several models of social communication, but that has not yet been developed to date.

The goal of this study is to identify a process that taps into a child’s underlying executive functions by incorporating a real-time processing element, while also
determining a child’s ability to utilize these functions in everyday contexts among peers. The investigator hypothesizes that a series of realistic, interactive-vignettes (social scenarios) could be used as stimuli for assessing a child’s ability to utilize executive functions during real-life peer interactions that he or she may encounter in everyday life. Development of the vignettes is based on the premise that executive functions play a large role in social communication and that deficits in the area of executive functioning could affect a child’s social communication competency. The vignettes will be designed to oblige examinees to process incoming information during a social interaction in real-time, requiring them to utilize several functions simultaneously, and then to determine a course of action and produce an “on the spot” response. Using social vignettes as a mode of assessing executive functions, will combine two major features of assessment that have been the focus of literature about assessment of social communication and executive functions (i.e., real-time and real-world) to make functional tasks that will evaluate a child’s ability to use executive functions effectively in everyday social contexts. This study involves assessing social-communicative task performance and those factors that contribute to successful performance. Several video-based assessments have been developed to examine various aspects of social-cognitive performance and social-competence (e.g., Bedrosian, Hoag, & McCoy, 2003; Bosco, Bucciarelli, & Bara, 2006; Schultz, 2010). This methodology may support this present research, in that the design involves social interaction within naturalistic contexts that are replicated to be used as a measureable assessment tool. No published studies to date have focused explicitly on the development of interactive scripts to assess executive functions using scenarios
developed based on themes revealed through ethnographic interviewing of school personnel.

The first objective of this study is to identify realistic social interactions that occur among children ages 9-12 as reported by of school personnel who have observed publically displayed interactions and conflicts at their schools. Investigators analyzed information pertaining to the types, contexts, and causes of interactions to identify commonalities and themes that emerged among interviews.

The second major objective of this study is to use the information collected from the teachers and school personnel to develop realistic social scenarios that can be designed to elicit executive functions during social interaction. Themes that emerged from ethnographic interviews were used to develop seven social scenarios that are hypothesized to elicit specific social-cognitive skills (e.g., perspective taking) and executive functions (e.g., inhibition, mental flexibility, working memory). These scenarios could serve as a starting point for the development of scripts to be used for an assessment that would elicit executive functions, as they would occur during a real-time interaction.

The third objective of this research study is to determine whether social vignettes demonstrate ecological validity based on the results of a validity measure completed by school personnel. Teachers and other school employees were asked to determine if the initial drafts of social scenarios were realistic or not, and if the proposed scenarios, in their expert opinion, could occur in their school settings.

This paper includes a review of relevant literature related to executive functions and social communication, which outlines current theoretical models of social
communication. In this section, currently available assessments are reviewed and limitations of these assessments are addressed in terms of the presented theoretical models of social communication and executive function. A justification of methods used in the current study is presented, outlining work of other authors using a similar methodology (i.e., interactive social scenarios) and the reasons behind the need for an additional assessment tool designed based on identified themes revealed in social interactions of children 9-12. This section discusses limitations in the area of assessment of executive functions as they relate to social communication.

Methodology for obtaining information relevant to the development of the proposed social scenarios is described. Using Interpretivism as a theoretical framework, six ethnographic interviews were examined using a content analysis to determine any commonalities or emerging themes among interviews. These themes were compared between various student populations (e.g., African American vs. Caucasian) and community types (e.g., urban vs. suburban).

After analysis was performed, the investigator used themes that emerged in both positive and negative interaction and the specific features described by participants to develop a series of social scenarios. In the results section of this paper, seven interactive social scenarios are presented incorporating information obtained from the ethnographic interviews and analysis process. A description of the hypothesized executive skills required to respond to the various scenarios is included for each proposed vignette.

In the final chapter, findings and limitations of the current study are discussed. The investigator explains the implications that this study may have in the field of speech-language pathology, and how the seven social vignettes may contribute to our knowledge
of executive functions and assessment of these skills using social scenarios. An explanation is given of the importance of further developing the scripts to refine the initial interactive design. Additional questions are raised based on the current findings, and recommendations for subsequent studies are outlined.
CHAPTER II

REVIEW OF LITERATURE

Executive Functions

Executive functions (EF) are cognitive capacities that are responsible for a person’s ability to use purposeful, organized, strategic, self-regulated, goal-directed processing of emotions, thoughts, and actions necessary to cue mental operations such as language, reasoning, and visuospatial representation (McCloskey, Perkins & Van Divner, 2009). This complex system begins developing in early childhood and continues through adolescence and into adulthood. These skills play a crucial role in developing other cognitive processes and are important for social development and academic achievement as they allow an individual to adapt to the contextual demands of a given situation or interaction (Salimpoor & Desrocher, 2006; Dennis, 1989; Burgess & Simmons, 2005; Timler, 2008).

Luria, a predominant neuropsychologist, laid the foundation for modern day study of executive operations and identified a connection between the frontal lobe, executive functions and problem solving (as cited in Goldberg & Bougakov, 2005, p. 568; Purdy, 2011). Traditional components of executive function have included the formulation of goals and action routines, access to routines, execution of routines, and self-monitoring (Goldberg & Bougakov, 2005; Purdy, 2011). Present day models of executive function vary in organization; however, the majority of authors agree executive functioning consists of separate but interconnected components, and that these skills are utilized in a variety of other cognitive processes (McCloskey, 2009; Miyake, Friedman, Emerson,
Witzki, Howarter, & Wagner, 2000). Miyake et al. (2000) emphasize the diversity of individual executive functions (e.g., shifting, inhibition, working memory) while still acknowledging the relationship between these processes and their underlying commonalities. Stuss and Alexander (2000) describe the unity and diversity of EF, relating these processes to a “supervisory system” comprised of multiple parts, converging on one general concept of executive control.

McCloskey (2009) proposed a five-tier model of executive function organization that attempts to display the interconnectedness of various executive functions. McCloskey (2004) describes tiers 1) Self-Control: Self-Activation; 2) Self-Control: Self-Regulation; 3) Self Control: Self Realization/Self Determination; 4) Self Generation; and 5) Trans-self Integration. This model is unique in that it recognizes the roles that executive functions play in various levels of brain development throughout a lifetime. Most popularly, executive function research has focused predominately on the “self-regulation” tier. McCloskey (2009) is one of the first to propose this type of overarching theory that attempts to encompass all aspects of executive control providing a framework of executive functions that can serve as a guide for clinical practice.

McCloskey et al. (2003) describes 23 specific functions as part of the self-regulation tier, closely aligned to frequently discussed models, which classify executive skill into self-regulatory and organizational categories. Researchers most frequently focus on three component functions: inhibition, set shifting/mental flexibility, and working memory and typically consider these to be the “Core” executive functions (e.g., Diamond, 2013; Lehto et al. 2003; Miyake et al., 2000; Baddeley, 1996). There is much variation among different authors regarding what comprises the components of EF.
Functions such as planning, problem-solving, organization, monitoring, goal-setting, and reasoning have also been discussed in the literature (Purdy, 2011). In a meta-analytic review performed by Alvarez and Emory (2006) several authors included sustained and selective attention as a major component of the executive system (Barcelo, 2001; Barkley, 1996, Manly & Robertson, 1997; Stuss et al., 1998; Stuss et al., 2001). The current study will focus on the three components appearing to be in most agreement among popular models of EF, and around which the bulk of the literature relevant to assessment focuses.

Miyake et al. (2000) describes ‘inhibition’ as “one’s ability to deliberately inhibit dominant automatic, or proponent responses when necessary” (p.57). Inhibition involves controlling behaviors, thoughts, and emotions, to overcome an inherent desire to act in one manner, and act instead in the manner required by a given situation (Diamond, 2013). Inhibitory control allows one to change the directions of behaviors and react appropriately to a given situation rather than only acting out of habit (Diamond, 2013).

Mental flexibility, as discussed in this study, is often described in the literature using the terms such as shift/shifting, set shifting, or cognitive flexibility. McCloskey (2007) describes flexibility/shift as the function that cues a change in focus or a modification of perceptions emotions, thoughts, or actions in reactions to internal or external stimuli. Diamond (2013) defines mental flexibility as “the opposite of rigidity” (p. 149). Miyake et al. (2000) describes shifting (mental flexibility) with a widely accepted definition as the process of engagement in a relevant task and the disengagement of an irrelevant task. Diamond (2013) suggests mental flexibility requires aspects of both inhibition and working memory and involves changing how one thinks
about something or coming up with an alternative action plan to adjust to new demands or priorities. This flexibility is needed, for example, for a child to adapt to peer interactions and modify his or her responses and nonverbal behaviors in a way that makes the communication interaction successful (Timler, 2008).

Working memory can be viewed as the management, manipulation, and transformation of information drawn from either short-term or long-term memory (Dehn, 2008). Historically, research on working memory considers this process an active memory system that is responsible for the temporary maintenance and simultaneous processing of information (Dehn, 2008). This component is necessary for completing multi-step tasks and following complex instructions by holding on to information and not losing track of ideas and concepts (Salimpoor & Desrocher, 2006; Gioia, Isquith, Guy & Kenworthy 2000). Updating is a closely related function to working memory, often described in the literature as the ability to monitor and make changes to working memory representations (Lehto et al., 2003; Miyake et al., 2000). Working memory is necessary for making sense of language, for incorporating new information into plans of action or thought processes, and for forming relationships between multiple ideas (Diamond, 2013).

Any one of these component functions described may be utilized by an individual within four distinct domains including, perception, cognitive, emotion, and action, and may be required in the interpersonal, intrapersonal, environmental or symbol system arena (McCloskey et al., 2009). Considering the extent of the present day construct of EF (e.g., Diamond, 2013; McCloskey et al., 2009; Riggs, Jahromi, Razza, Dillworth-Bart, & Mueller, 2006), it appears evident that these skills may affect many areas of daily life.
Executive functions in relation to other skill areas

Many studies have explored the link between executive functions and other skill areas and aspects of mental and physical health (Diamond, 2013). The research demonstrates a relationship between executive function and academic success, and EF performance may be predictive of math and reading skills (e.g., Best, Miller, & Naglieri, 2011; Borella, Carretti, Pelgrina, 2010; Gathercole, Pickering, Knight, & Stegmann, 2004; Yeniad, Malda, Mesman, Van IJzendoorn, & Pieper, 2013). Literature has shown a relationship between EF and many mental health disorders, in that EFs are impaired in disorders such as Attention Deficit Hyperactivity Disorder (ADHD) (e.g., Lambek, Tannock, Dalsgaard, Trillingsgaard, Damm, & Thomsen, 2011; Lui & Tannock 2007) Schizophrenia (e.g., Bersani, Clemente, Gherardelli, & Pancheri, 2004), Obsessive Compulsive Disorder (e.g., Bannon, Gonsalvez, Croft, & Boyce, 2006) and Depression (e.g., Harvey et al., 2007). Other links that have been explored between EFs and physical health (Crescioni et al. 2011, Miller et al. 2011, Riggs et al. 2010), job success (Bailey, 2007), quality of life (Brown & Landgraf 2010, Davis et al. 2010), marital harmony (Eakin et al., 2007), and public safety (Broidy et al. 2003, Denson et al. 2011) (as cited in Diamond, 2013).

Several studies have shown evidence of a relationship between EFs and aspects of social communication. McEvoy, Rogers, and Pennington (1993), examined EFs and social communication in children with Autism. These authors compared executive function skills to social communication skills, and found a significant relationship between these skills evidenced by performance of children with autism and children who are typically developing (McEvoy, 1993). Riggs et al., (2006) reviewed literature linking
executive function to children’s social-emotional development. Many studies conducted with adolescents have found a concurrent negative relationship between executive functions and other areas that are related to social-emotional deficits such as ADHD (e.g., Castellanos, Sonuga-Barke, Milham, & Tannock, 2006; Barkley 1997), bullying (e.g., Coolidge, DenBoer, & Segal, 2004), conduct disorder (e.g., Lueger & Lugill, 1990), delinquency (e.g., Lyñam, Moffit, & Stouthamer-Loeber, 1993), and autism (Klinger & Dawson, 1996).

It is clear that executive function plays an integral role in many aspects of life and deficits in this area are likely to result in significant challenges to a child. However, the majority of the literature on assessment of executive functions in children is predominately geared towards the environmental or symbol system areas as described by McCloskey et al. (2009), relating to academic and visuospatial skills. Many experts in the field of psychology and social communication, however, have continually emphasized the integral role executive functions play in interpersonal activities and social communication found in everyday contexts (e.g., Coggins, Olswang, Olson & Timler, 2003; Crick & Dodge, 1994; Hyter, 2012; Mackelprang, Heyanka, Lennertz, Morin, & Marker, 2009; Olswang, Coggins, & Timler, 2001; Mattson, Goodman, Caine, Delis & Riley, 1999).

Social Communication and Executive Functions

Social communication is the ability to use knowledge about social situations to guide verbal and nonverbal behaviors to meet the requirements of a particular social situation (Coggins, Timler, & Olswang, 2007; Hyter, 2012; Olswang et al., 2001; Timler, 2008). Appropriate social communication is dependent on both social and
communicative competence. Social-communicative competence is one’s ability to achieve social goals and carryout communicative functions necessary for a given situation, while using specific forms relating to the cultural, linguistic, or social requirements of the situation (Kaczmarek, 2002). Several models have been proposed to describe the complex processes involved in social interaction skills and social communication.

McFall (1982) separates social skills from social competence in his 2-tiered model. He proposes an individual needs to both possess the social skills for a given context and have the capacity to apply those skills to rules of social interaction, requiring cognitive processing (i.e., mental flexibility) (McFall 1982). Others have described models of social interaction that are heavily weighted on processing skills (Crick & Dodge, 1994). Crick and Dodge (1994) propose a social information processing model involving 1) encoding of external and internal cues, 2) interpretation and mental representation of cues, 3) clarification or selection of a goal, 4) response access or construction, 5) response decision, and 6) behavioral enactment. This model proposes that a child must process input cues using a pre-existing set of biological capacities and past memories. Interpretation of input cues involves processes such as accessing long-term memory, assessing goals of present and past interactions, making inferences about others’ perspectives (perspective-taking), and making inferences about the meaning of the exchange to oneself and partner (Crick & Dodge, 1994).

Hyten’s proposed model suggests that social communication is comprised of interdependent relationships among social cognitive abilities (e.g., perspective taking and intention reading), executive functions, and pragmatic language, with working memory.
being described as the “glue” that holds the other components together (Hyter, 2012). In a revised version of this model (Hyter & Sloane, 2013), a reciprocal relation exists between executive functions and affect regulation, meaning that dysregulated affect (emotions, anxiety) can interfere with executive control.

The first interdependent component of the social communication model (Hyter, 2012; Hyter & Sloane, 2013) is social cognition, defined by Baron and Byrne (1977) as “the manner in which we interpret, analyze, and remember information about the social world” (p.125). Perspective taking is the ability to take on the viewpoint of another person. Selman (1980) uses the term “role-taking skills” to describe perspective taking. For successful social communication, a child must be aware of the intentions and perspectives of their peers (Timler, 2008). Perspective taking is related to the broader concept of theory of mind, as it involves deducing the thoughts or feelings of another person (Blakemore & Choudhury, 2006). Theory of mind, awareness and understanding of mental states of others (Wellman, 1990), has been linked to executive function (Riggs et al., 2006). Frye, Zelazo & Palfai (1995) found that young children who performed poorly on executive function tasks (e.g., card sorting task that is typically used to assess cognitive shift/mental flexibility) also performed poorly on theory of mind tasks (e.g., false belief task) (Frye et al., 1995). These findings suggest that executive function may play a role in theory of mind development in children (Riggs et. al., 2006)

In addition to executive functions, another integral component of successful social communication is the ability to use pragmatic language. Pragmatic language involves an understanding of language form (structure) and content (meaning), and knowledge of appropriate ways these components may be used during social interactions across various
contexts (Bates, 1976; Prutting & Kittchner, 1987; Levinson, 1983). The principles that govern the use of language are highly dependent on one’s previous cultural worldview and experiences, and history of social practices (Hyter, 2007). In the literature, several different schemas are used to encompass the various parameters of pragmatic language (Abbeduto & Short-Meyerson, 2002) but generally three primary components are considered to be the essence of pragmatic skills. Speech acts, sometimes described using the terms communicative intentions or communicative acts (Austin, 1962; Searle, 1969; McTear, 1985), refer to a specific intended function or purpose of a given utterance (Abbeduto & Short-Meyerson, 2002). Another parameter, is presupposition, which requires social cognition and pertains to the level of appropriateness or relevance of an act within a given context. Presupposition falls in the category of Cognitive Pragmatics. Airenti, Gabriella, Bara, Colombetti, and Marco (1993) proposed a model of Cognitive Pragmatics, which describes the cognitive processes involved in interpreting and responding to communicative acts of others. The meaning of a communicative act can only be understood if the interlocutors share mental states; that is, the partner’s intentions are clear and recognized through the interaction. The third parameter of pragmatics pertains to rules for discourse such as turn taking (Sacks, Scheloff, & Jefferson, 1974), topic maintenance (Brinton & Fujiki, 1989) and paralinguistic and nonverbal features (Prutting & Kittchner, 1987; Penn, 1983).

Sloane and Hyter’s (2013) model of social communication also describes the reciprocal relationship between affect regulation and executive functions and the effect that emotions and ability to cope with stress can have on the outcome of social interactions. The literature has demonstrated a relationship between emotional regulation
and coping with stress, and outcomes in social functioning (Eisenburg, Fabes, Murphy, Maszk, Smith, & Karbon, 1995; Matsumoto, 2002; Wang & Saundino, 2011).

Together, these interdependent skills (social cognition, executive functions, affect regulation, pragmatic language, and working memory) allow a child to understand others’ viewpoints, adapt to different communicative contexts using mental flexibility, carry out communicative goals in a given interaction, while holding on to and processing additional information (Hyter, 2012; Hyter & Sloane, 2013; Timler, 2008). According to the presented frameworks, executive functions are one of the vital components of social communication, and are likely to have a heavy influence on appropriateness of social interaction. Without the essential executive skills included in models by McFall (1982), Crick and Dodge (1994), Hyter (2012), and Hyter and Sloane (2013), it could prove difficult for a child to interact successfully with others and to meet the demands of a given social scenario. These functions guide a child’s behavior by manipulating and holding information using memory, planning, and reasoning about interpersonal goals before formulating responses in various contexts (Olswang et al., 2001). Coggins et al. (2003) argued that impaired social communication might in part be the result of deficits in underlying executive functions. Mackelprang et al. (2009) examined the relationship between third and fifth graders’ executive functioning and social skills, and found that the ability to plan, initiate, inhibit, and shift cognitive sets may affect social skills that require behavioral regulation, self-control, and emotion modulation, providing additional evidence for the presented models of social communication.
Social Communication Assessment

Social communication is a complex process involving many components including a child’s pragmatic language skills, a child’s social skills, and the underlying mechanisms that support these skills (e.g., social cognition, executive functions, affect regulation, and working memory) (Hyter, 2012; Hyter & Sloane, 2013; Timler, 2008). Assessment of social communication involves a comprehensive and interdisciplinary model (Kaczmarek, 2002; Timler, 2008). Kaczmarek (2002) proposed a model for assessment involving three dimensions of social communicative competence: social appropriateness, communicative appropriateness, and social-communicative effectiveness. These aspects must be considered on different levels of performance: at the basic level of social communication skills (e.g., social behaviors, linguistic, paralinguistic, and nonverbal aspects of utterances), a higher level of social communicative task performance (e.g., social cognition, discourse skills), and overall social communicative behavior (e.g., global social and communication measures, peer acceptance) (Kaczmarek, 2002). According to Kaczmarek’s (2002) multi-layer model of assessment, first a child’s basic social-communicative skills should be evaluated examining social appropriateness, communicative appropriateness, and social-communicative effectiveness.

Assessing the social appropriateness of a child’s social-communication skills is most commonly done through direct observation, using behavioral coding systems that rate behaviors as positive or negative by observing a child in a naturalistic or analogue situation (Kaczmarek, 2002). A limited amount of rating scales are available that focus explicitly on social interaction skills (Kaczmarek, 2002). One recent example of a social
interaction rating scale is the *Evaluation of Social Interaction* (Fisher & Griswold, 2010), which has been found to be a valid tool for establishing the quality of a child’s specific social interaction skills such as initiating/ending interactions, (Griswold & Townsend, 2012). Similar methods have been used to look at a communicative appropriateness of social-communicative skills.

Assessing the communicative appropriateness of social-communicative skills can be achieved through language sampling including conversational and narrative language samples examining linguistic, paralinguistic, and nonverbal characteristics of utterances (Timler, 2008; Kaczmarek, 2002). Timler (2008) discusses the importance of also collecting peer-peer samples, because in these more naturalistic contexts the supports provided by adults are eliminated. Several rating scales and conversational rubrics are available as tools for analyzing social-communicative skills during peer interaction (Timler, 2008; Adams, 2002; Kaczmarek, 2002). Prutting and Kirchner (1987) developed a Pragmatic Protocol to evaluate various parameters of pragmatics based on a 15-minute observation including verbal aspects (e.g., speech acts, topic maintenance, and lexical selection); paralinguistic aspects (e.g., vocal intensity, vocal quality, and prosodic features), and nonverbal features (e.g., physical proximity, facial expressions, and gestures). The *Children’s Communication Checklist* (Bishop, 1998) is a rating scale used to measure communication behaviors that focuses predominately on pragmatic behaviors at the social-communicative skill level including subscales such as speech output, inappropriate initiation, coherence, and use of context.

Several methods have been employed to measure the effectiveness of specific social-communicative skills, which examine general characteristics of interaction, social
assertiveness and responsiveness, social and communicative functions, impact on partners, and analysis of challenging behaviors (Kaczmarek, 2002). One method that has been used is setting up analogue situations, which simulate scenarios that could occur in a natural environment (Dodge, Petit, Mccluskey, & Brown, 1986; Brinton & Fujiki, 1999; Craig & Washington, 1993; Kaczmarek, 2002). Specific analogue situations have been constructed to elicit particular social or communicative skills such as peer group entry, conflict resolution, and responding to conversational bids of peers (Dodge et al., 1986; Brinton & Fujiki, 1999). Role-play methods also can elicit social communicative skills and analysis of a child’s responses to several interpersonal vignettes can provide information about the appropriateness and effectiveness of these skills (Kaczmarek, 2002). Examples of scaled role-play measures include the Behavioral Test of Interpersonal Competence for Children-Revised (BTICC-R; Hughes et al., 1989) and the Social Skills Test for Children (Williamson, Moody, Granberry, Lethermon, & Blouin, 1983) (Kaczmarek, 2002).

The next level of Kaczmarek’s (2002) model of social communication assessment is social-communicative task performance. Assessment at this level involves the integration of social-communicative skills discussed above to formulate strategies for completing more challenging and complex social tasks (Kaczmarek, 2002). Social-communicative task performance can be evaluated using many of the same methods used to assess individual social-communicative skills (e.g., direct observation, analogue situations, role-plays, etc).

Direct observation at the task performance level involves discourse analysis for rating communicative appropriateness during conversational and narrative discourse,
rather than just focusing on speech acts (Kazemarek, 2002). Kazemarek (2002) discusses three areas of analysis that are necessary for communicative appropriateness at the discourse level: 1) topic management; 2) semantic/syntactic cohesion; and 3) turn taking. Prutting and Kirchner (1987) include these aspects of discourse analysis in their Pragmatic Protocol. Narrative discourse analysis is also relevant to social communication as narratives play a major role in everyday social interaction and communication (McCabe, 1996; Bliss, McCabe, & Miranda, 1998). Bliss et al. (1998) discuss using the Narrative Assessment Profile as a tool for discourse analysis, which evaluates narratives across six dimensions: topic maintenance, event sequencing, explicitness, referencing, conjunctive cohesion, and fluency. In addition to discourse analysis, social skills must be assessed at the task performance level, which has been done using scripted social scenarios and social tasks. These types of assessments are described in greater detail in the following section, as this methodology most closely resembles that of the current study.

Kazemarek’s (2002) final level of social communication assessment is evaluation of social-communicative performance, which involves global social measures, global communication measures, and an evaluation of outcomes such as peer acceptance, friendships, and social networks. Several norm-referenced instruments are available for assessing a child’s social competence (Kazemarek, 2002).

The Social Skills Rating System-Teacher Form (Gresham & Elliot, 1990) is a teacher rating scale that has been used to measure social-competence in children by obtaining teacher’s perceptions of a child’s social skills, problem behaviors, and academic competence (Kazemarek, 2002; Brinton & Fujiki, 1999). Parent and self-report
measures have also been used for rating a child’s social competence such as The Social Competence Questionnaire-Parent (Spence, 1995) and the Loneliness Questionnaire (Williams & Asher, 1992). Fujiki, Brinton, and Todd (1996) developed a task to assess children’s perceptions of quantity of peer interactions in which children would be presented with a series of pictures of children during common activities and asked with whom they performed each activity (Brinton & Fujiki, 1999).

In addition to the rating scales and informal observation methods that explore the social-communicative skills and social-communicative task performance, a few standardized comprehensive assessments containing pragmatic subtests are available to assess a child’s pragmatic language skills. These include the Comprehensive Assessment of Spoken Language (CASL; Carrow-Woolfolk, 1999). The Assessment of Comprehension and Expression (Adams, Cooke, Crutchley, Hesketh, & Reeves, 2001), the Clinical Evaluation of Language Fundamental 4th edition (CELF-4; Samel, Wigg, & Secord, 2003), and the Test of Language Competence, Expanded Edition (TLC-C; Wigg & Secord, 1989). Several formal measures are available that are dedicated to assessment of pragmatics including, the Test of Pragmatic Skills-Revised (Shulman, 1986), the Interpersonal Language Skills Assessment (Blagden & McConnell, 1985) and the Test of Pragmatic Language 2nd Edition (TOPL-2; Phelps-Terasaki & Phelps-Gunn, 2007) (Nelson 2010; Adams, 2002; Kaczmarek). The TOPL-2 examines social communication in context to identify children with pragmatic language deficits by focusing on the child’s ability to determine the effectiveness of a response used to resolve a social conflict (Nelson, 2010). Assessment tasks from these batteries involve using pictures, social stories, and utterance interpretations within specific contexts to elicit pragmatic skills
such as non-literal comprehension, understanding and making inferences, perspective taking, narrative development and comprehension, understanding ambiguity, and various speech acts (Adams, 2002; Kaczmarek, 2002). To assess social-communicative outcomes, the benefits a child experiences due to his or her level of social-communicative competence must be determined (i.e., peer acceptance, friendships, social networks) (Kaczmarek, 2002). Although a range of global measures are available to assess social competence, it has been argued that social competence can be better gauged by assessing a child’s performance on a specific social task (McFall, 1982).

**Scripted social scenarios and social tasks**

This section outlines several examples of social tasks using hypothetical analogue or role-play situations that have been used to assess a variety of social-cognitive processes. Although, these described methods have made a significant contribution to the knowledge of social-communicative assessment, each example has limitations in that no single method described in the literature incorporates the real-time processing element needed to elicit executive functions during a realistic social scenario, which is an essential component to successful social communication in the daily interactions of school-age children.

Analogue situations were mentioned previously as a method for assessment of social-communicative skills; however, more frequently they have been used to address the combination of social-communicative skills required during a given task-oriented social activity (Kaczmarek, 2002; Brinton & Fujiki, 1999). Brinton and Fujiki (1999) observed how well students (ages 8-12) performed various social tasks in triad interactions such as entering into ongoing play of two peers, a collaborative toy selection
task, a negotiation task, and a cooperative work task. Children were rated on aspects of interactions such as the time it took to enter the scenario, the number of utterances produced during each task in comparison to peers, the number of strategies suggested during each task in comparison to peers, and the amount of verbal and nonverbal means used in collaboration (Brinton & Fujiki, 1999).

Another method that may be used to focus on specific social goals is behavioral role-plays. Role-plays were discussed earlier as a method of evaluating specific social-communicative skills, however; they are often used as a tool for assessing a child’s social performance during a specific social scenario or hypothetical social task (Kaczmarek, 2002; Timler, 2008b; Dodge et al., 1986; Dodge & Price, 1994; Rose & Asher, 1999). Hypothetical reasoning tasks have long served as a popular means of assessing social-task performance, two early examples include, the Social Problem Solving Test (SPST; Rubin & Krasnor, 1986) and the What Happens Next Game (WHNG; Spivak, Platt, & Shure, 1976). The Social Problem Solving Test-Revised consists of picture stimuli displaying children attempting to obtain a desired object or enter into an interaction with a peer and requires the child to explain how he or she might gain access to the desired object or activity (Rubin, 1983). The What Happens Next games is another test using hypothetical tasks that requires the examinee to use problem solving skills to predict what may happen next in a given scenario (WHNG; Spivak, Platt, & Shure, 1976).

Rose and Asher (1999) administered a hypothetical reasoning task using social vignettes in 4th and 5th grade students to study the children’s response to conflict within a friendship. These authors included information about the intentions of the communication partner in the vignettes (e.g., “You want to play the same game again, but your friend
doesn’t want to and says it’s her turn to pick”), and therefore the subjects are only required to access knowledge about strategies and goals for resolving conflict (Rose & Asher, 1999; Timler, 2008). This methodology does not examine a child’s ability to generate a natural response to a peer conflict scenario, rather the child is prompted by asking, “What would your goal be?” following each hypothetical task (Rose & Asher, 1999). Although a child may be able to generate an appropriate goal and strategy when prompted, there is still a question of whether or not the child may be able to execute the identified goal in real-time, demonstrating the ability to do so during real-life social interactions. In real-time interactions, the affective state of the child may play a role in the child’s ability to successfully achieve his or her goals, which should also be considered (e.g., Aupperle, Melrose, Stein, & Paulus, 2012; Hyter & Sloane, 2013).

In a study by Timler (2008b) specific conflict vignettes are used to evaluate the likelihood of a child to use prosocial responses versus hostile, passive, or adult-seeking responses and predict positive peer consequences. In these hypothetical task situations, the intentions or perspectives of the communication partner is not explicitly stated, and therefore the child is required to access these social cognitive skills in addition to accessing goals and strategies for conflict resolution (Timler, 2008b). Timler (2008b) used open-ended questions to elicit a response to these hypothetical tasks (e.g., “what would you do or say?”); however, asking this question prompts a child to respond to interaction without waiting for a natural response, therefore limiting the ability to assess a child’s ability to react in the moment using real-time processing (executive functions). Additionally, methodologies used by Rose and Asher (1999) and Timler (2008b) do not
provide a systematic process for the development of these hypothetical peer conflict tasks, which may have provided stronger ecological validity for the proposed tasks.

**Assessment of executive functions during social interactions**

The many aspects of social communication and social communication assessment outlined above are important to consider when developing any assessment tool related to social-communicative competence. However, these available assessment tools fail to address executive function skills using real-time processing, one of the critical interdependent components outlined in the theoretical model of social communication presented by Hyter and Sloane (2013). The evaluation of executive function has not been specifically addressed in any of the above-mentioned methods for assessing social communication. Additionally, incorporating real-time responses is necessary for an assessment to tap into some of the stress responses, part of affect regulation, that may impact a child’s ability to utilize executive functions, influencing a child’s social communication.

The focus of this research centers around developing a process designed to elicit higher level processing skills involved in everyday social communication interactions. One known study to date has incorporated a similar methodology to assess the various aspects of social communication. Landry, Smith, and Swank (2009) developed an assessment using a social task scenario to integrate components of social communication (e.g., executive functions, language skills, social-cognitive skills). Landry et al. (2009) developed an interactive social problem-solving task involving a child playing board game with the examiner. The examiner served as the teacher and described 17 specific rules to the examinee that were needed to play the game. Part way through the test
session, the examiner claimed he/she needed to finish some paperwork, and was replaced by a second examiner. The examinee is then required to explain to the second examiner how to play the game, and is evaluated on the ability to take initiative, respond to verbal and nonverbal cues from examiner (e.g., cues demonstrating confusion about rules), and alter strategies used based on feedback from the examiner (Landry et al., 2009). Although the framework for the development of this proposed methodology is very similar to that of the current study, some potential areas of limitations were identified. Although playing a board game may replicate a realistic scenario a child may encounter, this situation involves an interaction between an adult and the examinee, and does not examine social interactions among peers. A child’s interactions with peers must be evaluated to assess a child’s social communicative competence, acceptance by peers, and ability to develop positive peer relationships. Ecological validity of such a social task is questionable considering no everyday social interactions among peers are included.

A second potential limitation of methods used by Landry et al. (2009), involves the examiner intentionally misleading the examinee to believe false information. At this level of social development in the school age years, it is likely that some children could notice the deception (e.g., the examiner pretending they have to exit, or pretending to be naïve to the rules of a game) and develop thoughts that the examiner is “lying” or “tricking” them. The risk in misleading a child during an examination has the potential to violate the examinee’s trust, which may affect emotional state, especially in children within certain populations, such as those with histories of maltreatment. Outcomes may be compromised if a child loses trust in an examiner or feels betrayed, as they may not be motivated to engage with the examiner.
Several authors have proposed methods of assessment of aspects of social communication through the use of video-recorded social scripts (e.g., Bedrosian et al., 2003; Bosco et al., 2006; Schultz et al., 2010). Bosco et al. (2006) and Schultz et al. (2010) both use similar designs employing video-recorded social interactions to assess some level of social performance and social-cognitive capacity. Bosco and colleagues (2006) examined a child’s reaction to ability to identify and propose a way to repair communicative failures viewed on a video recording. To elicit responses children were prompted by asking if they believed the actor got what she wanted at the end of the scene. If the child believed the actor did not achieve the desired outcome, the child was asked what the actor should do, assessing the child’s ability to repair the given communicative failure. Although this methodology does incorporate some level of executive skills in order for the child to develop a plan to repair the communicative failure, it does not incorporate the same processing-demand of real-time social interactions. Shultz et al. (2010) designed a process to assess the various components involved in the social information processing (SIP) model of communication (Dodge & Crick, 1994). Using video-recorded social scenarios, Schultz and colleagues (2010) assess a child’s ability to produce an appropriate and positive responses to a series of questions based on the scenario. According to the SIP model, this assessment design evaluates a child’s ability to use “Knowledge structures”, or his/her existing knowledge of social information, to answer a series of questions, and this method does not tap in to a child’s “online” or real-time information processing (Dodge & Crick, 1994; Schultz et al., 2010). Using this assessment design, little information about a child’s ability to use existing social
knowledge along with executive skills required during a real-time social interaction can be obtained.

In research by Bedrosian et al. (2003), a process is presented using scripted communication exchanges that involves the participant viewing interaction with an Augmentative and Alternative Communication (AAC) user, while being instructed to take on the role of the sales clerk, or communication partner in the interaction. The participant was then asked a series of questions in order to rate his or her perceptions of different communicative features of the exchange and the overall effectiveness of the interaction (Bedrosian et al., 2003). These authors raise the question of generalizability of their findings to more naturalistic contexts, where the communication partner is actually involved in the real-time scenario rather than participating as an outside observer. In subsequent research by Bedrosian and colleagues, this question was addressed and an interactive video-based assessment was conducted to more closely resemble an everyday social interaction between two communication partners. This proposed methodology could also be used to examine executive functioning, as it would require an examinee to play an active role in the scenario, and respond to real-time social interactions (Hoag, McCoy, Bedrosian, & Johnson, 2008; Hoag, Bedrosian, Johnson, & McCoy, 2008).

A child’s social communication competence may not be evaluated using a single method; however, the investigator seeks to develop a method that assesses executive function, one important component of successful social interaction and communication (McFall, 1982; Crick & Dodge, 1994; Hyter, 2012). Available assessment measures of executive function are reviewed below to explore current methods used for assessing EF in children.
Executive Function Assessment Tasks

Currently, there are several standardized assessments available to assess the executive functioning of school-aged children (9-12 years); however, the current collection of well-standardized tools predominately focus on the symbol system arena only, and have limited value in determining a child’s ability to use executive functions as they relate to the interpersonal area and thus social communication competence (McCloskey et. al, 2009). Herny and Bettany (2010) reviewed several standardized assessments that are currently available to evaluate executive functions in school-age children, which included: The Delis-Kaplan Executive Function System (D-KEFS) (Delis, Kaplan, & Kramer, 2001); The Cambridge Neuropsychological Test Automated Battery (CANTAB) (Cambridge Cognition Ltd, 2006); The Test of Everyday Attention for Children (TEA-Ch), (Manly et al., 1999); The Behavioural Assessment of the Dysexecutive Syndrome in Children (BADS-C) (Emslie et al., 2003); and The NEPSY II (Korkman, Kirk & Kemp, 2007). These tools focus on working memory, verbal fluency, inhibition, and set shifting (mental flexibility), and each utilize a similar array of tasks to assess these specific functions (Henry & Bettenay, 2010). Another available standardized assessment tool is the Tasks of Executive Control (TEC; Isquith, Roth, PhD, & Gioia, 2009). The TEC is a computer-based assessment of working memory and inhibition and requires a child to respond to various tasks that incorporate both working memory and inhibition resulting in a combined score for the two functions. This assessment combines two common approaches to executive function assessment listed in the section below, the “n-back” paradigm, which includes working memory and the “go/no go” method, which includes inhibitory tasks (Isquith et al., 2009).
Common tasks on these assessment batteries include activities such as sorting or organizational tasks (e.g., ‘trail-making test’ and ‘the clock task’) (D-KEFS, Delis et al., 2001; NEPSY II, Korkman et al., 2007), and inhibitory tasks (e.g., Stop signal task) (CANTAB, Cambridge Cognition Ltd, 2006). Some tasks on these batteries measure working memory (e.g., ‘Spatial Working Memory’ task) (CANTAB, Cambridge Cognition Ltd, 2006) and problem solving (e.g., ‘Tower of London’ or ‘Tower of Hanoi). Other authors have examined specific tasks that aim to assess specific domains of EF. Diamond (2013) describes several psychological measures of inhibitory control such as the Stroop task (MacLeod 1991), Simon task (Hommel 2011), Flanker task (Erickson & Erickson 1974, Mullane et al. 2009), antisaccade tasks (Luna 2009, Munoz & Everling 2004), delay of gratification tasks (Kochanska et al. 2001, Sethi et al., 2000), go/no-go tasks (Cragg & Nation, 2008), and stop signal tasks (Verbruggen & Logan 2008). There is much debate as to whether or not these tasks truly require inhibitory control and if the type of inhibitory control is related to real-world instances of inhibitory control (Aron 2011, as cited in Diamond 2013).

Common working memory assessment activities include tasks in both the verbal and visuospatial domains. The majority of working memory measures only either tap into certain aspects of working memory such as phonological and verbal dimensions and ignore visuospatial components, or they do not differentiate between short-term memory and working memory (Dehn, 2008). Backward digit span tasks and backward letter span tasks, in contrast to forward digit span tasks that assess short-term memory, are largely used to assess verbal working memory (Dehn, 2008; Diamond, 2013; Boudreau & Costanza-Smith, 2011). Another widely used task to assess visuospatial working memory
is the Corsi-block tapping task (Diamond, 2013; Dehn, 2008; Lezak 1983). The CANTAB also included a computerized variation of this task (Diamond, 2013; Henry & Bettenay, 2010; Luciana & Nelson, 2002). Researchers in the field also mention that the trail-making, Stroop, memory for stories, and memory for sentences, and N-back (also called AX continuous performance), operation span, and Competing Language processing tasks may also be used to tap into aspects of working memory (Diamond 2013; Dehn, 2008; Boudreau & Costanza-Smith, 2011). It is difficult to isolate any such task to solely assess working memory because of the demands placed on other cognitive functions such as the attentional abilities to remain focused on information and to ignore irrelevant stimuli (Salimpoor & Desrocher, 2006; Diamond, 2013).

Mental Flexibility is often assessed using a range of task-switching and set-shifting tasks including the classic Wisconsin Card Sorting Task (WCST) (Diamond, 2013; Miyake et al., 2000). Many other tasks involving switching back and forth between sets have been widely used to assess mental flexibility. Miyake et al. (2000) utilized the plus-minus task (Jersild, 1927), the number-letter task (Rogers & Monsell, 1995), and the local-global task to assess mental flexibility, all which require cognitive shifting between different mental sets (Diamond, 2013). Zelazo and colleagues (2003) developed the Dimensional Change Card Sort Task, which requires sorting cards first by one dimension (e.g., shape) and second by the other dimension (e.g., color).

Although one advantage to using one of the described standardized assessment batteries, is that they include good information on reliability and validity, the focus of these tools is on the ‘symbol systems’ and they are limited to assessing subcomponents of executive function as they relate to verbal and visuospatial domains (Henry & Bettenay,
2010; McCloskey et al., 2009). While, having standardized measures is important in establishing if a child has deficits in the area of executive function, the assessments outlined previously are of little value in examining a child’s ability to use these same skills in interpersonal behaviors. Specific limitations with many traditional neuropsychological-based measures are reviewed in the proceeding section, as well as some proposed performance-based measures of EF that have been employed to overcome some of these limitations.

**Gaps in the Research**

There are many limitations with traditional task performance measures of executive function, especially when assessing how a child’s EF abilities apply to social communication. Salimpoor and Desrocher (2006) discuss some of the problems that present with current batteries and tasks of executive function such as the lack of ecological validity, difficulty in isolating individual functions on a specific task, and the possibility of other task-dependent variables (e.g., auditory or visual components) affecting performance on a given task for reasons other than EF deficit.

Contextual variables also play a role in a child’s EF abilities. For instance, within a structured clinical setting, a child may not display difficulty with mental flexibility; however, a child may demonstrate significant difficulty shifting between mental sets in a real-time social situation, thus showing inconsistencies between EF measures and real-life application of EF (Eslinger & Damasio, 1985; Levine et al., 1998; Salimpoor & Derocher, 2006). Several researchers have sought to address some of the issues
associated with traditional EF batteries when developing alternative forms of assessment with higher ecological validity.

Goldberg and Bougakov (2005) use the term “Actor-centered Control” when describing EF, meaning an individual is required to make a conscious choice relating individual priorities to the external demands of a given situation. In traditional neuropsychological assessment measures, there are pre-determined correct responses based on the test design that do not account for individual choice or the needs of an individual (Goldberg & Bougakov, 2005). To address this concern, Goldberg and Bougakov (2005) suggest incorporating ‘actor-centered’ approaches into assessment of EF. Examples of such tasks include the Cognitive Bias Task and the Iowa Gambling Task (Goldberg, Harner & Lovell, 1994; Bechara, Damasio, Damasio & Anderson 1994).

The Cognitive Bias Task (Goldberg et al., 1994) uses similar stimuli as many traditional task performance measures and requires subjects to use higher-order processing skills to recognize characteristics of the stimuli along five dimensions: color, shape, number, size, and contour. The subject is presented with three stimuli, (one target and two possible choices) and is asked to determine similar characteristics between the target stimuli and the two choices. In contrast to traditional measures, the subject is presented with a choice. Instructions are given to select either the one that is more similar or more different to the target stimuli, requiring the subject to select based on preference (Goldberg & Bougakov, 2005). ‘Actor-centered’ tasks are important to consider when conceptualizing EF in everyday social contexts since individual priorities are directly related to a partner’s intended outcome of an interaction.
The traditional EF assessment tasks reviewed and many other similar activities relate to a child’s ability to utilize the various “Core” executive functions predominately during verbal or visuospatial-based activities. Activities such as a ‘go/no go’ task for inhibition or a ‘number-letter’ task for mental flexibility do not adequately rate a child’s ability to use these same skills during less structured, more naturalistic contexts. The majority of existing tools tend to focus solely on the ‘symbol system arena’ and largely disregard a child’s use of executive functions in other domains, such as the interpersonal, intrapersonal, and environmental arenas (McCloskey et al., 2009). To determine a child’s ability use these EF in social communication, one must question the usefulness of administering traditional measures of performance on specific EF tasks.

Using ecologically based assessments is especially relevant when discussing a child’s ability to utilize executive functions in everyday social scenarios. When reviewing available measures of executive functions one standardized assessment tool, the Behavior Rating Inventory of Executive Functions (Gioria et al., 2000) accounts for performance in everyday contexts.

The Behavior Rating Inventory of Executive Functions (BRIEF) uses behavioral evidence to assess EF in the home and school with parent and teacher report measures (Gioria et al., 2000). The BRIEF is made up of two separate scales: the Behavior Regulation Index, and the Metacognitive index. The Behavior regulation scale consists of three sections including inhibit, shift, and emotional control. The Metacognitive index consists of five sections including initiate, working memory, Plan/Organize, Organization of Material, and Monitor. The nature of such a measure certainly accounts for how a child behaves in everyday life; however, several researchers have found inconsistencies
between scores on the *BRIEF* and other performance-based measures. In one study of children with ADHD and/or Tourette’s Syndrome along with typically developing children by Mahone et al. (2002), no significant correlation was found between index scores of participants on the *BRIEF* and the on the conducted performance-based measures (e.g., Oral Words Association Test, go/no go task). In another study, McAuley, Chen, Goos, Schachar and Crosbie (2010) found dissociation between teacher and parent ratings on the *BRIEF* and commonly used performance measures of executive functions. McAuley et al. (2010) proposed that scores on performance-based measures are representative of underlying function whereas the behavior ratings assess the application of those skills in real-life contexts (i.e., school and home) as one plausible explanation for this finding. Investigators suggest the lack of correlation between performance measures and behavior rating measures could be that behavior rating measures do not assess a child’s ability to perform a task in real-time.

Many executive function assessments currently available involve impersonal activities, such as sorting tasks or visuospatial patterns, and little research has been conducted that examines real-time processing using everyday scenarios as stimuli (Gerlach, Spreng, Gilmore & Schacter, 2011). Scholars have demonstrated the importance of using real-time assessments for social communication and executive functions, and have suggested using realistic and relevant tasks (Olswang, Coggins, & Timler, 2001; Gerlach, Spreng, Gilmore, & Schacter, 2011). Specifically, Olswang et al. (2001) argue that in order to assess higher-order cognition relative to social communication it is important that a real-time element be incorporated considering that social situations require children to perform “on the spot”. Gerlach et al. (2011) found
that regions in the brain associated with working memory and cognitive control were activated on fMRI when adult participants were asked to think about solving a specific real-world situations that may occur in the future and to imagine themselves in that specific setting, demonstrating the significance of both ecological validity and real-time processing.

Although the real-time application of EF in ecologically relevant scenarios has been explored to some degree, there is still a need for investigation into measures that examine children in everyday contexts. Some informal measures of EF may provide additional information about EF in real-life contexts, using real-time processing.

McCloskey et al. (2009) discusses behavior observations across multiple contexts and process-oriented assessment (assessing how a child performs task) as possible opportunities to gain understanding of a child’s ability to use executive functions. Problems exist with validity of these types of behavioral observation measures. Considering observations take place in everyday naturalistic settings it is not possible to predict when specific executive functions may be elicited, and there is no guarantee that a situation will present when self-regulation difficulties can be observed (McCloskey et al., 2009). It is difficult to determine what specific information about executive function ability can be inferred from a specific behavior or interaction, and obvious problems exist with the accuracy, consistency, and validity of such processes (McCloskey et al., 2009).

In some of the more recent literature, several authors have questioned the practicality and relevance of such measures to real life traditional measures of EF. Instead it is proposed that EF should be assessed in everyday, functional contexts using performance-based measures in order to better gauge a child’s EF skills across a variety
of activities and contexts (e.g., Rocke, Hays, Edwards, & Berg 2008; Weiner, Toglia, & Berg, 2012). Rocke et al., (2008) developed the *Children's Kitchen Assessment Task* (*CKAT*), which examines a child’s ability to utilize several executive skills (e.g., initiation, organization, judgment/safety, sequencing/planning, and completion) during an everyday functional activity (e.g., making play dough). Although the *CKAT* offered a valid and reliable measure of EF in children during an everyday, functional context, again, it does not examine EF in the domain of peer interaction further justifying the need for this current study.

The literature suggests executive functions (higher-level processing skills) are an obligatory component to successful social communication and thus the development of positive peer relationships (Timler, 2008; Hyter 2012; Coggins, 2003; Olswang et al., 2001). Therefore, there is a clear need for research and development of a process to assess executive functions skills that are used during real-life social scenarios that meet the time demands of everyday social communication. Although a few measures have been proposed that transcend traditional measures in gaining information about EF skills incorporated in social communication, limitations exists with each. Currently, no available assessment tool exists that elicits specific self-regulatory functions in children that follows repeatable procedures, utilizes realistic social scenarios that occur among peers ages 9-12, and involves real-time processing. Investigation into the common social interactions and social conflicts in children is necessary to gain preliminary information towards developing such an assessment tool.
Current Research Goals and Objectives

The goal of this study is to identify a process that taps into a child’s underlying executive functions by incorporating a real-time processing element, while also determining a child’s ability to utilize these functions in everyday contexts among peers. The investigator hypothesizes that a series of realistic vignettes (social scenarios) could be used as stimuli for assessing a child’s ability to utilize executive functions during real-life peer interactions that he or she may encounter in everyday life. Development of the vignettes is based on the premise that executive functions play a large role in social communication and that deficits in the area of executive functioning could affect a child’s social communication competency. Using interactive social vignettes would incorporate the types of real-world situations that have been found by Gerlach et al. (2011) to utilize executive functions. The vignettes will also focus on social communication skills and will be designed to oblige examinees to process incoming information in real-time, requiring them to utilize several functions simultaneously to determine a course of action and respond “on the spot”. Using social vignettes as a mode of assessing executive functions will combine both of these elements (i.e., real-time and real-world) to make functional tasks that will evaluate a child’s ability to use executive functions effectively in everyday social contexts.

The first objective of this study is to identify realistic social scenarios that can occur among children ages 9-12 as reported by of school personnel who have observed publically displayed interactions and conflicts at their schools. Information pertaining to the types, contexts, and causes of interactions and conflict will be used to formulate social scenarios.
The second major objective of this study is to use the information collected from the teachers and school personnel to develop social scenarios representing realistic interactions between peers designed to elicit executive functions during social interaction. The third objective of this research study is to determine whether social vignettes demonstrate ecological validity determined by the results of a validity measure completed by school personnel.
CHAPTER III

METHODOLOGY

The following section includes an explanation of the theoretical framework used to guide this study, and a description of the data collection procedures and research methods used in this study. A description of participants is provided and recruitment methods and inclusion criteria used are discussed. Research procedures are outlined, including methods for conducting the literature review, and data collection analyses. A reliability measure was conducted to determine the repeatability of analysis procedures, and results and methods are described. An ecological validity measure was performed to determine if proposed social vignettes were realistic or not. Procedures of this measure are described.

Theoretical Framework

The theoretical framework of Interpretivism was used to guide the development of the procedures in this study. Interpretative social science is an approach to social research that largely focuses on meaningful social actions, or social actions with purpose or intent attached to a behavior and its underlying subjective meaning (Neuman, 2006). Interpretivism is comprised of several theories such as phenomenology, hermeneutics, ethnomethodology, and symbolic interactionism, all of which share similar assumptions about social research (Neuman, 2006).

One of the assumptions of Interpretive Social Science is that detailed observations and field research in natural settings can allow a researcher to create meaning, understanding, and interpretation of how people create and maintain their social worlds.
(Neuman, 2006). The interpretive researcher assumes that a person within a particular social setting may assign different cultural meanings to a particular social action, and the researcher’s goal is to understand meaning by taking on the perspective of people within a particular social setting (Neuman, 2006). With Interpretivism one assumes that each individual possesses his/her own version of reality, which is constructed through personal experiences with social interaction demonstrating the socially constructed meaning (Neuman, 2006).

These assumptions about social research have guided the current methodology employed in this study. Ethnographic interviewing, an open-ended and conversational style of interview, was used to capture the real-life experiences of children, ages 9 – 12, from the participant’s perspective. Rather than using survey style interview techniques, this methodology allowed the investigator to uncover the social meaning that schoolteachers are making from their own observational experiences.

**Participants**

Sixteen teachers and/or school employees working with a population of students between the ages of 9-12 were invited to participate in a field interview. To qualify to take part in this study, participants had to be currently employed in a school as a teacher or other school employee, and have access to a student population, ages 9-12 years. The goal was to invite a diverse sample of teachers/school employees varying in age, gender, race/ethnicity, years of experience, and student population in which they serve to take part in a brief interview. Representing a range of demographic characteristics was important in order to adequately include different groups in the collection of data. The
investigator was located in Kalamazoo, MI, and individuals recruited resided in the southwest Michigan area.

A convenience sample of teachers working in primary educational institutions, and who are known to the principal and student investigators were invited to participate in this study via an emailed flyer (see appendix A). The flyer described the purpose of the study and included a brief explanation of the interview. After reviewing the study description, individuals who were interested in learning more about the study were asked to contact researchers by email or phone to set up a time to meet to review the consent document and proceed with interview if they agreed to participate. Human Research Compliance guidelines were followed during all recruitment procedure and written documentation of informed consent of was obtained from individuals before participating in this study (See appendix B for HSIRB approval letter).

A total of 16 individuals were contacted regarding this study via email or in person. Of the 16 individuals initially informed of the project, 14 were sent an invitational flyer via email. Individuals who were not sent the invitational flyer either did not express interest in receiving one or did not provide investigators with a contact email address. Of the 14 individuals who were sent the invitational flyer, 10 responded to the flyer via email, expressing interest in learning more about the study. The investigator corresponded with all individuals who expressed an interest in the study, and set up meeting times convenient for all who agreed. A total of eight meetings were scheduled, but due to other obligations or time conflicts, two of the eight individuals were unable to participate, and meetings were cancelled, resulting in six participants.
A total of six interviews were collected from school employees including: four teachers, one substitute teacher, and one speech-language pathologist. Demographic information was collected based on participant report and included: types of student populations that participants worked with; age, race, and gender of the participant; job title, and years experience working in a school. Table 3.1 shows participant demographics. Of the six participants, three reported working in urban schools, two reported working in rural schools, and one reported working in both urban and suburban schools. Four of the six participants reported working predominately with lower-middle class students, one reported working with a lower class population, and one reported working with some lower class students and some upper-middle class students. Five of the six participants identified themselves as Caucasian and one of the six participants identified as being African American. Three male and three female participants were interviewed. Participants ranged in age from 25-58 years old, and ranged in years of experience working in schools from 2 to 25 years.

Table 1

Participants Characteristics

<table>
<thead>
<tr>
<th>Participant</th>
<th>Demographic Information</th>
<th>Job Experience</th>
<th>Student Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>050402</td>
<td>Age: 28 Gender: Male</td>
<td>Job Title: Substitute teacher (K-8)</td>
<td>Years of Experience: 5 years Type of School: Urban &amp; Suburban Student Population: Mostly African American or mostly Caucasian Student Socio-economic Status: Lower class/ mostly free and reduced lunch OR upper middle class/ “privileged”</td>
</tr>
<tr>
<td>240501</td>
<td>Age: 25 Gender: Female</td>
<td>Job Title: Speech-language Pathologist (Pre-4th)</td>
<td>Years of Experience: 2 years Type of School: Rural Student Population: Mostly Caucasian Student Socio-economic Status: lower socio-economic status, working class families</td>
</tr>
</tbody>
</table>
Table 1 – continued

<table>
<thead>
<tr>
<th>010101</th>
<th>49</th>
<th>Female</th>
<th>African American</th>
<th>3rd grade teacher</th>
<th>28 years</th>
<th>Urban</th>
<th>Mostly African American</th>
<th>Lower-middle class, 100% free and reduced lunch, majority of families living below poverty line</th>
</tr>
</thead>
<tbody>
<tr>
<td>060601</td>
<td>39</td>
<td>Female</td>
<td>Caucasian</td>
<td>Resource room teacher (K-5)</td>
<td>7.5 years</td>
<td>Urban</td>
<td>Mostly African American, Some Hispanic, Some Caucasian</td>
<td>Lower-middle socio-economic status</td>
</tr>
<tr>
<td>220302</td>
<td>58</td>
<td>Male</td>
<td>Caucasian</td>
<td>Computer teacher (K-5; formerly 5th grade teacher)</td>
<td>32 years</td>
<td>Rural</td>
<td>Mostly Caucasian</td>
<td>Lower middle class/“blue-collar”, majority of students living in single parent households</td>
</tr>
<tr>
<td>030202</td>
<td>47</td>
<td>Male</td>
<td>Caucasian</td>
<td>6th grade teacher</td>
<td>23 years</td>
<td>Urban</td>
<td>Mixture of students: Mostly African American, Hispanic/Latino, and white</td>
<td>Lower-middle class, 100% free and reduced lunch</td>
</tr>
</tbody>
</table>

Procedure

Review of literature procedure

A review of relevant literature in the areas of executive function, social communication, and the relationship between executive functions and social communication was conducted. Multiple search strategies were employed to obtain relevant literature to include in this review. Initially, searches of computerized databases, including PsychINFO, PubMed, Scopus, and ERIC using keywords such as “executive function assessment,” “executive function,” “executive function assessment in children,”
“working memory assessment,” “social communication assessment,” “executive functions and social skills” and variations of these terms. After collecting and reviewing all available relevant resources, authors’ reference lists were reviewed to obtain additional relevant literature. Specific titles were searched using Western Michigan University Libraries general search engine of all available online databases. Additionally, several authors were searched who were known to be major contributors to the areas of study, or were suggested by committee members. Such authors include Geralyn Timler, George McCloskey, and Rosemary Tannock.

Resources included preliminary studies, controlled trials, meta-analyses, published books, as well as specific assessments of executive function and its components and social communication. Resources selected for inclusion in this review of the literature included the following categories: theoretical models of social communication and executive function, executive function assessment, executive function assessment in children, social communication assessment in children, evidence for relationships between executive functions and social communication, and several neuroimaging studies on localization of executive functions and social cognition. Strict selection criteria were not employed due to the lack of strong empirical evidence in executive function assessment of children as it applies to social communication; continued need exists for identification of well standardized, highly reliable, and ecologically valid tools for children (Hughes & Graham, 2002; Salimpoor, 2006; Henry & Bettenay, 2010). Also included were studies with both adults and children as participants involving specific assessment tasks for executive function or social communication skills. A total of 186 journal articles, 12 published books, and 7 published
comprehensive assessment batteries were reviewed. A total of 83 resources were included in this study that provided evidence for: assessment of executive function, assessment of social communication, justification of methodology used, and the development of a theoretical framework of social communication and the role EF play in social communication.

Data collection procedure

Participants took part in an interview following the ethnographic style. Ethnographic interviewing differs from traditional interviewing in that it does not follow a strict structured format with a pre-determined, specific set of questions. In an ethnographic interview, the interviewer asks open-ended questions and waits for information to emerge naturally, using neutral probes to direct the interviewer towards topics initiated by the respondent (Bauman & Greenberg Adair, 1992; Monette, Sullivan, & De Jong, 2011; Patton & Westby, 1992). This style of interviewing focuses on the respondent’s perspectives and experiences, maintaining the language used by the respondents and the narratives used in their natural form rather than “repacking” responses into a standardized form (Monette, Sullivan & De Jong, 2011; Neuman, 2006). Interviews conducted for this study incorporated somewhat more structure than would be used in a purely ethnographic, non-directive style. In order to obtain some specific information about social interactions, while maintaining the interviewee’s voice, the interviewee was provided with the intended purpose of the interview before beginning (i.e., “We would like to find out your perceptions of typical social interactions at your school”).

Interviews were obtained at a convenient location and time determined by each participant (see appendix C for interview script). Locations where interviews were
conducted included workplaces (e.g., area schools), public locations (e.g., a local restaurant), and private residences. The purpose of conducting interviews was to gather information from persons who have direct contact with the target population for the social vignettes, and who may have insight into the types of social interaction and social conflicts that commonly occur among children ages 9-12. The investigator interviewed all participants, and began each interview with an open-ended question about common social interactions (e.g., “I am interested in learning more about the student populations at your school and what types of social situations they may encounter on a day-to-day basis. Describe the types of social interactions you may typically observe between students.”) and used semi-scripted follow-up questions on specific markers to clarify participant responses (e.g., if participant mentioned a specific term such as ‘bullying’, interviewer followed with, I am hearing you use the term bullying. Describe to me what you mean by that term or how does bullying look?”) Follow up questions were also used to obtain specific examples of social interactions described by interviewees (e.g., if participant mentioned that they commonly observed ‘joking around’ at their school, the interviewer followed up with “Could you describe a time that you observed ‘joking around’ at your school?”) Secondly, participants were asked an open-ended question about social conflicts observed at their school (e.g., I’d like for you to tell me about the types of conflicts that may occur among students at your school). Semi-scripted follow up questions were asked to help clarify or expand on interviewee responses. If interviewees did not include specific information about the differences between social interactions/social conflicts among boys and girls, then an additional question was asked to gain this information. Additional questions were included to obtain information about
the context of various interactions at their school (e.g., questions about the location of interactions, questions about the perceived cause of different social conflicts, questions about the perceived mood of interaction). The interviews ranged from 15 to 45 minutes in length across participants. Table 3.2 below includes example interview questions.

Table 2

**Sample Interview Questions**

<table>
<thead>
<tr>
<th>Open-Ended Questions</th>
<th>Example Markers</th>
<th>Follow-Up Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tell me about social interactions at your school.</td>
<td>“Students joking around”</td>
<td><em>Example Question:</em> Can you give me an example of a time when students were joking around?</td>
</tr>
<tr>
<td></td>
<td>“bullying”</td>
<td><em>Clarification Question:</em> I am hearing you use the term “bullying”, can you describe what you mean by that term?</td>
</tr>
<tr>
<td></td>
<td>“boys often play rough”</td>
<td><em>Example Question:</em> Could you describe a time when you observed this? <em>Structural Question:</em> You mentioned that boys often play rough on the playground. Do you observe these same types of interactions among girls?</td>
</tr>
<tr>
<td></td>
<td>“I see kids interacting in the lunchroom”</td>
<td><em>Example Question:</em> Describe the types of interactions you observe in the lunchroom between students.</td>
</tr>
<tr>
<td>Tell me about conflicts you observe between students at your school.</td>
<td>“Name calling is very common”</td>
<td><em>Restatement/Example Question:</em> So, you are saying that you frequently observe name-calling, describe a situation when name-calling occurred.</td>
</tr>
</tbody>
</table>
Table 2 – continued

“IT HAPPENED IN THE HALLWAY”  
*Example/Narrative Question:* Could you describe the interaction that occurred in the hallway?

“They tend to over-react”  
*Clarification Question:* So you mentioned students often “over-react”, could you explain what children do when they “over-react”?

“Girls are more passive”  
*Clarification/Structural Question:* Explain what you mean by “more passive”.

You described conflicts between girls to be more passive, how do conflicts between boys differ?

Participants were asked to describe the demographics of the student populations with whom they worked (e.g., Tell me a little bit about the student population you work with, such as racial or ethnic backgrounds and the average socioeconomic status). Participants were also asked to report some specific personal demographic information (e.g., race, gender, age, year of experience, and grade levels they have predominately worked with over their careers).

The Interviewer collected handwritten field-notes during interviews, recording broad domains mentioned by participants (e.g., ‘students often have conflicts in the lunchroom’, or ‘students tend to get along the best during structured activities, etc.) and specific examples described (e.g., ‘One time a student became upset when another student cut in line for the drinking fountain). The interviews were audio-recorded for the
investigator to use as a reference when reviewing field-notes. Audio-recordings were not transcribed word for word and were deleted after all data were collected and field-notes were compared against recordings. Exact quotations or remarks made by participants were not specifically reported in results. The information was only used to collect general information about participants' perceptions and to be used as qualitative data to form the basis for the development of realistic social vignettes.

**Data analysis procedure**

This study used a descriptive design. This type of research design allowed the investigator to learn of the realistic types of peer interactions that currently exist in a variety of school settings from the perception of school employees. Statistical analysis was not performed; however, field-notes from interviews were systematically analyzed for general themes occurring across respondents using a data analysis chart (See Appendix D for Data Analysis Chart Template). Investigators listened to audio-recordings and made additions to field notes based on recordings. Investigators examined the various observations collected from school personnel and recorded information from the following categories for each interview: Interviewee’s age, gender, race, years of experience; student population; types of interactions; context of interactions; number of people involved; gender involved; perceived mood of interactions; perceived cause of interactions; and consequence of interaction. The 6 data analysis charts were compared for commonalities and big domains found across all interviews (i.e., location where conflict occurs, common types of social interactions and conflicts, and frequently perceived causes of conflict).
A content analysis was performed that allowed the investigator to systematically analyzed information and document themes and specific features that appeared in field-notes (Neuman, 2006). During the initial pass, investigators determined the total number of interactions mentioned by respondents. The initial pass was conducted using open coding to locate themes and establish codes to aid in organizing information into categories (Neuman, 2006). Each interaction was coded as positive or negative based on investigator’s subjectivity and inferences drawn about respondents’ perceptions of interactions. The investigator used verbal comments made by participants, non-verbal communication (e.g., facial expression, body language), and general assumptions about positive/negative interactions to make this determination (e.g., “physical fighting” is considered to be a negative interaction among peers in schools). Several interactions were coded as “neutral”, meaning the given interaction could be perceived as either positive or negative depending on the context of interaction and the reaction to interaction of different children. For example, the interaction “playing rough” was coded as “neutral” because respondents gave examples of both playful/friendly interactions surrounding this type of play and peer conflict that arose out of “playing rough”.

During open coding, specific themes were assigned to describe types of interactions. For example, under “positive interactions”, “playing soccer”, “playing football”, and “playing games” all had the common theme of “organized games”. Under “negative interactions”, “forming cliques”, “leaving one friend out”, and “isolating some students from group” all were classified under the theme “excluding peers”. Themes present were identified for each interaction reported by participants. After assigning codes for specific themes, a process known as axial coding was implemented to
determine relationship between initial codes and attempt to combine any closely related concepts into subcategories (Neuman, 2006). Investigators considered the themes ‘physical aggression and ‘physical contact’ to be similar; however, the two differ in that ‘physical aggression’ involves creating an intentional confrontation whereas participants’ interactions involving ‘physical contact’ as either a friendly push (positive) or making contact with a peer unintentionally (negative) leading to confrontation.

A last pass through the data was performed using a selective coding process to make comparisons between major emerging themes construct core ideas based on different variables (Neuman, 2006). Investigators examined emerging positive and negative themes and the contexts in which these interactions most frequently occurred. Trends were determined based on the type of scenarios described by respondents varying in age, gender, race/ethnicity, year of experience, and the student populations in which they serve and this information was used collectively to write the social vignettes.

Social scenarios were created to encompass all positive and negative themes that emerged from the data, and that were consistently present across respondents. Context of social scenarios was selected based on location of interactions, mood of interactions, perceived causes of interactions, and number of students involved in various interactions that were gathered from interviews. Using evidence from the literature on social communication and executive function assessment, investigators determined specific executive functions and social-cognitive skills that are accessed using each social script.
Inter-rater Reliability Measure

A Reliability measure was conducted to determine replicability of interview coding. The secondary rater was instructed on what information should be included in each column in the data analysis chart (e.g., types of interactions, context of interaction, perceived mood of interaction, etc.) based on the same guidelines used by the investigator for coding data. To ensure the secondary rater understood the process followed by the investigator, the investigator and secondary rater coded one interview together. Together, the investigator and the secondary rater listened to the audio recording of one interview. During the recording, the investigator explained the types of information coded into specified columns on the data analysis chart. The reliability coder was provided a clear explanation about why a given piece of information was coded into a designated column. For example, during the trial reliability coding session “Teasing” was placed under “type of interaction” because it describes an actual event, interaction, or conflict situation that occurred; “At recess” was placed under “context of interaction” as it describes the setting, time of day, or environment in which the event or interaction occurred.

After ensuring that adequate information about the coding process used in this study was provided, and the secondary rater acknowledged understanding the process, the rater coded one of the six interviews, or 17% of the total available data. A comparison was conducted between the investigator’s initial data analysis chart and the second rater’s data analysis chart to examine consistencies among items included in each column of the data analysis chart. Exact matching of specific wording was not required for two given responses to be consistent (e.g., replacing “jealousy” for “envy” in the perceived moods column). Consistency between raters was determined by the total number of items in each
column that were matched, and the percentage of items in each column of the secondary coding form that were determined to be generally synonymous in content. A summary of the agreement between raters in each column on the data analysis sheet is included below. After comparing agreement between raters and averaging agreement in each category, the overall reliability between raters was 86.9%. The ‘perceived cause of interactions’ had a substantially lower level of agreement (57%) than the other categories (ranged from 75% to 100%) and was the outlier. Coding in this category involved a high degree of subjectivity as some items were deduced by the rater based on participant comments and were often not specifically stated as a ‘perceived cause’ by the participant. The overall inter-rater reliability excluding ‘perceived cause of interaction’ was 90.6%. (See table 3.3 for Reliability Rating; see Appendix E for Reliability Rater Training Instructions and reliability coding.)

Table 3

<table>
<thead>
<tr>
<th>Data Categories</th>
<th>Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant Information (e.g., age, experience)</td>
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</tr>
<tr>
<td>Student Population</td>
<td>1.0</td>
</tr>
<tr>
<td>Types of Interactions</td>
<td>.90</td>
</tr>
<tr>
<td>Context of Interaction</td>
<td>.75</td>
</tr>
<tr>
<td># of people involved</td>
<td>1.0</td>
</tr>
<tr>
<td>Gender involved</td>
<td>1.0</td>
</tr>
<tr>
<td>Perceived mood of interaction</td>
<td>.80</td>
</tr>
<tr>
<td>Perceived cause of interactions</td>
<td>.57</td>
</tr>
<tr>
<td>Consequence of interaction</td>
<td>.80</td>
</tr>
<tr>
<td>Overall Reliability</td>
<td>86.9%</td>
</tr>
</tbody>
</table>
Validity Measure

As a measure of validity, to ensure completed scripts are realistic in nature, investigators surveyed interviewees who agreed to be contacted in this regard (see Appendix F for completed scripts validity measure). Participants were given the option to be contacted to determine if the completed social vignettes were realistic or not. Interviewees who agreed to be contacted subsequently were sent completed scenarios and an answer form electronically via email. After reading the developed vignettes, school personnel were asked to select a response of YES if scenarios were deemed realistic, and NO if the scenarios were not realistic. Vignettes deemed unrealistic were revised or eliminated.
CHAPTER IV

RESULTS

The following section describes outcomes of the research objectives. Types of social interactions, peer conflicts, and contexts where interactions occur are reported. Eight social scenarios were developed based on the analysis of field notes obtained during an ethnographic interview process. Scenarios are designed to target various executive functions and social-cognitive skills. The final objective of this study was to determine if the proposed social scenarios were realistic or not based on expert opinion of school personnel. Results of this ecological validity measure are reported.

Common Social Interactions

The first objective of this study was to identify realistic social scenarios that can occur among children ages 9-12 as reported by school personnel who have observed publically displayed interactions and conflicts at their schools. Information pertaining to the types and context of interactions reported by participants are detailed in this section, and commonalities and broad themes emerging across interviews are identified. Although data were collected across seven categories (i.e., types of interactions, context of interaction, number of people involved, gender involved, perceived mood of interaction, perceived cause of interaction, and consequence of interaction), data analyses primarily focused on two categories: types of interactions and the context of interactions reported by participants.
Types of interactions

The six participants reported a total of 86 “types of interactions”. Examples of frequently occurring “types of interactions” include, talking, tattling, pushing/shoving, playing organized games or sports, and working on group assignments/projects. Seven (8%) of the 86 interactions were considered to be neutral (i.e., counted as both a positive and a negative interaction). Of the 86 interactions reported by respondents, 31 (36%) were positive and 62 (72%) were negative. All six participants reported more negative interactions than positive or neutral interactions. (See Appendix G for completed Data Analyses.)

After determining themes for each type of interaction, a total of 12 positive themes and 14 negative themes emerged from a content analysis of the data. Positive themes that emerged from the data included turn taking, working in groups, cooperative play, organized games, talking, acknowledgements, humor, and animated communication. Negative themes included bullying, physical and verbal aggression, excluding peers, jealous behavior, non-cooperative play, arguing, tattling, and talking negatively about peers. Two identified themes, physical contact and animated communication, were considered neutral and could be associated with either positive or negative social interactions. One neutral interaction was described by a participant who used the term “bravado” to describe boys bumping into each other. The participants considered this type of behavior as a sign of affection rather than aggression. A negative social interaction was described as physical contact occurring when students accidentally bumped into each other in the hallway, leading to a confrontation. The behavior of ‘loud
talking' (i.e., positive/friendly verbal exchanges at a high volume) was considered positive animated communication, whereas the behavior ‘yelling’ was considered animated communication during a negative social interaction.

The most prevalent positive themes (i.e., mentioned by three or more participants) were cooperative play, playing, organized games, talking, and dating. Secondary positive themes that were identified in more than one interview included, working in groups, animated communication, acknowledgements, and including others. The most prevalent negative themes were bullying, verbal aggression, physical aggression, physical contact, arguing, excluding peers, non-cooperative play, and tattling. Other negative themes that were identified in only two interviews included, jealous behavior, inappropriate play, talking about others, and inappropriate language.

**Context of interactions**

In order to determine general contexts in which positive interactions and peer conflict frequently occur, investigators examined contextual factors mentioned during positive and negative interactions. Ethnographic interviews also sought to obtain information regarding contexts in which social interactions typically occurred. Analysis of field notes resulted in 40 different “context of interactions” categories among all six participants. Examining information coded under “context of interactions” from ethnographic interviews, data predominately contained information about location or time of interactions (e.g., at recess, during class, etc). Many (68%) of these contextual elements were mentioned more than one time by the same participant to describe different examples of social interaction. Contextual information that was associated with
both positive and negative interactions included, at recess, at lunchtime, on the playground, in the hallway, and during class time.

Comparing types of interactions and the context in which they occurred revealed the environmental structure as a consistent theme. Participants described a greater number of positive peer interactions during class activities and more conflicts or negative interactions in locations/times of the day that are less structured such during recess, in the hallway, on the playground, and at lunch. In several interviews, school personnel stated that peer conflict was more likely to occur in unstructured environments, and that the structure of the classroom environment made it less likely that peer conflict would occur in that setting.

**Other trends in participant perceptions**

Data analyses primarily focused on types and contexts of interactions; however, a description of the remaining categories (e.g., gender involved and perceived cause of interactions) are included below to identify any additional trends across interviews regarding social interactions at their schools (See table 4.1 for representation of additional emerging features). Based on the information revealed during ethnographic interviews, commonalities in types of interactions were noted based on a student’s gender. Investigators focused on highlighting the differences in interaction types between boys and girls. Five (83%) of the six participants mentioned boys more frequently engage in physical confrontations and girls tend to exhibit more verbal conflicts. Boys were described to engage in “in your face” interactions, playing sports, and physical confrontations/conflicts. Girls were described as “being more sneaky,” engaging in verbal
conflicts, and excluding peers. Five (83%) of the six participants compared female/male interactions, and four (80%) of the five participants mentioned differences in types of interactions among boys vs. among girls. One of the five participants who compared female/male interactions reported that girls tend to be just as aggressive as boys.

Data obtained about the number of people involved in interactions was minimal and often limited to only one or two specific interactions reported by participants. For example, one participant described a specific scenario where two girls were excluding one other girl and this information was included in this category. Interactions were reported to occur between two students, three students, or in small or large groups of students.

Initially investigators sought information regarding the mood of different interactions; however, during the ethnographic interview process rarely was information regarding mood of interaction explicitly stated. Information from the perceived mood category was often based on inferences made by the investigator based on the types and contexts of interactions, as the investigator did not ask direct questions regarding a student’s mood during a given interaction. Examples of perceived moods that were derived based on participant responses included frustration, feeling left out, jealousy, feeling upset, aggressive, and feeling annoyed. Due to the level of subjectivity that the investigator needed to impose on data about mood, data in this category were not analyzed in detail. Commonalities across interviews were also noted under perceived cause of interactions regarding causes of peer conflict. Many participants attributed peer conflict to the following possible causes: problems in the home (e.g., limited parenting, lack of food or sleep, observations of negative behaviors in the home), a child’s inability
to let go of a mild disagreement, misunderstandings or miscommunication, and the lack of knowledge about the rules of appropriate play (e.g., “uneducated play”).

The final category of data collection was ‘consequence of interactions’. Investigators aimed to gain information about the outcomes or the effect that interactions may have had on social relationships. During the interviews, participants were prompted to consider possible consequences, and the information consistently reported included items such as, sending a child in the hallway for misbehavior, adult mediation during peer conflict, and calling parents to notify of conflict. This information on the social consequences of the interactions described by participants was not directly relevant to the writing of social scripts as the consequences that were reported focused on teacher or parent intervention rather than outcomes among peers. Several participants did mention information about how peer relationships could be affected. Participants mentioned consequences such as, being accepted or not in a social group, breaking friendships, feeling left out, and as consequence of small disagreements between peers larger physical conflicts could arise.

Table 4

*Emerging Themes **Additional Features

<table>
<thead>
<tr>
<th>Gender Involved in Interactions</th>
<th>Number of People involved in interaction</th>
<th>Perceived Cause of Interaction</th>
<th>Perceived Mood of Interaction</th>
<th>Perceived Consequence of Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>The majority of interactions described occurred between boys OR between girls, not typically between a boy and a girl</td>
<td>Two students (e.g., two girls, two boys)</td>
<td>Problems at home (e.g., lack of sleep, lack of food, lack of parental influence, observed violence in the home)</td>
<td>Frustration</td>
<td>Punishing a student (e.g., sending out in the hallway or to principal’s office for misbehavior, Calling a parent</td>
</tr>
</tbody>
</table>
### Table 4 – continued

| Boys engage in more physical contact than girls | Three students (e.g., Two girlfriends have another peer join in play and one of the girls end up being left out) | Lack of knowledge about appropriate play (e.g., “uneducated-play”) | Feeling left out | Adult mediation in peer conflicts |
| Boys engage in “hands on” or “in your face” communication behaviors | Small groups of students (e.g., working on class activities) | Inability to “let go” of mild disagreements | Feeling upset | Being accepted or not by a social group |
| Girls engage in more verbal arguments | Large groups of students (e.g., playing organized games at recess) | Unable to communicate appropriately (e.g., cannot explain feelings to peer) | Aggression | Breaking friendships |
| Girls more likely to exclude peers than boys | Misunderstandings (e.g., student misinterprets ‘accidents’ for deliberate behavior and seeks retaliation) | | Becoming annoyed | Feeling left out |
| Peer conflict among girls describes as being more subtle, or more “sneaky” than boys. | | | | As consequence of escalating verbal disputes, physical confrontation occurs |

*Note. *Emerging themes listed were revealed in multiple interviews, **Additional features include specific examples of items appearing in at least one interview.*

### Interactions across student populations

Data were examined to identify whether types and context of social interactions occurred along gender, racial/ethnic or geographic lines. Results were compared to student population characteristics observed by each participant to determine similarities and differences in social interactions that occur between diverse groups of children. All six participants reported predominately working with students from lower-middle class households or lower socioeconomic status. One participant worked in various settings,
some of which the participant considered to be lower-middle class and others were considered to be upper-middle class.

Similarities were observed across all interviews and participants who reported working with diverse student groups (e.g., mostly African American students vs. mostly Caucasian students); that is, data analyses revealed that similar themes emerged in the interactions whether the children were African American or Caucasian. Analysis focused on type of area or community as at least one participant reported working in an urban, suburban, and rural community. When compared by type of population (urban, suburban, rural), many major positive and negative themes remained consistent between each group. Themes that emerged consistently across the three community types included, working in groups, physical contact, organized games, dating, cooperative play, bullying, excluding peers, playing, physical aggression, verbal aggression, and tattling. The themes that were consistent between only two region types included animated communication, acknowledgement, jealous behavior, non-cooperative play, inappropriate play, and inappropriate language. All of the emerging themes that were consistent between two regions were mentioned by participants working in both urban and rural settings, but not by the participant working in a suburban setting. None of the major themes emerged in only one type of community or areas.

Social Vignettes

The second major objective of this study was to use the information collected from the teachers and school personnel to develop interactive social scenarios representing realistic social scenarios designed to elicit executive functions during social
interaction. After analyzing data from interviews, the investigator identified several general themes and frequently occurring interactions that were consistent between students differing in race/ethnicity and geographic location (community type), which were used to draft social scenarios. Investigators focused on themes that came across in interviews in a variety of community types (i.e., urban, suburban, and rural). Social vignettes are included in the following section. Description of how scenarios would be designed to elicit specific skills through asking direct questions to subjects or by requiring a response in a time-suspended social scenario is outlined for each scenario. The scenarios were designed to include the examinee playing one character within the scenario, so that they may later be used as part of a video-based assessment tool using interactive scripts. It is hypothesized that the interactive scripts will be designed to keep the examinee emotionally connected to the moment at hand, and will access executive functions based on the evidence provided from existing literature on executive functions.

**Scenario one**

The follow interaction is based on three girls, two of which have been long-time friends. When a new friend is introduced during recess, one girl ends up feeling left out or excluded from the group. This scenario is based on the general theme of excluding peers, specifically two friends excluding another friend from play. The scenario is designed to be developed into an interactive script between the actors in the scenario and the examinee. This will require the examinee to produce an on-the-spot response each time the scenario pauses. The time-suspended design requires the examinee to use
executive skills when processing incoming information and developing and executing a plan to resolve the following problem.

(Scenario establishes context of interaction and friendship between Kamaia and the examinee) Kamaia and the examinee have been best friends all year. The two always sit together at lunch, play during recess, and choose each other as a partner for class activities. (Scenes are displayed of the two friends interacting during these activities) One day during recess another girl named Gina approaches Kamaia and asks if she wants to jump rope with her. Kamaia says “sure!” and she runs off to play with Gina, leaving the examinee behind by the swings.

(Scene of Kamaia and Gina jumping rope together as seen from the perspective of examinee) Examinee is sitting down watching the two girls jump rope. Kamaia and Gina appear to be having fun together, talking and laughing amongst themselves, and they are not including the examinee in their play. The girls continue to jump rope and do not ask examinee to join in.

Eventually, the two girls stop jumping rope and toss the jump ropes. Kamaia says, “We are going to go swing you can jump now if you want.” Kamaia and Gina run off, leaving the examinee behind.

Scenario one requires the examinee to use social cognitive skills (i.e., theory of mind and perspective-taking) in addition to executive function skills to provide a response resulting in a positive outcome. The executive function skill of mental flexibility is required in this scenario to have the ability to recognize it is acceptable to have more than one friend, and to play with a group of three friends instead of the usual group of two. The scenario is designed to elicit feelings of jealousy towards the newcomer of the group, to make the respondent grow impatient waiting for a turn, and to generate feelings of frustration or sadness thinking about being left out or ignored by a good friend. The combination of all of these feelings could likely cause a child (the examinee) to want to lash out at Gina or Kamaia and to say something out of anger or frustration without considering possible consequences. Inhibition (an executive function)
is required in order for a child to minimize the urge to act out of anger or jealousy to produce an appropriate pro-social response when put on the spot. The examinee is required to use working memory to access existing social knowledge, combine that knowledge with new information learned in the scenario, and hold on to this information while using processing skills to provide a response. In addition, the examinee has to combine all of these skills in order to plan and execute goal-directed behaviors, tapping into the various interconnected components of executive function accessed during social exchanges.

**Scenario two**

The second scenario incorporates the act of excluding peers, but on a larger scale than the first scenario. There is a birthday party coming up and *everyone* is invited, with the exception of one student. The scenario takes place in the hallway and in the classroom before the start of the school day. The school rules state that party invitations should not be passed out during school hours, to limit some students feeling left out and feelings being hurt. The child who does not receive an invitation to the birthday party is clearly left out from the social activities of her peers.

In this scenario, the examinee will have to formulate a solution when placed under pressure as a character within the scenario. The scenario deals with a child’s ability to handle a difficult situation when put on the spot, without hurting the feelings of others or getting into trouble with her teacher, while also remembering the school rules.

*(Scenes include shots of Mia doing things alone, and being excluded by her peers)* Mia does not have many friends at school. Often, when other students at her school plan activities, Mia is not invited to participate. One day, at recess, a large group of students
was playing a game of tag. Mia sat and watched as the other kids played. She asked one boy, “Hey, can I be on your team?” The boy responded to Mia, “Sorry Mia, we already have teams, and you have to be able to run fast to play tag anyways. Mia was disappointed and walked over to swing by herself. She watched as the rest of her class laughed and screamed playing tag with excitement.

(Scene shot from the perspective of the examinee shows Amy talking with many friends in the hallway.) Amy has many friends at her school and she is well liked by all of her peers. Amy’s birthday is coming up and she is having a birthday party the following weekend. All of the students are gathered in the hallway before school and Amy secretly pulls out her invitations. She begins passing out invitations to all of the other students in hallway. Amy tells the other students to be careful, “I’m not supposed to bring these to school, so don’t tell anyone!” Amy approaches examinee and gives them an invitation. Amy walks over to another group of students and says, “You’re lucky I was able to even have the party! My mom was so mad that I invited so many people, I had to beg her to let me!” Mia is standing in the hallway watching Amy while she passes out party invitations and the students open them. Mia is smiling watching Amy pass out the invitations. Mia watches as Amy gives out the last invitation she is holding. Mia’s expression changes quickly, she puts her head down and is no longer smiling.

(Students are now in the classroom before class begins.) Students are whispering about the upcoming party, careful not to make it obvious to the classroom teacher. Mia makes eye contact with the examinee, and she walks over to the examinee (The examinee is sitting near the teacher’s desk.) Mia asks the examinee, “Where is Amy’s party going to be? I really want to come!”

Scenario two requires a child to use pragmatic knowledge to interpret another child’s non-verbal communicative behaviors. This scenario also requires social cognitive skills, such as perspective taking and empathy, in order for the examinee to react taking into consideration the thoughts and feelings of another. The examinee must possess the ability to take on another’s viewpoint and to consider perspectives of others before responding. Working memory is highly involved because the examinee is required to consider another’s point of view, observe and interpret nonverbal behaviors using pragmatic knowledge, and in addition to other key details (e.g., Amy is in trouble with her mother, it is against the rules receive/pass out invitations at school). The examinee has to be discrete about the party details because she knows she should not be talking
about it at school. All of these pieces of new information and the knowledge of language use and appropriate social skills must be held on to and used in order to formulate an appropriate response to a challenging question. Mental flexibility is also required in order to shape an appropriate response based on specific contextual factors, as the examinee cannot respond to Mia the same way he or she would to a friend who did receive an invitation to the party, and was asking a direct question about party details.

**Scenario three**

The following scenario occurs among a large group of boys playing an organized game during recess. In addition to organized games, this situation also involves cooperative play, non-cooperative play, and physical contact. The scenario is set up so that the examinee has an interactive role.

 *(Scene shot from the perspective of examinee) One day during recess, boys are playing soccer on the playground during recess. Suddenly a ball gets loose and Anthony and the examinee go running after it, each is racing to recover the ball for his team. Anthony says to examinee, “I’m gonna beat you to it!” Anthony is just ahead the examinee, when he trips and falls to the ground. The examinee continues running toward the ball and accidentally steps right on Anthony’s hand while running. Anthony is clearly hurt by Juan’s error (Anthony shows signs of injury and verbalizes his pain) Meanwhile an opponent of the examinee is catching up to him to get to the soccer ball. (Screen shot shows an opposing team member running and getting closer to the soccer ball)*

*Anthony becomes angry with Juan for stepping on his hand. Anthony gets up with an angry expression on his face and yells, “I’m going to get you for that!”*

This scenario primarily taps into a child’s ability to inhibit an automatic response. During a fast paced, competitive game, the initial instinct is to want to get to the ball first. However, in order to respond appropriately the examinee must inhibit the desire to win and be first, to show empathy to a peer and claim responsibility for a mistake that caused harm to another individual. This scenario also requires pragmatic language skills,
perspective taking, and intention reading for the examinee to identify Anthony’s aggression towards him, to understand Anthony’s point of view, the reason he may be upset, and what Anthony’s intentions are in the interaction. An examinee may also be required to inhibit feelings of anger or defensiveness and try to explain and apologize for his mistake rather than answering to Anthony’s threat with an antisocial response.

**Scenario four**

The following interaction incorporates working in groups during a structured class activity. Working in groups was a theme that was not mentioned by the participants as frequently as some other positive themes; however, scenario four centers on this type of interaction to include an instance of interaction in more structured environments. This scenario highlights different roles a group member may take on during an activity and some conflicting viewpoints that may arise during group activities. The scenario is designed so that the examinee takes on an interactive role and must respond in some way to the video stimuli, requiring executive skills to process incoming information and plan a course of action.

*(Scene shot from perspective of examinee)* During class, the teacher instructs the students that they will be working in their table groups to write a chapter summary from the book the class has been reading. The examinee is a very good student and always works hard in school. The examinee tends to take a leadership role during group activities. After the kids are told to begin, she immediately gets to work. She begins delegating roles to her other group members. Two of her group members, Matt and Simon, are paying little attention to the examinee and are flicking little paper balls across the desks at each other, while laughing and giggling.

Matt and Simon are still goofing off and the group has not finished any of the assignment. The teacher looks up from her desk and looks right at the examinee and starts walking over to the table. The teacher says, “I expect you all to be working together, not just goofing off.”
The teacher walks away, and Matt and Simon continue not doing their work or participating in the group. The boys keep throwing things across the table and continue their laughing and giggling.

This scenario also examines the child’s ability to inhibit the automatic response, which is to become upset, and place all of the blame on the two boys in the group who were really the ones not working. Given this ability, the examinee will be more likely to execute a more positive solution, which would not get her into trouble, or turn her team members against her. Coming up with a positive solution to this problem requires the ability to develop and execute plan of action to reach the desired goal, which is to complete the project and to stay out of trouble. This scenario also taps into mental flexibility. The examinee must exercise flexible thinking to be able to accept that sometimes members of a group will not have the same desired goals and it is not always possible to convince others to work towards a mutual goal. If the examinee can demonstrate mental flexibility, they will be able to come up with an alternative plan to complete the assignment without the help of Matt and Simon rather than perseverating on the boys’ lack of participation. Similar to other scenarios, this scenario provides several pieces of contextual information and specific instructions to the examinee and the examinee must hold on to this information, combined with their knowledge of social rules and execute a plan of action, requiring working memory to hold on to information, while processing.
Scenario five

The following scenario incorporates the theme jealous behavior, and it is based around one girl who becomes jealous of another girl’s belongings and appearance (e.g., clothing, hairstyles). A similar scenario could be developed that is more focused around things boys may be jealous of (e.g., shoes, toys, etc). This scenario will be designed so that the examinee takes on the role of a character in the scenario and is part of the ongoing scene. This scene takes place in the school hallway, one location that many participants reported observing these types of interactions.

(Scene shot from the perspective of examinee) Ava has many friends and is always coming to school with new outfits and hairstyles to show to her friends. Ava constantly talks about her new things and brags about having the nicest hair of all her friends. Ava is seen in the hallway and at lunchtime walking around proudly and telling everyone about her new outfits and hairstyles. Ava is seen in several new-looking outfits with her hair done differently in each shot. Other peers are shown making faces exhibiting their feelings toward Ava’s outward flaunting of her appearance on a daily basis. One day Ava approaches the examinee, and says, “Don’t you just wish you could have hair like mine?” (Ava flaunts her hair, and makes a face after looking at examinee’s hair that day)

One day, the examinee gets a brand new outfit and can’t wait to wear it to school and show Ava. Examinee approaches Ava while wearing her new outfit and says, “Hey Ava! What do you think about my new outfit, I just got it brand new from the mall!” Ava takes one look at examinee and says, “Your outfit still doesn’t look as nice as mine” (Ava chuckles at examinee, and continues walking with her nose in the air)

This scenario taps into a child’s pragmatic and social cognitive skills (e.g., intention reading), as the examinee is required to read Ava’s nonverbal behavior and facial expressions, and decipher the underlying meaning and attitude behind her comments and behaviors. The examinee must hold on to multiple pieces of information to determine a plan, and then hold on to the plan of action when formulating and executing a socially appropriate response to Ava according to the plan. The examinee then must use this information when determining a course of action, and utilize all of these cues when
responding to Ava, incorporating working memory. This scenario is designed to elicit feelings of jealousy, and requires the examinee to deal with these feelings in an appropriate way. The examinee is required to inhibit an automatic response (e.g., making mean comment to Ava; acting aggressively towards Ava) and determine a course of action that will have a positive outcome. For example, the examinee could decide that Ava’s opinion is not as important as her own opinion, and respond by saying, “Well I really like it, and I don’t care what you think”. The examinee has to determine what her desired outcome is (e.g., does she want to be accepted by Ava and remain friends; or does she feel Ava is not a very good friend and she decides to be happy with herself and disregards what Ava thinks) and carry out the plan effectively to achieve the desired goal.

Scenario six

The following scenario incorporates several themes that came across in ethnographic interviews. Verbal aggression and bullying are involved in this scenario, specifically name calling, an interaction that was mentioned by several participants. The scenario also involves two students that are typically left out or excluded from the group. To provide a successful response to this social interaction, the examinee must use problem-solving skills to determine how to successfully enter a peer group. The examinee also must decide how he will respond when he is put in a difficult situation, and is required to stick up for his friend losing the acceptance from his other peers.

(Scene shot from perspective of examinee) The examinee and Sam are best friends. They always eat lunch together and hangout after school. During recess he plays with Sam, and does not tend to join in games with other students in class. One day the examinee sees a group of boys playing football together and it looks like the boys are having fun. Sam says, “I wish we were playing football, it looks so fun. No one ever asks us if we want to play, it would be fun if we got to play with everyone else”
(Scene shot from perspective of examinee, standing with friend Sam who becomes a target of a group of his peers) One day, Sam is standing in the hallway by his locker with the examinee, when several other students whom the two have always wanted to play with at recess, approach. The boys begin laughing and loudly yelling, “Stupid Sam, Stupid Sam, Stupid Sam!” (boys continue calling Sam names and taunting him in the hall for several seconds)

Scenario six involves the examinee to possess knowledge of how to enter a peer group appropriately. To effectively determine a course of action of how and when to enter the game, the examinee must use higher order executive skills. Planning is required in order for the examinee to effectively identify his goal and determine the steps required to achieve the desired outcome. Additionally, to successfully enter the peer group the examinee would have to demonstrate a certain level of initiation of a behavior to decide to approach the group and try to join in. For example, the examinee may say, “I would stand on the sidelines, watch the football game, and see if anyone would ask me to join”. Alternatively, another child may give a response such as, “I would play with Sam instead”, or “I would ask Sam if he was going to join the game.” One of the latter responses demonstrates only limited ability to initiate a new behavior or carry out a plan of action. Another child may give a response such as, “I would just run onto the field and steal the football and try for a touchdown!” Although in this example the child initiates a behavior, this response does not demonstrate the ability to inhibit an automatic response by first considering possible consequences before acting out of habit or impulse.

The portion of this scenario also incorporates the executive function called inhibition, because the examinee must inhibit a habitual response, and rather he must consider possible repercussions of a given behavior before acting. For example, when a child observes a close friend being hurt emotionally or physically by other peers, the first
thought may be to act defensively to try to protect the well-being of the friend. This scenario incorporated other contextual factors that a typically developing child would consider before automatically acting out of anger towards peers picking on Sam. In order to hold onto these various contextual factors, such as that the Sam desires to join in play with this same peer group, the examinee must utilize working memory.

**Scenario seven**

Scenario seven incorporates tattling, and non-cooperative play, two emerging themes revealed from interviews. This scenario is focused around two boys, and is similar to an interaction described by one participant. However, a similar interaction could be developed that would be designed around two girls. In this scenario, the examinee will take on the role of a child who participates in a trade with a peer, and in turn ends up not being pleased with the result. The boys know that they are not allowed to trade items at school, because of the school policy, but they do it anyway. This scenario will require the examinee to decide how he might problem-solve to come up with a fair solution to this problem without getting in trouble by his teacher.

*(Scene shot from perspective of examinee)* The examinee brings a new toy to school, and he is playing with the toy during recess. Soon, Brendan approaches, and asks, “That looks like a cool toy, I wish I had one.” Brendan really likes the examinee’s new toy and offers to trade, “I’ll trade you my new video game for that toy.” From the point of view of the examinee, the video says, “You know we could get in trouble with Mr. Brown if he finds out so you have to promise not to tell!” (Meanwhile, examinee is thinking about how he has always wanted that video game) Brendan says, “I won’t tell, don’t be a scardy-cat!”

*(The two boys have just made the trade, and the examinee takes the video game)* Brendan starts playing with the new toy he just traded for and just a few minute of playing with it, it breaks. Brendan runs back to the examinee, “This is a crappy toy! It doesn’t even work, give me back my video game now!”
“I’m gonna get you good if you won’t give it back to me, it’s mine!” says Brendan. Examinee watches as Brendan runs over to the teacher on recess duty and says, “He (examinee) stole his video game, and he won’t give it back!” The teacher says, “okay, well you boys are going to have to resolve this with Mr. Brown after school.” Brendan runs back over and says “Hahah, you’re gonna’ be in trouble now, I told you I would tell on you!”

This scenario incorporates several executive skills that the examinee must possess in order to respond to Brendan appropriately and resolve this conflict in a positive manner. Similarly to the previous scenarios, in the initial scene of scenario seven, the examinee is required to use real-time processing resources to decide how to respond to a proposition from a peer. This taps into the child’s ability to inhibit an automatic response and consider all factors and consequences of a given response before responding. A child who is being called a “scardy-cat” may react negatively and automatically reciprocate this by calling the peer a name. Requiring the examinee to explain why he decided to respond in a certain way will reveal information about his ability to determine a goal, and develop a plan to achieve that that goal.

To a certain extent, mental flexibility may be involved in the second scene of this scenario. Children who demonstrate rigidity in their thought processes may have a difficult time developing a creative and prosocial solution to this conflict. If one is unable to demonstrate flexible thinking, the child may be stuck thinking, “A trade is a trade” and not be able to move past this line of thinking to move towards a compromise. The scenario provides pieces of information (e.g., “you know we could get in trouble if Mr. Brown finds out”) that the examinee must hold on to throughout the interaction in order to produce appropriate responses considering the multiple variables at play during the interaction.
Scenario eight

The following scenario was proposed to incorporate the emerging themes of dating and jealous behavior. Upon completion of the ecological validity measure, only three out of five participants believed this scenario to be a realistic interaction between children 9-12 in the population they serve. Based on the low ecological validity score (on 60% of respondents) this final scenario was not developed any further, as it may not adequately represent the everyday interactions of the targeted population. Below is the initial scenario that was used in the ecological validity measure.

Damien has been friends with Jasmine for three years and they used to be neighbors. They always used to hang out after school and sit at the same table during lunch. This year, Jasmine moved to a different neighborhood and no longer rides the same bus as Damien. Jasmine is also in a different class than Damien this year and she has started making new friends in her class. Jasmine has started inviting a boy in her class named Joey to sit with her and Damien during lunch. One day, there are only two seats remaining at the lunch table where the three usually sit. Jasmine sits down, and then Joey quickly sits down at the last remaining spot at the table. Joey laughs at Damien and tells him, “Get lost, Jasmine doesn’t like you anymore she likes me now.”

Ecological Validity Measure

The third objective of this research study was to determine whether the developed social vignettes demonstrate ecological validity determined by the results of a validity measure completed by school personnel. Of the six participants that agreed to participate in the validity measure, five responses were received. All participants determined scenarios #2-7 to be realistic by checking “YES”, he or she believed the scenario to be realistic within his or her student population. Two of the five participants who completed the validity measure selected “NO” (did not believe the script to be realistic for his or her
student population) for Scenario Eight, and one of the five participants did not believe that Scenario one was realistic. For six out of the eight scenarios (Scenarios #2-7), ecological validity based on this sampling was 100%; scenario #1 had a validity rating of 80%, and scenario #8 received a validity rating of 60%. The overall ecological validity, including the eight scenarios was 92.5%. Considering that only 60% of participants believed scenario eight to be realistic, this scenario was not included as one of the proposed social scenarios. The overall ecological validity of the remaining social scenarios, excluding scenario eight, was 97.1%. (See table 4.2 for ecological validity measure results.)

Table 5

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<td><strong>Overall Ecological Validity</strong></td>
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*Ecological validity percentage based on input of five participant ratings*
CHAPTER V

DISCUSSION

The present study has revealed patterns of social interaction among students age 9-12 through data obtained during six ethnographic interviews of school employee’s (e.g., teachers, speech-language pathologist). Consistent with the original hypothesis, investigators were able to identify commonalities in types, contexts, and other emerging themes about social interaction according to school employees’ perceptions. Similarities in specific features and themes in participants’ perceptions of social interactions consistently appeared, suggesting that common characteristics exist in social interactions of children 9-12 from diverse student populations. These emerging themes were used to write realistic social scenarios that incorporate a range of executive functions and social cognitive skills. The following section discusses current research findings, contributions to existing literature, limitations of the study, suggestions for subsequent studies, and implications for future research.

Summary

The ethnographic approach involves leading with open-ended questions, which allowed participants to offer initial thoughts about their general views of social interaction and to include information thought to be important to peer interactions with limited influence from the interviewer. Participants consistently mentioned specific key themes (e.g., bullying, verbal aggression, cooperative play, talking) and contexts of
interactions (e.g., at recess, during class, structured vs. unstructured environments). These responses are significant because they occurred independent of interviewer-led, directive questioning which could have lead participants to produce similar responses. The degree of similarity in themes discussed across interviews has implications for the ecological validity of the proposed scenarios for use with children in this age group. The findings from this preliminary investigation are promising in terms of overall consistency in broad themes across interviews; however, due to the limited number of participants, and the limited geographical region from which the participants were recruited, generalization of ecological validity to other regions or when assessed with a larger sample is questionable.

Predominate positive and negative themes represented in the proposed social vignettes were similar in student populations varying in racial/ethnic backgrounds (e.g., predominately African American vs. predominately Caucasian) and geographic locations (e.g., urban vs. rural). Similar features and themes were described as occurring in the social interactions of children from various types of communities (e.g., urban, rural, and suburban). This finding is important when determining the appropriateness of using the themes revealed from ethnographic interviews to develop social scenarios that are representative of students in different geographic locations and in determining the level of ecological validity of the proposed scenarios for different student populations. These preliminary findings reveal that many of the same general themes are observed in social interactions of children 9-12 in all three community types examined (e.g., suburban, rural, urban). Based on the limited sample obtained for this study, the scenarios developed are focused around emerging themes seen within urban, rural, and suburban schools. Generalization of these findings is also limited by the absence of diverse
socioeconomic groups. All six participants reported working with student populations who predominately belonged to lower, or lower-middle level socioeconomic groups.

Participants described a substantially higher number of negative interactions than they did positive interactions. This finding raises questions about the types of interactions that teachers and other school employees observe and about the perception held about the types of interactions at their schools. Interviews were initiated with an open-ended question, which did not encourage participants to focus on either negative or positive interactions. However, in all of the six interviews school personnel placed a heavy focus on negative interactions. Participants may have held a preconceived notion that investigators were more concerned with peer conflicts based on the brief description of the study given by the investigator. Another possible explanation for this trend is that teachers or school personnel may tend to be more observant of negative interactions that eventually may require adult mediation versus positive interactions, which may not require as much direct attention on the part of school employees. Positive emerging themes were used throughout social scenarios; however, all seven social vignettes incorporate some level of peer-conflict or a situation that has the potential to develop into a conflict. When developing the scenarios, it proved to be difficult to only use positive themes with no conflicting situation and still design the scenarios to assess an examinee’s executive capacities used during social interactions. One possible explanation for this difficulty is that, social interactions involving some degree of peer conflict require a child to resolve a problem, and thus incorporate skills such as planning, mental flexibility, initiation, and execution of the plan to achieve the desired outcome. Whereas, during a social vignette describing a positive peer interaction, social problem solving is not
typically highly involved and therefore it proved to be more difficult to elicit these skills without eliminating the element of real-time natural responses.

The investigator designed seven social scenarios with two major goals in mind, to incorporate ecologically valid scenarios, and to develop scenarios that lend themselves to be used in an interactive design to replicate the demands placed on a child’s executive skills in real-time, on-the-spot peer interactions. First, the predominate themes that emerged regarding types and contexts of interactions, genders involved in different interactions, and perceived mood/cause of the interactions were used to produce an initial draft of eight social scenarios representing perceptions of participants. These initial drafts of the social scenarios were used for the ecological validity measure, and based on the opinion of five participants, seven of these scenarios were found to be realistic.

The second major goal was to design interactive social scenarios that incorporated these themes, which would tap into the targeted executive skills (e.g., inhibition, mental flexibility, working memory). In designing the interactive scenarios, the investigator attempted to eliminate the need for directive questions or prompts for a response, to allow for a natural response to the interactions. This design is unique from other proposed social scenario assessment tasks that present a scenario, followed by a question or statement to prompt examinees to respond, such as, “What would your goal be?” (Asher & Rose, 1999), or, “What would you do or say?” (e.g., Timler, 2008b).

The developed methodology used for the purpose of eliciting executive functions, attempts to avoid the need for specific prompts by including specific instructions prior to the social scene (i.e., video clip). The investigator used suggestions by Bedrosian and
colleagues (2003-2011), and will have the examinee imagine they are part of the scene they while watching a video that appears to be filmed from the examinee’s point of view.

Although the intention was to develop a series of purely interactive scenarios, requiring only these types of natural responses to time-suspended scenarios, it may not be feasible to eliminate all direct questions and prompts. The developed scripts need to be investigated further to determine appropriate methods for instructing examinee’s regarding how and when to respond, so that they may be able to take on the desired interactive role. Although the initial interactive scenarios were developed, these scripts will need to be further examined to determine a higher level of ecological validity from the perspective of typically developing students in the target population. This step will allow the investigator to make modifications to develop the scripts into truly interactive scripts, that utilize realistic dialogue, and in which children age 9-12 can become emotionally engaged, allowing them to take on an interactive role in the given scenarios.

The investigator found it more challenging to design the interactive scenarios around certain executive functions than others. All of the scenarios, on some level, incorporated the executive skill, inhibition. This may be the case because of the nature of peer conflict situations, as these types of interactions evoke emotions that may drive a child to produce an automatic response. These scenarios were intended to replicate real-life interactions, requiring the real-time processing that is highly involved with social communication. It was more difficult to modify scenarios to access mental flexibility. Mental flexibility is needed in order for a child to make adjustments in their behavior or communication based on the demands of a given context (Hyter, 2012; Timler, 2008). This skill was incorporated into several of the scenarios; however, it may prove to be a
more difficult skill to assess using this methodology. One limitation of this study was the relatively small number of scenarios that were developed from the data collected in ethnographic interviews. It was difficult to design multiple scenarios to tap into each of the core executive functions and other pragmatic, and social-cognitive skills.

The seven proposed social vignettes incorporate all of the predominate themes that came across from participant responses. Specific examples of interactions were included whenever possible; however, some modifications were made to these interactions to attempt to target the specific pragmatic, social-cognitive, and executive function skills described in presented theoretical models of social communication (e.g., Hyter & Sloane, 2013; Hyter, 2012; Timler, 2008). Investigators described specific executive functions (e.g., mental flexibility, inhibition, working memory) required to respond appropriately to prompts during the interactive scenarios. Based on a relevant review of the literature regarding implications of difficulties with any one of these functions on social communication, it is proposed that scenarios could serve as a preliminary step in the development of an interactive executive function assessment tool. The study was not ideal, as a limited number of interviews were performed within a small geographical region. Conducting the ecological validity measure on a larger scale, with school personnel working in diverse student population from a variety of geographic regions, as well as with typically developing children who are 9 – 12 years old would demonstrate a more accurate measure of ecological validity. Additionally, the majority of participants described the school they worked in to be either urban or rural, and only one participant reported working in a suburban setting. All of the respondents reported working in student populations that were lower or lower-middle socioeconomic level. It
would have been ideal to conduct interviews with an equal number of participants working in each type of school (e.g., suburban, urban, rural), to attempt to obtain a more diverse and representative sample of participants working in a variety of community types and socioeconomic classes. Additionally, these scenarios were not presented to typically developing children, and it is important to determine if children in various populations agree with school employees regarding the realistic value of the developed scenarios. This measure could lead to further development of the scripts to more closely resemble real-time, realistic social interactions of children 9-12.

The proposed social scenarios serve as a potential process to attempt to bridge existing gaps between theoretical frameworks described in both social communication (e.g., Dodge & Crick, 1994; Hyter & Sloane, 2013) and executive function literature (McCloskey et al., 2009), and the currently available assessment tools. These scenarios demonstrate a methodology that support these presented frameworks. Some of the existing literature has described methodologies that are designed to assess the interdependent components of social communication, specifically executive functions.

Landry et al. (2009), used an interactive social task to examine multiple components of social problem solving. The proposed social vignettes attempt to provide task stimuli that are consistent with the frameworks used in this interactive problem-solving task, while also establishing a task that closely resembles everyday social interactions among children ages 9 to 12 to gauge more accurately how the skills assessed during the task would generalize to naturalistic contexts. Shultz et al. (2010) used this type of methodology with video-based social scenarios designed for young children; however, the current study incorporates more interactive elements, which are essential in
order to examine a child’s ability to use processing resources and executive functions in “online” social interactions during daily life.

The proposed methodology required the combination of executive function skills and social communication skills to resolve realistic social problems, just as is required in daily interactions. In previous research, many authors have incorporated hypothetical social tasks or scenarios into assessments of social-cognitive functions (e.g., Asher & Rose, 1999; Shultz et al., 2010; Timler, 2008b). However, the methods used to develop these social scenarios were unique as only themes that emerged from the perceptions of school personnel were used to determine the general themes of the social scenarios (e.g., type of interaction, context of interaction, perceived causes interaction, etc).

**Future Research**

The current study contributes to the research in the area of assessment using social scenarios, in that stimuli used in scenarios was systematically designed based on the perceptions of teachers and other school employee’s to increase ecological validity with children and to replicate “real-life” social interactions. Previous studies using hypothetical social tasks have not employed this type of methodology in developing social scenarios. Additionally, proposed scenarios that combined pragmatic, social-cognitive, and executive skills within one task more accurately replicate the demands (e.g., processing resources, ability to cope with stress) placed on a child during everyday social interactions as they encompass the multiple components of social communication (Hyter & Sloane, 2013; Hyter, 2012).

These social scenarios may serve as a foundation for future research and development of a unique assessment of EFs used during peer interactions, a tool not
previously available. Subsequent research is necessary to transform the social scenarios into truly interactive scripts that would engage a child and create the impression that the examinee is a character within the scenario. Replicating the emotional experience a child encounters during these scenarios if they were to occur in real life is essential to tap into not only the targeted executive skills, but also to determine a child’s ability to regulate emotions and stress (i.e., affect regulation), supporting the reciprocal relationship between EF and affect regulation. (Hyter & Sloane, 2013).

Subsequent investigation is also needed to determine appropriate responses to the proposed social scripts (e.g., how typically developing children would respond), and to establish a process for measuring an examinee’s response in order to create a useful tool for assessment. It is proposed that the seven social scenarios generated could be used to develop an ecologically valid, interactive assessment tool, requiring responses to videotaped vignettes as a method of measuring executive functions utilized in social communication. The presented social vignettes need to be investigated further in terms of construct validity in identifying EF during this type of social communication exchange. It is suggested that future studies focus on using existing, well-validated EF assessment tools such as the BRIEF (Gioia et al., 2000), to determine if the findings using the proposed interactive scenarios are consistent with ratings of the targeted skill areas (e.g., mental flexibility, inhibition, working memory).

This study serves as an initial step in developing a tool to assess executive functions in children 9-12 as it applies to the complex theoretical model of social communication and has implications in the area of social communication assessment. This research may encourage further investigation into the development of an assessment
tool that could adequately gauge how a child’s executive functions may interfere with or facilitate the ability to respond appropriately to peer interactions and peer conflicts. Such assessments would help speech language pathologists and other professionals identify deficits in one specific component of social communication, thus being able to more adequately develop social communication intervention programs to meet the needs of an individual child.
Appendix A

Recruitment Flyer

November 11, 2012

Teachers and School Employees:

My name is Mackenzie Waite, and I am a graduate student at Western Michigan University studying speech-language pathology. Currently I am working on a study for my master’s thesis project under the supervision of Dr. Yvette Hyter. The aim of this study is to develop social scenarios that will later be used as the basis for an assessment for children ages 9-12 that will evaluate skills involved with social communication. The goal of this project is to create realistic and plausible scenarios that students from a variety of populations may encounter in their daily lives.

As part of my preliminary investigation, I am asking for your participation in a short interview (30 minutes or less). The purpose of the interview is to gather your opinions and examples about student social interactions, as I think teachers and other school employees that frequently observe students in a natural setting will provide extremely valuable information. If you are interested in learning more about this study, please contact me at the number below. Thank you very much for your time!

Sincerely,

Mackenzie Waite

Phone number was provided on the original document

Mackenzie.j.waite@wmich.edu
Appendix B

HSIRB Approval Letter

Date: October 25, 2012

To: Yvette Hyter, Principal Investigator
    Mackenzie Waite, Student Investigator for thesis
    Jan Bedrosian, Student Investigator

From: Amy Naugle, Ph.D., Chair

Re: HSIRB Project Number 12-10-39

This letter will serve as confirmation that your research project titled “Development of Social Vignettes Illustrating Executive Functions” has been approved under the expedited category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note: This research may only be conducted exactly in the form it was approved. You must seek specific board approval for any changes in this project (e.g., you must request a post approval change to enroll subjects beyond the number stated in your application under “Number of subjects you want to complete the study”). Failure to obtain approval for changes will result in a protocol deviation. In addition, if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

Reapproval of the project is required if it extends beyond the termination date stated below.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: October 25, 2013
Appendix C

Ethnographic Interview Template

Grand Tour Question:

Thank you for agreeing to participate in this short interview. I will be asking about your opinions about student interactions that you may have observed at your school. When respond to the questions, please do not use the names of students or other staff/faculty/administrators at your school.

Expression of Interest/Mini Tour Question:

1. I am interested in learning more about the student populations at your school and what types of social situations they may encounter on a day-to-day basis. Describe the types of social interactions you may typically observe between students.

Markers:
A) Social interactions with a positive outcome
   • Follow up with asking for an example or narrative, “Could you give me a specific example of this type of interaction (e.g., a time when two students were joking with each other)”
     o If needed: Ask for clarification to gain more knowledge about specific elements or factors contributing to the interaction or ask structural question to get further explanation about specific setting characteristics (e.g., “You said that students often talk about..., could you explain or …. Could you give an example of how they talk about …….?”)

B) Social interactions with a negative outcome
   • Follow up with asking for an example or narrative, “Could you give me a specific example of this type of interaction” (e.g. a time when a student was excluded from a group)
     o If needed: Ask for clarification to gain more knowledge about specific elements or factors contributing to the interaction or ask structural question to get further explanation about specific setting characteristics (e.g., “You said that some students are left out, what does being “left out of the group” look like?

2. Thank you. We’ve talked about the general interactions among students in your school. I’d like for us to talk a little more about the types of conflicts that may occur among students at your school.
Markers:
A) A specific time of day or place is indicated (e.g., at recess, getting off the bus, or in the lunchroom)
   - Follow up with asking for an example or narrative, “Could you give me an example of a conflict you observed (at recess)
     - Ask for clarification to gain more knowledge about specific elements or factors contributing to the conflict or ask structural question to get further explanation about specific setting characteristics (e.g., “so you were saying one student ran into the cafeteria through the south door, which made the other students upset. Could you explain how the students would typically enter the cafeteria for lunch?”)

B) Interviewee indicates that conflict rarely occurs at his/her school among students
   - Follow up with a repetition, acknowledgement, and probe…”So it sounds like…(you do not frequently observe conflict among students at your school and you feel the children typically all get along, that is always good to hear). Could you describe a time when two or more students disagreed or had a difficult time reaching a compromise when trying to solve a problem?
   - If specific scenario is indicated return to A
     - Ask for clarification to gain more knowledge about specific elements or factors contributing to the conflict or ask structural question to get further explanation about specific setting characteristics (e.g., “so you were saying one student ran into the cafeteria through the south door, which made the other students upset. Could you explain how the students would typically enter the cafeteria for lunch?”)

C) Interviewee indicates one or more specific students who frequently are the ‘root’ of conflicts or who are frequently involved in conflict situations
   - Provide acknowledgement, “I understand what you’re saying”
   - Follow up with asking for an example or narrative to redirect to specific scenarios, “Tell me about a specific instance when a conflict occurred between this student or others during the school day?
     - If specific time of day or place is indicated return to A
Appendix D

Data Chart Analysis Template

<table>
<thead>
<tr>
<th>Interviewee #</th>
<th>Student Population Description</th>
<th>Context of Interaction</th>
<th># of People Involved</th>
<th>Perceived Mood of Interaction</th>
<th>Perceived Cause of Interaction</th>
<th>Consequence of Interaction</th>
</tr>
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</table>


### Investigator Coding

<table>
<thead>
<tr>
<th>Interviwee #</th>
<th>Interviewee Age, Gender, Year of Experience, Race, Ethnicity</th>
<th>Student Population Description</th>
<th>Types of Interactions</th>
<th>Context of Interaction</th>
<th># of People Involved</th>
<th>Gender Involved</th>
<th>Perceived Mood of Interaction</th>
<th>Perceived Cause of Interaction</th>
<th>Consequence of Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>010202</td>
<td>Age: 47 Gender: Male, Caucasian, Job title: computer teacher, k-5th Experience: 25 years teaching experience</td>
<td>urban good mixture of racial backgrounds Hispanic, white, mostly black students At public school. 100% free and reduced lunch, most families in poverty, lower middle class At Catholic school, more balance (proportional to city population), mixture of Hispanic, Asian, black, white</td>
<td>• playing soccer and football on playground • separating into cliques • sitting at tables talking • name calling • some kids become isolate from other students • kids grabbing things from others, playing “keep away” • kids finding inappropriate things to play with • kids zero in on other kids’ social problems • blurring out (attention seeking behaviors) • quarrel over the rules of a game • bringing item to school and “trading” • fidgeting with something of someone else’s (button on peers’ coat)</td>
<td>• on playground • group interaction • in hallways during class</td>
<td>Groups of students 2 students</td>
<td>Boys playing sports Girls, talking more than boys</td>
<td>• some kids feel isolated • some kids “don’t play nice” • kids get impatient with other kids • some kids continue to way to get their own way • kids become upset, feel regret for action but know they broke a rule, so they are afraid • one kid annoys another</td>
<td>• taking things from other kids • kids targeting others because of social problems • some kids are drawn to being a bully and seek out other students • something was misunderstood from the start and continues to grow • communication problem • no systematic way to deal with problems that arise during a game and can’t continue game • bringing in toys and someone breaks it or does a trade and on kid is unhappy • kids that have problems have not learned from home and have not been taught by parents • counterproductive instructions from parents • unstructured environment may set kids off</td>
<td>• social behavior program at school that tracks problem behaviors in different students • some time in conflicts kids seek out teachers to help resolve the issue • adult might come and mediate the same, or sometimes kids learn to work it out themselves</td>
</tr>
</tbody>
</table>
### Secondary Rater Coding

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<tr>
<th>Interviewee #</th>
<th>Interviewee Age, Gender, Year of Experience, Race/Ethnicity</th>
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<th>Perceived Cause of Interaction</th>
<th>Consequence of Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>03020</td>
<td>Age: 47 Gender: Male Race: Caucasian Job title: computer teacher, k-5th Experience: 23 years experience</td>
<td>Urban setting good mixture of racial backgrounds mostly black students, some white and Hispanic At public school, 100% free and reduced lunch, most families in poverty, lower middle class/most families in poverty At catholic school, more balance (proportional to city population), mixture of Hispanic, Asian, black, white</td>
<td>• students bring toys from home and trade them • fidgeting which disrupted another student/poking/touching another kid • playing soccer, football, etc and not agreeing on rules of the game • tackling during football games • group of kids sitting at tables talking • name calling • students separating into chiques • some kids become isolate from other students • kids grabbing things from others, playing “keep away” • kids finding inappropriate things to play with like rocks</td>
<td>• on playground group interaction in hallways during “line up” time</td>
<td>• Groups of students 2 students</td>
<td>Boys engage in playing sports Girls tend to talk more than boys</td>
<td>• isolation • some kids “don’t play nice” • upset • annoyed • frustration • scared because they broke a rule • sadness/pain</td>
<td>• taking things from other kids • one student touching another student or his things • miscommunication • can’t agree on rules to a game • someone breaks a toy or isn’t happy with a trade • tackling causes someone to get hurt accidentally • kids try to separate themselves from authority or rules • don’t know how to resolve an argument and continue a game</td>
<td>• social behavior program at school students • adult might come and assist • parents may be involved • some students become isolated from other students • sometimes kids learn to work out their arguments</td>
</tr>
</tbody>
</table>
Appendix F

Ecological Validity Measure

Instructions:
Below are several social scripts based on the information I gathered during the interview process. Please read over the following scripts and make a determination if you believe they are realistic interactions for children ages 9-12, and could possibly occur in your student population. Below each scenario, you will see two options, YES or NO. Please select YES if you believe the scenario is realistic or NO, if you believe the scenario is not realistic by highlighting or bolding the text to indicate your selection. Try to select either YES or NO if possible, but if you are not able to make a determination about a scenario, you may leave it blank. No explanation is necessary for your reasoning behind your selection for this measure.

After you finish, please save the document and attach the file to an email to me (Mackenzie.j.waite@wmich.edu). You may simply reply to the email I sent you if that is easier. Thank you so much for your input, it is vital to the completion of my project!

Social Scenarios:

Scenario One
Jenny and Ashley have been best friends all year. They always sit together at lunch, play during recess, and choose the other as a partner for class activities. One day during recess another girl named Gina approaches Jenny and asks if she wants to jump rope with her. Jenny agrees and runs off to play with Gina, leaving Ashley behind by the swings. When Ashley notices the two girls jumping rope together she heads over to see if she can join in. Jenny agrees that Ashley can join, but there are only two jump ropes and Jenny and Gina continue jumping together while Ashley had to wait for a turn. Eventually, the two girls stop jumping rope but they do not invite Ashley to join in their next activity. Jenny tells Ashley, “We are going to go swing you can jump now if you want.” Jenny and Gina run off again, leaving Ashley behind by herself.

YES  NO

Script Two
Amy has many friends at her school, and she is well liked by all of her peers. Amy’s Birthday is coming up and she is having a birthday party the following weekend. Amy brings her birthday invitations to school to pass out to all of her friends. Mia is often left out of activities and is not frequently included by her peers at school. Mia is standing in the hallway watching Amy pass out all of her invitations. She waits patiently to receive her invitation, and hopes that she will be invited to the party. Mia listens as she hears her peers talk about Amy’s upcoming birthday party, and she approaches another student in
her class, Kamaia, who is holding an invitation and asks, “Where is Amy’s party going to be at? I really would like to come!” Kamaia has to respond to Mia’s question.

YES  NO

**Script Three**
Many of the boys enjoy playing soccer on the playground during recess. One recess, during the game, a ball gets loose and two boys, Juan and Johnny, go running after it. Johnny is not paying close attention when Juan stops suddenly, and he accidentally bumps into Juan. Juan falls to the ground, skinning his knee badly. Johnny does not realize Juan is hurt and he continues running towards the soccer ball hoping he will be able to score a goal. Juan is immediately angry with Johnny and he wants to ‘get him back’ for what he did.

YES  NO

**Script Four**
During class, the teacher instructs the students that they will be working in their table groups to write a chapter summary from the book the class has been reading. Elizabeth is a very good student and she always works hard in school. She tends to take a leadership role during group activities. After the kids are told to begin, Elizabeth immediately gets to work. She begins delegating roles to her other group members. Two of her group members, Matt and Simon, are paying little attention to Elizabeth and are flicking little paper balls across the desks at each other, while laughing and giggling. She tells Matt and Simon to stop, and threatens to call the teacher over if they will not listen. The two boys still do not seem to care about Elizabeth’s threats and continue goofing off. Elizabeth soon becomes very frustrated that the boys will not listen to her and work on completing the assignment.

YES  NO

**Script Five**
Ava is has many friends and is always coming to school with new outfits and hairstyles to show off to her friends. Ava constantly talks about her new things and brags about having the nicest hair of all her friends. Her friend Lindsey is envious of Ava’s look and belongings and wishes she could dress as nice as Ava did. One day, Lindsey gets a brand new outfit and is so excited to wear it to school to show it off to Ava. Lindsey approaches Ava that day in her new outfit and says, “Look what my Aunt just got me from the mall, don’t you love it!!” Ava takes one look Lindsey and tells her, “Your outfit still doesn’t look as nice as mine” Lindsey immediately feels embarrassed and bad about what she is wearing. Lindsey is sick of Ava always having nicer clothes than she does, and her jealousy makes her want to get back at Ava. Lindsey thinks to herself, “I’ll show her!”

YES  NO
**Scenario Six**
Jason does not have many close friends at his school. His mostly likes to play with his best friend Sam and he does not tend to socialize with many of the other students at his school. One day, Jason and Sam are standing in the hallway at their lockers, when several of their peers approach them. The boys begin laughing and loudly yelling, “Stupid Sam! Stupid Sam! Stupid Sam!” Jason does not like that these boys are calling Sam names, but he is scared to stand up for Sam because he doesn’t want the boys to start making fun of him too. Sam looks at Jason waiting for his friend to stick up for him.

**Scenario Seven**
Jayden brought a new toy to school, and he shows it to his friend Brendan during recess. Brendan really likes Jayden’s new toy and offers to trade Jayden for his favorite video game. Jayden does not have the video game and he has always wanted it so he agrees to the trade. Brendan starts playing with the new toy he just traded for and within five minutes of playing, it breaks. Brendan runs back to Jayden complaining that the toy was broken and asks to trade back. Jayden laughs and tells Brendan, “No way! We traded so I get to keep the game now”. Brendan runs inside when recess is over and tells the teacher that Jayden stole his video game.

**Scenario Eight**
Damien has been friends with Jasmine for 3 years, and they used to be neighbors. They always used to hang out after school and sit at the same table during lunch. This year, Jasmine moved to a different neighborhood and no longer rides the same bus as Damien. Jasmine is also in a different class than Damien this year and she has started making new friends in her class. Jasmine has started inviting a boy in her class named Joey to sit with her and Damien during lunch. One day, there are only two seats remaining at the lunch table where the three usually sit. Jasmine sits down, and then Joey quickly sits down at the last remaining spot at the table. Joey laughs at Damien and tells him, “Get lost, Jasmine doesn’t like you anymore she likes me now.”
<table>
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</table>
| 010101       | Age: 48<br>Gender: Female<br>Race: African American<br>Job: 3rd grade teacher<br>Experience: 28 years experience teaching grades K-5 | Urban<br>Lower socioeconomic class<br>80% free and reduced lunch<br>80% minorities<br>Large male student population | • taking turns on swing or slide<br>• one child gets in the way of another gets pushed out of the way<br>• playing touch football<br>• taunting<br>• bullying<br>• tattling on each other<br>• aggressive behavior<br>• playing rough<br>• "hands on interactions"<br>• being jealous over another's shirt or hair causing a conflict<br>• "pair share" activity<br>• working on group activities or projects<br>• playing together<br>•loud talking<br>• giving each other high fives<br>• conflict over rules of play<br>• physical fighting<br>• making verbal threats<br>• pushing, shoving | • at recess<br>• at lunchtime<br>• on the bus<br>• in the classroom, during structured activities<br>• conflict arises more frequently during unstructured time | Groups of students playing games<br>Two students interacting | Boys: more physical conflict<br>Girls: more verbal conflict | • jealousy<br>• lack of empathy<br>• excessive aggression | parents aren't around to supervise<br>play at home<br>"unmedicated play" problems at home<br>not getting enough sleep<br>not eating enough<br>difficult living situations<br>may be hit or beat up at home leading to aggressive behaviors at school<br>tattling, and the other child gets mad<br>"just playing": mentality that sometimes leads to someone getting hurt<br>unable to share or take turns<br>jealous over another's appearance or things<br>kids are "on call for aggression"
• can't agree on rules to a game | behavior support person<br>principle intervenes<br>kids may have to switch classrooms if there is ongoing conflict<br>child has to stay in for lunch<br>students with tell the teacher<br>students feel left out |
<table>
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<td>playing soccer and football on playground separating into cliques sitting at tables talking name calling some kids become isolate from other students kids grabbing things from others, playing “keep away” kids finding inappropriate things to play with kids zero in on other kids’ social problems blurt out attention seeking behaviors quarrel over the rules of a game bringing item to school and “trading” fidgeting with something of someone else’s (button on poor’s coat)</td>
<td>on playground group interaction in hallways during class</td>
<td>Groups of students 2 students Boys playing sports Girls, talking more than boys</td>
<td>some kids feel isolated some kids “don’t play nice” kids get impatient with other kids some kids continue to way to get their own way kids become upset, feel regret for action but know they broke a rule, so they are afraid one kid annoys another</td>
<td>taking things from other kids kids targeting others because of social problems some kids are drawn to being a bully and seek out other students something was misunderstood from the start and continues to grow communication problem no systematic way to deal with problems that arise during a game and can’t continue game bringing in toys and someone breaks it or does a trade and one kid is unhappy kids that have problems have not learned from home and have not been taught by parents counterproductive instructions from parents unstructured environment may set kids off</td>
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</table>
| 060601       | Age: 34  
Gender: Female  
Race: Caucasian  
Job: Resource room teacher, K-5  
Experience: 7.5 years of teaching experience with grades K-5 special education, and general education | Urban  
Universal breakfast  
100% free and reduced lunch  
African American, Hispanic, Caucasian students  
Mostly lower socio-economic status | playing games  
working in groups on word games  
yelling/ cursing  
one friend playing with someone else  
fighting  
hitting each other  
yelling at one another  
excluding peers  
ignoring peers  
team up against one friend  
inappropriate messaging over social media  
pushing, shoving  
picking at each other  
bragging  
making inappropriate comments via text messaging  
flirting  
dating  
“in your face” communication  
arguing over winning or losing a game | recess  
on the bus  
in class  
via facebook  
via text messaging  
during unstructured times, conflict occurs in classroom | 3 people  
one friend left out, or 2 team up against 1. | Boys: “in your face”  
Interaction between boys and girls very different  
Girls: more sneaky, do not notice dispute right away; girls exclude each other | frustrated  
angry  
annoyed with each other  
jealousy  
mad at one another  
feel ashamed about making inappropriate comments to each other | struggle to show appropriate “friend like” behaviors  
can’t resolve it by talking it out  
can’t express they want to play with someone else  
not knowing when to take a break from a friend and play with someone else  
two girls like the same boy, leading to a dispute  
parents intervene in inappropriate facebook activity, and one child blames the other  
don’t know how to communicate with each other  
families not knowing how to deal with a problem  
parents are working multiple jobs, money is stressful may not have time to help kids deal with emotions  
students don’t know how to deal with their emotions, good or bad  
mad about things at home  
someone gets hurt, and retaliation occurs  
ot understanding accidents happen | kids shut down  
one student left out of everything  
feelings hurt  
parents intervene or email teacher  
teachers intervene and discuss why behavior is not appropriate  
boys and girls may not be able to be friends again after inappropriate comments over facebook  
teaching students how to deal with winning or losing |
<table>
<thead>
<tr>
<th>Interviwee #</th>
<th>Interviewee's Age, Gender, Year of Experience, Race/Ethnicity</th>
<th>Student Population Description</th>
<th>Types of Interactions</th>
<th>Context of Interaction</th>
<th># of People Involved</th>
<th>Gender Involved</th>
<th>Perceived Mood of Interaction</th>
<th>Perceived Cause of Interaction</th>
<th>Consequence of Interaction</th>
</tr>
</thead>
</table>
| 240501      | Age: 25 Gender: Female Race: Caucasian Job: speech language pathologist, grades K-8th Experience: 2 years experience as speech language pathologist | Not a lot of racial/cultural diversity Mostly Caucasian Lower socio-economic status Most students receive free or reduced lunch Title 1 services | • teasing
• students not getting along
• talking older than age (inappropriate topics)
• being friendly and nice to one another
• generally kind to each other
• name calling
• tattling (“he said she said”)
• structured social groups with counselor, kids talk about problems
• little cliques formed
• shoving
• blaming others, pointing fingers at each other
• passing out party invitations
• kids bring in toys/dishes and share with friends
• pretending to use weapons in play
• arguing/crying
• talking about video games
• gossip | • large class sizes
• in classroom
• in hallways
• recess
• lunchtime
• structured social groups
• at lockers
• secretly, during class
• many peers are very close, or are relatives | Groups playing games
Most students are interacting together except a few | Interactions between boys, between girls, and between boys and girls | • frustration
• kids get really upset over tattling
• some kids feel isolated
• dramatic | • knowing/seeing inappropriate content in the media
• over-reacting about small things
• “snowball effect”
• acting over-dramatic
• hear inappropriate language at home
• playful games can turn into trouble, then students blame each other when a teacher gets involved | • positive intervention program
• kids blow things out of proportion, “he said she said”
• some kids feel left out
• some kids don’t fit in
• resolved through adult mediation
• kids told to keep toys/ personal items in locker |
| Intervie  |
|---|---|
| wee # | Interviewee’s Age, Gender, Year of Experience, Race/Ethnicity |
| 150402 | Age: 28  
Race: White  
Gender: Male  
Substitute teacher grades k-8th, previously permanent math teacher, and resource room teacher  
5 years of experience |
| Interviewers | Student Population Description |
| | Suburban and Urban  
Urban: Free and reduced lunch, Very under-privileged  
Urban: lower middle class, mostly African American, some Hispanic, some Caucasian  
Suburban: upper middle class, mostly Caucasian |
| Types of Interactions | Context of Interaction |
| | showing dominance in hallways  
cliques  
working on group activities  
physical dominance (pushed around)  
play tag  
pushing  
tattling  
throwing crayons  
physical threats (raising chair toward another student)  
dating (“who’s dating who?”)  
conflict between kid who wants to work hard and kid who doesn’t |
| | hallways, between classes  
in the classroom  
in classroom during group work  
recess |
| # of People Involved | Gender Involved |
| | Small groups  
2 student groups of students |
| | Female-Female  
Male-Male  
Female-Male |
| Perceived Mood of Interaction | Perceived Cause of Interaction |
| | some are frustrated because others aren’t completing work  
becoming over excited  
overly aggressive  
become confrontational |
| | lack of structure  
lack of accountability of parents and administrators  
kids trying to show leadership  
home-life, not having opportunity at home  
unable to let something go  
won’t listen to reason  
students are constantly defensive  
student gets injured during a game, and reacts by wanting to “fight”  
o no understanding something was an accident  
don’t want to appear weak  
lack of parent involvement |
| Consequence of Interaction | |
| | being accepted or not in a social situation  
students are sent out into the hallway  
adult mediation  
send students to office  
talk with counselor  
an argument develops between students |
<table>
<thead>
<tr>
<th>Interview #</th>
<th>Interviewee's Age, Gender, Year of Experience, Race/Ethnicity</th>
<th>Student Population Description</th>
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<th>Perceived Cause of Interaction</th>
<th>Consequence of Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>22032</td>
<td>Age: 58&lt;br&gt;Gender: Male&lt;br&gt;Race: Caucasian&lt;br&gt;Job: 6th grade teacher&lt;br&gt;Experience: 37 years of teaching experience</td>
<td>Lower middle class&lt;br&gt;Predominately Caucasian, 60 total kids in grade, 4 Hispanic, 1 African American&lt;br&gt;More than 50% being raised by a single parent</td>
<td>• touching, “bravado”, might seem aggressive but is sign of affection&lt;br&gt;• loud talking&lt;br&gt;• pushing/shoving&lt;br&gt;• gossiping&lt;br&gt;• cliques&lt;br&gt;• some are left out&lt;br&gt;• some boys “dating” girls, some not interested at all&lt;br&gt;• humor, potty humor, burping&lt;br&gt;• name calling b/w boys and girls&lt;br&gt;• kid goes after another kid&lt;br&gt;• fighting for a girls affection&lt;br&gt;• “verbal warfare”&lt;br&gt;• one friend being left out&lt;br&gt;• taking a push the wrong way</td>
<td>• in hallways&lt;br&gt;• less conflict in classroom because of teaching style/zero tolerance&lt;br&gt;• in the courtyard at lunchtime&lt;br&gt;• most conflict in hallways and at lunch</td>
<td>2 boys&lt;br&gt;Groups of students&lt;br&gt;2 girls</td>
<td>Boys, more physical conflict&lt;br&gt;Girls, cliques, excluding&lt;br&gt;3 girls, but only 2 can be “best” friends</td>
<td>• friendly&lt;br&gt;• acting tough&lt;br&gt;• playful mood turns into aggressive or hurtful one&lt;br&gt;• kids become upset&lt;br&gt;• jealousy</td>
<td>• starts from someone bumping into another student&lt;br&gt;• starts with a push, one student takes it the wrong way&lt;br&gt;• starts as fun, someone gets angry&lt;br&gt;• one boy called another boy a “sissy” for not fighting&lt;br&gt;• name calling, kids may not understand significance of a bad word&lt;br&gt;• exclusion of others&lt;br&gt;• conflict begins as response to name calling</td>
<td>• No tolerance for bullying at the school&lt;br&gt;• reprimand for name calling&lt;br&gt;• name calling might turn into physical response or a student may go and tell a teacher&lt;br&gt;• someone ends up left out of the group&lt;br&gt;• someone’s feelings get hurt</td>
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<tr>
<td>Positive Interactions (first pass) (Themes – second pass)</td>
<td>Emerging Positive Themes (third pass)</td>
<td>Negative Interactions</td>
<td>Emerging Negative Themes</td>
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<tr>
<td>• taking turns on the swing/slide (turn taking)</td>
<td>• Turn taking</td>
<td>• taunting other students (bullying)</td>
<td>• Bullying</td>
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<tr>
<td>• playing “rough” (N) (cooperative play)</td>
<td>• Cooperative play</td>
<td>• bullying (bullying)</td>
<td>• Physical aggression</td>
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<tr>
<td>• “pair share” (share with partner in class activity) (working in groups)</td>
<td>• Working in groups</td>
<td>• aggressive behavior (physical aggression/verbal aggression)</td>
<td>• Verbal aggression</td>
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<tr>
<td>• working on group activities or projects (working in groups)</td>
<td>• Organized games</td>
<td>• pushing/shoving (physical contact)</td>
<td>• physical contact</td>
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<tr>
<td>• “hands on” interactions (N) (physical contact)</td>
<td>• Talking</td>
<td>• playing “rough” (N) (physical aggression)</td>
<td>• tattling</td>
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<tr>
<td>• playing together (cooperative play)</td>
<td>• Animated communication</td>
<td>• “hands on” interactions (N) (physical contact)</td>
<td>• non-cooperative play</td>
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<tr>
<td>• playing touch football (organized game)</td>
<td>• Acknowledgement</td>
<td>• making verbal threats to one another (verbal aggression)</td>
<td>• arguing</td>
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<tr>
<td>• loud talking (talking/animated communication)</td>
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<td>• tattling on other students (tattling)</td>
<td>• jealousy towards a peer</td>
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<td>• high fives (acknowledgement)</td>
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<td>• physical fighting (physical aggression)</td>
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<td>(Urban)</td>
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<td>• one child will not let others take a turn to play a certain activity, with an item, or in a certain area (non-cooperative play)</td>
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<tr>
<td>• Playing Soccer (organized game/cooperative play)</td>
<td>• Organized games</td>
<td>• arguments/conflict over the rules of play or the rules of a game (arguing/non-cooperative play)</td>
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<tr>
<td>• Playing Football (organized game/cooperative play)</td>
<td>• Cooperative play</td>
<td>• conflict over being jealous about another’s clothing, belongings, or appearance (jealousy towards a peer)</td>
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<td>• Talking (talking)</td>
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<td>• trading toys or items to others (N) (playing/cooperative play)</td>
<td>• Playing</td>
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<td>• excluding peers</td>
<td>• Separating into Cliques (excluding peers)</td>
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<td>• verbal aggression</td>
<td>• name calling (verbal aggression)</td>
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<td>• inappropriate play</td>
<td>• playing with inappropriate things (inappropriate play)</td>
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<td>• attention seeking behaviors</td>
<td>• blurtling out (attention seeking behavior)</td>
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<td>• non-cooperative play</td>
<td>• trading toys or items to others (N) (non-cooperative play)</td>
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<td>• physical contact</td>
<td>• fidgeting with other peoples clothing or bag (physical contact)</td>
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<td>• arguing</td>
<td>• arguing over rules of game (arguing/non-cooperative play)</td>
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<td>• bullying (bullying)</td>
<td>• playing “keep away” (bullying)</td>
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<td>• isolating some students from group (excluding students)</td>
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<td>Rural</td>
<td>Physical contact</td>
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<td>Dating</td>
<td>Pushing/shoving (physical contact/physical aggression)</td>
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<td>playing</td>
<td>Gossiping (talking about other students)</td>
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<td></td>
<td>Humor</td>
<td>Forming cliques (excluding peers)</td>
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<td>Name calling (verbal aggression)</td>
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<td>Kids singling out other kids (excluding peers/bullying)</td>
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<td>Boys fighting for a girls affection (jealous behavior)</td>
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<td>&quot;Verbal warfare&quot; (verbal aggression)</td>
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<td>One friend left out of a group (excluding peers)</td>
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<td>Responding negatively to a friendly push (physical contact)</td>
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<table>
<thead>
<tr>
<th>Urban/Suburban</th>
<th>Working in groups</th>
<th>Working in groups</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Playing</td>
<td>Showing dominance to other students (verbal and physical) (verbal aggression/physical aggression)</td>
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<tr>
<td></td>
<td>Cooperative Play</td>
<td>Forming cliques (excluding peers)</td>
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<td></td>
<td>Dating</td>
<td>Pushing others around (physical aggression/bullying)</td>
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<td>Arguments (arguing/verbal aggression)</td>
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<td></td>
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<td>Pushing others too hard during games (organized games/physical contact/physical aggression)</td>
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<td>Making physical threats to others (verbal aggression)</td>
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<td>Throwing crayons at each other (physical aggression)</td>
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<td></td>
<td></td>
<td>Tattling (tattling)</td>
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</tbody>
</table>

- Physical contact
- Physical aggression
- Talking about other students
- Excluding peers
- Verbal aggression
- Bullying
- Jealous behavior
| (Rural)  | (Urban)  |  |
|----------|----------|  |
| • being friendly (acknowledgement) | • playing games (organized games/playing) |  |
| • generally kind to one another (acknowledgement) | • one friend playing with someone else (N) (including others) |  |
| • social group mediation (cooperative play?) | • flirting (dating) |  |
| • passing out party invitations (N) (including others) | • dating (dating) |  |
| • bringing in toys/items to share with friends (N) (including others) | • in your face communication (N) (animated communication) |  |

| Acknowledgement | Cooperativa play |  |
|-----------------|-----------------|  |
| • talking | • including others |  |

|  |  |  |
|---|---|  |
| • teasing (verbal aggression/bullying) | • students not getting along (non-cooperative play/arguing) |  |
| • talking about inappropriate topics for their age (inappropriate language/inappropriate play) | • name calling (bullying/verbal aggression/inappropriate language) |  |
| • tattling (tattling) | • forming cliques (excluding peers) |  |
| • showing (physical contact/physical aggression) | • blaming others when kids get in trouble (tattling) |  |
| • passing out party invitations (N) (excluding peers) | • bringing in toys/items to share with friends (N) (non-cooperative play) |  |
| • pretending to use weapons during play (inappropriate play) | • gossiping (talking about other peers) |  |

|  |  |  |
|---|---|  |
| • verbal aggression | • bullying |  |
| • non-cooperative | • arguing |  |
| • inappropriate language | • inappropriate play |  |
| • tattling | • physical contact |  |
| • physical aggression | • excluding peers |  |
| • excluding peers | • talking about other peers |  |

| Playing | Organized games |  |
|---------|-----------------|  |
| • dating | • including others |  |
| • animated communication | • animated communication |  |

<p>| | | |
|  |  |  |
|---|---|  |
| • yelling (animated communication/verbal aggression) | • cussing (inappropriate language:animated communication) |  |
| • one friend playing with someone else (N) (excluding peers) | • fighting (physical aggression) |  |
| • excluding peers (excluding peers) | • teaming up against a peer (bullying/excluding peers) |  |
| • inappropriate text messaging (inappropriate language) | • inappropriate messaging via social network sites (inappropriate language) |  |
| • in your face communication (N) (animated communication/verbal aggression) | • arguing (arguing/verbal aggression) |  |
| • being a sore loser or winner (non-cooperative play) | |  |</p>
<table>
<thead>
<tr>
<th>Context of Positive Interactions</th>
<th></th>
<th>Context of Negative Interactions</th>
</tr>
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<tbody>
<tr>
<td>- During structured class activities (Structured activities, during class)</td>
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<tr>
<td>- in the hallways (in hallways)</td>
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<td>- at recess (at recess)</td>
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<td>- on the playground (on the playground)</td>
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<tr>
<td>- at lunchtime (at lunchtime)</td>
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<tr>
<td>(Urban)</td>
<td>- Structured Activities</td>
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<tr>
<td>- During class</td>
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<tr>
<td>- in hallways</td>
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<td>- on playground</td>
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<tr>
<td>- at lunchtime</td>
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<tr>
<td>- Playing on playground in large groups (on playground, group interaction)</td>
<td></td>
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<tr>
<td>- Sitting around tables in groups (group interaction)</td>
<td></td>
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<td>- near lockers in hallway (in hallways)</td>
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<td></td>
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<tr>
<td>- during class time (during class)</td>
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<tr>
<td>(Urban)</td>
<td>- on playground</td>
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<td>- group interaction</td>
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<tr>
<td>- in hallways</td>
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<td>- during class</td>
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<tr>
<td>- Playing on playground in groups (Unstructured activities, group play)</td>
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<td>- Competitive outdoor games (group play, during organized games)</td>
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<tr>
<td>- Hallways (2 students interacting) (in hallways)</td>
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<tr>
<td>- during class (during class)</td>
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<tr>
<td>- Unstructured activities</td>
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<tr>
<td>- during organized games</td>
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<tr>
<td>- in hallways</td>
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<tr>
<td>- during class</td>
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</tbody>
</table>

| during class time (Structured activities, during class) |
| in hallways (in hallways) |
| (Rural) | - Structured activities |
| - during class |
| - in hallways |
| - in hallways (in hallways) |
| - at lunchtime (at lunchtime) |
| - in the courtyard (outside at lunch) (unstructured activities, at recess) |
| - Unstructured activities |
| - during organized activities |
| - at recess |

<p>| during class time (structured activities, during class) |
| in small groups in class (structured activity, during class, group interaction) |
| recess (at recess) | - structured activities |
| - during class |
| - group interaction |
| - at recess |
| - in hallways (in hallways) |
| - between classes (unstructured activities, in hallways) |
| - in the classroom during unstructured time (during class, unstructured activities) |
| - recess (at recess) |
| - on the playground (on the playground) |
| - Unstructured activities |
| - during class |
| - at recess |
| - on the playground |</p>
<table>
<thead>
<tr>
<th>(Urban/Suburban)</th>
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</thead>
<tbody>
<tr>
<td>• in classroom (during class)</td>
<td>• during class</td>
<td>• recess (at recess, unstructured activities)</td>
<td>• unstructured activities</td>
</tr>
<tr>
<td>• teacher mediated social groups (structured activities, group interaction)</td>
<td>• structured activities</td>
<td>• in hallways (in hallways)</td>
<td>• in hallways</td>
</tr>
<tr>
<td>• in hallways (in hallways)</td>
<td>• group interaction</td>
<td>• at lockers (in hallways)</td>
<td>• during class</td>
</tr>
<tr>
<td>• at lockers (in hallways)</td>
<td>• in hallways</td>
<td>• secretly during class time (during class)</td>
<td>• at lunchtime</td>
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<tr>
<td>• lunchtime (at lunchtime)</td>
<td>• at lunchtime</td>
<td>• lunchtime (at lunchtime)</td>
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<tr>
<td>• during class (during class)</td>
<td>• close inter-peer relationships</td>
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<tr>
<td>• many classmates are very close or related to one another (close inter-peer relationships)</td>
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<tr>
<td>(Rural)</td>
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<tr>
<td>• structured settings (structured activities)</td>
<td>• structured activities</td>
<td>• unstructured settings (unstructured activities)</td>
<td>• unstructured activities</td>
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<tr>
<td>• in the classroom (during class)</td>
<td>• during class</td>
<td>• recess (at recess)</td>
<td>• at recess</td>
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<tr>
<td>• recess (at recess)</td>
<td>• at recess</td>
<td>• on the bus (on the bus)</td>
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<td>• hallways (in hallways)</td>
<td>• in hallways</td>
<td>• hallways (in hallways)</td>
<td>• in hallways</td>
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<td></td>
<td></td>
<td>• social networking (outside of school peer communication)</td>
<td>• outside of school peer communication</td>
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<td>• via text messaging (outside of peer school communication)</td>
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</table>
Comparison between Urban, Suburban, and Rural Schools

<table>
<thead>
<tr>
<th>Urban</th>
<th>Suburban</th>
<th>Rural</th>
<th>Seen in all regions</th>
<th>Seen in two regions (Urban and Rural)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- taking turns on the swing/slide (cooperative play)</td>
<td>- working on group assignments (working in groups)</td>
<td>- touching/bumping in to one another (N) (physical contact)</td>
<td>- working in groups</td>
<td>- animated communication (Urban and Rural)</td>
</tr>
<tr>
<td>- playing “rough” (N)</td>
<td>- playing tag (playing/cooperative play/organized games)</td>
<td>- loud talking (talking, animated communication)</td>
<td>- physical contact</td>
<td>- acknowledgement (Urban and Rural)</td>
</tr>
<tr>
<td>- “pair share” (share with partner in class activity)</td>
<td>- dating (dating)</td>
<td>- dating (dating)</td>
<td>- organized games</td>
<td>- non-cooperative play (Urban and Rural)</td>
</tr>
<tr>
<td>- working on group activities or projects (working in groups)</td>
<td>- showing dominance to other students (verbal and physical) (verbal aggression/physical aggression)</td>
<td>- humor/joking around (playing/humor)</td>
<td>- being friendly (acknowledgement)</td>
<td>- jealous behavior (Urban and Rural)</td>
</tr>
<tr>
<td>- “hands on” interactions (N) (working in groups)</td>
<td>- forming cliques (excluding peers)</td>
<td>- generally kind to one another (acknowledgement)</td>
<td>- playing/cooperative play</td>
<td>- inappropriate play (Urban and Rural)</td>
</tr>
<tr>
<td>- playing together (cooperative play)</td>
<td>- pushing others around (physical aggression/bullying)</td>
<td>- social group mediation (cooperative play?)</td>
<td>- bullying</td>
<td>- inappropriate language (Urban and Rural)</td>
</tr>
<tr>
<td>- playing touch football (organized game)</td>
<td>- arguments (arguing/verbal aggression)</td>
<td>- passing out party invitations (N) (including others)</td>
<td>- excluding peers</td>
<td>- physical aggression</td>
</tr>
<tr>
<td>- loud talking (talking)</td>
<td>- pushing others too hard during games (organized games/physical contact/physical aggression)</td>
<td>- bringing in toys/items to share with friends (N) (including others)</td>
<td>- playing</td>
<td>- verbal aggression</td>
</tr>
<tr>
<td>- high fives (acknowledgement)?</td>
<td>- making physical threats to others (verbal aggression)</td>
<td>- talking about video games (talking)</td>
<td>- bullying</td>
<td>- tattling</td>
</tr>
<tr>
<td>- Playing Soccer (organized game/cooperative play)</td>
<td>- throwing crayons at</td>
<td>- touching/bumping in to one another (N) (physical contact)</td>
<td>- physical aggression</td>
<td>- verbal aggression</td>
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<tr>
<td>- Playing Football (organized game/cooperative play)</td>
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<tr>
<td>Urban/Suburban</td>
<td>Physical Contact</td>
<td>(N)</td>
<td>Physical Contact</td>
<td>Physical Contact</td>
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<tr>
<td>• aggressive behavior (physical aggression/verbal aggression)</td>
<td>• pushing/shoving (physical contact)</td>
<td>• playing “rough” ((N) physical aggression)</td>
<td>• “hands on” interactions ((N) physical contact)</td>
<td>• making verbal threats to one another (verbal aggression)</td>
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<tr>
<td>• tattling (tattling)</td>
<td>• responding negatively to a friendly push (physical contact)</td>
<td>• teasing (verbal aggression/bullying)</td>
<td>• students not getting along (non-cooperative play/arguing)</td>
<td>• talking about inappropriate topics for their age (inappropriate language, inappropriate play)</td>
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<td>clothing or bag (physical contact)</td>
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<td>arguing over rules of game (arguing/non-cooperative play)</td>
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<td>playing “keep away” (bullying)</td>
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<td>isolating some students from group (excluding students)</td>
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<tr>
<td>yelling (animated communication/verbal aggression)</td>
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<td>cussing (inappropriate language/animated communication)</td>
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<td>one friend playing with someone else (N) (excluding peers)</td>
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<tr>
<td>fighting (physical aggression)</td>
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<td>excluding peers (excluding peers)</td>
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<td>teaming up against a peer (bullying/excluding peers)</td>
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<td>inappropriate text messaging (inappropriate language)</td>
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<td>inappropriate messaging via social network sites (inappropriate language)</td>
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<td>in your face communication (N) (animated communication/verbal aggression)</td>
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<tr>
<td>arguing (arguing/verbal aggression)</td>
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<td>being a sore loser or winner (non-cooperative play)</td>
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BIBLIOGRAPHY


