UCLA
UCLA Previously Published Works

Title
Narrative story stem methodologies

Permalink

Journal

ISSN

Authors
Kelly, Kimberly R
Bailey, Alison L

Publication Date

DOI

Narrative Story Stem Methodologies: Use and Utility of Quantitative and Qualitative Approaches Across the Lifespan

Kimberly R. Kelly

California State University Long Beach

Alison L. Bailey

University of California, Los Angeles

We review three decades of literature across multiple disciplines that demonstrate the efficacy of *narrative story stem methodologies* (NSSM) to elicit responses that are projective of mental processes and to reveal what would otherwise be too complex or sensitive to communicate. The review synthesizes evidence for the extensive and diverse utility of NSSM. To accomplish this, we provide theoretical framing and historical background, describe assessment methods, resulting data and analytic approaches, and chart the empirical work of the past decade that relates story stem narratives to a range of developmental outcomes, and meaning-making processes. This synthesis of cross-disciplinary research provides the first comprehensive review of a truly innovative narrative methodology and includes work across periods of development, representing research that has primarily focused on children with increasing emphasis on adolescents and adults.

Introduction

This paper describes narrative story completion methodologies, a diverse and flexible research approach that harnesses the power of storytelling to reveal our inner realities, brings to the surface social discourses available for meaning making, and accesses what would otherwise be too complex or too difficult to communicate. Story completion techniques begin with a story stem, cue, or prompt – in other words, the start of a story. Consequently, data is generated by asking the participants to continue the story in verbal, or sometimes written, form and often with figurine or doll enactments.

As such, storytelling is foundational to two core components of narrative story completion methodologies: the elicitation procedure and the response data. The assessment elicitation procedure consists of one or more prompts that parallel classic narrative structure. The open-ended stems often embed a scenario, conflict, or dilemma (Woolgar, 1999), and suspend at the story high point. The prompts are constructed with the intention of eliciting responses that provide, to varying degrees, resolution to the proposed scenario, resulting in response data that are delivered in narrative form. The narrative response is then subjected to analysis. Depending on the researcher's epistemological lens and corresponding analytic approach, the qualitative responses may be quantified and the mental construct that the story prompt was meant to project evaluated (Bretherton, Ridgeway, et al., 1990); or, the qualitative responses may be retained to access and assess complex themes, sensitive topics, or socially undesirable responses (Clarke et al., 2019).

Over the past 25 years, as the range of analytic applications has widened, the number of assessments that utilize narrative story completion methodologies has swelled to at least three dozen published in hundreds of studies across developmental psychology, cognitive psychology, education, clinical psychology, and social work. To date, reviews (Bettmann & Lundahl, 2007; Farnfield, 2014; Holmberg et al., 2007; Page, 2001; Woolgar, 1999; Yuval-Adler & Oppenheim, 2015) have focused on the utility of story completion measures with young children, and their attention has weighted heavily to child socioemotional outcomes. However, to our knowledge there exist no cross-disciplinary synthesis of the state of the field, which additionally includes cognitive and behavioral outcomes into adolescence and adulthood and integrates qualitative work, despite these areas being particularly active for contemporary researchers.

Specifically, we focus on *Narrative Story Stem Methodologies* (NSSM), the subset of story completion methodologies that utilize verbal or written story beginnings to structure a narrative form across the elicitation procedure and verbal response, highlighting the central role of narrative inquiry as core to NSSM task development, implementation, and analysis. We consider all measures that utilize a verbal stem, prompt, or cue as the story beginning, as well as those that do and do not use doll play to elicit narrative responses as age appropriate. We synthesize story stem research with outcomes and correlates that measure cognitive, social, attitudinal, socio-linguistic, and other meaning-making processes. Moreover, the paper includes quantitative and qualitative studies across periods of development, representing research with children, adolescents, and adults. Finally, although studies on narrative story completion methodologies that utilize picture story prompts or word-outline story cues are not discussed here, we direct readers to George and West (2011) and Steele et al. (2014) for examples.

Theoretical Framing and History

That adults and children have robust internal worlds anchors the study of human cognition and development, from Freud's (1933) first conceptualization of mental material that exists beyond the reach of conscious access to Bowlby's (1988) notion of internal working models of self, others, and relationships that shape expectations for and interpretations of future interactions. We have come to understand that children form internal working models of their social world and interpersonal relationships that reflect their lived past experiences (Bowlby, 1982). From the gradual accumulation of experience over the life course, working models take the form of mental schema, or scripts, which represent and organize information about our world, the people and objects in it, and the events that take place (Hudson et al., 1992; Nelson, 1986). As such, script representations of the social world facilitate how we make meaning of new experiences and anticipate future interactions, allowing for efficient processing of social and emotional input (Bretherton & Munholland, 1999; Fivush, 2006).

Moreover, from Bruner's (2002) connection between storytelling and the self to Nussbaum's (2001) postulations on inner emotional realities, scholars argue the integral role of narrative in reflecting, shaping, and indeed making our inner representations. Bruner (1986) posited that there exists a deep structure to narrative, implying that narrative structure and content are reflected from within. He argued that stories are the realization of this deep structure, revealing psychological reality and processes (Bruner, 1986, p. 92). His later work proposes the central role of narrative in shaping inner representations of self and others (Bruner, 2002). In other words, stories construct and reflect the internal scripts that organize, make meaning of, and predict our social worlds. These seminal works have motivated and fortified over time research

approaches that use narrative methodologies with children, adolescents, and adults to access, project, and understand their inner representational realities and meaning-making processes.

The origin of NSSM in psychological research has been traced (e.g., Woolgar, 1999; Yuval-Adler & Oppenheim, 2015) to early psychoanalysts' use of projective techniques in clinical interventions (Winnicott, 1971). For example, early psychoanalysts used with adults, and later with children, the Thematic Apperception Test (Morgan & Murray, 1935), a personality assessment in which the subject is asked to tell a dramatic story about ambiguous picture cards. In her work with children in treatment for psychological disturbances, Melanie Klein (1932/1975) pioneered a type of play therapy in which she used story-based therapeutic doll play. Unique from psychoanalytic talk therapy with adults, play served as an age-appropriate adaptation of the therapeutic process for the developing cognitive and linguistic capacities of young children. Doll play therapy, in particular, allows children to *tell and show* the dolls' actions and feelings, which in Klein's view (1932/1975) projects meaning onto the doll enactments that can then be interpreted as symbolic of the child's own thoughts and feelings.

Through the mid-20th century, doll play methods were adopted with much fervor by researchers and practitioners alike. Developmental researchers tested, evaluated, and documented the technique's suitability for investigations with children and adolescents (Levin & Wardwell, 1962). Early scholars pioneered the method to investigate psycho-social phenomena, such as racial identity (Clark & Clark, 1947) and aggression (Bach, 1945), advancing social theory. Following the first wave of doll play studies, Sears (1947) called for the standardization of the techniques. It became clear that projective doll play must follow the same standards for structure and rigor that are expected for experimental design if researchers hoped to amass data and draw conclusions about response themes that could then be compared across studies for purposes of

generalization. Researchers concurrently introduced to the elicitation procedure a prescriptive organization of play materials (Pintler, 1945) and the story completion technique with one or more standardized story stems (Goodman, 1946; Lynn & Lynn, 1959). In this second wave of assessments, adding a story stem to the elicitation protocol instituted a standardized open-ended prompt derived from theory-driven constructs or based around meaningful topics. These early story stem instruments paved the way for the current generation of assessments.

The third wave of story stem instruments, including the MacArthur Story Stem Battery (MSSB) and the overlapping Attachment Story Completion Task (ASCT) (Bretherton, Ridgeway, et al., 1990; Bretherton, Prentiss, et al., 1990) established a gold standard for story completion methodologies, which is characterized by highly controlled and standardized procedures that provide both a physical and contextual structure for doll play and story completion. In recent qualitative NSSM work with adults, researchers adopt a social constructionist lens, which positions story stems as a method to examine the social discourses on which participants rely for making meaning of their experiences (Clarke et al., 2015), or the knowledge systems that inform participants' thinking (Gravett, 2019), while constructing their narrative in response to the story stem. As such, the content of the stories themselves is examined in qualitative studies often using positivist thematic analysis to gain access to meaning-making processes through constructed stories that reflect social or cultural discourses (Kitzinger & Powell, 1995). In both quantitative and qualitative studies, the story responses are recorded and can be analyzed for a range of outcomes, including narrative organization (Yuval-Adler & Oppenheim, 2015) and content themes by way of story mapping (Clarke et al., 2019). As such, the third wave tradition places narrative inquiry and methods at the heart of NSSM.

NSSM Elicitation and Analysis Procedures

In this section, we detail administrative approaches with third-wave NSSM as an elicitation technique and the resulting narrative data. We then discuss several quantitative and qualitative techniques that have been developed for analyzing child and adult narrative responses.

Administration of NSSM Protocols

The most common rendition of the NSSM procedure involves the interviewer presenting the participating child (typically ranging from 3-14 years) with a short story scenario, often with dolls to represent characters. To make the NSSM as valid and reliable an instrument as possible, there has been a strong emphasis on standardizing the administration of the story prompts in key areas of administration, including

> the pacing and presentation of the stories in a way that is sensitive to the child's
> emotional state…careful control of the exact wording of the scripts, the timing and
> wording of follow-up probes, the specific dolls and props that are used, their arrangement
> on the table, and so on (Oppenheim, 2006, p. 776).

As one of the earliest and most widely used versions of the third-wave NSSM approach, the MSSB (Bretherton, Oppenheim, et al., 1990) administration shares core features with many other modern NSSM procedures (see Table 1). Core features include (1) a warm up activity, (2) a

minimum of four open-ended story scenarios that can cover different target themes, (3) ending the story prompt at the high-point, (4) eliciting the completion of the story by directing the child to tell and show what happens next, and (5) employing dolls and other props that can be used by the participant to act out their responses and to voice the characters reactions. Several NSSM procedures also include manuals for coding the resulting narratives, the details of which we discuss further below.

@@ Insert Table 1 about here

In the case of the MSSB and several other NSSM procedures, the protocol begins with a warm-up story to ensure the child understands the task. In the warm-up session, the interviewer introduces to the child a prototypical story script assumed to be familiar to all young children (e.g., *The Birthday Party*) with a family of dolls (e.g., plastic Playmobile(™) figures) and props (i.e., a toy table) in a set arrangement and demonstrates how the dolls can be used. The interviewer describes a birthday party for one of the child characters using dolls that are matched with the gender of the participating children or selected by the children to be most like them, then asks the child "Can you get the family ready at the table? Show me and tell me what happens now". Establishing that the child can readily converse, manipulate the dolls, talk for characters, and produce a response that is on the target theme, the interviewer uses encouragement and demonstrations, while adhering to standard prompts for the administration of the procedure that are important for drawing valid inferences from the resulting MSSB data and similarly argued for other NSSM approaches (e.g., Woolgar, 1999).

During the standard prompt administration, the interviewer may encourage the child by using prescribed prompts only. For example, to keep the child on task with the issue at hand ("What happens about Susan/George spilling the juice?" in the MSSB "Spilled Juice" story

prompt) and to ask non-leading elaboration questions ("Did anything else happen?"). Non-leading clarification questions can also be asked if the narration and actions are not clear to the interviewer ("What are they doing?"). Both verbal or non-verbal responses are candidate data for later coding (e.g., Dealy et al., 2019).

Modifications to the administration procedures can be made for older children and adults. For middle childhood and adolescence, adaptations of the story stems can be made to better reflect developmental changes in later childhood, including increasing stress-inducement level and adjusting story content (Granot & Mayseless, 2013). Doll use can also be phased out. Computerized administration with animated story beginnings and automated child response recordings (e.g., Minnis et al., 2010) can be used with school-age children and beyond. For adults, administration can take place as written story stem scenarios either in person (e.g., Frith, 2013) or via online survey software, which is typical of qualitative NSSM studies (e.g., Clarke et al., 2015; Tischner, 2019), and the number of story stems can be reduced to as few as one for qualitative coding and analysis (see analysis section below).

Nature of the Narrative Response Elicited by NSSM

The open-ended nature of story stems used in the NSSM protocols lends itself to participants producing their own original narratives in response to the scenario stimulus. Inclusion of a dilemma component in the NSSM and allowing the child to resolve it means that the story stems and responses mimic a classic narrative structure found in the stories of European North American neurotypical children (McCabe & Peterson, 1991): the prompt first provides *orientation* information (e.g., in the MSSB "Mom's Headache" story stem, "Mom and

Susan/George are sitting and watching TV"), then offers *complicating actions* (e.g., "'Oh Susan/George, I have such a headache! I just have to turn this TV off and lie down!' (mom gets up and turns the TV off)"). The story stems typically end at a *high-point* (i.e., the narrative climax, e.g., Rollins et al., 2000) via the embedded dilemma (e.g., "'Ding-dong' (making a doorbell sound). It's Susan/George's friend, Laura/Dave. Child 3: 'There's this really neat show on TV, can I come in and watch with you?'"). This stopping point with the story's dilemma signals the need for a *resolution* in the narrative response (Woolgar, 1999).

In the following example from our own work (Bailey, forthcoming; Bailey & Zwass, 2015), the experimenter reads the child participant a story stem about a communicative breakdown due to differences in languages spoken by third-graders in a classroom. In the story stem, the teacher character has asked students to build a model of the tree root system but a monolingual English-speaking student character (Sophie) and a monolingual Spanish-speaking student character (Carlos) have different interpretations of what the teacher said. A third student character (Sarah) is bilingual.

(1)

Interviewer: Can you show me and tell me what happens next?

Child: Then Sophie says, 'I don't understand you.' And then Carlos says, 'I don't understand you.' He doesn't understand her because she speaks English and he speaks Spanish. And then Sophie comes and she says to Carlos, 'Carlos, she's saying that…that let's make a clay of the system of the root.' And then she [Sarah] says to Sophie, 'Sophie, he's saying, 'Let's make. Yes, let's make a system of the root.'' And then they all make a system of the root. And then the teacher liked it.

Interviewer: Uhumm.

Child: And that's all.

In this example, the participating child is able to provide a classic story *resolution* by using the bilingual character as a go-between and the story characters all agree to make the tree root system together. The story ends with the final classic narrative macrostructure – a *coda* to wrap up the conflict (i.e., the teacher likes the characters' clay model).

Approaches to Analysis

How participants solve the dilemma or create actions, thoughts, or dialogue for the characters as they extend and eventually complete the story is the focus of NSSM analyses with narrative responses like the child's above. In this section, we focus on common quantitative and qualitative approaches to analyzing resultant narrative data.

Quantitative Coding and Analyses

Quantitative coding and numerical analysis of the quintessentially qualitative narrative data have commonly focused on the content and structure of responses to the NSSM protocols, as well as participant behaviors or performance characteristics during the elicitation process. In the case of coding behaviors while storytelling, coding can be done in tandem with transcribed audio/video

data or directly from videoed data. A priori content or thematic coding focuses on what the story includes, namely the topics that the story stem scenarios are intended to elicit such as child-parent or child-teacher attachments, affective responses to family or peer conflicts, abilities to solve a dilemma, or children's stances towards the moral actions (or inactions) characters might take (See, for further review of early childhood coding targets and content theme codes, Yuval-Adler & Oppenheim, 2015).

Structural coding focuses on how participants put their stories together, specifically the manner of responses such as whether stories are coherent (e.g., Müller et al., 2014), or contain certain language choices (e.g., codeswitching between English and Spanish, Vu et al., 2010). Depending on a study's research questions, such coding may then be correlated with other aspects of the stories and even other measures of internal and external factors that influence different developmental processes (See below for discussion of different example study findings using the NSSM approach).

Behavioral coding focuses on performance characteristics, particularly children's interaction with the interviewer/researcher during the elicitation procedure. For example, some coding systems for the MSSB and related NSSM approaches (e.g., ASCT/ASCT-R) include directness and openness, avoidance or reluctance to engage in the story, or children's controlling behaviors during interaction (e.g., Robinson & Mantz-Simmons, 2003; Kelly, 2015). This coding not only reveals key characteristics of the child but can also indicate how valid and reliable the narrative data might be regarding the thematic and structural codes that may also be applied. For example, a child who the researcher determines is disengaged with the NSSM protocol may not generate a narrative response sufficient for other coding decisions to be meaningfully made.

Coding is commonly based on dichotomous coding, multi-category coding, ordinal (Likert) scales, or combinations of the three. With dichotomous coding, the presence (0) or absence (1) of a targeted feature such as secure/insecure attachment displayed in the narrative response or engaged/disengaged during the storytelling session is determined. Many NSSM approaches, including the MSSB, categorize young children by theory-based attachment strategies inherent in their narrative responses, such as representations of the attachment figure as a source of comfort for a secure (Type A) categorization and inhibited distress displays for an insecure-avoidant (Type B) categorization. A narrative response might be categorized by one overall theme (e.g., threat or danger to the children in the stories) and then the number of discrete story stem responses of this type may be tallied (Dodd et al., 2012). Use of scales provides a measure of the magnitude of a feature in the narrative responses rather than a simple count of categories or coded stories. For example, Verschueren and Marcoen (1999) rated narrative responses on the ASCT along a 5-point scale for attachment security based on story content (e.g., characterization of caregiver-child interactions) and the child's willingness to respond. The sum of the scales applied to five stories then created a continuous global attachment security score.

Several coding approaches follow a two or three-step process of first coding features of the story responses using scales and then on the basis of these results assigning individual stories and/or collections of story responses by the participant to a category or status such as type of attachment strategy. For example, Green et al. (2000) first subjected 33 different coding features of the Manchester Child Attachment Story Task (MCAST) to 9-point continuous scales and used the sum of the scales to assign an overall "strategy of assuagement" (i.e., attachment Type A, B, or C) for each story. The predominant classification across all the stories was then given to the participant.

Coded data can be subjected to descriptive analyses and/or inferential statistical analyses can be used to test hypotheses regarding story stem response differences between groups. Alternatively, aspects of the story stem responses are used as predictors of target outcome behaviors, emotions, self-concepts, etc. as detailed in the later section on applications of the NSSM in specific studies.

Qualitative Coding and Analyses

Examples of qualitative coding and analyses of resulting narrative responses are less numerous than quantitative techniques described above and their applications with child data are fewer (see Bailey et al., 2015, and Franieck & Page, 2019, for exception). However, as Gravett notes (2019, p. 5) "story completion can offer the flexibility for a number of analytical approaches to be employed depending on the researchers' theoretical framework and desired aims". Inductive thematic coding, discourse analysis, story-mapping, and rhizomatic analysis are types of qualitative analysis that have all been attempted with story stem completion data. For example, thematic coding that inductively derives themes from the narrative data rather than imposes an a priori coding scheme on the story stem responses can reveal new understandings about a topic or indeed new concepts not anticipated in existing literature. Rather than quantify the frequency of these themes, grounded theory approaches to analysis can attempt to build new theories about connections between themes. There remains, however, internal debate about the use of frequencies, proportions, or quantifiers in analyses of the responses generated by NSSM (Clarke et al., 2019), which likely reflects the larger debate about quantification in the qualitative field (e.g., Wu et al., 2016).

In the case of story mapping, this approach is used to identify themes and patterns at each stage of the story, which may reflect the linear canonical narrative structure of a beginning, middle, and end. These qualitative coding and analysis approaches have primarily been applied in studies using story stem completion as a data collection technique with adults in psychological and health-related studies (Clarke et al., 2019; Walsh & Malson, 2010) (See Assessing Social Discourses and Meaning Making Processes with NSSM below). Rather than posit that the resulting analyses reveal inner representations of study participants, qualitative approaches are primarily guided by sociocultural or poststructuralist theories that emphasize social discourse practices.

Application of Story Stem Techniques

The evolution of the field has been documented over time in a series of reviews, mostly on the technical aspect of story stem measures (e.g., Bettmann & Lundahl, 2007; Farnfield, 2016; Page, 2001; Woolgar, 1999), as introduced at the start of this paper. Due to space constraints in this paper, we direct readers to Yuval-Adler and Oppenheim's (2015) excellent overview of the evidence (up to 2012/2013) of links between story stem assessments and child, caregiver, and family functioning.

In the intervening years, dozens more studies with story stems at their methodological core have been published. The next section presents our summary of scholarship from the past decade that provides empirical evidence relating to representational assessment with NSSM, its antecedents, and developmental outcomes in early childhood to adolescence. Additionally, we

summarize the emerging literature that demonstrates the utility of NSSM for assessment of social and meaning-making processes into adulthood.

NSSM and the Intergenerational Transmission of the Attachment Working Model

Using NSSM to assess the child's internal working model of attachment continues to enjoy popularity in the child development literature, including recently as a primary method used in a monograph on the structure and development of attachment representations (Posada & Waters, 2018), and in a special issue on secure-base representations and social competence (Vaughn et al., 2019). Recent research using NSSM has found empirical support for the theoretical association between maternal and child attachment representations, adding to extant scholarship addressing the intergenerational transmission of attachment. Howes et al. (2011) reported concurrent links between the security of maternal attachment representations as measured on the Adult Attachment Interview, the gold standard for adult attachment measurement, with child attachment and coherence scores on the MSSB with a U.S. sample of 4.5-year-old children from Mexican-heritage families. With 5-7-year-old children, George and Solomon (2016) similarly found maternal attachment representation scores as assessed with an attachment interview were related to child attachment classifications assessed on the Attachment Doll Play Assessment (ADPA). Both studies found correspondence between mothers with secure, open, and flexible responses in the attachment interviews and children's security scores in the story completion tasks, providing evidence for the intergenerational transmission of attachment.

Relatedly, research in the past decade has explored parent and family communication style as a mechanism for the intergenerational transmission of attachment (Fivush & Waters,

2015). Evidence for the association between maternal communicative style and children's story stem narratives has been demonstrated with children through middle childhood and across cultural contexts. A pair of studies by Kelly (2016, 2018) with 3- to 6-year-old children found concurrent links between maternal narrative style during parent-child conversations about recent past events and child attachment representations on the ASCT-R, such that children whose story stem narratives were classified as secure and coherent had mothers with a more autonomy-supportive and responsive narrative style than their insecure counterparts. An increasing number of studies with international samples have also demonstrated the link between maternal communication and child story stem narratives. Using the ASCT with 3- to 5-year-old South Korean children, Shin (2019) revealed significant, though modest, associations between children's secure representations and maternal narrative elaboration and mental state talk. Apetroaia and Waters (2018) provided evidence of a strong association between maternal communication style and the ASCT narratives of Romanian preschoolers, such that mothers with a more elaborative and supportive style in emotion-laden conversations had children with more secure attachment representations. In a study of Middle Eastern refugee children, family communication style about past traumatic experiences has also been linked to child story stem narratives, such that families who more openly discussed difficult past experiences had children with secure attachment representations (Dalgaard et al., 2016).

Attachment Story Stems and the Caregiving Environment

Factors in the child's caregiving environment, parenting, and early life circumstances in particular, also relate to their story stem attachment narratives. More harmonious and balanced

maternal interactions with the child during storybook reading were related to children's secure attachment representations on the ADPA (George & Solomon, 2016). Also, more synchronous and reciprocal maternal interactions with the child while reminiscing have been linked to children's secure ASCT-R narratives (Kelly, 2018). A study with Spanish children (Román et al., 2012) indicated that early adverse life circumstances, including adoption and institutionalization, were related to insecure attachment representations as assessed with Story Stem Assessment Profile (SSAP; Hodges et al., 2000).

Attachment Story Stems and Socio-Emotional Sequelae

The last 10 years have resulted in accumulating support for relations between children's attachment representations and socio-emotional, cognitive, and psychological functioning. Evidence consistently indicates links between children's story stem narratives and adaptive socio-emotional outcomes. The set of studies using the ASCT in Vaughn et al.'s (2019) special issue demonstrated that preschoolers' secure base representations were linked to a range of adaptive functioning, including teacher-child relationship quality, peer acceptance, and observed social competence (Nichols et al., 2019), as well as parent-reported social competence in children from Mexico and Peru (Nóblega et al., 2019) and South Korea (Shin, 2019).

In a study of normative, adopted, and institutionalized school-age children from Spain, Román et al. (2018) reported links between secure attachment representations as assessed by SSAP and greater social adjustment later in childhood. In one of the few studies to compare preschool children's representations of mother, teachers, and peers, Vu (2015) demonstrated that MSSB teacher-child and peer-child (but not mother-child) representations were related to

teachers' ratings of their social competence. In one of the only studies to examine older

children's (10- to 12-year-olds) social-cognitive functioning and story stem narratives, Granot

and Mayseless (2013), found that attachment classifications via their story completion task were

differentially related to prosocial, antisocial and distress orientations toward peers.

Attachment Story Stems, Cognitive Correlates, and Psychological Functioning

The literature also provides evidence for cognitive correlates of children's story stem narratives.

Two studies have found concurrent and longitudinal links between preschool children's

executive functioning and their attachment narratives. Executive functioning at age four has been

found to predict MSSB prosocial themes and narrative coherence at age six (Dealy et al., 2019).

Nichols et al. (2019) concluded that preschool children's story stem narratives and executive

function were intertwined, given the strong concurrent relations reported in their study. They

also reported associations between secure ASCT narratives and higher effortful control, a

measure of temperament and self-regulation. Attachment representations on the ASCT-R have

also been correlated with language competencies, including general language ability (Dealy et

al., 2019) and personal narrative structure (Kelly, 2015). In Kelly's study, for example, preschool

children with ambivalent attachment representations were more likely to have developmentally

delayed discourse.

Prior study has established longitudinal effects of early attachment representations and

preschool children's externalizing and internalizing behavior problems. Dalgaard et al.'s (2016)

study of refugee families after traumatic family experiences adds recent evidence of similar

relations to externalizing behavior in middle childhood, citing links between children's

attachment representations on NSSM and parent report of child problematic conduct, hyperactivity and inattention, but mixed results for internalizing behavior problems.

Extending Assessment with NSSM Beyond Attachment

The flexibility and utility of the NSSM approach are illustrated in its application beyond the assessment of attachment representations. Researchers have employed existing NSSM and developed novel story stems tasks to measure an increasing variety of internal representations across developmental domains with populations of young children through adolescents. Recent uses of the MSSB demonstrate its suitability for assessing psychological functioning, particularly as it relates to family functioning representations. Langevin et al. (2020) found that maltreated children's story stem narratives were more dysregulated in terms of coherence and denial with fewer positive themes than their non-maltreated counterparts. Plokar et al. (2018) extended the use of the MSSB to middle childhood and early adolescence to develop a novel assessment of dissociative symptoms in maltreated children (i.e., the Child Disassociation Assessment System) and found medium to large group differences in dissociative symptoms when comparing a clinical group of maltreated children with a non-clinical group. In one of the only qualitative studies using a set of MSSB stems, Franieck and Page (2019) compared the narrative responses of three siblings, ages 5, 8, and 11 years, who had lived unhoused for much of their lives. The youngest child relied on doll play enactments to complete the stories, and all three children's narratives acknowledged family conflict, conveyed care (or lack thereof) by their parents, and expressed emotional (dys)regulation.

Especially notable are three longitudinal studies that utilized large samples for story stem investigations (Davies et al., 2018; Martoccio et al., 2016; Yoo et al., 2014). With a sample of 575 families, Martoccio et al. (2016) investigated the pathways between maternal depression, harsh parenting, and dysregulated representations. Using MSSB story stems and one stem from the Family Stories Task (Shamir et al., 2001), their results showed that harsh parenting mediated the relationship between maternal depression and dysregulated representations. Davies et al. (2018) examined negative family representations using the MSSB, attention to negative emotions, and externalizing behavior problems in a sample of 243 preschoolers. Their results support the schema-based, top-down argument about the role that children's family representations play in behavioral outcomes, indicating that negative representations exacerbate children's susceptibility to interpreting emotional input as negative or threatening, which in turn predicts children's externalizing behaviors. In longitudinal investigation with 400 families, Yoo et al. (2014) tested the intervening effects of parent-child interactions and maternal perceptions of child behavior on the relationship between maternal distress and children's representations of family cohesion or conflict. Findings showed that MSSB story stems could be reliably coded to understand children's representations of family cohesion-conflict. Also, mothers who experienced more distress with their infants had more negative perceptions of child behavior and less positive interactions with their young children, which in turn predicted children's negative family representations.

Recent applications of the ASCT focus on children's social functioning with peers. Garner et al. (2020) examined longitudinal relations of prosocial and antisocial representations to peer victimization two months later and prosocial behavior three months later with a sample of 118 preschoolers. Their findings indicated that entering school with positive expectations of peer

relations buffered children from negative peer interactions and, in turn, promoted more positive early school adjustment. Gullón-Rivera (2013) used a Spanish version of the ASCT focusing on self-representations to assess Puerto Rican Kindergarteners' self-worth and self-evaluation. They found that more positive self-evaluations were associated with greater prosocial behaviors with peers at school.

Many researchers have combined stems from existing story stem tasks or have developed novel stems to address new questions in child development and/or to use with unique populations, including extending NSSM implementation into adolescence and exploring children's representations of self, teachers, and peers in settings outside of the home. For example, King et al. (2014) used story stems to compare the coherence and length of fictional narratives produced by adolescents (11-14 years) with and without Autism Spectrum Disorder. Bailey and colleagues' Language Attitudes Story Prompt (LASP) protocol, a linguistically and developmentally appropriate assessment for preschool and school-age children, measures socio-linguistic cognition (i.e., awareness and attitudes toward other languages and their speakers) with mono- and bilingual Spanish-English speakers (Bailey & Zwass, 2015). Bailey et al. (2015) accompanied quantitative ratings of children's responses with inductive, open-coding to examine how young children understood bilingualism to work. Emergent themes (e.g., characters' strategies of translating or finding an interpreter to solve language barriers) revealed differences in metalinguistic awareness across age-groups and language status.

To study children's representations of conflict within the childcare setting, Müller et al. (2014) developed two new stems and selected one from the MSSB. Results showed greater family risk exposure predicted more aggressive themes in conflict narratives, and higher narrative coherence predicted fewer internalizing and externalizing behaviors. Apavaloaie et al.

(2014) incorporated stems from the MSSB, ASCT, and others to assess negative emotions and self-conscious representations with Romanian children in middle childhood and early adolescence.

A set of batteries has been developed that assesses negative representations relating to childhood anxiety. Dodd et al. (2012) developed story stems to assess interpretation bias in clinically anxious 3- to 4-year olds. They found that clinically anxious children were more likely to perceive ambiguous story stems as threatening, and anxious representations were in turn related to childhood anxiety at a 1-year follow-up but the relationship diminished by middle childhood. To better understand social phobia relating to the transition to the start of school, two studies adapted the Dolls' House Play (DHP) task (Murray et al., 1999): In a longitudinal study with 122 preschool children, Pass et al. (2012) explored the role of maternal social anxiety and preschoolers' anxious representations in children's early school adaption. They found that clinically anxious mothers were more likely to have children who told highly anxious, negative story stem narratives, as compared to non-clinical mothers, and children's anxious school representations were in turn related to teacher reports of anxiety-depressive symptoms and child social worries at the end of Kindergarten. Murray et al.'s (2014) longitudinal study with 186 families examined whether maternal narrative style while reading a book about starting school mediated links between maternal social anxiety and children's anxious school representations. Findings indicated that anxious mothers talked more about the book topic as potentially challenging and threatening with less encouragement, which then predicted children's negative school representations. In a novel adaptation of Murray et al.'s DPH task, Ramchandani et al. (2011) revised the story stems to assess health anxiety in older children (6-9 years old)

experiencing chronic illness. They found that the story stem health narratives of children with chronic illness were more inhibited and included more serious health outcomes.

Assessing Social Discourses and Meaning Making Processes with NSSM

We now turn to the emerging evidence from qualitative NSSM scholarship. Story completion methods have found favor among qualitative researchers who study complex and often difficult-to-express topics with adults. Clarke et al. (2019) argue that the third-person, story-based elicitation format circumvents pressures of social norms, which may otherwise introduce social desirability bias and limit the extent to which honest, accurate participant responses can be obtained, and allows the participant to speak about sensitive topics with some distance rather than reporting out potentially threatening first-person accounts. As such, the NSSM approach has allowed the qualitative literature to investigate topics including heterosexual relationships, sex, and dating (Frith, 2013; Hunt et al., 2018; Shah-Beckley et al., 2020); same-sex infidelity (Clarke et al., 2015); relationships with sex robots (Trioano et al., 2020); online pornography (Wood et al., 2017); as well as weight, body image, and eating disorders (Jennings et al., 2019; Tischner, 2019; Walsh & Malson, 2010).

Several recent studies have innovated NSSM uses by combining story stem elicitation techniques with other data collection methods or by extending the traditionally qualitative thematic analysis approach with other analytic approaches. For example, Gravett (2019), in an investigation of new students' experiences in transition to college, supplemented the story stem procedure with a semi-structured interview to facilitate participants' reflection on their narrative responses and connections with their own educational experiences. Cravens and Whiting (2016)

conducted a large-scale, multi-method study with adults (18-54 years) to explore understandings

of what constitutes infidelity in the virtual space. They used content analysis with logistic

regression to find that participant gender differentially predicted infidelity themes in their story

stem narratives. To examine appearance norms and expectations for bisexual, lesbian and

straight adults, Hayfield and Wood (2019) supplemented an ambiguous story stem about going

on a date by asking their participants to build a virtual avatar of their story protagonist. Thematic

analysis of the narrative response and deductive coding of the avatars' appearance indicated that

heteronormative appearances expectations (e.g., unrealistic beauty standards and gender norms

in appearance and behaviors) dominated the participants' representations of the story characters

across the sexuality spectrum.

Limitations of the NSSM Approach

With much to commend the NSSM protocol as a developmentally and socially appropriate

approach to understanding and revealing the inner lives of children and adolescents and the

adopted discourses of adults, we nevertheless identified important limitations: the contested

language constraints on verbal expression of representations of internal processes, including

influence of individual differences, and the cultural and cross-linguistic differences still needing

consideration.

Possible Language Constraints

Although story stems may be an alternative measure to ameliorate the documented effects of using self-reports, interviews, and priming procedures with children (Dodd et al., 2012), using story stems raises the issue that language may be a construct irrelevant variable. That is, language abilities are inadvertently measured instead of children's mentalizing. For example, while some studies report no connection between language abilities and narrative coherence (Kelly, 2015; Vu, 2015), several studies have found a relationship between general language ability (e.g., Dealy et al., 2019), or narrative ability in particular (Yoo et al., 2014) and narrative coherence in narrative responses. Müller et al. (2014, p. 707) report that in turn there is an association between children's narrative coherence and better adjustment, and that coherence "had a buffering effect on the negative relation between family risk on children's internalizing problems". Their results and the results of other studies, however, still hang on how well children control the coherence of their stories which may have less to do with representations of their inner worlds and a lot to do with their language abilities instead. Attempts to control for language abilities in some studies may not be getting at the relevant language skills. Often, studies have focused on including scores from standardized language proficiency assessments (e.g., Preschool Language Scales) that do not directly assess the requisite narrative discourse skills that are called upon by the NSSM approach.

Furthermore, the narrative discourse ability that is called upon to complete the story stems requires children as young as three years to provide the *resolution* macrostructure, something that child development research has found to be later occurring in narrative discourse development (McCabe & Rollins, 1994). Differences in children's narrative discourse abilities, as well as language abilities more broadly, may be some of reasons for the reported differences in children's performances using NSSM.

More recently, Bailey (forthcoming) reports that when children shifted from kindergarten to first grade they added more asides about their own personal experiences to their responses to story stems. Consequently, a separate protocol was created to elicit personal narratives from the same children when they entered third grade. Comparing both story stem narrative responses and the personal oral narratives collected at that grade, children provided more complex attitudes about the languages they spoke (i.e., they held both negative and positive attitudes) in their personal narratives than in their resolutions to stories stems by this age (Bailey, forthcoming). Results from the two approaches suggest NSSM may impose stricture on children trying to convey ambiguities in their feelings. Personal narrative techniques, at least in the middle childhood years, may allow students to respond to open-ended prompts with their own more nuanced perspectives than story stems allow, suggesting that there may also be an age boundary beyond which story stems are no longer as effective at getting children to produce meaningful responses due to the restrictions placed on them by the format of this more constrained narrative discourse.

Cultural and Cross-Linguistic Considerations

To date, most quantitative studies and all qualitative studies that use NSSM have been with English-speaking, predominantly North American participants. As reported, a few investigations have begun to explore the application of story stem methodologies with samples outside the U.S. (e.g., Nóblega et al, 2019; Román et al., 2012, 2018; Shin, 2019) or with children from immigrant and non-English-speaking backgrounds within the U.S. (e.g., Bailey et al., 2015; Gullón-Rivera, 2013; Vu et al., 2010). Use of NSSM in these settings requires careful

consideration of the differing cultural and cross-linguistic contexts of the participating children. Not taking account of children's perspectives in this regard may limit the usefulness of the narrative data that is generated by NSSM.

Modifications to the story stems to make them culturally relevant and to address the dynamic language needs and practices of participants are warranted. For example, the MSSB was administered individually in the home setting by examiners bilingual in both English and Spanish in the study reported by Vu et al. (2010). This encouraged children to respond to the story stems in whichever language they preferred and indeed to codeswitch during the telling of their stories because they knew examiners were bilingual.

Conclusions

The past two decades have seen more than two hundred studies, across multiple disciplines and epistemological lenses, that utilize and extend third-wave NSSM to access a diverse range of internal representations relating to the self, parents, family, teachers, peers, and romantic partners, and to reveal the socio-cultural discourses used to make meaning of experiences. Using large-scale, longitudinal designs, scholars have begun to identify and confirm individual, caregiver, and environmental factors that are viewed as antecedent to story stem representations, as well as many developmental outcomes and correlates across socio-emotional and cognitive domains. Recent literature also shows promising quantitative uses of NSSM in middle childhood and adolescence and qualitative uses primarily in adulthood with simple adaptations to administration procedures, story stem content, and analysis. While early work was mostly

confined to English-speaking, U.S. samples, studies in other languages and with international samples have very recently demonstrated the method's promising usability across cultures. Together, the canon of NSSM research exemplifies the method's utility, flexibility, simplicity and expeditiousness in administration, and potential to produce rich data for multiple approaches to analysis.

We conclude this paper with a few reflections on the current and future state of NSSM. While research to date has focused predominantly on concurrent validity with corresponding measures (see Table 1), validity studies that address what we have identified as key limitations are now needed. Threats to validity from the language abilities of children being assessed using NSSM are generally ignored or else standardized language proficiency scores are used as covariates but these do not assess the relevant narrative discourse skills needed for responses. Additionally, evidence reviewed here suggests that NSSM are suitable for research in middle childhood and beyond. However, given that story stem approaches may restrict participant expression in some socio-cognitive domains at different developmental periods (e.g., Bailey, forthcoming), the strengths and drawbacks of the story stem technique in revealing inner representations may vary by developmental domain. Thus, future research extending NSSM to older populations should consider employing concurrently additional approaches (e.g., eliciting personal narratives, semi-structured interviews).

NSSM research has seen an increasing number of studies that utilize large samples or longitudinal designs, but employing mixed- and multi-method studies (e.g., Bailey et al, 2015; Gravett, 2019) is another promising direction for NSSM work to add to our understanding of both the cognitive scripts and socio-cultural discourses through which we understand and interpret our worlds. Given that the vast majority of qualitative NSSM studies are conducted

online and even traditional story stem batteries haves been computerized (e.g., Minnis et al., 2010), inclusion of virtual avatars (e.g., Hayfield & Wood, 2019) or the like with older participants would serve as a valuable parallel to NSSM with doll play used in younger populations. Doing so would allow for inclusion of visual data via avatar enactments to enrich narrative story responses and potentially alleviate the linguistic burden discussed above, while providing an additional culturally and socially relevant medium for older children and young adults to convey their cognitive and social scripts.

Our final comment addresses the treatment of quantitative and qualitative approaches to NSSM as epistemologically diametric. As Bruner (1986) argued, our reliance on socio-cultural scripts for meaning making necessarily has bearing on the construction of the self. In this way, social discourses are internalized, and as Kitzinger and Powell (1995, pp. 349-350) described, the constructed stories "reflect" those internalized discourses, revealing the "knowledge systems, which inform [our] thinking" (Gravett, 2019, p. 5). From this view, the cavern between an essentialist lens in quantitative inquiry and a social constructionist lens in qualitative inquiry appears to narrow. Instead, we see the two as complementary approaches that harness narrative inquiry to reveal the cognitive and social scripts that organize, make meaning of, and predict our internal and social worlds.

References

Apavaloaie, L., Page, T., & Marks, L. D. (2014). Romanian children's representations of negative and self-conscious emotions in a narrative story stem technique. *Europe's Journal of Psychology*, *10*(2), 318-335.

Apetroaia, A., & Waters, H. S. (2018). VI. Intergenerational transmission of secure base script knowledge: The role of maternal co-construction skills. *Monographs of the Society for Research in Child Development, 83*(4), 91-105.

Bach, G. R. (1945). Young children's play fantasies. *Psychological Monographs, 59*(2), i-69. http://doi.org/10.1037/h0093546

Bailey, A. L. (Forthcoming). Young children's language attitudes with implications for identity in a U.S dual-language immersion classroom. In W. Ayres-Bennett & L.G. Fisher (Eds.), *Multilingualism and Identity: Interdisciplinary Perspectives*. Cambridge University Press.

Bailey, A. L., Zwass, R. H., Rivera-Torres, K. A., & Mistry, R. S. (2015, March). Y*oung Children's Development of "Sociolinguistic Cognition" about Different Languages and their Speakers* [Poster presentation]. Biennial Conference of the Society for Research on Child Development, Philadelphia, PA.

Bailey, A. L. & Zwass, R. H. (2015). Language Attitudes Story Prompts. In D. Castro (Ed.), *Report of Researcher-developed Measures of Dual Language Learners.* University of North Texas.

Bettmann, J. E., & Lundahl, B. W. (2007). Tell me a story: A review of narrative assessments for

    preschoolers. *Child and Adolescent Social Work Journal, 24*(5), 455-475.

Bowlby, J. (1982). Attachment and loss: retrospect and prospect. *American Journal of*

    Orthopsychiatry, 52(4), 664-678.

Bowlby, J. (1988). Developmental psychiatry comes of age. *The American Journal of*

    Psychiatry, 145(1), 1–10. https://doi.org/10.1176/ajp.145.1.1

Bretherton, I., & Munholland, K. A. (1999). Internal working models in attachment

    relationships: A construct revisited. In J. Cassidy & P.R. Shaver (Eds.), *Handbook of*

    Attachment: Theory, research, and clinical applications (pp. 89-111). Guilford.

Bretherton, I., Oppenheim, D., Buchsbaum, H., Emde, R. N., & the MacArthur Narrative Group.

    (1990). *MacArthur Story Stem Battery (MSSB)*. Unpublished manuscript.

Bretherton, I., Prentiss, C., & Ridgeway, D. (1990). Family relationships as represented in a

    story-completion task at 37 and 54 months of age. *New Directions for Child and*

    Adolescent Development, 1990(48), 85-105.

Bretherton, I., Ridgeway, D., & Cassidy, J. (1990). Assessing internal working models of the

    attachment relationship. In M. Greenberg, D. Cicchetti, & E. Cummings (Eds.),

    Attachment in The Preschool Years: Theory, research, and intervention (pp. 273-308).

Bruner, J. (1986). *Actual minds, possible worlds*. Harvard UP.

Bruner, J. (2002). *Making stories: Law, Literature. Life.* Harvard UP.

Clark, K. B., & Clark, M. P. (1947). Racial identification and preference in Negro children. In T.

    Newcomb & E. Hartley (Eds.), *Readings in social psychology*. Holt.

Clarke, V., Braun, V., Frith, H., & Moller, N. (2019). Editorial Introduction to The Special issue:

    Using Story Completion. *Methods in Qualitative Research*, *16*(1), 1-20.

Clarke, V., Braun, V., & Wooles, K. (2015). Thou shalt not covet another man? Exploring constructions of same-sex and different-sex infidelity using story completion. *Journal of Community & Applied Social Psychology, 25*(2), 153-166.

Cravens, J. D., & Whiting, J. B. (2016). Fooling around on Facebook: The perceptions of infidelity behavior on social networking sites. *Journal of couple & relationship therapy, 15*(3), 213-231.

Dalgaard, N. T., Todd, B. K., Daniel, S. I., & Montgomery, E. (2016). The transmission of trauma in refugee families: Associations between intra-family trauma communication style, children's attachment security and psychosocial adjustment. *Attachment & Human Development, 18*(1), 69-89.

Davies, P. T., Coe, J. L., Hentges, R. F., Sturge-Apple, M. L., & van der Kloet, E. (2018). The interplay among children's negative family representations, visual processing of negative emotions, and externalizing symptoms. *Child Development, 89*(2), 663-680.

Dealy, J., Mudrick, H., & Robinson, J. (2019). Children's narrative story stem responses: Contributions of executive functioning and language proficiency to relationship representations. *Social Development, 28*(1), 168-185.

Dodd, H. F., Hudson, J. L., Morris, T. M., & Wise, C. K. (2012). Interpretation bias in preschool children at risk for anxiety: A prospective study. *Journal of Abnormal Psychology, 121*(1), 28-38.

Farnfield, S. (2014). From preschool to school age: Narrative story stems. In S. Farnfield & P. Holmes (Eds.), *The Routledge Handbook of Attachment: Assessment* (pp. 95-115). Routledge.

Farnfield, S. (2016). The Child Attachment and Play Assessment (CAPA): Validation of a new approach to coding narrative stems with children ages 3–11 years. *International Journal of Play Therapy, 25*(4), 217-229.

Fivush, R. (2006). Scripting attachment: Generalized event representations and internal working models. *Attachment & Human Development, 8*(3), 283-289.

Fivush, R., & Waters, T. E. (2015). Patterns of attachment across the lifespan. In R.A. Scot & S.M. Kosslyn (Eds.), *Emerging trends in the social and behavioral sciences. An Interdisciplinary, Searchable, and Linkable Resource* (pp. 1-10). Wiley.

Franieck, M., & Page, T. (2019). The family narratives of three siblings living in a 'street situation' since birth. *Early Child Development and Care*, *189*(10), 1575-1587.

Freud, S. (1933). *New Introductory Lectures on Psychoanalysis*. W. W. Norton & Co.

Frith, H. (2013). Accounting for orgasmic absence: Exploring heterosex using the story completion method. *Psychology & Sexuality*, *4*(3), 310-322.

Garner, P. W., Dunsmore, J. C., & Bassett, H. H. (2020). Direct and indirect pathways to early school adjustment: Roles of young children's mental representations and peer victimization. *Early Childhood Research Quarterly*, *51*, 100-109.

George, C., & Solomon, J. (2016). The attachment doll play assessment: Predictive validity with concurrent mother-child interaction and maternal caregiving representations. *Frontiers in Psychology, 7,* 1594.

George, C., & West, M. (2011). The adult attachment projective picture system: integrating attachment into clinical assessment. *Journal of personality assessment*, *93*(5), 407-416.

Goodman, N. (1946). A query on confirmation. *The Journal of Philosophy, 43*(14), 383-385.

Granot, D., & Mayseless, O. (2013). Representations of mother-child attachment relationships

      and social-information processing of peer relationships in early adolescence. *The Journal*

      of Early Adolescence, 32(4), 537-564.

Gravett, K. (2019). Story completion: Storying as a method of meaning-making and discursive

      discovery. *International Journal of Qualitative Methods, 18,* 1-8.

Green, J., Stanley, C., Smith, V., & Goldwyn, R. (2000). A new method of evaluating attachment

      representations in young school-age children: The Manchester Child Attachment Story

      Task. *Attachment & Human Development, 2*(1), 48-70.

Gullón-Rivera, Á. L. (2013). Puerto Rican kindergartners' self-worth as coded from the

      Attachment Story Completion Task: correlated with other self-evaluation measures and

      ratings of child behavior toward mothers and peers. *Attachment & Human Development,*

      15(1), 1-23.

Hayfield, N., & Wood, M. (2019). Looking heteronormatively good! Combining story

      completion with Bitstrips to explore understandings of sexuality and appearance.

      Qualitative Research in Psychology, *16*(1), 115-135.

Hodges, J., Steele, M., Hillman, S., Henderson, K., & Neil, M. (2000). Effects of abuse on

      attachment representations: Narrative assessments of abused children. *Journal of Child*

      Psychotherapy, 26(3), 433-455.

Holmberg, J., Robinson, J., Corbitt-Price, J., & Wiener, P. (2007). Using narratives to assess

      competencies and risks in young children: Experiences with high risk and normal

      populations. *Infant Mental Health Journal, 28*(6), 647-666.

Howes, C., Vu, J. A., & Hamilton, C. (2011). Mother-child attachment representation and

 relationships over time in Mexican-heritage families. *Journal of Research in Childhood*

 Education, 25(3), 228-247.

Hudson, J. A., Fivush, R., & Kuebli, J. (1992). Scripts and episodes: The Development of Event

 Memory. *Applied Cognitive Psychology, 6*(6), 483-505.

Hunt, X., Swartz, L., Carew, M. T., Braathen, S. H., Chiwaula, M., & Rohleder, P. (2018).

 Dating persons with physical disabilities: The perceptions of South Africans without

 disabilities. *Culture, health & sexuality, 20*(2), 141-155.

Jennings, E., Braun, V., & Clarke, V. (2019). Breaking gendered boundaries? Exploring

 constructions of counter-normative body hair practices in Āotearoa/New Zealand using

 story completion. *Qualitative Research in Psychology, 16*(1), 74-95.

Kelly, K. R. (2015). Insecure attachment representations and child personal narrative structure:

 Implications for delayed discourse in preschool-age children. *Attachment & Human*

 Development, 17(5)*,* 448-471.

Kelly, K. R. (2016). Mother-child conversations and child memory narratives: The roles of child

 gender and attachment. *Psychology of Language and Communication, 20*(1)*,* 48-72.

Kelly, K. R. (2018). Maternal autonomy support and dyadic verbal synchrony during narrative

 coconstruction: Links with child attachment representations and independent narrative

 competence. *Infant and Child Development, 27*(3), e2074.

King, D., Dockrell, J., & Stuart, M. (2014). Constructing fictional stories: a study of story

 narratives by children with autistic spectrum disorder. *Research in Developmental*

 Disabilities, 35(10), 2438-2449.

Kitzinger, C., & Powell, D. (1995). Engendering infidelity: Essentialist and social constructionist readings of a story completion task. *Feminism & Psychology*, *5*(3), 345-372.

Klein, M. (1932/1975). *The Psychoanalysis of Children*. Delacorte.

Langevin, R., Cossette, L., & Hébert, M. (2020). Emotion dysregulation in sexually abused preschoolers: insights from a story completion task. *Journal of Child Sexual Abuse*, *29*(4), 468-489.

Levin, H., & Wardwell, E. (1962). The research uses of doll play. *Psychological Bulletin*, *59*(1), 27-56.

Lynn, D. B., & Lynn, R. (1959). The Structured Doll Play Test as a projective technique for use with children. *Journal of Projective Techniques, 23*(3), 335-344.

McCabe, A., & Peterson, C. (Eds.). (1991). *Developing Narrative Structure*. Erlbaum.

McCabe, A., & Rollins, P. R. (1994). Assessment of preschool narrative skills. *American Journal of Speech-Language Pathology, 3*(1), 45-56.

Martoccio, T. L., Brophy-Herb, H. E., Maupin, A. N., & Robinson, J. L. (2016). Longitudinal pathways from early maternal depression to children's dysregulated representations: a moderated mediation analysis of harsh parenting and gender. *Attachment & Human Development, 18*(1), 46-68.

Minnis, H., Read, W., Connolly, B., Burston, A., Schumm, T. S., Putter-Lareman, S., & Green, J. (2010). The computerised Manchester Child Attachment Story Task: A novel medium for assessing attachment patterns. *International journal of methods in psychiatric research*, *19*(4), 233-242.

Morgan, C. D., & Murray, H. A. (1935). A method for investigating fantasies: The Thematic Apperception Test. *Archives of Neurology & Psychiatry*, *34*(2), 289-306.

Müller, E., Perren, S., & Wustmann Seiler, C. (2014). Coherence and content of conflict-based

    narratives: Associations to family risk and maladjustment. *Journal of Family Psychology,*

    28(5), 707.

Murray, L., Pella, J. E., De Pascalis, L., Arteche, A., Pass, L., Percy, R., Creswell, C., & Cooper,

    P. J. (2014). Socially anxious mothers' narratives to their children and their relation to

    child representations and adjustment. *Development and Psychopathology, 26(4pt2),*

    1531-1546.

Murray, L., Woolgar, M., Briers, S., & Hipwell, A. (1999). Children's social representations in

    dolls' house play and theory of mind tasks, and their relation to family adversity and

    child disturbance. *Social Development*, *8*(2), 179-200.

Nelson, K. (1986). *Event knowledge: Structure and function in development*. Lawrence Erlbaum

    Associates.

Nichols, O., Vaughn, B. E., Lu, T., Krzysik, L., & El-Sheikh, M. (2019). Scripted attachment

    representations and adaptive functioning during early childhood. *Attachment & Human*

    Development, 21(3), 289-306.

Nóblega, M., Bárrig-Jo, P., Gonzalez, L., Fourment, K., Salinas-Quiroz, F., Vizuet, A., &

    Posada, G. (2019). Secure base scripted knowledge and preschoolers' social competence

    in samples from Mexico and Peru. *Attachment & Human Development, 21*(3), 253-264.

Nussbaum, M. (2001). *Upheavals of Thought: The Intelligence of Emotions*. Cambridge

    University Press.

Oppenheim, D. (2006). Child, parent, and parent-child emotion narratives: Implications for

    developmental psychopathology. *Development and Psychopathology*, *18*(3), 771-790.

Page, T. F. (2001). The social meaning of children's narratives: A review of the attachment-based narrative story stem technique. *Child and Adolescent Social Work Journal, 18*(3), 171-187.

Pass, L., Arteche, A., Cooper, P., Creswell, C., & Murray, L. (2012). Doll play narratives about starting school in children of socially anxious mothers, and their relation to subsequent child school-based anxiety. *Journal of Abnormal Child Psychology, 40*(8), 1375-1384. https://doi.org/10.1007/s10802-012-9645-4

Pintler, M. H. (1945). Doll play as a function of experimenter-child interaction and initial organization of materials. *Child Development, 16*(3), 145-166.

Plokar, A., Bisaillon, C., & Terradas, M. M. (2018). Development of the Child Dissociation Assessment System using a narrative story stem task: A preliminary study. *European Journal of Trauma & Dissociation*, *2*(1), 21-29.

Posada, G. E., & Waters, H. S. (2018). I. Introduction: The Co-construction of mother–Child attachment relationships in early childhood. *Monographs of the Society for Research in Child Development, 83*(4), 7-21.

Ramchandani, P. G., Murray, L., Romano, G., Vlachos, H., & Stein, A. (2011). An investigation of health anxiety in families where children have recurrent abdominal pain. *Journal of Pediatric Psychology, 36*(4), 409-419.

Robinson, J. L. & Mantz-Simmons, L. (2003). The MacArthur Narrative Coding System: one approach to highlighting affective meaning making in the MacArthur Story Stem Battery. In R. Emde, D.P. Wolf & D. Oppenheim (Eds.), *Revealing the Inner Worlds of Young Children: The MacArthur Story Stem Batter and Parent-Child Narratives* (pp. 81-91). Oxford University Press.

Rollins, P. R., McCabe, A., & Bliss, L. (2000). Culturally sensitive assessment of narrative skills in children. *Seminars in Speech and Language, 21*(3), 223-234.

Román, M., Hodges, J., Palacios, J., Moreno, C., & Hillman, S. (2018). Assessing mental representations of attachment with story stems: Spanish application of Story Stem Assessment Profile (SSAP). *Revista Iberoamericana de Diagnostico y Evaluacion-e Availacao Psicologica, 1*(46)*, 5-19.

Román, M., Palacios, J., Moreno, C., & López, A. (2012). Attachment representations in internationally adopted children. *Attachment & Human Development, 14*(6), 585-600.

Sears, R. R. (1947). Influence of methodological factors on doll play performance. *Child Development,* 190-197.

Shah-Beckley, I., Clarke, V., & Thomas, Z. (2020). Therapists' and non-therapists' constructions of heterosex: A qualitative story completion study. *Psychology and Psychotherapy: Theory, Research and Practice, 93*(2), 189-206.

Shamir, H., Schudlich, T. D. R., & Cummings, E. M. (2001). Marital conflict, parenting styles, and children's representations of family relationships. *Parenting*, *1*(1-2), 123-151.

Shin, N. (2019). Preschoolers' secure base script representations in relations to social competence, maternal narrative style and content in a Korean sample. *Attachment & Human Development, 21*(3), 275-288.

Steele, R. D., Waters, T. E., Bost, K. K., Vaughn, B. E., Truitt, W., Waters, H. S., Booth-LaForce, C., & Roisman, G. I. (2014). Caregiving antecedents of secure base script knowledge: A comparative analysis of young adult attachment representations. *Developmental Psychology, 50*(11), 2526-2538.

Tischner, I. (2019). Tomorrow is the start of the rest of their life—so who cares about health? Exploring constructions of weight-loss motivations and health using story completion. *Qualitative Research in Psychology*, *16*(1), 54-73.

Troiano, G. M., Wood, M., & Harteveld, C. (2020, April). "And this, Kids, is how I met your mother": Consumerist, mundane, and uncanny futures with sex robots. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems* (pp. 1-17).

Vaughn, B. E., Posada, G., & Veríssimo, M. (2019). Scripted knowledge about attachment and social competence in preschoolers: overview. *Attachment & Human Development, 21*(3), 219-224.

Verschueren, K., & Marcoen, A. (1999). Representation of self and socioemotional competence in kindergartners: Differential and combined effects of attachment to mother and to father. *Child Development, 70*(1), 183-201.

Vu, J. A. (2015). Children's representations of relationships with mothers, teachers, and friends, and associations with social competence. *Early Child Development and Care, 185*(10), 1695-1713.

Vu, J. A., Bailey, A. L., & Howes, C. (2010). Early cases of code-switching in Mexican-heritage children: Linguistic and sociopragmatic considerations. *Bilingual Research Journal, 33*(2), 200-219.

Walsh, E., & Malson, H. (2010). Discursive constructions of eating disorders: A story completion task. *Feminism & Psychology, 20*(4), 529-537.

Winnicott, D. T. (1971). *Playing and reality*. Tavistock Publications.

Wood, M., Wood, G., & Balaam, M. (2017, May). "They're Just Tixel Pits, Man" Disputing the 'Reality' of Virtual Reality Pornography through the Story Completion Method. In

Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (pp. 5439-5451).

Woolgar, M. (1999). Projective doll play methodologies for preschool children. *Child Psychology and Psychiatry Review, 4*(3), 126-134. https://doi.org/10.1017/S1360641799002026

Wu, Y. P., Thompson, D., Aroian, K. J., McQuaid, E. L., & Deatrick, J. A. (2016). Commentary: Writing and evaluating qualitative research reports. *Journal of pediatric psychology, 41*(5), 493-505.

Yoo, Y. S., Popp, J., & Robinson, J. (2014). Maternal distress influences young children's family representations through maternal view of child behavior and parent-child interactions. *Child Psychiatry & Human Development, 45*(1), 52-64.

Yuval-Adler, S., & Oppenheim, D. (2015). Story completion play narrative methods for preschool children. In O. Saracho (Ed.), *Handbook of Research Methods in Early Childhood Education*, (pp. 323-381). Information Age Publishing.

Author information

Kimberly R. Kelly

California State University Long Beach

1250 N. Bellflower Blvd

Long Beach, CA 90840

Kimberly.Kelly@csulb.edu

Alison L. Bailey

University of California, Los Angeles

Department of Education, Mail Box 951521

405 Hilgard Ave

Los Angeles, CA 90095

abailey@seis.ucla.edu

Table 1. NSSM protocols by year of release from 2010

Measure Name	Developed By	Target Population	Constructs/ Themes	Story Protagonists	Validity	No. of Stems	Dolls/ Props
N/A	Walsh & Malson (2010)	Young adults	Weight, body image, and eating disorders	Anorexic/Bulimic young woman	N/A	1	No
Symbolic Play Assessment	Ramchandani et al. (2011)	Children 6-9 years	Health anxiety, physical symptoms of illness	Child, family members	Concurrent	5	Yes
Child Doll Play	Pass et al., (2012)	Children 3-5 years	Anxiety narratives	Child & mother	N/A	3	Yes
N/A	Frith (2013)	Adults	Heterosexual relationships, sex, and dating	Heterosexual couple	N/A	1	No
Language Attitudes Story Prompts (LASP)	Bailey & Zwass (2015)	Children 4-8 years	Sociolinguistic awareness, Language attitudes	Child, friends/classmates, teacher, family members	N/A	4	Yes
N/A	Clarke et al. (2015)	Adults	Same-sex infidelity	Male and female hetero couple	N/A	4	No
N/A	Cravens & Whiting (2016)	Adults	Infidelity behaviors	Cis-gender male and female couple	N/A	2	No
Attachment and Traumatization Story Task (ATST)	Daalgard et al. (2016)	Children 4-9 years	Transgenerational transmission of trauma, migration-specific conflict, parent-child separation	Child, parents, family	N/A	6	Yes
Child Attachment and Play Assessment (CAPA)	Farnfield (2016)	Children 3-12 years	Attachment	Child	Discriminant	10	Yes
Attachment Doll Play Assessment (ADPA)	George & Solomon (2016)	Children 6 years	Attachment	Father, mother, child and a baby	Predictive & concurrent	4	Yes
N/A	Wood et al. (2017)	Adults	Virtual reality (VR), online pornography	VR online pornography user	N/A	1	No

N/A	Jennings et al. (2019)	Young adults	Body image, body hair, hair practices	Man and Woman, with counter normative hair behavior	N/A	2	No
N/A	Hunt et al. (2018)	Adults	Disability, dating beliefs	Disabled man/woman, non-disabled man/woman	N/A	1	No
N/A	Gravett (2019)	Young adults	Educational transitions, higher education	Undergraduate students	N/A	2	No
N/A	Hayfield & Wood (2019)	Female adults	Bisexual, sexuality, avatars	Hetero, bisexual, or lesbian Bitstrip	N/A	1	Yes
N/A	Tischner (2019)	Young adults	Weight, body image, and eating disorders	Man or woman, weight loss	N/A	1	No
N/A	Shah-Beckley et al. (2020)	Adults	Heterosexual relationships, sex, and dating	Man and woman, sexual partners	N/A	2	No
N/A	Trioano et al. (2020)	Adults	Relationships with sex robots	Individual and a robot	N/A	1	No