



## Effects of cognitive schemas on children's testimony for a simulated juvenile crime

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### ABSTRACT

This investigation examined immediate and seven-week delayed recall by 104 children (ages 6 to 8 years) for a simulated misdemeanor bicycle theft in which gender-role characteristics and sex of criminal were manipulated (i.e., masculine male, feminine male, feminine female, masculine female). Children recalled criminal appearance, central crime, peripheral crime well; only the latter declined over time. Crime and criminal recall showed a same-sex bias, male-as-criminal preference, and higher rates when thieves exhibited gender-role consistent characteristics. Children relied on their crime, criminal, and gender schemas to help them to process the theft. Criminal justice implications for eyewitness testimony findings are provided.

### Introduction

Despite 30 years of research on children's eyewitness testimony, little is known about social-cognitive factors impacting their ability to remember and report crimes committed by juvenile offenders, especially after a delay. Larceny-theft (e.g., shoplifting, bicycle theft, stealing from backpacks and lockers) accounts for the majority of property crimes committed by juveniles (Snyder & Sickmund, 2006) and the typical victims and bystanders are youth of the same or younger age (Finkelhor & Ormrod, 2000). In the majority of cases, arrests were possible because witnesses provided information about the crime and criminal to police (Greenberg, Wilson, Ruback, & Mills, 1979). Yet, only a small fraction of child victims reported thefts against them, even though the recovery rate for stolen property increased significantly when they did (Finkelhor & Ormrod, 2000).

U.S. statistics on larceny theft show that both juvenile victims (Finkelhor & Shattuck, 2012) and offenders (National Research Council and Institute of Medicine, 2001), respectively, are most often male (56% and 72%) and of Anglo-American descent (85% and 71%). The accuracy of these incidence rates for offender sex, however, is questionable given the discrepancy between self-report data and arrest statistics (Snyder & Sickmund, 2006). Specifically, male and female juveniles self-report similar rates of committing larceny theft offenses (Bright et al., 2017), yet boys are arrested at higher rates than are girls (e.g., 58% vs. 42%, respectively; (Office of Juvenile Justice and Delinquency Prevention, 2015)).

Sex differences found in arrest rates, but not for incidence, may be due to child eyewitnesses' cognitive schemas. Cognitive schemas (i.e., mental representations of knowledge, expectations, and beliefs) influence children's processing of crimes and criminals, as well as govern what information gets stored in memory and what is subsequently retrieved in immediate and delayed interviews (Golombok & Fivush, 1994). The notion that a typical criminal is male is derived through exposure to literature and media, such as internet, movies, and television, all of which relate this message repeatedly (Allison, Sweeney, & Jung, 2013; (Stalans, 1993)). Therefore, it is not surprising that college students in two distinct locations—Kansas and New York—when asked to describe the physical appearance of a juvenile thief provided remarkably similar attributes: “male; ages 14 to 17; lower to middle-class; short or medium brown or black hair” ((Shapiro & Maras, 2017), p. 46).

The purpose of the current study was two-fold. First, we examined whether child eyewitnesses' ability to recall a criminal and crime was hampered by their cognitive schemas, particularly when information related to sex and gender-roles was violated. When activated, cognitive schemas differentially affect children's attention, perception, and interpretation of the same set of behaviors performed by male and female thieves ((Shapiro, 2009), Experiment 2). Clearly, different interpretation and labeling of the same actions either as a crime or not due to criminal sex has repercussions in the criminal justice system for decisions starting with the need for police through sentencing (Ahola, 2012). Specifically, if a child believes that “boys are thieves,” then a male adolescent's incessant asking to use a female child victim's bicycle

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will be viewed as “bullying” and the subsequent taking of the bicycle will be interpreted as both aggressive and “stealing” (Fox, Jones, Stiff, & Sayers, 2014; Heyman, 2001); consequently, this situation will be handled formally by involving the police (Shapiro & Maras, 2017). In contrast, an identical interaction between a female adolescent and a male child victim will be interpreted as “begging” and the subsequent taking of the bicycle will be viewed as both nonaggressive and merely “borrowing;” this situation will be handled informally (Blake & Harris, 2009; Fox et al., 2014). In this way, children's cognitive schemas contribute to the aforementioned theft incidence-arrest discrepancy.

Second, we examined whether children's different interpretations of the bicycle theft stemmed from the rigid application of their cognitive schemas within an eyewitness situation. Over the past decade, adolescents and young adults have increasingly displayed gender-fluid appearance and actions. However, children would have difficulty understanding or even processing a crime committed by adolescent criminals whose sex and/or gender-role appearance and behaviors (e.g., masculine girl or feminine boy) violated their cognitive schemas (Golombok & Fivush, 1994; Heyman, 2001). These recall biases would result in children's reports being incomplete, particularly after long delays, and discourage victims from reporting the theft of their possessions to police (Frawley, 2008).

### Cognitive schemas

Two types of cognitive schemas, the event schema and the gender schema, play an important role in children's eyewitness testimony. According to Nelson and Gruendel (Nelson & Gruendel, 1986), event schemas, or knowledge about what typically happens in familiar events, form during early childhood (ages 2 to 5 years). Preschoolers' understanding is based on their generalized event representations (GERS), event memories of specific personal episodes, event-topic related stories, and knowledge of common types of social interactions. GERS are spatially and temporally organized event schemas that define the expected sequence of actions, actors, and props (Hudson & Shapiro, 1991). By representing the structure and variability of the event, event schemas provide a crucial type of cognitive support, allowing preschoolers to participate in everyday activities (Nelson & Gruendel, 1986).

Preschoolers and children (ages 6 to 8 years) are able to construct event schemas for novel and non-experienced events by generalizing the actions, actors, and props from their current event schemas for analogous situations and from information learned through other people's reports of their own and others' experiences, presented by teachers, gained from books and games, and seen in television shows and movies (Bowers & MacLin, 2004). Developmental patterns in recall have been found in verbal reports of commonly experienced events. Children's event schemas represented in their reports were increasingly specialized, elaborated, and complex compared to those of preschoolers (Slackman, Hudson, & Fivush, 1986), but less complete than those of preadolescents, ages 9 to 11 years (Luna, Garver, Urban, Lazar, & Sweeney, 2004).

Both crime schemas (i.e., what typically happens in a crime, actors involved, and objects used) and criminal schemas (i.e., typical physical appearance and behavior of the offender) are specialized forms of event schemas (García-Bajos & Migueles, 2003; Luna & Migueles, 2008; Luna & Migueles, 2009; Shapiro & Maras, 2017). Based on the adult eyewitness testimony literature (Bowers & MacLin, 2004; MacLin & Herrera, 2006), children should develop separate, specialized crime schemas for different offenses, such as for theft, robbery, and murder, and specialized criminal schemas for different types of offenders, such as thieves, robbers, and murderers.

Children's knowledge and expectations influence the types of content information they will recall and report about a crime and criminal (Ornstein, Shapiro, Clubb, Follmer, & Baker-Ward, 1997). Testimony for *central crime* (i.e., essential to describe the crime) and *criminal*

*appearance* (i.e., description of the suspect) features is required as proof that a crime occurred (i.e., misdemeanor theft) and to help establish guilt of the accused (i.e., thief), whereas testimony for *peripheral crime* features (i.e., acts tangential to the crime) contributes to the credibility of the witness (Cassel, 1993; Shapiro, 2009). Activating their crime and criminal schemas help child eyewitnesses to attend, process, and store information during exposure, plus aid their recall afterwards of the central crime, peripheral crime, and criminal appearance (Luna & Migueles, 2009; MacLin & Herrera, 2006). Child witnesses shown a simulated theft of a child's bicycle by an adolescent thief were able to recall it accurately in reports obtained immediately ((Shapiro, 2009), Experiment 2) and one-week later (Cassel, Roebbers, & Bjorklund, 1996; Roebbers, Bjorklund, Schneider, & Cassel, 2002). Children's recall assessed immediately declined in completeness, but not in accuracy, when reports were requested again four-weeks (Cassel & Bjorklund, 1995) or seven-weeks later ((Shapiro, Blackford, & Chen, 2005), Experiment 1).

Content analysis of children's testimony for the simulated theft revealed that a higher proportion of central than peripheral crime features was recalled in single reports immediately following the crime ( $M = 0.64$  vs.  $M = 0.38$ ; (Shapiro, 2009), Experiment 2) and in reports assessed immediately ( $M = 0.64$  vs.  $M = 0.28$ ) and again seven-weeks later ( $M = 0.63$  vs.  $M = 0.23$ ; (Shapiro et al., 2005), Experiment 1). Children's recall of adolescent criminal appearance, in comparison to their recall of central and peripheral crime content of the theft, yielded inconsistent results across studies. Shapiro et al. (Shapiro et al., 2005) reported that the immediate ( $M = 0.82$ ) and 7-week delayed rates ( $M = 0.86$ ) of criminal recall were similar to the high rates of central crime information in immediate and 7-week delayed reports for a male adolescent thief exhibiting schema-consistent gender-role features ( $M = 0.85$  and  $M = 0.83$ , respectively). However, Shapiro (Shapiro, 2009) reported that children provided lower rates of immediate recall for male and female adolescent thief descriptions ( $M = 0.51$ ) than for central crime information ( $M = 0.64$ ), but higher rates than for peripheral crime information ( $M = 0.38$ ). Recall rates for criminal appearance in Shapiro (Shapiro, 2009) were averaged across male and female thieves exhibiting either schema-consistent or schema-inconsistent gender-role features. It is possible that children's recall of criminal appearance may be hampered when the adolescent thieves' sex and gender-role characteristics violate children's gender schemas.

Children rely on their gender schemas as an important source of gender-relevant expectations to construct crime and criminal schemas, (Allison, Sweeney, & Jung, 2016; MacLin & Herrera, 2006). Gender schemas contain knowledge and beliefs about how boys/men and girls/women differ in culturally-defined masculine and feminine traits, appearance, behaviors, preferences for activities and objects, occupations, etc. (Martin, Ruble, & Szkrybalo, 2002). Gender schemas form through social interactions and daily exposure to popular and media culture (e.g., music, books, television, and movies), which helps toddlers, preschoolers, and children to associate different norms for boys and girls (Freeman, 2007; Heyman, 2001).

Toddlers ages 18 and 24 months identify and label themselves and others as a particular sex (Martin & Ruble, 2009). Preschoolers actively seek out gender-role information, but they are implicitly and explicitly encouraged by others in their social world to focus on the stereotypically associated activities, objects, traits, roles, physical appearance, psychological attributes, and behaviors of same sex rather than opposite-sex actors (Campbell, Shirley, & Candy, 2004; Freeman, 2007; Halpern, 1985; Liben & Bigler, 2002). Vertical associations between a category and an object (e.g., girls like dolls) when learning about typicality are made in early childhood, but it is not until children are 8 or 9 that they can make horizontal inferences (e.g., dolls and jump ropes are associated with being feminine) (Martin & Ruble, 2009).

As preschoolers and children are in the process of learning about gender, they strongly endorse their gender-role beliefs in a rigid and absolute manner, particularly when considering which activities, traits,

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