LYING STRATEGIES IN JUVENILES DURING BEHAVIOR ANALYSIS INTERVIEWS

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ABSTRACT

Police officers use the Behavior Analysis Interview (BAI) to detect deceit, but it is based on faulty indicators of lying and may be problematic for juveniles due to developmental immaturities. This study compared juveniles', young adults', and adults' reported willingness to engage in truthful and deceitful responses during a hypothetical BAI. Regardless of guilt condition or age, participants were more willing to engage in truthful responses, suggesting they can manipulate their behaviors to appear innocent. Guilty participants were more willing to use strategies to manipulate their behaviors to appear truthful, while innocent participants said they would behave naturally. Juveniles were somewhat more likely to engage in deceitful responses and they agreed less with stereotypical cues of deception than adults. Juveniles may be worse at differentiating between truthful and deceptive behaviors that police officers observe for, which may put them at risk of being mistakenly judged as guilty in a police interview.

DEDICATION

This thesis is dedicated to my Mom and Dad for their never-ending support and love, whom I owe everything to.

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CHAPTER I

INTRODUCTION

On January 21, 1998, 14-year-old Michael Crowe was accused of stabbing and murdering his 12-year-old sister, Stephanie. Initial forensic evidence found no sign of forced entry, indicating that the homicide could have been committed by someone within the home. Michael became a suspect when police thought he seemed detached, distant, and showed little emotion the morning after his sister's murder. He was questioned by police multiple times without his parents, during which officers' lied about having evidence that implicated Michael and claimed he failed a lie-detection test. After nine intense hours of interrogation, Michael confessed to the murder, providing only vague details of the crime. Police additionally questioned Michael's friend, Joshua Treadway, who confessed to aiding in the murder after 22 total hours of interrogation.

Although both Michael and Joshua confessed to this horrific crime, neither boy was actually involved. The same night Stephanie was murdered, several neighbors had reported a suspicious "drifter", identified as Richard Tuite, a convicted felon. However, police did not hold Tuite as a suspect, as they had already focused in on Michael (Drizin & Leo, 2004; Redlich et al., 2009). As Michael and Joshua were awaiting their murder trials, DNA testing was conducted on Richard Tuite's clothes from the night of the murder, finding blood that matched Stephanie. The charges against Michael and Joshua were dismissed, and their confessions were proven to be false and the products of coercive police tactics (Sauer, 2012). In their questioning with Michael,

police relied on faulty techniques to determine that Michael was behaving inappropriately by showing little emotion and had lied in some of his responses to police questions, which ultimately contributed to their assumption of his guilt (Kassin, 2005; Redlich et al., 2009).

Cases like that of Michael Crowe are not uncommon. Over 24,600 years of life have been spent in jail by 2,710 individuals who were wrongfully convicted, many of whom were juveniles when they were convicted (National Registry of Exonerees, 2021). False confessions are among the most common causes of wrongful convictions, present in 28% of the individuals who were exonerated based on post-conviction DNA testing (Innocence Project, 2021). Moreover, one third of those individuals were under the age of 18 when they falsely confessed, most of whom confessed to murder (Innocence Project, 2021).

Interrogators rely on methods of detecting truth- and lie-telling behaviors in suspects to judge their innocence/guilt. If inaccurately judged as deceptive, innocent individuals are put at risk of being exposed to coercive interrogation techniques known to increase their risk of a false confession and/or wrongful conviction (Kassin, 2017; Kassin & Kiechel, 1996). This is especially true for juveniles, who are uniquely vulnerable to the pressures put on them by police officers (Drizin et al., 2004). Juveniles are more susceptible to commonly used interrogation techniques, such as use of intimidation, perceived threats, presentation of false evidence, physical isolation, and implied promises of leniency (Cleary, 2017; Kassin & Kiechel, 1996; Meyer & Reppucci, 2007; Redlich & Goodman, 2003). The purpose of this study is to investigate the use of deception detection techniques with juveniles in efforts to uncover if they are at an increased risk for being mistakenly judged as deceitful and subsequently subjected to an unnecessary interrogation.

The Reid Technique

The Reid Technique, created by Inbau and colleagues (2013), is the most widely implemented interrogation training for law enforcement in the United States (Buckley & Williamson, 2006; Cleary & Warner, 2016; Horvath et al., 2008; Meyer & Reppucci, 2007). Over 150,000 investigators have been trained in the Reid Technique since the 1970's (Horvath et al., 2008). The technique includes an interview phase and an interrogation phase. The interview occurs before the suspect is formally arrested or their rights are read; it is designed to be non-accusatory and conversational in order to build rapport and to obtain baseline information on behavioral responses. Only suspects who are judged to be deceitful in the interview are meant to move into the more aggressive interrogation phase, where they are formally accused of the crime in question by police with the goal of obtaining a confession (Inbau et al., 2013). The basis of this initial judgment of deceit in the interview is perhaps the most important step in the investigative process, as any error lays the groundwork for an innocent individual to be subjected to further accusatory and coercive interrogation tactics that can lead to a false confession (Gould & Leo, 2010; Meissner & Kassin, 2002; Scherr et al., 2020). In order to promote accurate judgments of deceit and guilt, and therefore protect juveniles from coercive interrogation tactics, it is crucial to investigate the Reid Technique's method of interviews and deception detection in juvenile suspects.

Behavior Analysis Interview

The interview phase of the Reid Technique is two-fold, focusing on factual analysis and a behavior analysis interview (BAI). The factual analysis portion concentrates on gaining information relevant to the criminal case in question, such as the relationship between the victim

and suspect and establishing the suspect's alibi. The BAI was designed to be used as a screening tool for police interviewers to distinguish between innocent and guilty suspects and to determine if a formal interrogation of the suspect is necessary (Horvath et al., 2008; Inbau et al., 2013), claiming to be the "only questioning method that has been developed specifically for this purpose" (Horvath et al., 2008, p. 102).

The BAI consists of 15 behavior-provoking questions developed with the goal of evoking specific verbal and nonverbal behavioral responses said to indicate lie- or truth-telling. These questions are intended to reveal differences in how guilty and innocent suspects present themselves through their verbal and nonverbal behaviors, and thus assume that a guilty person's methods of self-presentation will be "less-compelling" because of their "misperceptions regarding how truly innocent persons actually behave" (Horvath et al., 2008, p. 104). Further, these questions are designed to make the guilty suspect more uncomfortable, which will supposedly be revealed by subsequent anxiety-reducing behaviors. Nonverbal behaviors claimed to indicate lying include shifting in the chair, crossing legs, gaze aversion, or grooming mannerisms; verbal behaviors claimed to indicate lying include evasive, delayed, vague responses, or increased response latency (see Appendix A; (Inbau et al., 2013). However, several critiques of this approach have been discussed in the deception detection research: 1) These behaviors do not reliably indicate deceit or truth-telling, 2) these behaviors are commonly held stereotypes of truthful and deceptive behaviors, and as such can be easily manipulated by guilty suspects, and 3) even trained individuals are not good at detecting deceit (Bond & DePaulo, 2006; Masip et al., 2012; Vrij, Mann, et al., 2006).

Behaviors Associated with Lying

The BAI relies heavily on behavioral indicators of deceit, in line with Leakage theory (Hartwig & Bond, 2014; Vrij et al., 2019). Leakage theory assumes that verbal and nonverbal behaviors reveal a suspect's internal emotional, cognitive, and physiological states that are reflective of the anxiety they experience when lying. Therefore, liars will be unable to completely conceal the nervous emotions associated with lying and specific behaviors will 'leak' out as a result (Ekman & O'Sullivan, 1991). However, parts of this theory have been heavily criticized in the field of deception detection due to its over-reliance on observations of "deceitful" behaviors that do not accurately indicate deceit. In a meta-analysis, DePaulo et al. (2003) reviewed 120 independent samples comparing behavioral cues of lying and truth telling in adults, finding that the verbal and nonverbal cues of deception used in the BAI are only weakly correlated with actual deception, at best. Only 14 out of 50 behavioral cues analyzed (28%) were shown to be significantly related to actual deception, and all these had a small effect size (average d= .25).

In one of the few empirical tests of the BAI's cues to deception, Vrij, Mann, et al. (2006) interviewed adults who were randomly assigned to either commit a mock theft and lie about it to appear innocent during an interview, or who did not commit the mock theft and were told to tell the truth during an interview. The interviews were coded for the degree to which the BAI's behavioral indicators of deceit or truthfulness were present. Results showed that many of the BAI's cues to deceit in several questions were present significantly more in the truth-telling sample. Specifically, truth-tellers gave more naïve and evasive responses, were more likely to cross their legs and shift their posture, and showed more nervous behaviors than liars, which are all opposite of the BAI's predictions. No differences emerged between liars and truth-tellers for

the remaining observed behaviors, demonstrating that the BAI's predictions may not be accurate in distinguishing liars from truth-tellers (Vrij, Mann, et al., 2006). Masip and Herrero (2012) adapted this methodology to a hypothetical police interview; adult participants were randomly assigned to 'imagined guilt' or 'imagined innocence' conditions, presented with a vignette of an arson case, and told to imagine they were to be interviewed by a police officer. Participants were then presented with the 15 BAI questions, with each question followed by all potential deceptive-indicating and truth-indicating responses laid out by Inbau et al. (2013) in their Reid Manual. Results showed that both "innocent" and "guilty" participants chose answers the BAI would consider truthful, revealing an ability to manipulate these indicators.

The behaviors exhibited by individuals during a laboratory experiment may differ from those exhibited during a criminal interrogation, as the stakes and consequences associated with the lie are inherently unequal (Mann et al., 2002). However, Vrij and Mann (2001) inspected police questioning videotapes of individuals who committed homicide and found that these individuals did not show an increase in nervous behaviors when lying, as may be expected. Mann et al. (2002) coded the behaviors exhibited in liars and truth-tellers during high-stakes police interviews and found that liars had an increase their pauses and a decrease in the blinking compared to truth-tellers, however, no differences emerged in gaze aversion, head movements, hand/arm movements, and speech disturbances. Despite these empirical findings showing these behaviors are not accurate predictors or lying, interrogators are still trained to observe for these behaviors and make their judgments of innocence/guilt based on their presence or absence.

Deception Detection Accuracy

Authors of the Reid Technique claim that interviewers trained in the BAI can distinguish between truthfulness and deceitfulness 85% of the time (Inbau et al., 2013), yet extensive psychological research shows that individuals typically cannot detect deception at better than chance rates (50%). A meta-analysis of 206 studies by Bond and DePaulo (2006) found an average deception detection accuracy of 53.46%; given the unreliability of the behaviors outlined in the BAI to actually indicate deceit, it is not surprising that people are so poor at accurately detecting deception (Vrij & Granhag, 2012). Moreover, providing training in the observation for the BAI indicators of deceit/truth-telling has not typically improved lie detection skills. In a review of 22 studies, Vrij (2008) revealed only a minimal (4%) average increase in accuracy after training, and Bond and DePaulo (2006) found no significant difference in veracity judgments between experts and laypersons. In their meta-analysis, Hartwig and Bond (2014) found no differences in the detection of lies in unmotivated individuals (low-stakes scenarios) compared to highly motivated individuals (high-stakes scenarios).

Officers, who contribute to the life-altering judgment of guilt/innocent based on signs of deceit, should be better detectors of deception than the general layperson, however, studies have shown different trends. Kassin and Fong (1999) trained student participants in the Reid Technique's nonverbal and verbal cues to detecting lies, showed them mock-interrogations with mock-suspects, had them rate if the suspects were lying or telling the truth, and how confident they were in their decisions. Results showed that while all participants were generally no better than chance (50%) at identifying truthful and guilty suspects, those who did *not* receive training were better than those who *did* in respect to the accuracy of their judgements. Yet, those who received training reported higher confidence in their judgements compared to those who did not

receive training. This study was replicated with a police officer sample and found that training in deception detection increased the frequency and confidence with which officers judged suspects as deceitful but did not increase the accuracy of those judgments (Meissner & Kassin, 2002). This trend of officers to over-confidently rate suspects as deceptive, even when inaccurate, has been labeled as the *investigator bias effect* (Meissner & Kassin, 2002).

Ekman and O'Sullivan (1991) tested the accuracy of identifying deception across several different professions (U.S. secret service, federal polygraphers, judges, police, psychiatrists, special interest group, and students) and found that only the secret service group performed significantly better than chance (50%) at accurately detecting deception. Kassin et al. (2005) compared police officers and laypeople's ability to distinguish false confessions from true confessions obtained from male prisoners, and found that the two groups did not differ in their rates of correctly identifying true confessions as true, but police officers were more likely to misidentify false confessions as true. Again, officers had significantly higher confidence in their ratings of deceit in comparison to the college sample, further supporting the potential for the investigator bias effect to impact officers' judgments (Kassin & Fong, 1999; Meissner & Kassin, 2002). This could imply that in an actual interrogation, police officers may not be able to reliably distinguish a true from a false confession, which can put an innocent individual at risk of a potential wrongful conviction. Taken together, research continues to show that Reid Technique training does not improve deception detection accuracy but can contribute to a bias in investigators to be over-confident in their, often times, inaccurate judgments.

Manipulation of Stereotypical Lying Behavior

An additional criticism of the BAI is that the behaviors said to indicate deceit are congruent with behaviors stereotypically believed to imply deceit (Masip et al., 2012; Masip et al., 2011), suggesting that guilty suspects can easily and consciously manipulate these behaviors to appear innocent to investigators. The Global Deception Research Team (2006) surveyed residents from 53 countries on how they believed they could tell when a person is lying and found that the most common belief held is that liars avoid eye contact (63.66% included this response). Among the other most reported beliefs were that liars are nervous, are incoherent, and that lying can be detected through body movements, including facial expressions, speech fillers, and pauses (The Global Deception Research, 2006). However, the majority of these commonly held stereotypes of cues to deception have been found to be inaccurate, and therefore judgments of deception based on these cues are flawed (Hartwig & Bond, 2011). For example, in DePaulo and colleagues' (2003) meta-analysis, gaze aversion (d = .03), response latency (d = .02), facial expressiveness (d = .12), and posture shifts (d = .05) were all found to be non-significant predictors of lying.

If the BAI indicators of deceit are nothing more than common stereotypes of how people behave when lying, then laypeople should view suspects who display these indicators during a BAI as lying (guilty). To test this assumption, Masip et al. (2011) had college participants read transcripts of two example BAIs provided by the Reid Manual (Inbau et al., 2013); one depicted the behaviors of an innocent suspect while the other depicted the behaviors of a guilty suspect. Participants then had to decide which of the suspects was guilty and which was innocent. Participants with no training on deception detection identified the guilty suspect as guilty significantly more than chance. In other words, without any prior training, participants classified

the suspect who had provided the BAI's claimed deceitful responses as guilty, and classified the suspect who had provided the BAI's claimed truthful responses as innocent. These results suggest that participants' stereotypes on how liars behave were congruent with the BAI's inaccurate cues to deception. As a follow-up, Masip et al. (2012) presented participants with all of the potential responses that are claimed indicators of deceit and truth-telling in a BAI and instructed them rate the degree to which they believed each of those responses would be provided by either a guilty or innocent suspect. For example, in response to the question "Do you really think someone did purposefully start the fire?" from the officer, the suspect "suggests unrealistic possibilities": participants would then rate the suspect's guilt on a scale of 1 ("innocent") to 6 ("guilty") based on that specific response (p. 598). Ultimately, results showed that across all but three of the 15 questions, participants rated the BAI's guilty responses as guilty significantly more than they rated the innocent responses as guilty. Again, these results show that lay people with no training are able to correctly identify responses claimed to be deceitful by the BAI. These findings were extended into a police officer sample: both novice and experienced officers correctly identified Inbau et al.'s (2013) deceitful responses as deceitful (Masip et al., 2012). Taken together, results from Masip et al. (2012; 2011) demonstrate that Inbau et al.'s (2013) recommendations are not only inaccurate indictors of deceit (DePaulo et al., 2003), but are also in-line with common-sense, stereotypical notions of what liars look like.

Given that many of the BAI's indicators to deceit are congruent with the stereotypical indicators of lying, guilty suspects may attempt to manipulate these behaviors during an interview to actively appear more truthful (e.g., a guilty suspect purposefully making eye-contact to avoid seeming deceitful) and avoid being caught (Masip et al., 2012; Masip et al., 2011). In fact, research has shown that guilty suspects do apply more strategies to appear truthful than

innocent suspects do in interrogations, including avoiding signs of nervousness, planning the content of their responses, and maintaining eye contact (Hartwig et al., 2007; Hartwig et al., 2010; Hines et al., 2010). In Masip and Herrero's (2012) imagined BAI study, "guilty" suspects indicated they would be more likely to prepare a strategy for how they would act during the interview, try harder to appear innocent, manipulate their behaviors and words more, and would be more likely to provide an alibi than "innocent" suspects. On the other hand, innocent suspects may not actively manipulate their behaviors to appear innocent because they have an overwhelming belief that their innocence will easily be seen by interrogators (Kassin, 2005). Innocent suspects report using less or no strategies to appear truthful, citing their innocence as the primary reason for doing so (Hartwig et al., 2007). Consequently, more innocent suspects may be mistakenly judged as deceitful by police, and more guilty suspects may be mistakenly judged as truthful.

Using the BAI with Adolescents

While flaws in the use of the Behavior Analysis Interview with adults have emerged, it remains unknown how this method applies to juveniles. However, substantial research has investigated how adolescents' psychosocial and neurobiological development uniquely impacts their interactions with other facets of the legal system (Cleary, 2017; Steinberg, 2017). For example, several Supreme Court decisions have relied on developmental psychology research in decisions to ban the death penalty for 16 and 17-year-olds (*Roper v. Simmons* 2006) and life without parole (*Miller v. Alabama* 2012) for juvenile offenders, citing that their developmental immaturities impacted their ability to make reasonable decisions and control their behavior (Bonnie & Scott, 2013).

In comparison to adults, adolescents' prefrontal cortex is not yet fully matured which impacts their ability to appropriately plan, control impulses, and make decisions while anticipating future consequences (Bonnie & Scott, 2013). Adolescents' ability to reason with logic, or their cognitive capacity, gradually and steadily matures into adulthood. However, their psychosocial functioning, specifically sensitivity to rewards, peer influence, self-regulation, and impulse control, is significantly less mature than adults, even up to 18-years-old (Cleary, 2017; Steinberg et al., 2009).

The development of "hot" cognition (i.e., cognitive functioning in emotionally charged situations) and "cold" cognition (i.e., cognitive functioning in emotionally neutral situations) differs in adolescence; cold cognition can reach maturity in mid-teen years, but hot cognition continues to mature into adulthood (Icenogle et al., 2019). Adolescents' decision-making and self-regulation skills are impaired during these "hot", emotionally charged situations, and they can become overly emotionally aroused due to the changes occurring in their limbic system (Bonnie & Scott, 2013; Icenogle et al., 2019). In an investigation of how 13-to-25-year-olds respond to emotional stimuli, Cohen et al. (2016) found that even young adults (18-21) decreased cognitive control in the face negative emotional stimuli compared to older adults. These reactions were linked to decreased activity in the fronto-parietal circuitry and increased activity in the ventromedial prefrontal cortex: the areas involved in cognitive control and emotional processes, respectively (Cohen et al., 2016). A comparison of the neurobiological structures between adults and juveniles reveals self-regulation and executive functioning immaturities within the fronto-parietal-striatal brain system and increased activity in the ventral striatum and ventromedial prefrontal cortex in juveniles, resulting in heightened responses to emotional situations (Steinberg, 2017). For example, adolescents are more likely to make decisions that

result in immediate rewards without weighing the long-term consequences of that decision due to their decreased ability to self-regulate and control impulses (Cleary, 2017). As structural and functional connectivity, or the coactivation of different brain regions during tasks, improves and matures throughout adolescence, impulse control, future planning, and cognitive control continues to improve into early adulthood (Luna et al., 2013; Steinberg, 2017).

Research on false confessions can offer additional insight into how the developmental immaturities in juveniles disadvantage them in their interactions police officers. In an examination of 125 proven interrogation-produced false confessions, Drizin and Leo (2004) found that one-third were between 14 and 17-years-old when they falsely confessed. Juveniles have been found to be at an increased risk of providing a false confession during a coercive interrogation, along with individuals with mental-illness or an intellectual disability (Mogavero, 2020; Redlich, 2004; Redlich & Goodman, 2003). Malloy et al. (2014) interviewed 14-to-17-year-old serious offenders and found that 35.2% stated that they gave a false admission of guilt (false confession or false guilty plea). Those who gave false confessions cited protecting someone and high-pressure, long interrogations by police as their reasons for confessing. Adolescents are more susceptible to external pressures, including peer influence, compliance with authority figures (Bonnie & Scott, 2013), coercive tactics (Gould & Leo, 2010), and the stress associated with an interrogation (Scott-Hayward, 2007).

Pimentel et al. (2015) found that adolescents were significantly more likely than adults to take the blame for someone else's wrongdoing by providing a false confession for an act of cheating by a peer. Redlich and Goodman (2003) examined 12-13-year-olds', 15–16-year-olds', and young adults' compliance in signing a confession after being told they hit a wrong key on a keyboard and crashed the computer during the study, finding younger participants were more

likely to provide a false confession. When false evidence of the wrongdoing was presented by an authority, 73% of the 12-13-year-olds, 88% 15-16-year-olds, and 50% of young adults complied by providing a confession (Redlich & Goodman, 2003). Compliance with accepting suggestions from officers (i.e., suggestibility), is negatively correlated with age; young suspects are more likely to accept untrue or misleading information presented to them during an interrogation, thus increasing their potential of providing a false confession (Redlich & Goodman, 2003). Individuals may provide a false confession is as a means to escape the stress of the current interrogation (Gould & Leo, 2010). Juveniles may perceive that the only way to escape a stressful interrogation is by confessing, and doing so will allow them to go home; they may not weigh the long-term consequences of a confession with those immediate gains (Scott-Hayward, 2007) and are worse at weighing short vs. long-term impacts of a behavior compared to adults (Cleary, 2017; Steinberg, 2017). In an examination of juvenile false confession cases, Drizin and Leo (2004) found that getting to go home was one of the main reasons cited as juveniles' reasons for confessing.

Deception in Juveniles

As juveniles have been shown to be distinctly different from adults in terms of their neurological, cognitive, and psychosocial development (Cleary, 2017), differences in lying behaviors and strategies emerge as well. Children as young as 4 demonstrate the ability to intentionally lie (for a review, see (Evans & Lee, 2011). The ability for young children to tell sophisticated lies has been shown to increase with age, as executive functioning, specifically inhibitory control and theory of mind, matures (Evans et al., 2011). In an investigation of 6-to-11-year-olds' lying about not peeking at an answer during an experiment, Talwar et al. (2007)

found that while majority of children did lie, statements after the initial lie often revealed information that discredited their lie. However, their ability to tell sophisticated lies by keeping their subsequent statements consistent with their initial lies did improve with age. Evans and Lee (2011) found that better working memory, inhibitory control, and more time spent planning was related to more sophisticated lies in 8-to-16-year-olds. In a review of the cognitive demands associated with lying, Gombos (2006) found that developed executive functioning and control is needed for children to successfully maintain a sophisticated lie. Lie-telling can be more cognitively taxing than truth-telling because the liar must produce plausible alternatives to the truth while not contradicting previous statements, thus, several cognitive functions are needed when producing and maintaining sophisticated lies. Appropriate executive functioning is needed to plan for a lie, including working memory, directed attention, metacognition, management of information, and inhibition (Gombos, 2006), yet these functions continue to develop into adulthood (Icenogle et al., 2019; Luna et al., 2013; Steinberg et al., 2009).

As children's perspective taking, emotional self-regulation, and self-presentation improves, so does their ability to manipulate expressive behaviors to disguise internal states (see (DePaulo, 1992). Many experimental paradigms have investigated children's ability to control their reactions to undesirable gifts, unsweetened drinks, and lying about peeking at a toy. At age 5, children demonstrate effortful control, which is related to their ability to give positive reactions to undesirable gifts (Kieras et al., 2005). At age 8, children are able to control their nonverbal leakage control by using strategies like making eye contact, smiling, having relaxed and confident expressions, and a positive tone of voice (Talwar & Lee, 2002). At age 11, they display better semantic leakage control by keeping initial lies and subsequent statements consistent (Talwar et al., 2007), and by seventh grade they are able to adjust their facial

expressions to conceal their feelings (Feldman & et al., 1979). Additionally, 11-to-15-year-olds are able to maintain eye contact when lying (McCarthy & Lee, 2009), 11-to-13-year-olds use strategies like including components from real-life, staying calm, and looking normal to appear truthful (Strömwall et al., 2007), and 11-12- and 14-15-year-olds are able to manipulate their verbal statements to improve their credibility scores during an interview when coached on how to do so (Vrij et al., 2004). Taken together, studies have demonstrated that by early adolescence, children are aware of the way their behaviors can impact others and can manipulate their reactions to adjust those judgments.

When observing for signs of lying in their students in education settings, teachers do report looking for behaviors similar to what officers look for in adult suspects, specifically, the presence or absence of nervousness, gaze aversion, speech disturbances, head movements, and posture changes (Marksteiner et al., 2012). Vrij, Akehurst, and Knight (2006) investigated police officers', social workers' teachers', and laypersons' perceptions of deception in young children, adolescents, and adults, finding that participants thought all age groups would exhibit the same cues to deception (e.g., nervousness, gaze aversion, evasive responses). However, regardless of profession, participants thought adults would be more likely to manipulate their verbal and nonverbal behaviors to appear truthful, compared to children and teens.

Honts et al. (2013) investigated laypersons' ability to distinguish between true and false confessions provided by incarcerated male juveniles, aged 17-18. When evaluating the transcripts of confessions, participants were no better than chance at differentiating truth from lies. When evaluating video or audio confessions, participants performed significantly better than chance, however, this difference was modest, with 63.3 and 63.1% correct in identifying true confessions, respectively, and 52.7 and 47% correct in identifying false confessions. These

findings indicate that laypeople are still not very good at distinguishing between truth and false confession in 17-18-year-old juveniles, but their judgments may improve when observing video or audio of confessions. However, this study did not investigate the specific verbal or nonverbal behaviors that led participants to judge juveniles as lying or telling the truth (Honts et al., 2013).

Although police officers do acknowledge at least some developmental differences, they often believe juveniles can still be treated the same as adults (Reppucci et al., 2010) and report using the same interrogation techniques with youth and adult suspects (Meyer & Reppucci, 2007). Interrogation manuals advise similar techniques with juveniles as with adults (Barry C. Feld, 2006), and the Reid Technique manual, specifically, offers little to no insight on how to deal with juvenile suspects. The manual indicates that particular caution should be used when evaluating the deceptive behavior of children less than 10-years-old, but no such distinction is made for adolescents (Inbau et al., 2013). In a comparison of Reid trained versus non-Reid trained police officers, Kostelnik and Reppucci (2009) found that Reid Trained officers perceived no difference between adolescents' and adults' developmental maturity and sensitivity to coercive techniques. As previously discussed, substantial research has shown the use of BAI techniques with adults to be flawed (Bond & DePaulo, 2006; Kassin & Fong, 1999; Masip & Herrero, 2012), and due to the developmental differences between adults and juveniles, the use of these techniques with juveniles may be inappropriate and put them at risk.

Relying on the flawed BAI tactics of deception detection may be especially problematic for juveniles, who may commonly exhibit these behaviors due to reasons aside from deceitfulness. Claimed BAI indicators of deceit include crossing legs, shifting in the chair, gaze aversion, and increased response latency (see Appendix A). However, juveniles generally exhibit these behaviors regardless of their truthfulness or the context; they slouch more, make less eye

contact, and take longer to respond compared to adults (Meyer & Reppucci, 2007). They have even been found to make longer eye contact when lying compared to telling the truth (Jupe et al., 2016). Juveniles may pause or hesitate more during interviews due to limited understanding of legal processes (Birckhead, 2008) and may have a harder time managing their stress due to poorer self-regulation abilities (Cleary, 2017). Therefore, the behaviors exhibited by juveniles during an interview be misguidedly judged as indications of deceit. For example, a juvenile may give evasive responses to an officer's questions due to being uncomfortable in the presence of an authority figure or their limited ability to self-regulate this behavior (Birckhead, 2008; Cleary, 2017). An officer trained to observe for the presence of evasive responses may inaccurately interpret this as a cue to deception and, when coupled with similar flawed judgements, may mistake the juvenile as guilty of the crime in question.

Research has consistently shown that the stereotypical behavioral indicators of lying and the BAIs claimed behavioral indicators of lying are not accurate cues to deceit in adults (DePaulo et al., 2003). However, there is a lack of research on juveniles' ability to manipulate their behaviors to appear innocent during a police interview. As research has shown that common behaviors exhibited by juveniles (Birckhead, 2008; Jupe et al., 2016; Meyer & Reppucci, 2007) can be congruent with the stereotypical indicators thought to reflect lying (The Global Deception Research, 2006), juveniles may be at an increased risk of being mistakenly judged as deceitful if they are not actively controlling the presentation of those stereotypical indicators of lying.

Study Overview and Hypotheses

While there has been substantial research on the BAI and deception detection in adult samples, no research to date has directly observed the strategies and behaviors of juveniles during a BAI. Several researchers have acknowledged the underrepresentation of adolescents in the deception research (Jupe et al., 2016; Vrij, Akehurst, Brown, et al., 2006). This study aims to fill that gap in the research. Constraints placed by COVID-19 prevented me from physically bringing participants into the lab to take part in an in-person mock-BAI and record their actual behaviors, as done in previous research by Vrij, Mann, and colleagues (2006), therefore I investigated adults' and juveniles' willingness to engage in verbal and nonverbal behaviors during a hypothetical BAI, as done by Masip and Herrero (2012) with a college sample.

Participants were presented with a hypothetical criminal scenario followed by the 15 BAI questions. For each question, participants were presented with the verbal and nonverbal indictors of lying and truth-telling as detailed by Inbau et al. (2013) and they indicated the extent to which they would be willing to engage in those responses. Based on results from Masip and Herrero (2012), I hypothesized a main effect of response type, such that participants will be more willing to engage in truthful responses compared to deceitful responses, regardless of condition or age (H1). I further hypothesized an interaction between response type and age, such that juveniles will be more willing to engage in deceitful responses compared to adults. In other words, the difference between willingness to engage in deceitful and willingness to engage in truthful responses will be greater for juveniles than for adults (H2).

Participants indicated the extent to which they would use general and specific strategies to appear innocent. I predicted an interaction between use of strategies to appear innocent and condition, such that guilty suspects will be more willing to use strategies to appear innocent than

innocent suspects. In other words, I expected guilty participants to indicate they would attempt to manipulate their verbal and nonverbal behaviors to appear innocent to a greater extent than innocent participants (H3). I further predicted an interaction between use of strategies to appear innocent and age, such that adults will engage in more strategies to appear innocent than juveniles. In other words, I expected adults to indicate they would attempt to manipulate their verbal and nonverbal behaviors to appear innocent to a greater extent than juveniles (H4).

Participants were then presented with the stereotypical lying behaviors identified by previous research (The Global Deception Research, 2006) to explore whether juveniles and adults hold similar or different views on behaviors that indicate lying. Finally, participants indicated their perceptions of police legitimacy (Reynolds et al., 2018) to explore differences between age groups and whether their views of police influenced their responses to the BAI.

Presenting participants with an online, hypothetical BAI does account for restrictions placed on in-person research, however, its ecological validity is limited. In-person, mock-interviews can give better insight into how participants will behave in situations that utilize their "hot" cognition, which is more representative of the high-stakes, emotionally charged nature of a real interrogation (Mann et al., 2002). The hypothetical BAI method utilized in this research will give insight into participants' reported behaviors and strategies during situations in which their "cold" cognition is used more than their "hot" cognition. While this limits observations of behaviors and strategies in "hot" cognition situations, this method is still informative as it can provide insight on whether juveniles and adults differ in how they view, plan to use strategies in interviews, and plan to manipulate their behavior to appear innocent.

CHAPTER II

METHODOLOGY

Participants

Masip and Herrero's (2012) study with young adults (n=74) found non-significant effects of condition (innocent vs. guilty), significant medium-to-large effects of response-type (deceptive vs. truthful responses; partial η^2=.83), and a significant condition x response-type interaction (partial η^2=.42). Based on these results and a power analysis (Cohen, 1992) the sample size for this study should be 45 per condition, or 90 per juvenile, young adult, and adult age groups, to detect a medium effect (α =.05).

Juveniles

Forty-five juveniles aged 12-16-years-old participated in this study. This age range was chosen because the concept of lying can continue to develop between ages 12 to 19 (Engels et al., 2006), previous research investigating juvenile deception detection has defined adolescence as 14- to 15-years-old (Vrij, Akehurst, & Knight, 2006; Vrij et al., 2004), and the Reid manual defines adolescence as aged 10 to 15 (Inbau et al., 2013). Therefore, it was determined that ages 12-16 would serve as an appropriate age range to sample. Juvenile participants were recruited via social media posts, university and department-wide announcements, word-of-mouth between participants, ChildrenHelpingScience.com, and through additional snowball-sampling methods. Participants received a $10 Amazon gift card for participating.

To ensure voluntary participation and gain informed consent/assent, juvenile participants and their parent or legal guardian first met with a member of the research team via Zoom. During this meeting, juveniles and their parent were informed of the purpose of the study, their rights as a participant (e.g., voluntary participation, confidentiality), given an overview of the procedure and compensation information, and were given the opportunity to ask any questions. Parents and juveniles then gave verbal consent to the researcher, and provided consent and assent on the Qualtrics survey platform by selecting that they agreed to participate. Once consent/assent was received, the researcher exited Zoom and the juvenile completed the study via Qualtrics, without any assistance from their parent or the researcher.

Participation was limited to US. Citizens between 12-16-years-old, English speakers and readers, those able to read at a 7th grade level. Although participants are still being recruited, the current sample consists of the 45 participants, with ages ranging from 12 to 16 years (M=13.84, SD=1.24). Additionally, 8.9% (n=4) were in 6th grade, 13.3% (n=6) were in 7th grade, 22.2% (n=10) were in 8th grade, 33.3% (n=15) were in 9th grade, 20% (n=9) were in 10th grade, and 2.2% (n=1) were in 11th grade. For gender, 53.3% (n=24) identified as female, 44.4% (n=20) as male, and 2.2% (n=1) as transgender/non-binary. For racial identity, 86.7% (n=39) identified as White, 8.8% (n=4) as two or more races, 2.2% (n=1) as Black/African American, and 2.2% (n=1) as Asian. Finally, 60% (n=28) indicated they had never interacted with police before, 20% (n=9) said they had been informally questioned by police, and 4.4% (n=2) said they had been formally interrogated by police about their involvement in a crime.

Young Adults

One hundred and eight consenting young adults were recruited via The University of Tennessee at Chattanooga's SONA psychology research platform to serve as the young adult sample. Participants were compensated with extra credit in eligible psychology courses. This college sample was included to allow for appropriate comparison of results to Masip and Herrero's (2012) college-aged sample. Nine of these participants were excluded from analyses for failing attention checks or completing less than 50% of the study. Four participants were moved to the adult sample for analyses due to being older than 25. Therefore, 95 participants were included in the final young adult sample. Their age ranged from 18 to 25 years (M=20.33, SD=1.39). For gender, 93.7% identified as female and 6.3% as male. For racial identity, 70.5% identified as White, 12.6% as Black/African American, 3.2% as two or more races, 2.1% as Asian, 2.1% as Hispanic or Latino or Spanish Origin, and 1.1% as Native Hawaiian or Other Pacific Islander. One percent had some high school education, 22.1% were high school graduates, 60% had some college credit, no degree, 13.7% had an associate degree, 2.1% had a bachelor's degree, and 1.1% marked 'other' for their level of education. All participants indicated they had no children or responded "not applicable" to the question. Finally, participants were asked if they had any prior interactions with police officers: 27.4% (n=26) said they had never interacted with the police, 22.1% (n=21) said they had been informally questioned by the police, and 3% (n=3) said they had been formally interrogated by police about their involvement in a crime.

Adults

Typical college participants under 25-years-old still exhibit some immaturities and behaviors that lead to differences in interview performance and increased false confessions risk compared to older adults (Kassin & Kiechel, 1996). Thus, another sample of 77 adults aged 35-50 were recruited via Amazon's Mechanical Turk (MTurk) and were paid $3.00 for completing the study appropriately. The additional middle-aged sample allows for examination of a wider range of differences in adults' use of behavioral strategies for impression management in a BAI in comparison to juveniles. MTurk also allows for the recruitment of a more diverse sample of participants compared to a typical SONA sample (Buhrmester et al., 2011). CloudResearch was additionally used to restrict participants to United States citizens, English-speakers, and those between the ages of 35 to 50. Moreover, CloudResearch was used to block duplicate IP addresses to prevent participants from completing the study more than once, and to filter the sample to those with a 99% approval rating and a 500+ Human Intelligence Tasks approval to ensure higher quality data (Litman et al., 2017). Any participants who were not fluent English speakers, could not read at a 7th grade reading-level, or were not U.S. citizens were excluded from participating in this study.

One participant was excluded for falling beyond the required age range; four participants who were recruited from the SONA sample fell in the adult age-range and were thus included in the adult sample analyses. Therefore, responses from 80 participants were analyzed in the adult sample. Their ages ranged from 28 to 49 years (M=40.33, SD=4.74). For gender, 58.5% identified as female and 47.5% as male. For racial identity, 66.3% identified as White, 16.3% as Black/African American, 12.5% as Asian, and 2.5% as Hispanic or Latino or Spanish Origin. Two participants did not report their race/ethnicity. With regards to education: 43.8% had a

bachelor's degree, 16.3% had an associate degree, 16.3% had some college credit, no degree, 13.8% had a master's degree, 7.5% had some high school education, 1.3% had a professional or doctoral degree, and 1.3% had trade/vocational training. Finally, participants were asked if they had any prior interactions with police officers: 11.3% (*n*=9) said they had never interacted with the police, 28.7% (*n*=23) said they had been informally questioned by the police, and 6% (*n*=6) said they had been formally interrogated by police about their involvement in a crime.

Materials

Materials used for this study included a theft scenario, pre-interview question, Behavior Analysis Interview, and a post-interview questionnaire.

Theft Scenario

The Behavior Analysis Interview training in the Reid manual includes an example interview with a person of interest and police officer based on an arson case (Inbau et al., 2013). This training includes a case description, which details that a fire was started in a warehouse after a side door was pried open and investigations showed the fire was started purposefully and revealed two employees that had motive for starting the fire. The manual demonstrates how to conduct a BAI based on the details of this case. Previous research has utilized this arson scenario in an imagined BAI format by presenting participants with the scenario and instructing them to imagine they were either guilty or innocent of the crime (Masip & Herrero, 2012). Similar methods were utilized for this study; however, the criminal scenario was adapted to a theft scenario at school deemed more appropriate for the juvenile participants and young adult

participants. Adult participants from MTurk read the same theft scenario, however it depicted a theft at a place of work.

Participants read a high-stakes criminal scenario vignette modeled after the Reid Technique manual's example BAI of an arson case and adapted from Masip and Herrero's (2012) study (refer to Appendix B). The theft scenario was adapted by the research team to a 7th grade reading-level to promote readability for juvenile participants. Participants were randomly assigned to the innocent or guilty condition and instructed to imagine they are guilty/innocent of crime presented, imagine that they will be questioned by a police officer, and that they should prepare to answer questions regarding their involvement in the case.

The theft scenario detailed a fake-crime, including: 1) a computer was stolen from a computer lab/manager's office at school/work, 2) there were no witnesses to who stole the computer, 3) a teacher/co-worker discovered the computer as missing the following morning and called police, 4) police discovered a video camera in the parking lot which showed two individuals who appeared to be ages 12 to 16 (18 to 25 for young adults, 35 to 50 for adults), 5) police believe one of the individuals looks like them (i.e., the participant), and 6) they are now a suspect in this crime. Participants are further instructed to imagine that: 1) two police officers pulls them out of class/work for questioning, 2) they are either innocent or guilty of the crime (dependent on randomly assigned condition), and 3) they should prepare for questioning. Finally, participants were prompted with "If the officer decides that you are guilty of stealing the computer then you would be in serious trouble. You want to convince the police officer that you are innocent, that you did NOT take the computer."

Pre-Interview Question

Participants were prompted through an open-ended question to indicate the strategies they would use to convince a police officer that they are telling the truth during an interview. Participants were asked "Now that you are being interviewed by police about the stolen computer, how would you convince the police officer that you are telling the truth? What kinds of things would you say and do to make him believe you are innocent?" This was an open-ended question so that participants could specify any general or specific strategies that they would use to appear truthful without priming them.

Behavior Analysis Interview

The Behavior Analysis Interview training in the Reid manual includes an example interview with a person of interest and police officer based on an arson case, described earlier. Following the case description, the manual continues by presenting the 15 BAI questions asked by an officer and presenting potential verbal and nonverbal responses the person of interest could give, and whether the potential response is indicative of lying or truth-telling (Inbau et al., 2013). This flow was adapted to this study, such that participants were presented the 15 BAI questions in a fixed order on a Qualtrics survey (See Appendix C). Participants first read the officer's question, presented one at a time; for example, "Officer: 'What is your understanding of this interview with me here today?'". Below the officer's question were all possible deceptive and truthful, verbal and nonverbal responses outlined by Inabu et al. (2013). Each potential response started with the prompt "If you were innocent [guilty, dependent on randomly assigned condition], would you give a ..." and continued into the specific verbal or nonverbal behavior. Each potential response ended with an example of that behavior; for example, "If you were

innocent, would you give a general, unspecific and vague response? (e.g., "I guess you want to talk to me about what happened at school"). Potential responses to each of the BAI questions ranged from 2 responses (Q1) to 11 responses (Q2) with a mean of 4.26 responses (*SD*=2.46). All possible deceptive and truthful responses for each BAI question were presented in a random order under each BAI question. Participants rated on a Likert scale of 1 ("I would not give this answer") to 6 ("I would give this answer") the extent which they would be willing to give each potential response based on their involvement in the case.

All BAI questions and potential responses were adapted to a 7th grade reading level by the research team to promote readability among juvenile participants.

Post-Interview Questionnaire

Strategies to Appear Innocent

To determine if there is a difference between the strategies to appear innocent of guilty and innocent suspects, participants answered questions regarding the general strategies they would use during an interview to convince an officer that they are innocent of the crime in question. The strategies presented mimicked Masip and Herrero's (2012) study to promote comparison of results. These strategies were chosen based on previous research on differences in liars' and truth-tellers' strategies to appear truthful during police interviews (Hartwig et al., 2007; Hartwig et al., 2010; Hines et al., 2010; Vrij & Granhag, 2012).

Participants were first presented with a list of five general strategies and asked to indicate on a Likert scale of 1 to 6 the extent to which they would actively engage in each of the strategies (see Appendix C). These strategies included making a plan for how they would behave during the interview, trying to appear innocent, trying to change physical/nonverbal behaviors to

look innocent, trying to control their words to looks innocent, and giving an alibi. The general strategies were rated such that lower scores indicated more use of that strategy and higher scores indicated acting natural. Using this scale gave participants the ability to choose where they fell between those two extremes.

Participants were then presented with seven specific strategies rated on a 1 to 3 Likert scale. These included making body movements, looking nervous or relaxed, telling a detailed or simple story, denying or admitting guilt, including truthful or deceptive information, answering all questions, and making eye contact. The specific strategies were rated such that the middle point indicated act natural, and the two end points indicated opposite behaviors (e.g., 1 = 'Make eye contact', 2 = 'Act natural', 3 = 'Not make eye contact').

Stereotypical Lying Behaviors

Participants were presented with a list of behaviors stereotypically believed to be exhibited by liars and asked to identify if they believe each behavior is typically shown by someone who is lying. Participants were first prompted with the instructions to think about "how you can tell when someone, like a friend or parent, is lying to you and how you can tell when someone is telling the truth to you." They were then presented with the 10 behaviors that were identified as being most stereotypically related to lying globally in research by The Global Deception Research Team (2006). Participants were presented with a prompt (e.g., "When people are lying, they act") and then selected the behavior they associated with lying (e.g., calm, nervous, or neither calm nor nervous).

Attitudes Towards Police Legitimacy Scale (ATPLS)

The ATPLS is a 34-item scale designed to measure overall perceptions of police legitimacy, specifically the attitudes, beliefs, and emotions that effect individuals' perceptions (Reynolds et al., 2018). This scale has been shown to be reliable through a high internal consistency (Cronbach's α=.98) and valid through convergent validity measures. Factor analyses revealed all 34-items to load onto one factor, yet seven theoretical domains are assessed: bias (1 item), quality of interpersonal treatment (3 items), trustworthiness (4 items), motivation (7 items), quality and organizational integrity (5 items), being part of the community (4 items), and normative alignment (10 items).

Only 14-items from the 34-item scale were used for this study. Five of the original seven domains were represented in the 14-items chosen: bias (1 item), quality of interpersonal treatment (3 items), trustworthiness (4 items), motivation (5 items), and being part of the community (1 item). An additional 6-items that did not load onto components after factor analyses during scale development were included due to their relevancy to this study. All items were rated on a 1 ("Strongly disagree") to 7 ("Strongly agree") Likert scale, with higher scores indicating more positive beliefs, while lower scores indicate more negative beliefs. Questions include: "Police officers make fair decisions when enforcing laws", "Police officers are generally kind", and "If I were to interact with a police officer, I would be nervous". This scale was included to determine if there is a correlation between general perceptions of police and responses during the hypothetical police interview, and to determine if perceptions or police moderate with strategies used during an interview.

Demographics

All participants were prompted to indicate their age, gender, and race/ethnicity. Juvenile participants were additionally asked what grade they were currently in, while young adult and adult participants were asked their highest level of education and if they have any children. Finally, all participants were asked if they have had any prior police interactions, including prior arrests or participated in an interrogation with an officer (see Appendix C).

Attention Checks

Four open-ended, free-recall attention check questions were asked throughout the study. Two attention checks were presented directly after the theft scenario to check that participants fully read and comprehended the scenario, while it was still fresh in their minds. Specifically, they were asked who discovered the computer was stolen and what time of day the computer was stolen. The final two attention checks were presented after the strategies to appear innocent questions and asked what was stolen and why they were being questioned by police. These attention checks were placed here to ensure that participants were still actively engaged in the study towards its end.

Procedure

Juvenile Informed Consent and Assent

Parents of interested juveniles aged 12-to-16 signed-up for a meeting time slot with a member of the research team through an online sign-up platform. Within the sign-up page, parents provided their name, their contact email, their child's name, and their child's age. Personal participant information was collected for contact purposing, but was made available to

only to the research team. Upon signing-up, they were contacted via the email provided with a confirmation of the timeslot, a Zoom meeting link, and copies of the parental consent form and juvenile assent form. They were instructed to read over these forms prior to the virtual meeting, but informed that the researcher would review these forms and answer any questions during the meeting. Informed consent and assent forms outlined the purpose of the study, the length of time it would take to complete the study (30-45 minutes), potential benefits of participating, that participation was voluntary, they could withdraw at any point, and their data would be de-identified and confidential.

Meetings with juvenile participants and their parent or legal guardian were led by trained undergraduate and graduate research assistants. In the meeting, research assistants summarized the informed consent and assent forms, specifically stating the purpose and procedure of the study, right to withdrawal, and confidentiality of data. Juveniles and their parents were then given the opportunity to ask any questions before providing their consent/assent. A link to the study on Qualtrics was then sent, where parents and participants gave their written consent/assent. Once consent/assent was received and all questions from the participant and their parent were answered, the researcher exited Zoom and the participant continued with the study. To minimize potential confounding effects from individual researchers, all research assistants were provided with a script to follow during the meeting with the parent and participant.

Young Adult and Adult Informed Consent

Before beginning the study, young adult and adult participants were provided with an informed consent form which outlined the purpose of the study, the length of time it would take to complete the study (30-45 minutes), potential benefits of participating, that participation was

voluntary, they could withdraw at any point, and their data would be de-identified and confidential. After providing consent, participants were asked if they were at least 18 years-old (*yes, no*); those who responded "No" were exited from the study.

Study Procedure

After agreeing to participate, all participants were randomly assigned to one of two conditions (imagined innocence vs. imagined guilt) and progressed to the study. First, participants were instructed to imagine they were at school (or work for the adult sample) when a computer lab was broken into and a computer was stolen. A description of the circumstances surrounding the theft was provided, modeling Inbau et al.'s (2013) example BAI. Following the description of the crime, participants were told to imagine that they are one of the students (or employees) that was present during the theft and are being considered as a prime suspect by police and they were being taken into an interview room with two uniformed police officers for questioning. Participants were then told to imagine that they are guilty or innocent (dependent on their randomly assigned condition) of the crime. Finally, participants were told to think about how they would answer polices' questions in an attempt to appear innocent and evade trouble.

Following the description of the theft criminal scenario, participants completed two open-ended attention check asking detailed questions about the crime scenario they just read. They were then prompted with the pre-interview question which consisted of one open-ended prompt to identify the strategies they would use to convince a police officer that they are telling the truth during an interview. The 15 question BAI was then presented in a fixed-order, one question at a time, with each question followed by all potential deceptive and truthful responses presented in

the BAI training (Inbau et al., 2013). Participants were instructed to indicate the extent to which they would give each of those responses on a 1 to 6 Likert scale.

The final section consisted of the post-interview questionnaire, in which participants were presented with a set of 12 general and specific strategies they could use during an interview to convince an officer that they are innocent. They indicated the extent to which they would engage in those strategies on a 1 to 6 or 1 to 3 Likert scale. Participants then completed a second attention check where they answered two open-ended questions about details from the theft scenario. They were then presented with a list of 10 behaviors stereotypically believed to be exhibited by liars and asked to identify if they believe each behavior is or is not typically shown by someone who is lying (The Global Deception Research, 2006). Lastly, they were presented with 20-items from the Attitudes Towards Police Legitimacy Scale to assess their overall perceptions of police (Reynolds et al., 2018). Participants completed a series of demographic questions before being thanked and compensated.

Hypotheses

H1: There will be a main effect of response type, such that participants will be more willing to engage in truthful responses compared to deceitful responses. This will be tested by comparing participants' willingness to engage in each of the responses to the 15 BAI questions.

H2: There will be an interaction between response type and age, such that juveniles will be more willing to engage in deceitful responses compared to adults. In other words, the difference between willingness to engage in deceitful and willingness to engage in truthful responses will be greater for juveniles than for adults. This will be tested by comparing

juveniles', young adults', and adults' willingness to engage in each of the responses to the 15 BAI questions.

H3: There will be an interaction between use of strategies to appear innocent and condition, such that guilty suspects will be more willing to use strategies to appear innocent than innocent suspects. This will be tested by comparing innocent and guilty participants' responses to the 12 strategies to appear innocent questions.

H4: There will be an interaction between use of strategies to appear innocent and age, such that adults will engage in more strategies to appear innocent than juveniles. This will be tested by comparing juveniles', young adults', and adults' responses to the 12 strategies to appear innocent questions.

CHAPTER III

RESULTS

Attention Checks

Before conducting analyses, responses to the four attention checks were reviewed to determine if any participants needed to be excluded. Data were collected from 224 participants across three age groups. Four attention checks were used throughout the study procedure to ensure that participants were appropriately reading and paying attention to the study materials. Attention check questions included: *"Based on the story you just read, who discovered that the computer was stolen?", "Based on the story you just read, what time of day was the computer stolen?", "What was stolen from your school [work]?",* and *"Why are you being interviewed by the police?".* All attention check questions were presented as an open-ended format so participants could type their responses. Participants were excluded from analyses if they failed one or more attention checks. After analyzing the attention checks, four participants were excluded due to providing incorrect responses to at least one question, thus, data from 220 participants were further analyzed.

Behavior Analysis Interview

Overall BAI Responses

To test the effect of the two independent variables of age and condition on the dependent variable of willingness to engage in deceitful and truthful BAI responses, two means were first

computed for each of the 15 BAI questions ('response type'). One mean was computed for the average on all innocent responses per question and one for average on all guilty responses per question, resulting in 15 deceptive means and 15 truthful means. Two additional mean scores were then computed for willingness to engage in truthful responses and willingness to engage in deceptive responses across all 15 BAI questions ('overall response type'). I conducted a 2 (condition) x 3 (age) Repeated Measure Analysis of Variance (ANOVA) with the overall truthful and deceptive responses as the within-subject dependent variables. This analysis was used to determine if there were differences in the overall mean scores on the BAI based on age and condition. Alpha levels were set to .05 for all analyses.

In support of hypothesis 1, results show a significant main effect of response type, F (1, 214) =144.45, p<.001, partial η^2=.40, such that regardless of age or condition, participants were significantly more willing to engage in truthful (M=3.56, SE=.05) than deceptive responses (M=3.02, SE=.04) across all 15 BAI questions. Correlational analyses further showed a positive relationship between overall truthful response type and overall deceitful response type, r=.52, p<.01, suggesting participants who were more willing to engage in one response type were also more willing to engage in the other response type. The main effect of condition was not significant, F (1, 214) = .12, p=.73, partial η^2=.001. There was a significant response type x condition interaction, F (2, 214) = 4.26, p=.04, partial η^2=.02. Follow-up paired samples t-tests were used to further explore this interaction. Both innocent and guilty participants were significantly more likely to be willing to engage in truthful than deceptive responses (t[111] = 11.05, p < .001; t[111] = 7.14, p < .001 respectively). However, the size of the difference between willingness to engage in truthful and deceptive responses was larger for innocent participants compared to guilty participants. See Table 1 for means and standard deviations for

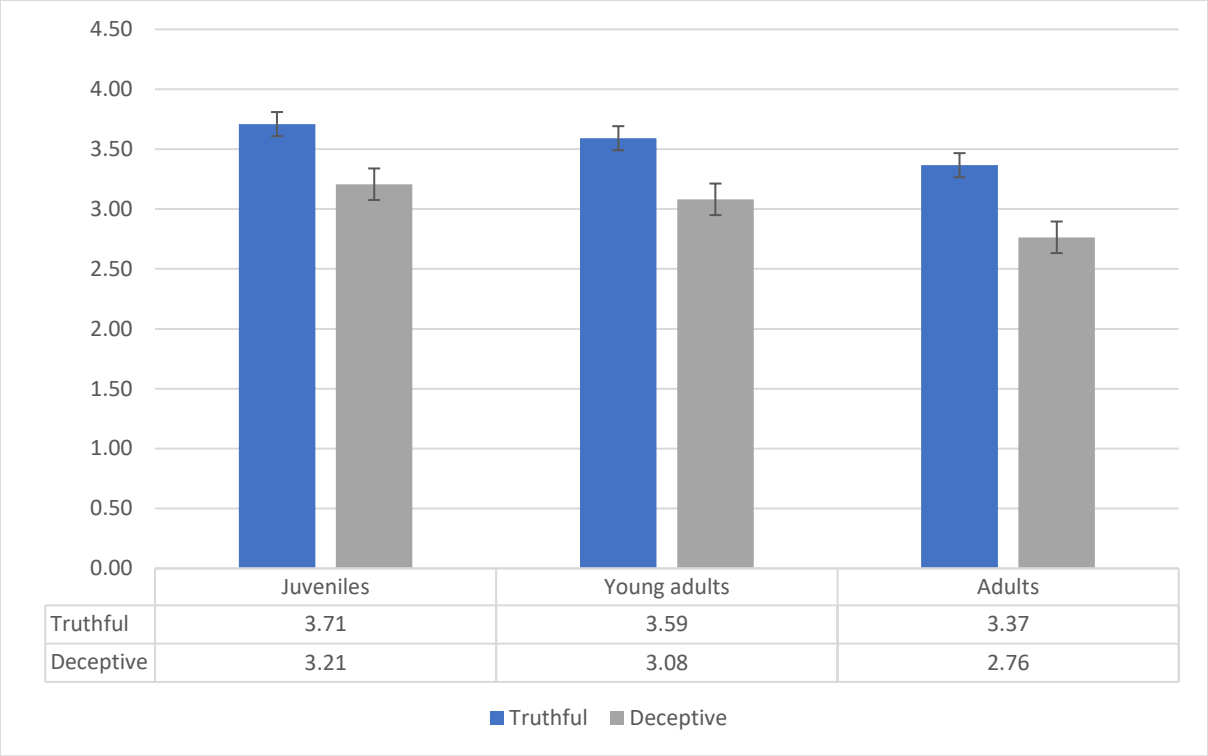
response type by condition. Moreover, an independent samples t-test revealed innocent and guilty participants did not significantly differ from each other in their use of either truthful or deceptive responses (t[218] = -1.31, p = .19; t[218] = 1.17, p = .24 respectively).

Table 1 Overall BAI Response Type X Condition

Condition	Response Type		t(111)
	Truthful M (SD)	Deceptive M (SD)	
Innocent	3.59 (.64)	2.94 (.62)	11.05**
Guilty	3.47 (.70)	3.04 (.61)	7.14**

**p < .001

There was a significant main effect of age, F (1, 214) =5.36, p<.001, partial η^2=.08; collapsed across response type and condition, juveniles were more willing to engage in both truthful and deceptive responses, followed by young adults, then adults. Contradicting hypothesis two, the response type x age interaction was not significant, F (2, 214) = 4.26, p=.57, partial η^2=.01. Although not significant, an observation in the trends shows that juveniles had higher ratings of willingness to engage in deceitful and truthful responses across all 15 BAI questions compared to young adults and adults. See Figure 1 for means and standard errors of response type by age group.



	Juveniles	Young adults	Adults
Truthful	3.71	3.59	3.37
Deceptive	3.21	3.08	2.76

Figure 1 Mean Ratings of Overall BAI Response Type by Age Group

Note. Error bars show standard errors.

Individual BAI Items

Masip and Herrero (2012) found differences across questions in participants' willingness to engage in the truthful and deceptive responses. To explore this possibility and to determine if there were age differences in participants' responses on a question-level, a series of 3 (age: juveniles, young adults, adults) x 2 (condition: innocent, guilty) Repeated Measures ANOVAs were used for each of 15 BAI questions response type variables. LSD post-hoc tests were used to further investigate any significant differences in age. As analyses of each BAI questions were conducted individually, results should be interpreted cautiously due to the potential for an inflated Type I Error rate.

Main Effects of Response Type

Significant main effects of response type were found for BAI questions 2, 8, 9, 10, 11, 12, 13, and 14. For all questions except 11 and 12, the difference in response type was in the predicted (H1) way such that participants were more willing to engage in truthful than deceptive responses. This pattern was opposite for questions 11 and 12, where participants were more willing to engage in deceptive than truthful responses.

Questions 2 and 10 were the only questions that contained both verbal and nonverbal responses. Thus, to further explore their significant main effects, separate repeated measures ANOVAs were conducted on means of truthful verbal responses compared to means of deceitful verbal responses, and means of truthful nonverbal responses compared to means of deceitful nonverbal responses. Question 2 verbal, question 2 nonverbal, and question 10 nonverbal analyses were significant and in the predicted direction. Overall, in partial support of hypothesis one, participants were more willing to engage in truthful than deceptive responses for all questions besides 7, 10 verbal, 11, and 12. See Table 2 for means, standard errors, and test statistics for response type main effects.

Table 2 Question Level Main Effects of Response Type

BAI Question	Response Type		$F(1, 217)$	partial η^2
	Truthful *M* (SE)	Deceptive *M* (SE)		
Q1	3.22 (.13)	3.15 (.08)	.16	.001
Q2	3.82 (.06)	2.60 (.06)	288.48**	.57
Q2 Verbal	3.65 (.09)	2.86 (.08)	61.65**	.22
Q2 Nonverbal	3.94 (.08)	2.38 (.07)	231.48**	.52
Q3	3.69 (.07)	3.55 (.07)	2.30	.01
Q4	3.29 (.13)	3.14 (.06)	1.20	.01
Q5	2.73 (.12)	2.67 (.07)	.22	.001
Q6	3.12 (.12)	3.03 (.12)	.23	.001
Q7	2.78 (.12)	3.00 (.09)	3.02	.01
Q8	4.23 (.12)	2.56 (.11)	68.4**	.24
Q9	4.65 (.12)	2.06 (.08)	263.21**	.55
Q10	3.14 (.09)	2.56 (.07)	31.15**	.13
Q10 Verbal	2.68 (.12)	2.87 (.08)	2.66	.01
Q10 Nonverbal	3.59 (.13)	2.32 (.10)	58.99**	.22
Q11	2.34 (.11)	3.66 (.09)	97.23**	.31
Q12	2.44 (.11)	3.33 (.08)	36.27**	.15
Q13	4.83 (.11)	3.80 (.08)	96.97**	.31
Q14	4.43 (.12)	2.63 (.07)	167.29**	.44
Q15	3.66 (.12)	3.44 (.09)	2.45	.01

**$p < .001$

Main Effects of Condition

Significant main effects of condition were found for BAI questions 4, 7, and 15. For questions 4 and 15, innocent participants were more willing to engage in any response. This pattern was opposite for question 7, where guilty participants were more willing to engage in any response. An observation of the mean trends shows that for questions 1, 2, 4, 9, 10, 14, and 15 innocent participants were more willing to engage in any responses than guilty participants. However, the opposite trend was found for questions 3, 5, 6, 7, 8, 11, 12, and 13 such that guilty participants were more willing to engage in any responses than innocent participants. See Table 3 for means, standard errors, and test statistics for condition main effects.

Table 3 Question Level Main Effects of Condition

Question	Condition		$F(1, 217)$	partial η^2
	Innocent *M* (SE)	Guilty *M* (SE)		
Q1	3.26 (.08)	3.11 (.08)	1.71	.01
Q2	3.29 (.07)	3.14 (.07)	2.45	.01
Q3	3.54 (.07)	3.70 (.07)	2.28	.01
Q4	3.37 (.1)	3.05 (.1)	5.08*	.02
Q5	2.68 (.1)	2.71 (.1)	.06	.00
Q6	2.96 (.11)	3.19 (.11)	2.32	.01
Q7	2.68 (.12)	3.10 (.12)	6.75*	.03
Q8	3.31 (.08)	3.48 (.08)	2.38	.01
Q9	3.37 (.09)	3.34 (.09)	.03	.00
Q10	2.98 (.09)	2.75 (.09)	3.05	.01
Q11	2.83 (.1)	3.07 (.1)	2.91	.01
Q12	2.86 (.09)	2.92 (.09)	.2	.001
Q13	4.22 (.12)	4.41 (.12)	1.26	.01
Q14	3.63 (.1)	3.43 (.1)	2.15	.01
Q15	3.77 (.1)	3.38 (.1)	9.58*	.06

*$p < .05$

Response Type X Condition Interactions

Significant condition x response type interactions were found for BAI questions 1, 3, 4, 5, 12, and 15. For all questions except 12, guilty condition participants were more willing to engage in deceptive responses and innocent participants were more willing to engage in truthful

responses. These trends partially support predictions from Inbau et al. (2013) that guilty suspects will engage in more deceptive responses and innocent suspects will engage in more truthful responses. However, the opposite pattern emerged for question 12, where innocent participants were more willing to engage in deceptive responses and guilty participants were more willing to engage in truthful responses. Additionally, no significant differences in response type according to guilt-status were found for the remaining questions. See Table 4 for means, standard errors, and test statistics for the response type by condition interactions.

Table 4 Question Level Response Type X Condition Interactions

Condition:	Innocent		Guilty		$F(1, 217)$	partial η^2
Response:	Truth	Deceit	Truth	Deceit		
Q1	3.54	2.99	2.91	3.31	6.19*	.03
	(.19)	(.12)	(.19)	(.12)		
Q2	3.89	2.69	3.76	2.52	.09	.00
	(.08)	(.09)	(.08)	(.09)		
Q3	3.73	3.36	3.65	3.74	6.29*	.03
	(.1)	(.1)	(.1)	(.1)		
Q4	3.69	3.05	2.88	3.22	12.81**	.06
	(.18)	(.09)	(.18)	(.09)		
Q5	2.89	2.47	2.57	2.86	6.29*	.03
	(.17)	(.1)	(.17)	(.1)		
Q6	3.09	2.82	3.13	3.23	.96	.004
	(.16)	(.18)	(.16)	(.18)		
Q7	2.6	2.76	2.96	3.25	.26	.001
	(.17)	(.12)	(.17)	(.12)		
Q8	4.05	2.57	4.41	2.55	.89	.004
	(.17)	(.16)	(.17)	(.16)		
Q9	4.72	2.01	4.58	2.1	.57	.003
	(.17)	(.12)	(.17)	(.12)		
Q10	3.21	2.76	3.07	2.43	.91	.004
	(.13)	(.1)	(.13)	(.1)		
Q11	2.02	3.64	2.45	3.68	1.92	.01
	(.15)	(.13)	(.15)	(.13)		
Q12	2.21	3.15	2.68	3.15	7.94*	.04
	(.16)	(.11)	(.16)	(.11)		
Q13	4.72	3.73	4.95	3.88	.19	.001
	(.16)	(.12)	(.16)	(.12)		
Q14	4.65	2.61	4.23	2.64	2.77	.01
	(.17)	(.1)	(.17)	(.1)		
Q15	4.21	3.33	3.11	3.54	20.68**	.09
	(.16)	(.12)	(.17)	(.12		

*$p < .05$
**$p < .001$

Main Effects of Age

Significant main effects of age were found for BAI questions 2, 4, 5, 6, 7, 10, 12, 13, 14, and 15. Juveniles were significantly more willing to engage in any of the responses compared to adults (except for question 2). For questions 6, 10, 13, and 15, young adults were also significantly more willing to engage in any of the responses compared to adults. For question 2, only young adults were significantly more willing to engage in any of the responses compared to adults.

Questions 2 and 10 were the only questions that contained both verbal and nonverbal responses. Thus, to further explore their significant main effects, separate univariate ANOVAs were conducted on means of truthful verbal responses compared to means of deceitful verbal responses, and means of truthful nonverbal responses compared to means of deceitful nonverbal responses. Question 2 nonverbal, question 10 verbal, and question 10 nonverbal analyses were significant and in the same directions. Juveniles (and young adults for 2 nonverbal and 10 nonverbal) were significantly more willing to engage in any responses compared to adults. Question 2 verbal was the only question where juveniles were less willing to engage in any of the responses compared to the other age groups. See Table 5 for means, standard errors, and test statistics for age main effects.

Table 5 Question Level Main Effects of Age

BAI Question	Age Group *M* (*SE*)			*F* (2, 217)	partial η^2
	Juveniles	Young Adults	Adults		
Q1	3.31_{a}	3.12_{a}	3.12_{a}	1.03	.01
	(.12)	(.08)	(.09)		
Q2	$3.17_{a,b}$	3.78_{b}	3.09_{a}	4.1*	.04
	(.10)	(.07)	(.08)		
Q2 V	3.07	3.35	3.29	1.55	.01
	(.13)	(.09)	(.10)		
Q2 NV	3.23_{a}	3.36_{a}	2.89_{b}	8.85**	.08
	(.11)	(.08)	(.08)		
Q3	3.72	3.68	3.46	2.67	.03
	(.11)	(.08)	(.08)		
Q4	3.63_{a}	3.16_{b}	2.84_{c}	9.05**	.08
	(.15)	(.10)	(.11)		
Q5	3.18_{a}	2.58_{b}	2.33_{b}	10.93**	.09
	(.15)	(.10)	(.11)		
Q6	3.21_{a}	3.22_{a}	2.79_{b}	3.92*	.04
	(.16)	(.11)	(.12)		
Q7	3.19_{a}	2.9_{a}	2.59_{b}	4.07*	.04
	(.17)	(.12)	(.13)		
Q8	3.53	3.41	3.24	2.15	.02
	(.12)	(.08)	(.09)		
Q9	3.46	3.4	3.2	1.59	.02
	(.14)	(.09)	(.10)		
Q10	3.29_{a}	2.87_{b}	2.44_{c}	12.36**	.10
	(.14)	(.10)	(.10)		
Q10 V	3.03_{a}	2.79_{a}	2.51_{b}	3.14*	.03
	(.17)	(.12)	(.13)		
Q10 NV	3.55_{a}	2.94_{b}	2.38_{c}	17.33**	.14
	(.16)	(.11)	(.12)		
Q11	3.14	2.91	2.8	1.7	.02
	(.14)	(.10)	(.11)		
Q12	3.22_{a}	2.82_{b}	2.62_{b}	6.86**	.06
	(.13)	(.09)	(.10)		
Q13	4.45_{a}	4.52_{a}	3.98_{b}	4.82*	.04
	(.18)	(.12)	(.13)		
Q14	3.83_{a}	3.44_{b}	3.32_{b}	4.23*	.04
	(.14)	(.10)	(.11)		
Q15	3.69_{a}	3.75_{a}	3.22_{b}	6.5*	.06
	(.125	(.10)	(.11)		

Note. Means with different subscripts differ at the $p = .05$ level by LSD post-hoc tests.
*$p < .05$
**$p < .001$

Response Type X Age Interactions

Significant age x response type interactions were found for BAI questions 2, 2 nonverbal, 4, 5, and 13. In partial support of hypothesis two, an observation of means shows that juveniles and young adults were more willing to engage in deceitful responses compared to adults for all BAI questions, except question 4. Moreover, juveniles and were less willing to engage in truthful responses compared to adults for questions 2 (verbal and nonverbal) and 8. Young adults were less willing to engage in truthful responses compared to adults for questions 1, 2 verbal, 11, and 12. The opposite trends were found for the remainder of the questions, such that juveniles and young adults were more willing to engage in truthful responses compared to adults. These patterns of results only partially supports hypothesis two that juveniles would be more willing to engage in deceitful and less willing to engage in truthful responses compared to adults. See Table 6 for means, standard errors, and test statistics for response type by age interactions.

Table 6 Question Level Response Type X Age Interactions

Age:	Juveniles		Young Adults		Adults		$F(2, 217)$	partial η^2
Response:	Truth	Deceit	Truth	Deceit	Truth	Deceit		
Q1	3.29	3.33	3.07	3.16	3.30	2.94	.65	.01
	(.28)	(.17)	(.19)	(.12)	(.21)	(.13)		
Q2	3.52	2.82	4.04	2.72	3.92	2.27	12.41**	.1
	(.12)	(.13)	(.08)	(.09)	(.09)	(.1)		
Q2 V	3.33	2.81	3.75	2.94	3.86	2.72	2.76	.03
	(.17)	(.17)	(.12)	(.12)	(.13)	(.13)		
Q2 NV	3.65	2.82	4.22	2.49	3.95	1.83	11.66**	.1
	(.15)	(.16)	(.1)	(.11)	(.11)	(.12)		
Q3	3.85	3.60	3.79	3.56	3.43	3.49	1.32	.01
	(.15)	(.14)	(.1)	(.1)	(.11)	(.11)		
Q4	4.21	3.05	3.09	3.23	2.56	3.13	11.38**	.1
	(.26)	(.13)	(.18)	(.09)	(.2)	(.1)		
Q5	3.58	2.79	2.50	2.66	2.11	2.54	5.77*	.05
	(.25)	(.15)	(.17)	(.1)	(.19)	(.11)		
Q6	3.33	3.08	3.01	3.43	3.00	2.58	2.51	.02
	(.24)	(.26)	(.17)	(.18)	(.18)	(.2)		
Q7	3.13	3.24	2.62	3.18	2.59	2.59	2.32	.02
	(.25)	(.18)	(.17)	(.13)	(.19)	(.14)		
Q8	4.13	2.94	4.36	2.46	4.20	2.29	1.14	.01
	(.25)	(.23)	(.17)	(.16)	(.19)	(.18)		
Q9	4.69	2.24	4.67	2.14	4.60	1.79	.25	.004
	(.25)	(.18)	(.17)	(.12)	(.19)	(.13)		
Q10	3.67	2.91	3.09	2.65	2.66	2.23	1.02	.01
	(.19)	(.15)	(.13)	(.1)	(.15)	(.11)		
Q10 V	3.07	2.99	2.61	2.97	2.36	2.66	1.16	.01
	(.25)	(.17)	(.17)	(.12)	(.18)	(.13)		
Q10 NV	4.27	2.83	3.56	2.32	2.95	1.81	.23	.002
	(.26)	(.21)	(.18)	(.14)	(.2)	(.16)		
Q11	2.33	3.94	2.09	3.73	2.30	3.31	2.44	.02
	(.23)	(.19)	(.16)	(.13)	(.17)	(.14)		
Q12	2.79	3.65	2.19	3.45	2.35	2.90	2.61	.03
	(.23)	(.17)	(.16)	(.12)	(.17)	(.13)		
Q13	5.08	3.82	5.14	3.91	4.28	3.68	5.0*	.05
	(.24)	(.18)	(.17)	(.12)	(.18)	(.13)		
Q14	4.73	2.93	4.33	2.54	4.24	2.41	.01	.00
	(.25)	(.15)	(.17)	(.1)	(.19)	(.11)		
Q15	3.68	3.70	4.02	3.47	3.29	3.14	1.48	.01
	(.25)	(.18)	(.17)	(.12)	(.18)	(.13)		

*$p < .05$
**$p < .001$

Condition X Age Interactions

There was a significant condition x age interaction for question 9, $F(2, 214) = 3.733$, $p=.03$, partial $\eta^2=.03$. Juveniles in the innocent condition were more willing to engage in any response ($M=3.55$, $SE=.2$) compared to adults in the innocent condition ($M=2.99$, $SE=.15$). No other significant condition by age interactions emerged for the other questions.

Condition X Age X Response Type Interactions

No significant condition by age by response type interactions emerged for any of the 15 BAI questions.

Strategies to Appear Innocent

A 3 (age: juveniles, young adults, adults) x 2 (condition: innocent, guilty) MANOVA was used to examine the effects of the independent variables on the dependent variables of general strategies to appear innocent. The mean score on the first five strategies (of the 12 total) that were presented to participants were first analyzed together because they were measured on the same Likert scale of 1 to 6. Lower ratings indicated that participants were more likely to use that strategy to appear innocent, and higher ratings indicated they were less likely to use that strategy and more likely to act natural.

The multivariate effect of condition was significant, F (1, 214) = 12.02, $p<.01$. . Supporting hypothesis 3, when compared to innocent participants, guilty participants were significantly more likely to use strategies to appear innocent. Univariate analyses of each strategy show that guilty participants were more likely to make a plan for how to act during the interview ($p<.01$), try to appear innocent ($p<.01$), try to change their physical/nonverbal

behaviors to look innocent (p<.01), try to control their words to appear innocent (p<.01), and to not care about giving the police an alibi (p<.01). There was a significant main effect of age, F (2, 214) = 3.30, p<.01. Refuting hypothesis 4, LSD post-hoc analyses revealed that compared to adults, juveniles were significantly more likely to make a plan for how to act during the interview (p<.01), try to appear innocent (p<.01), and try to change their physical/nonverbal behaviors to look innocent (p=.01). Additionally, juveniles were significantly more likely than young adults (p<.01) and adults (p<.01) to try to control their words to appear innocent. Finally, young adults were significantly more likely than adults to not care about giving the police an alibi (p=.01). See Table 7 for means, standard errors, and test statistics.

Table 7 General Strategies to Appear Innocent by Condition and Age

Strategy	Condition		F(1, 217)	partial η^2
	Innocent *M* (SE)	Guilty *M* (SE)		
Make a plan	3.86 (.18)	2.49 (.18)	29.72**	.12
Appear innocent	4.79 (.17)	4.16 (.17)	7.29*	.03
Change physical	4.89 (.16)	4.1 (.16)	212.73**	.06
Control words	4.88 (.16)	3.88 (.16)	20.1**	.09
Give an alibi	1.95 (.15)	2.53 (.15)	7.54*	.03
	Age			F(2, 217)	partial η^2
	Juveniles	Young Adults	Adults		
Make a plan	2.66 (.27)	3.22 (.18)	3.65 (.20)	4.57*	.04
Appear innocent	4.03 (.25)	4.51 (.17)	4.88 (.18)	3.82*	.03
Change physical	4.14 (.23)	4.47 (.16)	4.88 (.18)	3.36*	.03
Control words	3.71 (.24)	4.77 (.16)	4.66 (.17)	7.40*	.07
Give an alibi	2.20 (.22)	1.99 (.15)	2.53 (.17)	2.87	.03

Note. Higher means indicate less willing to engage in each of the strategies.
**p<.001
*p<.005

The second set of seven specific strategies to appear innocent were analyzed for differences in condition and differences in age groups using a series of chi-squares. In partial support of hypothesis 3, there was a significant association between details and condition, $\chi 2(1, N = 220) = 15.01$, $p = .01$, Cramer's V = .26. More guilty participants said they would try to tell a story with few details compared to innocent participants, while more innocent participants said they would try to tell a very detailed story compared to guilty participants. There was also significant association between truthful information and condition, $\chi 2(1, N = 220) = 8.23$, $p = .02$, Cramer's V = .19. More innocent participants said they would try to include as much truthful information as possible compared to guilty participants, while more guilty participants said they would try to include as much false information as possible compared to innocent participants. See Table 8 for frequencies and test statistics. No significant differences in condition emerged for the remaining specific strategies. Distributions of percentages show most participants would keep their body movements natural (87.7%), appear neither nervous nor calm (act naturally; 65.5%), focus on answering the questions instead of denying or admitting guilt (90.5%), try to be helpful by answering all the questions (63.6%), and make eye contact (65.5%).

Table 8 Frequencies and Chi-Square Results for Specific Strategies by Condition

Condition	Tell a very detailed story		Tell story naturally		Tell a story with few details		χ^2
	n	%	*n*	%	*n*	%	
Guilty	9	8.3	71	65.7	28	25.9	
Innocent	23	20.5	79	70.5	10	8.9	15.01*
Total	32	14.5	150	68.2	38	17.3	
	Include as much truthful information as possible		Tell story naturally		Include as much false information as possible		χ^2
	n	%	*n*	%	*n*	%	
Guilty	47	43.5	55	50.9	6	5.6	
Innocent	62	55.4	50	44.6	0	0	8.23*
Total	109	49.5	105	47.7	6	2.7	

*$p<.05$

Partially refuting hypothesis 4, there was a significant association between body movements and age, $\chi2(1, N = 220) = 10.27$, $p = .04$, Cramer's V = .15. More juveniles said they would try to stay still and not make many body movements compared to adults and young adults. There was a significant association between looking nervous or calm and age, $\chi2(1, N = 220) = 11.02$, $p = .03$, Cramer's V = .16. More juveniles said they would try to look calm and relaxed compared to adults and young adults. There was a significant association between details and age, $\chi2(1, N = 220) = 18.70$, $p = .001$, Cramer's V = .21. More juveniles and young adults said they would tell a very detailed story compared to adults. See Table 9 for frequencies and test statistics. No significant differences in condition emerged for the remaining specific strategies. Distributions of percentages show most participants would focus on answering the questions instead of denying or admitting guilt (90.5%), either give as much truthful information as possible (49.5%) or tell the story naturally (47.7%), try to be helpful by answering all the questions (63.6%), and make eye contact (65.5%).

Table 9 Frequencies and Chi-Square Results for Specific Strategies by Age

Age	Make lots of body movements		Act naturally		Stay still and not make many body movements		χ^2
	n	%	*n*	%	*n*	%	
Juveniles	0	0	36	80	9	20	10.27*
YAs	3	3.2	88	92.6	4	4.2	
Adults	1	1.3	69	86.3	10	12.5	
Total	4	1.8	193	87.7	23	10.5	
	Look nervous or tense		Act naturally		Look calm and relaxed		χ^2
	n	%	*n*	%	*n*	%	
Juveniles	2	4.4	21	46.7	22	48.9	11.02*
YAs	3	3.2	66	69.5	26	27.4	
Adults	0	0	57	71.3	23	28.7	
Total	5	2.3	144	65.5	71	32.3	
	Tell a very detailed story		Tell story naturally		Tell a story with few details		χ^2
	n	%	*n*	%	*n*	%	
Juveniles	10	22.2	29	64.4	6	13.3	18.70*
YAs	20	21.1	64	67.4	11	11.6	
Adults	2	2.5	57	71.3	21	26.3	
Total	32	14.5	150	68.2	38	17.3	

*p<.05

Replications with Young Adults

To determine if results from our young adult sample replicated results from Masip and Herrero's (2012) sample of young adults, separate analyses were conducted with just this sample. A repeated measures ANOVA was conducted with condition as the between-subjects variable and overall response type as the within-subjects variable. The main effect of condition was not significant, $F(1, 93) = .02$, p=.90, partial η^2=.001. The main effect of response type was significant, $F(1, 93) = 73.29$, p<.01, partial η^2=.44. Regardless of condition, young adults were significantly overall more willing to engage in truthful responses than deceitful responses, replicating results from Masip and Herrero (2012). At a question level, this significant trend was found for:

- Q2 [$F(1, 93) = 194.86$, $p<.01$, partial $\eta^2=.68$],
- Q8 [$F(1, 93) = 46.5$, $p<.001$, partial $\eta^2=.33$],
- Q9 [$F(1, 93) = 134.25$, $p<.001$, partial $\eta^2=.59$],
- Q10 [$F(1, 93) = 8.95$, $p<.01$, partial $\eta^2=.09$],
- Q13 [$F(1, 93) = 80.06$, $p<.001$, partial $\eta^2=.46$],
- Q14 [$F(1, 93) = 81.07$, $p<.001$, partial $\eta^2=.47$], and
- Q15 [$F(1, 93) = 7.07$, $p<.01$, partial $\eta^2=.07$].

Conversely, young adults were more willing to engage in deceitful responses for:

- Q7 [$F(1, 93) = 11.45$, $p<.01$, partial $\eta^2=.11$],
- Q11 [$F(1, 93) = 72.54$, $p<.001$, partial $\eta^2=.44$], and
- Q12 [$F(1, 93) = 44.19$, $p<.001$, partial $\eta^2=.32$].

Significant main effects of response type for questions 2, 8, 10, 14, and 15 replicate Masip and Herrero's (2012) findings and directions of means, such that young adults were more willing to engage in truthful responses. However, Masip and Herrero additionally found questions 1 and 5 to be significant. The significant main effect of question 12 was replicated, such that young adults were significantly more willing to engage in deceptive than truthful responses. Additionally, young adults in my sample were significantly more willing to engage in deceptive than truthful responses for questions 7 and 11, unlike those in Masip and Herrero's sample.

The overall response type x condition interaction was significant, $F(1, 93) = 7.30$, $p=.01$, partial $\eta^2=.07$: although both innocent and guilty condition participants would be more willing to engage in truthful than deceptive responses, the difference between response type was much greater for innocent participants (.67 for innocent, .35 for guilty). At a question level, the response type x condition interaction was significant for:

- Q1 [$F(1, 93) = 21.12$, $p=.02$, partial $\eta^2=.06$],
- Q3 [$F(1, 93) = 7.08$, $p=.01$, partial $\eta^2=.07$],
- Q4 [$F(1, 93) = 9.14$, $p<.01$, partial $\eta^2=.09$],
- Q5 [$F(1, 93) = 9.17$, $p<.01$, partial $\eta^2=.09$],
- Q12 [$F(1, 93) = 4.41$, $p=.04$, partial $\eta^2=.05$],
- Q14 [$F(1, 93) = 7.04$, $p<.01$, partial $\eta^2=.07$], and
- Q15 [$F(1, 93) = 8.9$, $p<.01$, partial $\eta^2=.00$].

An observation of trends shows that guilty participants were more willing to engage in deceptive responses, and innocent participants were more willing to engage in truthful responses. The significant condition x response type interactions partially replicated Masip and Herrero's (2012) findings and direction of means. Masip and Herrero found significant interactions for questions 1, 2, and 6. The patterns found in the significant interaction of question 1, and the non-significant interactions of questions 2 did replicate Masip and Herrero's pattern of responses.

A MANOVA was used to examine the effect of condition on general strategies to appear innocent in the young adult sample. Results showed that when compared to innocent participants, guilty participants were significantly more willing to make a plan for how to act during the interview [$F(1, 93) = 17.70$, $p<.001$, partial $\eta^2=.16$], change their physical/nonverbal behaviors to look innocent [$F(1, 93) = 5.69$, $p=.02$, partial $\eta^2=.06$], and make sure to give an alibi [$F(1, 93) = 14.34$, $p<.001$, partial $\eta^2=.13$]. These significant main effects replicated findings from Masip and Herrero, who additionally found significant main effects for the other two strategies. While not significant, a trend in our means did replicate the direction of Masip and Herrero's other significant strategies, such that guilty participants would try to appear innocent and control their words to look innocent to a greater extent than innocent participants.

Chi-square analyses were conducted to examine the effect of condition on specific strategies to appear innocent in the young adult sample. Masip and Herrero found significant effects of movements, complexity, and details. My results showed a significant effect of including truthful information, $\chi 2(1, N = 95) = 6.82$, p=.03, Cramer's V = .03; more innocent participants (64%) than guilty participants (40%) said they would include as much truthful information as possible, and more guilty participants (55.6%) than innocent participants (36%) said they would tell their story naturally. There was also a significant effect of details, $\chi 2(1, N = 95) = 12.09$, p< .01, Cramer's V = .36; more innocent participants (34%) than guilty participants (6.7%) said they would tell a very detailed story, and more guilty participants (17.8%) than innocent participants (6%) said they would tell a simple story with few details. This significant effect of details replicated Masip and Herrero's results, who also found significant effects of movement. Although not significant and marginal, the pattern of results did replicate: more guilty (6.7%) than innocent participants (2%) said they would try to stay still and make few body movements.

Stereotypical Lying Behaviors

A univariate ANOVA was used to test for differences in behaviors stereotypically associated with lying based on age. Participants were presented with 10 behaviors found to be most associated with lying globally and indicated whether liars displayed those behaviors more, less, or equally to truth-tellers (The Global Deception Research, 2006). Each of the 10 behaviors was recoded into new variables so that a 1 indicated the behavior was stereotypically thought to be associated with liars, or a 0 indicated the behaviors not stereotypically thought to be associated with liars. For example, liars are thought to make less eye contact than truth-tellers, so

participants who agreed with this stereotype by selecting '*less*' were recoded as a 1, and participants who disagreed with this stereotype by selecting '*more*' or '*neither less nor more*' received a 0. Sum scores were then created across the 10 recoded variables. Age was entered as the independent variable and the sum of endorsement of stereotypes as the dependent variable. A series of chi-square analyses were then used to investigate age differences in endorsement of each of the 10 behavior stereotypes.

A univariate ANOVA revealed a significant main effect of age on the sum variable of behaviors that are stereotypically associated with lying, F (2, 217) = 3.21, p=.04. LSD post-hoc analyses show that adult's perceptions of cues to deception are significantly more congruent with stereotypes compared to juveniles (M=7.26, SE=.22; M=6.33, SE=.29, respectively; p=.01). This indicates that juveniles are less likely to agree with the stereotypes of what a liar looks like. Although not significant, young adults' perceptions of cues to deception are more congruent with stereotypes (M=6.90, SE=.2) compared to juveniles, but less congruent compared to adults. See Figure 2.

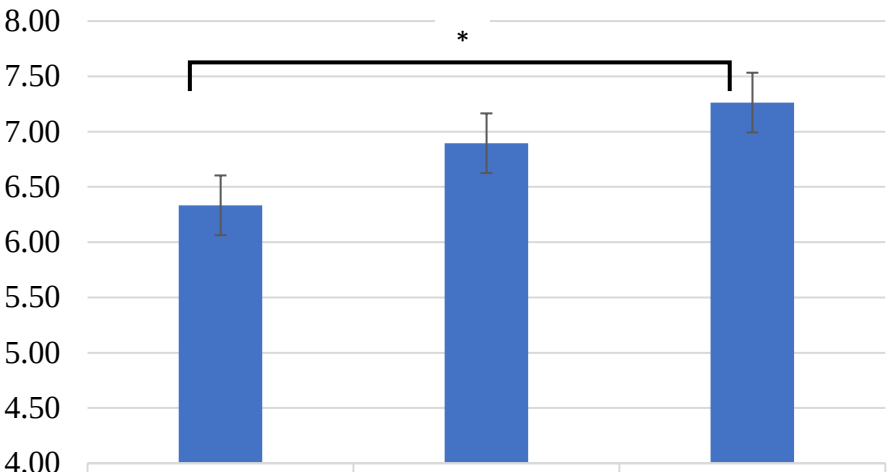


Figure 2 Means of Sum Perceptions of Cues to Deception by Age

*p<.01

Note. Error bars show standard errors.

Chi-square analyses were conducted to further explore this age difference in endorsement of the 10 stereotypes of lairs' behaviors. There was a significant difference by age in whether liars act calm or nervous, $\chi^2(1, N = 220) = 14.76$, $p<.01$; juveniles less frequently endorsed the stereotype that liars are nervous than young adults and adults. There was a significant age difference in whether liars act silly or serious, $\chi^2(1, N = 220) = 9.22$, $p=.05$; juveniles less frequently endorsed the stereotype that liars are serious than young adults and adults. There was a significant difference by age in whether liars have more or less consistent stories than usual, $\chi^2(1, N = 220) = 10.88$, $p=.03$; juveniles and young adults less frequently endorsed the stereotype that liars have less consistent stories than usual, compared to adults. There was also a significant age difference for whether liars have longer or shorter stories than usual, $\chi^2(1, N = 220) = 18.23$, $p<.01$; juveniles less frequently endorsed the stereotype that have longer stories than usual than

young adults and adults. See Table 10 for frequencies and Chi-Square test statistics. There were no significant associations between age and the rest of the stereotypes. Most participants agreed with the stereotype that liars pause longer (63.6%), stutter more (71.4%), shift more (84.1%), make less eye contact (81.4%), touch or scratch themselves more (82.3%), and make more hand gestures than usual (43.6%).

Table 10 Frequencies and Chi-Square Results for Lying Behaviors by Age

Age	Calm		Nervous		Neither		χ^2
	n	%	*n*	%	*n*	%	
Juveniles	6	13.3	27	60	12	26.7	
YAs	15	15.8	69	72.6	11	11.6	14.76*
Adults	2	2.5	67	83.8	11	13.8	
	Silly		Serious		Neither		χ^2
	n	%	*n*	%	*n*	%	
Juveniles	13	28.9	15	33.3	15	37.8	
YAs	35	36.8	38	40	22	23.2	9.22*
Adults	15	18.8	36	45	29	36.3	
	More consistent stories		Less consistent stories		Neither		χ^2
	n	%	*n*	%	*n*	%	
Juveniles	7	15.6	36	80	2	4.4	
YAs	14	14.7	77	81.1	4	4.2	10.88*
Adults	1	1.3	74	92.5	5	6.3	
	Longer stories		Shorter stories		Neither		χ^2
	n	%	*n*	%	*n*	%	
Juveniles	22	48.9	15	33.3	8	17.8	
YAs	64	67.4	21	22.1	10	10.5	18.26*
Adults	58	72.5	5	6.3	17	21.3	

*p<.05

Attitudes Towards Police Legitimacy Scale

A univariate ANOVA was conducted to test for age differences in perceptions of police. Three of the items from the Attitudes Towards Police Legitimacy Scale (ATPLS) were reverse coded and the 20-items were averaged so that higher scores indicate more positive perceptions of

police (Reynolds et al., 2018). A reliability analysis was conducted for the 20-item ATPLS scale used in this study. Analyses revealed excellent internal consistency for the scale, Cronbach's α = .95. A singular reliability analysis was done for the entirety of the scale because only 16-items from the original 34-item scale (plus 6-items from scale development) were used in this study.

A univariate ANOVA showed a significant main effect of age on perceptions of police legitimacy, F (2, 217) = 12.23, p<.01. LSD post-hoc analyses revealed that young adults (M=3.90, SE=.12) had significantly worse views of police legitimacy compared to juveniles (M=4.71, SE=.17; p<.01) and adults (M=4.46, SE=.13; p<.01). See Figure 3.

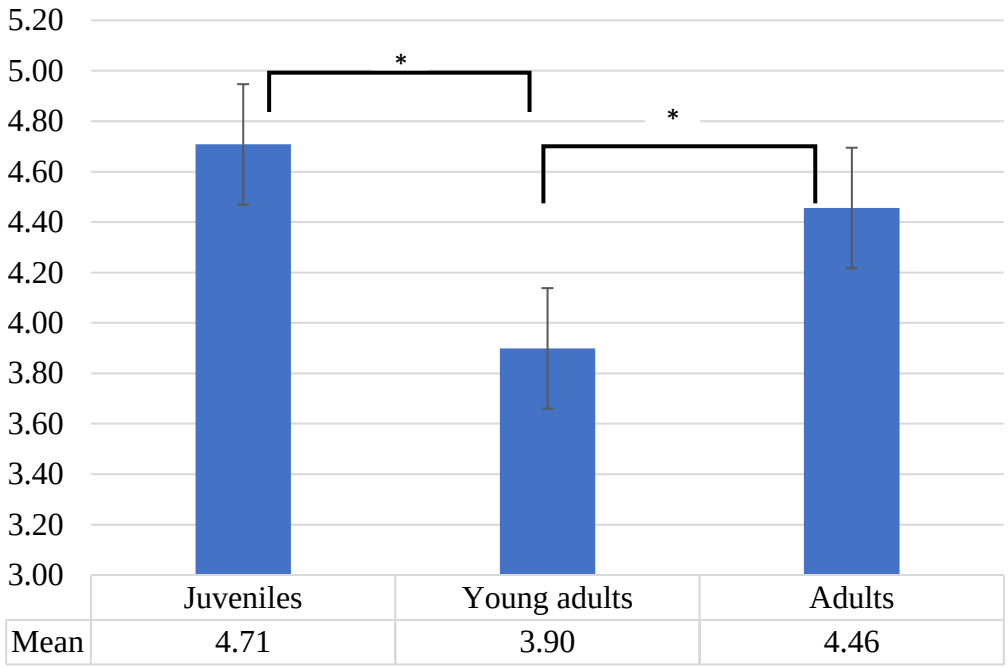


Figure 3 Mean Scores on ATPLS by Age

*p<.01

Note. Error bars show standard errors.

To determine if perceptions of police legitimacy were moderating participants' responses, a stepwise regression was conducted with overall truthful response on the BAI as the dependent variable, and condition, age, and ATPLS as the independent variables. Condition did not explain significant variance (p=.26) and was thus excluded from the regression model. Age was negatively related to truthful responses, B = -.01, p<.01, and explained 4% of the variance in truthful response type. ATPLS was positively related to truthful response type, B = .11, p<.01, and significantly explained an additional 3.7% of the variance, p<.01. Together, age and ATPLS explained 7% of the variance in overall willingness to engage in truthful responses. The stepwise regression was conducted again but with overall deceitful responses as the dependent variable. ATPLS and condition did not explain significant variance (p=.47; p=.26, respectively) and were thus excluded from the regression model. Age was negatively related to deceptive response type, B = -.01, p<.001, and explained 7% of the variance in overall willingness to engage in deceitful responses.

Next, a stepwise regression was conducted with mean scores on general strategies to appear innocent as the dependent variable and condition, age, and ATPLS as the independent variables. Lower scores on the general strategies variable indicated more use of strategies to appear innocent, while higher scores indicated acting naturally to a greater extent. Condition was coded such that a higher value indicated innocence. Condition was positively related to general strategies, B = .58, p<.001, and explained 7% of its variance. Age was positively related to general strategies, B = .39, p<.001, and explained an additional 6% of its variance**.** Finally, ATPLS was positively related to general strategies, B = .19, p<.01, and explained an additional 4% of its variance. Together, condition, age, and ATPLS explained 16% of the variance in general strategies to appear innocent.

Qualitative Data

Participants' qualitative analyses of responses to the open-ended question '*Now that you are being interviewed by police about the stolen computer, how would you convince the police officer that you are telling the truth? What kinds of things would you say and do to make him believe you are innocent?*' were conducted. A modified thematic analysis was used to identify themes and patterns in the data to create a code book (Braun & Clarke, 2006). The research team then used the code book to collaboratively analyze an overlap of 20% of participant responses to establish inter-rater reliability, and any disagreements were discussed. A Cohen's kappa coefficient of .77 was reached between the two coders. Frequencies of each code were then calculated. This was the first question participants responded to in the study to obtain un-prompted and spontaneously generated strategies, therefore, many participants had differing responses and as a result, 34 themes were identified for our codes.

Due to the large amount of codes, the five most frequently used codes across age and condition were initially examined. First, 70% (n = 156) said they would *Give the officers an alibi*. The second most frequently used code was *Tell the officers I had no motive or reason to steal the computer* used by 25.9% of participants (n = 57). One young adult in the innocent condition stated "I would say that I have a computer and would have no reason for stealing one. Also, that I have never committed a crime and would not want to hurt my reputation at school. I take my schooling very seriously and would do nothing to ruin that." This response was also coded as *Tell the officers I would not steal or lie due to some personal characteristic (e.g., no desire to steal),* which was the third most frequently used code (14.5% , n = 32). For example, one young adult in the guilty condition stated "I would convince the police officer I had never stolen anything in my life. I would make good eye contact and act confident." This response was

also coded as *Manipulate behaviors to be or appear confident* and *Manipulate non-verbal behaviors to make eye contact* and highlights how many participants' responses encompassed several themes.

The next most frequently used code was *Deny involvement or say I'm innocent* (12.3% , *n* = 27). For example, one juvenile in the guilty condition responded, "deny everything until proof is given that convicts you of said crime". The fifth most frequently used code was *Manipulate non-verbal behaviors to relax body or appear calm, not nervous, or comfortable* (10% , *n* = 22). One innocent adult stated, "I would tell him the truth. I would tell him that I didn't take the computer. I would tell him where I was at the time the computer was stolen. I would look him in the eyes and try to remain very calm."

Codes that encompassed manipulating verbal behaviors and codes that encompassed manipulating nonverbal behaviors were then collapsed together. Responses and their respective codes were then separated by age group and condition to examine frequency differences. See table 11 frequency and count distributions for frequencies by condition and age.

Table 11 Count Distribution of Open-Ended Responses by Age and Condition

	Age					
	Juveniles		YAs		Adults	
Condition	I (*n*=22)	G (*n*=23)	I (*n*=52)	G (*n*=47)	I (*n*=38)	G (*n*=38)
Codes						
Give alibi	82%	61%	87%	66%	66%	61%
No motive	27%	17%	21%	32%	16%	39%
Personal characteristics	9%	9%	13%	19%	13%	18%
Deny involvement	5%	28%	2%	19%	11%	18%
Appear comfortable	23%	13%	10%	13%	5%	3%
Manipulate non-verbals – Collapsed	32%	39%	21%	38%	16%	24%
Manipulate verbals – Collapsed	9%	4%	15%	4%	21%	3%
Total codes	44	45	104	106	71	88

CHAPTER IV

DISCUSSION

The Behavior Analysis Interview (BAI) is a component of the popular Reid Technique and is used by officers as a method to determine the guilt or innocence of an individual during a pre-interrogation interview. The BAI is a series of questions posed by an officer, where a suspect's verbal and non-verbal responses are claimed to be indicative of their truth or deciet; those deemed to be decietful are assumed to be guilty and move onto an accusatory interrogation (Inbau et al., 2013). However, previous research has shown that the behaviors the BAI relies on are flawed (Masip & Herrero, 2012; Vrij, Mann, et al., 2006), as there are few diagnositc cues that accurately or reliablely indicat lying (DePaulo et al., 2003). The use of the BAI with juveniles had not been addressed, and their socioemotional and cognitive developmental differences may put them at risk of being incorrectly judged as decietful, and consequently guilty.

The current study sought to investigate the strategies juveniles may use in a hypothetical police interview and how those compare to young adults and adults by addressing four questions. First, I was interested in how potential responses to the BAI could be manipulated by suspects to appear innocent. I hypothesized that participants would be more willing to engage in truthful responses compared to deceitful responses. Replicating results from Masip and Herrero (2012) and supporting my prediction, I found participants were more willing to engage in truthful than deceptive resposnes, regardless of age or condition. Consistent with previous research, this

suggests that the BAI's predictions of deceit- and truth-indicative responses are in-line with participants' common-sense notions of what a liar looks like, and they are therefore able to manipulate their behaviors to appear truthful (Masip et al., 2012; Masip et al., 2011). I additionally found that for five of the 15 BAI questions, innocent participants were more willing to engage in truthful responses, while guilty participants were more willing to engage in deceitful responses. These trends do support the BAI's prediction of guilty and innocent suspects' pattern of responses for those five questions (Inbau et al., 2013), however, opposite directions of response patterns were found for two additional questions, and no differences in response type according to guilt-status were found for the remainder of the questions. Taken together and consistent with previous research on the BAI (Masip & Herrero, 2012; Vrij, Mann, et al., 2006), I did not find support for the BAI's predictions of how guilty and innocent suspects will engage in truthful and deceptive responses for all questions. This study provides further evidence that the BAI's predictions are not entirely accurate, and officers' reliance on these indicators may put innocent suspects as risk.

Second, I was interested in how age would uniquely impact how willing participants would be to manipulate their responses to the BAI and hypothesized that juveniles would be more willing to engage in deceitful responses compared to adults. My results showed that juveniles were overall more willing to engage in any of the BAI respones compared to young adults, a trend that was additionally found for nine of the 15 BAI questions. Adults and young adults were more conservative than juveniles in their ratings, suggesting juveniles may be less conscious of their behaviors during an interview, regardless of if they are lying or telling the truth. Partially supporting my prediction, when compared to adults, juveniles and young adults had higher ratings of willing to engage in deceitful responses for 14 of the 15 quesitons. These

results are problematic; as juveniles and young adults are more willing to engage in any behavior and are less restrictive in their displays of behaviors said to indicate deceit, they would be at an increased risk of being mistakenly judged as guilty compared to adults. Even though the BAI's cues to deception are not reliably accurate, officers are still trained to observe for them in suspects under the age of 25, who may be mistakenly judged as guilty more often than adults beceause they are exhibiting those behaviors assumed to indicate deciet. Previous research has shown that individuals under the age of 25 posses developmental immaturities in an interview or interrogation that place them at an increased risk of being coerced into a false confession (Kassin & Kiechel, 1996) and/or waiving their *Miranda* rights (Redlich et al., 2003). The present findings contribute to that body of work by uniquely addressing how juveniles' and young adults' natural behaviors may make them vulnerable to an incorrect judegement of guilt during a BAI.

Third, I was interested in how guilt-status impacted use of strategies to appear innocent and predicted that guilty suspects would be more willing to use strategies to appear innocent than innocent suspects. Consistent with previous research, my findings revealed that guilty participants would use strategies to appear innocent to a greater extent than innocent participants (Hartwig et al., 2007; Hartwig et al., 2010; Hines et al., 2010; Masip & Herrero, 2012). Guilty suspects indicated they would make a plan for how to act during the interview, would try to appear innocent by changing their physical behaviors and controlling their words, and care more about giving officers an alibi, while innocent suspects said they would act naturally. In-line with previous research, it appears that innocent suspects believe that their innocence will be obvious to an officer (Kassin, 2005), and as a result, they do not feel the need to change their verbal and nonverbal behaviors to be congruent with how truth-tellers are thought to act.

Fourth, I was curious how age would uniquely impact participants' use of those strategies, and hypothesized that adults would engage in more strategies to appear innocent than juveniles. Refuting my prediction, juveniles rated using strategies to appear innocent to a greater extent than adults and young adults. Juveniles indicated to a greater extent that they would make a plan for how to act, try to appear innocent, change their physical behaviors and control their words to look innocent, try to stay still, try to look relaxed, and tell a very detailed story. However, even though they said they would use these strategies to a greater extent, these intentions did not translate into their chosen responses to the BAI, as they still had higher willingness to engage in deceptive behaviors compared to the older age groups. These results show a disconnect in how juveniles intend to use strategies to manipulate their behaviors to appear innocent, and how willing they are to actually engage in responses that indicate innocence and guilt. One explanation for this disconnect could lie in their beliefs of how liars stereotypically behave; juveniles less frequently endorsed the global stereotypes of what a liar looks like compared to adults. For example, adults more frequently agreed with the global stereotypes that liars are nervous, serious, have less consistent stories, and longer stories (The Global Deception Research, 2006). Perhaps juveniles were less aware of how these behaviors are stereotypically associated with deceit and, consequently, were more willing to engage in these and similar deceitful behaviors in the potential responses to the BAI.

Participants' attitudes towards police legitimacy were found to impact their willingness to engage in truthful BAI responses, such that those who had more positive perceptions of the police had higher ratings of willingness to engage in truthful responses. Moreoever, those with more positive perceptions of the police also indicated less use of strategies to appear innocent. These findings suggest that those who view the police positively would behave more naturally

and engage in stereotypical truth-indicative behaviors more an interview with police. However, young adults had the worst perceptions of police legitimacy, which could uniquely lead to them being non-compliant with officers in a real interview. This finding suggests that overall perceptions of police may play a moderating role in a suspect's willingness to engage in behaviors said to indicate truthfulness in a real interview. Participants with poor perceptions of police, specifically young adults, may be at an increased risk of being mistakenly judged as deceitful because they are displaying fewer truth-indicative behaviors.

Limitations

The largest limitation of the current study is that participants were responding to a hypothetical police interview rather than a real-life interview. Moreover, participants were presented with a low-stakes criminal scenario and instructed to imagine they were either guilty or innocent of the crime. It is unclear just how much participants "bought into" the scenario and their guilt-status, thus, the ecological validity of the study is limited and results may not be generalizable to high-stakes scenarios. However, previous deception detection research has shown low-stakes or "cold" cognition laboratory paradigms to be representative of high-stakes or "hot" cognition scenarios (Hartwig & Bond, 2014; Mann et al., 2002). Therefore, despite its limitations, the present study still contributes meaningful insights into how juveniles, young adults, and adults use strategies and responsd to a "cold" cognition task.

Another limitation of this study is the lack of field research on the frequency of use of the BAI. While my results contribute to the research on the use of the BAI being problematic, no research has investigated just how often and in what capacity officers use the BAI as a method of

determing guilt or innocence before an interview, specifically with juveniles. Thus, field research is needed to deteremine the how officers currently use these methods.

Limitations in the study also arise from the makeup of the participant samples. The gender distribution of the young adult sample recruited from the SONA research platform was not equally distributed (93.7% female), therefore, young adult males are not appropriately represented in this study. More young adult males than females have been shown to be interviewed by police (Cleary, 2014), so results are limited in their generalizability to a male population. Moreover, sample sizes across age groups were unequal, which may have contributed to the findings. The observed power in analyses of overall BAI response type ranged from .14 (age by response type) to .54 (condition by response type), potentially impacting the chances for Type II Errors. Developmental research does face the unique challenge of recruiting minors for their studies and thus low power is often reported, however, more juvenile participants are needed to increase power and confidence in results. Additionally, several analyses failed Levine's test of homegenity, suggesting unequal variances across age groups. This is also a common issue among developmental research, as children and adolescents exhibit greater variability than adults.

Another limitation of this study is a lack of information concerning each juvenile's cognitive ability or reading level. All study materials were adapted to a 7th grade reading-level before being distributed and all juveniles passed attention checks, yet I cannot be sure how successful our younger juvenile participants were at comprehending the materials. Moreover, data was not collected on cognitive abilities, which may have shed additional light on individual differences in the juveniles' willingness to engage in deceitful responses, as those with lowered cognitive ability do face difficulties during interrogations (Mogavero, 2020).

Implications

Use of the Behavior Analysis Interview (BAI) is problematic because it does not reliabily differentiate innocent from guilty suspects (DePaulo et al., 2003; Masip & Herrero, 2012; Vrij, Mann, et al., 2006), training does not improve lie-detection (Vrij, 2008), and guilty suspects can manipulate the behaviors said to indicate deceit because they are congruent with global stereotypes on how a liar behaves (Masip et al., 2012; Masip et al., 2011; The Global Deception Research, 2006). Results from the present study showed that participants were more willing to engage in truthful responses compared to deceitful responses during an imagined BAI and more guilty than innocent suspects planned to use strategies to appear innocent. However, age differences in these trends emerged: juveniles were more willing than adults to use strategies to appear innocent, yet were also more willing to engage in deceitful responses. The disconnect in strategies and responses may be beacuase juveniles do not hold the same stereotypes of what a liar looks like in comparison to adults, and as a result, they are not able to differentiate between truthful and deceitful responses as well as adults can.

If juveniles are not aware of the stereotypical cues to deception, then they may be not be able to successfully suppress these behaviors. These findings relate to Leakage theory, which suggests that the behaviors expressed while lying represent an individual's internal state of anxiety (Ekman & O'Sullivan, 1991). Previous research has shown that children as young as 6-years-old can suppress behaviors associated with lying during low-stakes, experimental paradigms and this skill continues to develop with age (Talwar et al., 2007). Results from the present study suggest that juveniles aged 12-16 may not be able to do this as successfully in high-stakes criminal interviews or interrogations.

This study gives insight into how juveniles plan to behave during a hypothetical, "cold" cognition situation. Played out in a real interview, findings from the current study can have severe implications. Guilty suspects who plan to purposefully adjust their verbal and nonverbal behaviors to appear truthful may be able to successfully go undetected by an officer, while innocent suspects may unknowingly engage in deceit-assumptive behaviors, and thus be determined guilty and interrogated. This pattern could be especially true for juveniles, who may intend to manipulate their behaviors to appear innocent, but who lack the self-regulation and impulse control skills needed to successfully adjust their responses to appear innocent during a "hot" cognition situation (Cleary, 2017; Steinberg et al., 2009). If inaccurately judged as guilty, innocent juveniles are subjected to an unnecessary, accusatory interrogation. The cumulative disadvantage that starts when a suspect is misidentified in the pre-interrogation interview can have lasting effects all the way through to a wrongful conviction (Scherr et al., 2020).

Before starting the interrogation, police officers pressume the guilt of a suspect and operate with the goal of obtaining a confession (Inbau et al., 2013). Once in the interrogation, suspects are presented with their *Miranda* rights, which were established in part to ensure confessions are obtained voluntarly and knowningly (Leo & White, 1999). However, four out of five suspects waive their *Miranda* rights (Leo & White, 1999), and innocent suspects, specifically, waive their rights because they often believe invoking them will make them look guilty (Kassin & Norwick, 2004). Moreover, 90% of juveniles waived their *Miranda* rights largely due to their misunderstanding of those rights (Redlich et al., 2003), as increased maturity and age have been found to be related to an increased understanding of *Miranda* (Colwell et al., 2005). Even when questioned informally in settings where their rights do not have to be read, as would be the case in a BAI, adolescents do not understand that they do not *have* to answer the

officers' questions and they have the right to leave, as seen in *J.D.B. v North Carolina* (2011). Furthermore, during informal interviews, juveniles may be questioned without the knowledge or presence of their parents, putting them at even greater risk. In an analysis of 57 video recorded juvnile interviews found that only 21% had a parent and none had an attorney present (Cleary, 2014), and in a separate analysis of 66 juvenile interrogations, Feld (2006) found a parent present in only one.

Led by a guilt-pressumptive interrogator, the tactics and technqiues used within the interrogation are known to increase the risk of an innocent suspect providing a false confession, including implied promises of leniceny, minimization, maximization, and isolation (Kassin, 2005; Kassin & Kiechel, 1996). These tactics especially increase the risk of false confession for juveniles (Meyer & Reppucci, 2007; Redlich & Goodman, 2003), who lack the socioemotional and cognitive maturities to avoid the coercion and are not skilled at weighing the short-term versus long-term benefits of a confession (Cleary, 2017; Steinberg, 2017). Even if their case does not go to trial, as about 95% do not (Redlich et al., 2017), innocent juveniles have been shown to be more likely to plead guilty in a laboratory study (Redlich & Shteynberg, 2016), as they do not understand the long-term ramifications of pleading guilty (Pimentel et al., 2015). In cases that do go to trial, confession evidence can overwhelmingly lead a jury to convict, even for juvenile defendants (Scherr et al., 2020).

Twenty-eight percent of exonerees provided a false confession that contributed to their wrongful conviction, 33% of whom were under 18 when they were interrogated (Innocence Project, 2021). Being wrongfully convicted has detrimental effects on every aspect of an indvidual's life, with exonerees reporting loss of identity, negative stigmas, housing and employment discrimination, psychological struggles, and much more (Brooks & Greenberg,

2021; Clow & Leach, 2015a; Faison & Smalarz, 2020). Exonerees who falsely confess are viewed as more guilty, less competent, less intelligent, and less deserving of reintegration services compared to those with different contributing factors (Clow & Leach, 2015b; Scherr et al., 2018).

Future Directions

Despite the limitations of the present study, it highlights differences in perceptions of lying behavior and intended use of strategies during an interview with juveniles, young adults, adults. It additionally adds to the research on the Behavior Analysis Interview as a flawed method of deception detection (Masip & Herrero, 2012; Vrij, Mann, et al., 2006) and guilty suspects' intentions to manipulate their behaviors to appear innocent (Hartwig et al., 2007; Hartwig et al., 2010; Hines et al., 2010), while adding valuable information on how the suspect's age uniquely impacts these factors. Future studies should seek to investigate how these results translate into a mock-interview paradigm, as done by Vrij, Mann, and colleagues. (2006). By investigating juveniles' and adults' during a "hot" cognition task, researchers can uncover more about how developmental differences shape strategies and behaviors during a police interview. Moreover, research on juveniles' strategies and behaviors during police interviews should prioritize recruiting a large sample of participants in efforts to reach sufficient power. Data collection with juveniles is still on-going for the present study, although barriers in accessing and contacting juveniles and their parents have emerged.

As discussed by Meisnner et al. (2017) and Russano et al. (2019), it is crucial to take a translational approach to psychological research on police interviews and interrogations by creating a cyclical flow between field observations, laboratory studies, police trainings, and field

validation studies. Thus, more field research is needed to determine how officers use the BAI in practice, with juveniles and adults alike, and how their methods compare to empirical research findings. Moreover, future researchers can continue to address individual differences within children and juveniles that impact their verbal and nonverbal behaviors when lying.

As research continues to reveal problems associated with the Reid Technique (Inbau et al., 2013), the shift is being made from the classic accusatorial-style interrogation to an information-gathering approach that empahsizes an increase in rapport and a decrease in psychologically coercive tactics (Meissner et al., 2017). In conjuction with this paradigm-shift in interrogations, alternative methods for detecting deceit in suspects have been introduced and empircally tested. One such alternative method is the cognitive interview, where information from a suspect is initially gathered and challenges to these statements are made later in the interview (Geiselman, 2012). The cognitive interview aims to increase the cognitive demand associated with lying through techniques like telling a story in reverse chronological order or drawing/sketching while providing a narrative (Frosina et al., 2018; Geiselman, 2012). Empirical studies have demonstrated that the cognitive interivew can be a reliable method for increasing police officers' deception detection abilities (Vrij et al., 2008). Future research can further investigate cognitive interview techniques as a method of lie detection with juveniles.

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APPENDIX A

IRB APPROVAL LETTER

THE UNIVERSITY OF TENNESSEE CHATTANOOGA

Institutional Review Board
Dept 4915
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Chattanooga, TN 37403
Phone: (423) 425-5867
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instrb@utc.edu
http://www.utc.edu/irb

TO: Talley Bettens **IRB # 20-096**
Dr. David Ferrier, Dr. Jill Shelton, Dr. Amye Warren

FROM: David Deardorff, Interim Director of Research Integrity
Dr. Susan Davidson, IRB Committee Chair

DATE: 9/14/2020

SUBJECT: IRB #20-096: Lying Strategies in Juveniles During Behavior Analysis Interviews

Thank you for submitting your application for research involving human subjects to The University of Tennessee at Chattanooga Institutional Review Board. Your proposal was evaluated in light of the federal regulations that govern the protection of human subjects and approved via the expedited review procedure authorized by 45 CFR 46.110 and 21 CFR 56.110.

You must include the following approval statement on research materials seen by participants and used in research reports:

The Institutional Review Board of the University of Tennessee at Chattanooga (FWA00004149) has approved this research project # 20-096.

Please keep in mind that all research must be conducted according to the proposal submitted to the UTC IRB. If changes to the approved protocol occur, a revised protocol must be reviewed and approved by the IRB before implementation. For any proposed changes in your research protocol, please submit an Application for Changes, Annual Review, or Project Termination/Completion form to the UTC IRB. Please bear in mind that significant changes could result in having to develop a new application for submission and approval. Your protocol will be automatically closed at the end of the proposed research period unless a change request application is submitted. No research may take place under a closed or expired protocol.

A goal of the IRB is to prevent negative occurrences during any research study. However, despite our best intent, unforeseen circumstances or events may arise during the research. If an unexpected situation or adverse event happens during your investigation, please notify the UTC IRB as soon as possible. Once notified, we will ask for a complete explanation of the event and your response. Other actions also may be required depending on the nature of the event.

Please refer to the protocol number denoted above in all communication or correspondence related to your application and this approval.

For additional information, please consult our web page http://www.utc.edu/irb or email instrb@utc.edu.

Best wishes for a successful research project.

APPENDIX B

REID TECHNIQUE BAI QUESTIONS AND INNOCENT/GUILTY RESPONSE BASED ON INBAU ET AL. (2013)

Question 1, Purpose: "What is your understanding of the purpose of this interview with me here today?'

Guilty/deceptive: Naïve, evasive, vague responses

Innocent/truthful: Direct, blunt response with realistic language

Question 2, History/You: "Did you commit the crime?"

Guilty/deceptive: Bolstered, delayed, evasive response, nonverbal behaviors such as crossing legs, shifting in chair, grooming behavior

Innocent/truthful: Empathetic, immediate denial, nonverbal behaviors such as learning forward, direct eye contact, use of illustrators to reinforce confidence

Question 3, Knowledge: "Do you know who committed the crime?"

Guilty/deceptive: Establish geographical and emotional distance from the crime, deny knowledge of who committed the crime without much thought

Innocent/truthful: Intimation of suspicion, apologize for not knowing, sound sincere, indicate they gave previous thought to this

Question 4, Suspicion: "Who do you suspect may have committed the crime?"

Guilty/deceptive: Unlikely to name someone known to be innocent, deny having suspicions

Innocent/truthful: Wil name someone and offer reasonable basis for suspicion

Question 5, Vouch: "Is there anyone you feel certain did not commit this the crime?"

Guilty/deceptive: Noncommittal response, or evasive response

Innocent/truthful: Willing to name specific individuals

Question 6, Credibility: "Do you think someone purposefully committed this crime?"

Guilty/deceptive: Suggest unrealistic possibilities, attempt to make it seem like the crime did not occur

Innocent/truthful: Acknowledges that the crime did occur

Question 7, Opportunity: "Who would have had the best opportunity to commit this crime if they wanted to?"

Guilty/deceptive: Will not point finger at self, name unrealistic suspects

Innocent/truthful: Open and realistic, include themselves as a possibility

Question 8, Attitude: "How do you feel about being interviewed concerning this crime?"

Guilty/deceptive: Voice negative feelings about interview

Innocent/truthful: Positive attitude, happy to help the investigation

Question 9, Think: "Have you ever thought about committing the crime?"

Guilty/deceptive: relieve the anxiety associated with their guilt by acknowledging they have had thoughts, use of qualifications

Innocent/truthful: Denial of these thoughts, immediate and emphatic response

Question 10, Motive: "Why do you think someone committed the crime?"

Guilty/deceptive: unwilling to speculate motives, shift posture in chair, engage in anxiety-reducing behavior

Innocent/truthful: offer a reasonable motive, comfortable

Question 11, Punishment: "What do you think should happen to the individual who committed the crime?"

Guilty/deceptive: difficult time discussing harsh punishments, more lenient response, evade offering a punishment

Innocent/truthful: Reasonably harsh, negative punishments

Question 12, Second chance: "Would you be willing to give a second chance to the person who committed the crime?"

Guilty/deceptive: Agree with a second chance, evasive, conditional language, reference to conditions

Innocent/truthful: Reluctant to give a second chance

Question 13, Objection: "Why would you never commit the crime?"

Guilty/deceptive: third-person response, reference to future consequences, refer to external factors

Innocent/truthful: First-person response to personal traits, refer to present responsibilities or past accomplishments

Question 14, Results: "What do you think the results of our investigation will be concerning your involvement in this case?"

Guilty/deceptive: lower confidence, one-word response, uncertainty, evasive, predict the investigation will show negative results, place blame on someone or something else

Innocent/truthful: confidence in being exonerated

Question 15, Tell loved ones: "Did you tell anyone about this interview?"

Guilty/deceptive: has not told anyone about or downplayed the investigation/interview, conceals information to avoid lying to loved ones, says the person had no reaction or asked if they were guilty

Innocent/truthful: Says the have told someone

APPENDIX C

CONSENT AND ASSENT FORMS

Parental Consent Form for Parents of Juvenile Participants:

Hello. I am a graduate student in the Department of Psychology at the University of Tennessee at Chattanooga. I am conducting research under the supervision of Dr. Amye Warren and I invite your child (ages 12 to 16) to participate in my study. Participating in this study is voluntary.

Description of the Study: The purpose of this study is to investigate the strategies that juveniles might use to appear innocent during a hypothetical police interview. First, we will ask your child to read a scenario about a computer stolen from school. Then we will ask them to imagine that they are a suspect in the case, and they are going to be questioned by a police officer. Next, we will present a series of 15 questions that the hypothetical police officer will ask them, and a list of potential responses they could give. Next, we will ask them to rate specific behavioral strategies they would use to appear innocent during a police interview and behaviors they think someone shows when lying. Finally, we will ask 20 questions about their views of police officers. We will remove any names or other information that could identify your child individually and assign your child a participant ID to keep their information confidential. The only risk potentially associated with your child participating is they may feel a bit uncomfortable reading about the theft scenario. However, your child can leave the study at any time without penalty. Your child's participation in this study would be very beneficial in helping to further the knowledge on this subject and may help inform future juvenile justice interview policies. The total amount of time required to complete the study will approximately 30 to 45 minutes. To express our appreciation for their time and effort, we will provide a $10 Amazon gift card for completing the study.

Request for Consent to Participate and Confidentiality of Information: We are asking for your consent to allow your child to participate. Participation in this study is voluntary. If you do choose to consent to your child participating in this study, their responses will be completely confidential. We will use participant IDs rather than names, and no identifying results will be shared with anyone outside of our research team. All data will be kept on password protected computer files. The identifiers will be removed from the all responses, and the de-identified information may then be used in future research or distributed without additional informed consent.

Potential Risks of Participation: When discussing the hypothetical crime situation, your child may experience some discomfort, however we do not anticipate this to be concerning. Again, they may choose to withdraw from the study at any time.

Potential Benefits of Participation: By participating in this study, you and your child will be adding to current research regarding juvenile behaviors during police interviews. This research may lead to training/educational programs in juvenile interview techniques or aid in policy development.

Rights as a Participant: You may choose to withdraw your child from the study at any time. Should you choose to withdraw your child from the study, all questioning will stop, and their information, responses, and materials will be destroyed. Your child's responses will not be used in the study. If you choose to withdraw your child from the study, you will still receive the $10 gift card for your time.

Who to Contact with Questions or Concerns: If you have any questions or concerns, please contact Dr. Amye Warren at amye-warren@utc.edu or the University of Tennessee at Chattanooga Psychology and Law Research Lab at utcpsychlawlab@utc.edu. This research has

been reviewed and approved by the University of Tennessee at Chattanooga's Institutional Review Board. If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact Dr. Susan Davidson, the Chair of the Human Subjects Committee, Institutional Review Board at 423- 425-5568. Additional contact information is available at www.utc.edu/irb.

By selecting "I agree," I indicate that I have fully read and understand the above information and agree to have my child voluntarily participate in this study.

- I agree (1)
- I do not agree (2)

Assent Form for Juvenile Participants:

Hello. I am a graduate student in the Department of Psychology at the University of Tennessee at Chattanooga. I am conducting research with Dr. Amye Warren and I invite you to take part in my study. The purpose of this study is to examine behaviors during a fake interview with police. You will first read a made-up story about a crime that occurred at school. Then you will be asked to pretend you are being asked questions by a police officer about the crime and rate the answers you would give to his questions. Then you will answer questions about how you would act and what you would say during a police interview, and what you think about police. We will replace your name or any other confidential information with an ID number to keep your information confidential.

Your parent/legal guardian has given permission for you to participate in this study, but you do not have to participate if you do not want to. If you do choose to participate in this study, we will keep your answers confidential. We won't share any information about you with anyone besides our research team, and no one who hears about the results of our study will be able to identify you. You may choose to withdraw from the study at any time. If you do decide to withdraw from the study, all questioning will stop, and your information, responses, and materials will be destroyed. During the part of the study where you read about a made-up crime that happened at school, you may feel a bit uncomfortable. Talking about crimes and police questioning may be somewhat stressful. Remember that you can choose to stop participating in the study at any time. By taking part in this study, you will help us understand what youth do and think during police interviews. You may also help us to design education programs to help protect other youth during police interviews. You may choose to withdraw from the study at any time. If you withdraw from the study, all questioning will stop, and your information, responses, and materials will be destroyed. Your responses will not be used in the study.

Your responses in this survey will not be shared with your parent/legal guardian. All information you provide will be kept confidential.

In this study you will: 1. Read a scenario 2. Say how you would respond to 15 questions from a police officer 3. Answer 12 questions about how you would behave during an interview 4. Answer 10 questions about what how you can tell when someone is lying 5. Answer 20 questions about what I think about police

I understand what I will be asked to do in this study and agree to participate.

- Yes (1)
- No (2)

Consent Form for SONA Participants:

Hello. My name is Talley Bettens and I am a graduate student in the Department of Psychology at the University of Tennessee at Chattanooga. I am conducting research under the supervision of Dr. Amye Warren and I invite you to participate in my study. Participating in this study is voluntary. You may withdraw from the study at any time. Your decision whether or not to participate will not affect your academic standing at the University of Tennessee at Chattanooga in any way. Please see below for a description of the study. This description will provide you with information regarding potential risks, inconveniences, or discomforts that may arise from participation in the study. You must be 18 years or older to participate in this study.

Description of the Study: The purpose of this study is to investigate strategies used during a hypothetical police interview. First, we will ask you to read a scenario about a computer stolen from your school. We will ask you to imagine that you are either innocent or guilty of the crime and that you are going to be questioned by a police officer. Then you will read a series of 15 questions from the hypothetical police officer with a list of potential responses and will rate how likely you would be to give each response. Next, you will rate specific behavioral strategies you would use during a police interview and behaviors you think someone shows when lying. Finally, you will answer 20 questions about your views of police officers. We will remove information that could identify you individually and assign you a participant ID to keep your information confidential. The only risk potentially associated with participating is you may feel a bit uncomfortable reading about the theft scenario. However, you can leave the study at any time without penalty. Your participation in this study would be very beneficial in helping to further our understanding of behaviors during police interviews and may help inform future policies on interview techniques. The total amount of time required to complete the study will approximately 30 to 45 minutes. We will provide 2 SONA credits upon completion.

Request for Consent to Participate and Confidentiality of Information: We are asking for your consent to participate. Participation in this study is voluntary. If you do choose to participate in this study, your participation will be completely anonymous. Neither anyone reading the results of the survey nor I will be able to identify you. The Sona research participation system does not provide me with your student ID or other identifying information.

Potential Risks of Participation: When discussing the hypothetical crime situation, you may experience some discomfort, however we do not anticipate this to be concerning. Again, you may choose to withdraw from the study at any time.

Potential Benefits of Participation: By participating in this study, you will be adding to current research regarding behavior during police interviews. This research may lead to training/educational programs in interview techniques or aid in developing policies.

Your Rights as a Participant: You may choose to withdraw from the study at any time. If you fail to complete at least 50% of the questions, we will consider that you have withdrawn from the study and your data will not be included. After completing the study, if you change your mind about participating and want us to exclude your data from the study, you can e-mail us to let us know and we will delete your information, and responses. Your responses will not be included in our results. If you choose to withdraw from the study, you will still receive the 2 SONA credits.

Who to Contact with Questions or Concerns: If you have any questions or concerns, please contact Dr. Amye Warren at amye-warren@utc.edu or the University of Tennessee at Chattanooga Psychology and Law Research Lab at utcpsychlawlab@utc.edu. This research has

been reviewed and approved by the University of Tennessee at Chattanooga's Institutional Review Board. If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact Dr. Susan Davidson, the Chair of the Human Subjects Committee, Institutional Review Board at 423- 425-5568. Additional contact information is available at www.utc.edu/irb.

By selecting "I agree," I indicate that I have fully read and understand the above information and agree to voluntarily participate in this study.

- I agree (1)
- I do not agree (2)

Consent Form for Amazon Mechanical Turk Participants:

Hello. I am a graduate student in the Department of Psychology at the University of Tennessee at Chattanooga. I am conducting research under the supervision of Dr. Amye Warren and I invite you to participate in my study. Participating in this study is voluntary. You must be between the ages of 35 and 50 to participate in this study.

Description of the Study: The purpose of this study is to investigate strategies used during a hypothetical police interview. First, we will ask you to read a scenario about a computer stolen from a workplace. We will ask you to imagine that you are either innocent or guilty of the crime and that you are going to be questioned by a police officer. Then you will read a series of 15 questions from the hypothetical police officer with a list of potential responses and will rate how likely you would be to give each response. Next, you will rate specific behavioral strategies you would use during a police interview and behaviors you think someone shows when lying. Finally, you will answer 20 questions about your views of police officers. We will not collect any information that could identify you individually and will assign you a participant ID to keep your information confidential. The only risk potentially associated with participating is you may feel a bit uncomfortable reading about the theft scenario. However, you can leave the study at any time without penalty. Your participation in this study would be very beneficial in helping to further the knowledge on this subject and may help inform future interview techniques. Total participation time will be approximately 30 to 45 minutes to complete the study appropriately (including attention checks to see that you read the materials). Several questions in this study are open-ended and will be reviewed by the researchers to check for appropriate responses. If you complete the survey entirely, pass the attention checks, and respond appropriately and coherently to the open-ended questions, you will be compensated $3.00. Our reason for waiting to compensate you until review of your responses is to ensure that bots are not attempting to take part in our study.

Request for Consent to Participate and Confidentiality of Information: We are asking for your consent to participate. Participation in this study is voluntary. If you do choose to participate in this study, your participation will be completely anonymous. No report of the results will identify you individually. Please be aware that any work performed on Amazon MTurk can potentially be linked to information about you on your Amazon public profile page, depending on the settings you have for your Amazon profile. We will not be accessing any personally identifying information about you that you may have put on your Amazon public profile page. We will store you MTurk Worker ID separately from the other information you provide to us and use your Worker ID only to distribute compensation. Your MTurk Worker information will never be shared with anyone outside the research team. If you do choose to participate in this study, your participation will be completely anonymous. Neither anyone reading the results of the survey nor I will be able to identify you.

Potential Risks of Participation: When discussing the hypothetical crime situation, you may experience some discomfort, however we do not anticipate this to be concerning. Again, you may choose to withdraw from the study at any time.

Potential Benefits of Participation: By participating in this study, you will be adding to current research regarding behavior during police interviews. This research may lead to training/educational programs in interrogation techniques or aid in policy development.

Your Rights as a Participant: You may choose to withdraw from the study at any time. Should

you choose to withdraw from the study, your data will not be used, and you will not be compensated.

Who to Contact with Questions or Concerns: If you have any questions or concerns, please contact the University of Tennessee at Chattanooga Psychology and Law Research Lab at psychlawlab@utc.edu. This research has been reviewed and approved by the University of Tennessee at Chattanooga's Institutional Review Board. If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact Dr. Susan Davidson, the Chair of the Human Subjects Committee, Institutional Review Board at 423- 425-5568. Additional contact information is available at www.utc.edu/irb.

By selecting "I agree," I indicate that I have fully read and understand the above information and agree to voluntarily participate in this study.

- I agree (1)
- I do not agree (2)

APPENDIX D

FICTIONAL THEFT SCENARIOS

For reference, below is the example case background provided by (Inbau et al., 2013) with an arson case. This was not presented to participants.

Assume that a fire was started in a warehouse and most of the inventory was destroyed. Entry was gained into the warehouse by prying open a side door. The security system indicated that this occurred at 9:40pm on September 12. By the time police arrived, at 9:50pm, the warehouse was engulfed in flames. Subsequent investigation revealed that an accelerant, probably gasoline, was used to start the fire and that the source of origin was the inventory boxes themselves.

A review of personnel records revealed that two warehouse employees may have had a motive for starting the fire. One of them, Jim, was recently denied a promotion to assistant supervisor and the second, John, had just received a one-work suspension for time-card violations. There seems to be good reason, therefore, to interview these employees, but clearly there is no basis for an arrest.

Theft Scenario Presented to Juvenile Participants:

Pretend a crime happened at your school. Someone broke into a computer lab after school and stole a computer. The computer lab was locked around 4:30 p.m. When the janitor walked by the computer lab at 5:30 p.m. the door was still locked.

The next morning, a teacher found the computer lab broken into and the computer missing. The teacher called police. When police came to the school, they looked for tapes from security cameras. There weren't any cameras in the computer lab or hallways nearby, but there was one camera in the parking lot near the computer lab. The parking lot camera showed only two people left the building after 5:30 p.m., shortly after the computer was stolen. These two people looked to be students about 12 to 16 years old. The police carefully reviewed the tapes and *one of the students looks like you.*

Some people at the school had reasons for breaking into the computer lab and taking the computer. You are one of these people and the police know that. You are now a suspect in this crime, meaning the police think you may have stolen the computer.

The day after the computer was stolen, two police officers pull you out of class to ask you questions. Pretend that the police take you to another room at your school. You sit at a table with a police officer across from you. He starts asking you questions about the stolen computer. You are not under arrest, but the police officer thinks that you may be involved in the crime.

Now imagine that **YOU ARE INNOCENT [GUILT]** of the crime. You did **not [did]** actually break in and steal the computer. Think about how you would answer the police officer's questions. How would you try to appear innocent and truthful?

If the officer decides that you are guilty of stealing the computer then you would be in serious trouble. *You want to convince the police officer that you are innocent, that you did NOT take the computer.*

Theft Scenario Presented to SONA Participants:

Pretend a crime happened at your school. Someone broke into a computer lab after school and stole a computer. The computer lab was locked around 4:30 p.m. When the janitor walked by the computer lab at 5:30 p.m. the door was still locked.

The next morning, a teacher found the computer lab broken into and the computer missing. The teacher called police. When police came to the school, they looked for tapes from security cameras. There weren't any cameras in the computer lab or hallways nearby, but there was one camera in the parking lot near the computer lab. The parking lot camera showed only two people left the building after 5:30 p.m., shortly after the computer was stolen. These two people looked to be students about 18 to 24 years old. The police carefully reviewed the tapes and *one of the students looks like you.*

Some people at the school had reasons for breaking into the computer lab and taking the computer. You are one of these people and the police know that. You are now a suspect in this crime, meaning the police think you may have stolen the computer.

The day after the computer was stolen, two police officers pull you out of class to ask you questions. Pretend that the police take you to another room at your school. You sit at a table with a police officer across from you. He starts asking you questions about the stolen computer. You are not under arrest, but the police officer thinks that you may be involved in the crime.

Now imagine that **YOU ARE INNOCENT [GUILTY]** of the crime. You did **not [did]** actually break in and steal the computer. Think about how you would answer the police officer's questions. How would you try to appear innocent and truthful?

If the officer decides that you are guilty of stealing the computer then you would be in serious trouble. *You want to convince the police officer that you are innocent, that you did NOT take the computer.*

Theft Scenario Presented to Amazon Mechanical Turk Participants:

Pretend a crime happened at your place of work. Someone broke into a manager's office after hours and stole a computer. The office was locked around 6:30 p.m. When the janitor walked by the office at 7:30 p.m. the door was still locked.

The next morning, the manager found their office broken into and the computer missing. The manager called the police. When police came to the building, they reviewed tapes from security cameras. There weren't any cameras in the office or hallways nearby, but there was one camera in the parking lot outside the office building. The parking lot camera showed only two people left the building after 7:30 p.m., shortly after the computer was stolen. These two people looked to be employees about 35 to 50 years old. The police carefully reviewed the tapes and *one of the employees looks like you.*

Some people at the office had reasons for breaking into the manager's office and taking the computer. You are one of these people and the police know that. You are now a suspect in this crime, meaning the police think you may have stolen the computer.

The day after the computer was stolen, two police officers pull you out of work to ask you questions. Pretend that the police take you to another room at your office. You sit at a table with a police officer across from you. He starts asking you questions about the stolen computer. You are not under arrest, but the police officer thinks that you may be involved in the crime.

Now imagine that **YOU ARE INNOCENT [GUILTY]** of the crime. You did **not [did]** actually break in and steal the computer. Think about how you would answer the police officer's questions. How would you try to appear innocent and truthful?

If the officer decides that you are guilty of stealing the computer then you would be in serious trouble. *You want to convince the police officer that you are innocent, that you did NOT take the computer.*

APPENDIX E

BEHAVIOR ANALYSIS INTERVIEW

Attention Checks:

1. Based on the story you just read, who discovered that the computer was stolen?
2. Based on the story you just read, what time of day was the computer stolen?

Pre-Interview Question:

1. Now that you are being interviewed by police about the stolen computer, how would you convince the police officer that you are telling the truth? What kinds of things would you say and do to make him believe you are innocent?

BAI Instructions:

On the next pages, there are 15 questions that the police officer asks you about the stolen computer. Each question has a list of answers you could give. After you read each question and the answers, you should rate how likely you would be to do or say each answer. Think about how you would feel when being interviewed about this crime. Would you feel nervous or calm? How would you behave during the interview? Do you think you would tell anyone about this interview with the police?

Please rate how likely you would give each answer on a scale of 1 to 6. Remember that you are trying to appear innocent!

1 means you definitely **would NOT** give that answer.

6 means you definitely **would** give that answer.

There is not an "I don't know" response, so you must choose a number between 1 and 6.

**The following Likert scale was presented with each response:*

1	2	3	4	5	6
I definitely **would NOT** give that answer					I definitely **would** give this answer

1. Officer: "What is your understanding of the reason for this interview with me here today?"
    a. If you were innocent [guilty], would you give a direct, more specific response? *(For example, "I think you want me to tell you what I know about the computer that was stolen from the lab")*
    b. If you were innocent, would you give a general, unspecific and vague response? *(For example, "I guess you want to talk to me about what happened at school")*

c. If you were innocent, would you give a response that would suggest you don't know why you are being interviewed? *(For example, "I have no idea")* Officer: "Did you steal the computer?"

2. Officer: "Did you steal the computer?"

Verbal Responses:

a. If you were innocent, would you give a response that avoids answering the question? *(For example, "Why would I do something like that?")*
b. If you were innocent, would you give an answer without thinking about it? *(For example, "No, I did not")*
c. If you were innocent, would you give a concerned response? *(For example, "I had absolutely nothing to do with stealing the computer, but I hope you find who did")*
d. If you were innocent, would you give a response that shows you are caught off guard or shocked by this question? *(For example, "What? Honest to God, I didn't- I swear")*
e. If you were innocent, would you delay and take time before you give a response? *(For example, "Did I steal the computer? No, I did not")*

Nonverbal Responses:

f. If you were innocent, would you cross your legs while you respond to the officer's questions?
g. If you were innocent, would you engage in grooming behaviors while you respond to the officer's question? *(For example, fixing your hair or fixing your clothes)*
h. If you were innocent, would you physically lean forward toward the officer while you respond to this question?
i. If you were innocent, would you use gestures to show you are confident while responding to the officer? *(For example, using hand gestures while speaking)*
j. If you were innocent, would you make direct eye contact with the officer while you respond to his question?
k. If you were innocent, would you shift in your chair while you respond to the officer's question?

3. Officer: "Do you know who **did** steal the computer?"
    a. If you were innocent, would you say that you were not near the crime scene? (For example, "I wasn't anywhere near the computer lab")
    b. If you were innocent, would you try to hide your emotions or feelings from the officer when answering?
    c. If you were innocent, would you give a response that avoids answering the question? (For example, "I don't even know if the computer was stolen")
    d. If you were innocent, would you tell the officer that you have an idea about what you thought may have happened? (For example, "Well, I don't know for sure, but I did see someone around the computer lab")
    e. If you were innocent, would you say that you have been thinking about who may have stolen the computer?
    f. If you were innocent, would you try to sound sincere (not fake) in your response?

    g. If you were innocent, would you give an apology with your answer? (For example, “I’m sorry I wish I did, but I have no idea”)
    h. If you were innocent, would you deny without much thought? (For example, “No, I do not”)
4. Officer: “Who you do you think may have broken in and stole the computer?”
    a. If you were innocent, would you give the name of someone who you think stole the computer but not give any reason why you think this?
    b. If you were innocent, would you say you have no idea about who the guilty person is?
    c. If you were innocent, would you give the name of who you think stole the computer and give a reason why you think this?
5. Officer: “Is there anyone that was in the school when the computer was stolen who you are confident did not steal the computer?”
    a. If you were innocent, would you give a response that avoids answering the question? (For example, “I’d swear that everyone who was at school didn’t steal the computer”)
    b. If you were innocent, would you give the name of someone who you think did not steal the computer?
    c. If you were innocent, would you give a noncommittal (uncertain) response? (for example, “Not really… I didn’t really see anything”)
6. Officer: “Do you think that the computer was really stolen?”
    a. If you were innocent, would you give another explanation for the missing computer? (For example, “Perhaps someone accidentally took the computer home”)
    b. If you were innocent, would you agree the computer was stolen? (For example, “Yes I do. The computer is missing and there is no other explanation”)
7. Officer: “Who would have had the best chance to steal the computer?”
    a. If you were innocent, would you admit that you had a chance to steal the computer? (For example, “Anyone who was near the computer lab could have easily broken in”)
    b. If you were innocent, would you name other people who could have stolen the computer, even if they couldn’t have really stolen it? (For example, “It could have been a janitor”)
    c. If you were innocent, would you say that no one had the chance to steal the computer? (For example, “They keep the computer lab locked up. I don’t think anyone would have had a chance to steal the computer”)
8. Officer: “How do you feel about being interviewed about the computer being stolen?”
    a. If you were innocent, would you have negative feelings about being interviewed? (For example, “I don’t understand why you are asking me these questions- a lot of people could have done this”)
    b. If you were innocent, would you have a positive attitude about being interviewed? (For example, “I don’t mind at all… I’ll do whatever it takes to get to the bottom of this.”)
9. Officer: “Have you ever just thought about stealing something from a store?”

a. If you were innocent, would you give a vague response, such as “Not really” or “Not seriously”.
b. If you were innocent, would you deny ever thinking about stealing something? (For example, “Not at all, no”)
c. If you were innocent, would you admit that you have thought about stealing from a store? (For example, “Well, sure. I’ll bet most people have thought about stealing from time to time”)

10. Officer: “Why do you think someone stole the computer?”

Verbal Responses

a. If you were innocent, would you not want to guess possible reasons for why someone stole the computer? (For example, “How would I know? It could be anything” or “I have no idea”)
b. If you were innocent, would you give a reasonable answer for why someone stole the computer? (For example, “Maybe someone really wanted it”)
c. If you were innocent, would you give a very specific reason for why someone stole the headphones? (For example, “Maybe they really needed a computer, but it was too expensive, and they couldn’t afford it, so they had to steal it”)

Nonverbal Responses

d. If you were innocent, would you do things to decrease your anxiety while answering the officer? (For example, tapping your foot or biting your nails).
e. If you were innocent, would you move in your chair while responding to the officer?
f. If you were innocent, would you feel comfortable discussing possible reasons for someone stealing the computer?

11. Officer: “What do you think should happen to the person who stole the computer?”
    a. If you were innocent, would you give a suggestion for a light punishment? (For example, “I think they should give it back”)
    b. If you were innocent, would you give a suggestion for a harsh or severe punishment? (For example, “They should be sent to jail”)
    c. If you were innocent, would you give a response that avoids answering the question? (For example, “That’s not up to me”)
12. Officer: “Would you be willing to give a second chance to the person who stole the computer?”
    a. If you were innocent, would you give a response that avoids answering the question? (For example, “It’s hard to say…”)
    b. If you were innocent, would you say that a second chance depends on the situation? (For example, “Well, I think it’s important to find out all the details that led up to it”)
    c. If you were innocent, would you say that you are willing to give the guilty person a second chance?
    d. If you were innocent, would you say that you don’t want to give the guilty person a second chance? (For example, “No way. After what I’ve gone through, I hope he gets caught”)
13. Officer: “Tell me why you wouldn’t have stolen the computer?”

a. If you were innocent, would you say you wouldn't steal the computer because of a general reason that is not related to you? (For example, "Because it's against the law")
b. If you were innocent, would you say you wouldn't steal the computer because of a future negative consequence? (For example, "I don't want to go to jail")
c. If you were innocent, would you say you wouldn't steal the computer because of current activities? (For example, "I wouldn't risk getting kicked out of school" or "I wouldn't risk getting kicked off my team/out of my group" or "I wouldn't risk getting fired from my job")
d. If you were innocent, would you say you wouldn't steal the computer because of a personal characteristic? (For example, "Because I'm not a thief" or "I could never live with myself if I did something like that")
e. If you were innocent, would you say you wouldn't steal the computer because of specific reason not related to you? (For example, "There are security cameras all over the place- I'd get caught")

14. Officer: "When our investigation is done, do you think we'll find out you were involved in stealing the computer?"
    a. If you were innocent, would you give a response that avoids answering the question? (For example, "I really don't have any control over the investigation, so I don't know")
    b. If you were innocent, would you be confident that the officer will find that you didn't steal the computer? (For example, "I know I didn't steal the computer so I'm not worried")
    c. If you were innocent, would you give a short response? (For example, "No")
    d. If you were innocent, would you give an uncertain answer? (For example, "I don't have any idea")
    e. If you were innocent, would you guess that the investigation will be bad for you, so you blame something else? (For example, "I'm always being blamed for things I didn't do, this will probably be the same")
15. Officer: "Who did you tell about your interview with me today?"
    a. If you were innocent, would you say that you did not tell anyone about the interview?
    b. If you were innocent, would you say that you did tell someone about the interview?
    c. If you were innocent, would you say that you told someone about the interview but that it was no big deal? (For example, "I told my mom, but she wasn't concerned")

APPENDIX F

POST-INTERVIEW QUESTIONNAIRE

Strategies to Appear Innocent:

Keep imagining that you are actually guilty, meaning you did steal the computer from your school's computer lab. You are going to be interviewed by police in real-life. How likely you would be to do each of the things listed on the next page? Use the scales below in question.

1. Before the interview...

	1	2	3	4	5	6	
I would try to make a plan for how I would act during the interview.	○	○	○	○	○	○	I would NOT try to make a plan for how to act because it is better to behave naturally.

2. During the interview...

	1	2	3	4	5	6	
I would try to appear innocent	○	○	○	○	○	○	I would try to act naturally

3. During the interview...

	1	2	3	4	5	6	
I would try to change my physical/nonverbal behaviors to look innocent	○	○	○	○	○	○	I would try to behave naturally

4. During the interview...

	1	2	3	4	5	6	
I would try to control my words to look innocent	○	○	○	○	○	○	I would try to tell my story naturally

5. During the interview...

	1	2	3	4	5	6	
I would make sure I give police an alibi/explanation for why I was at the school	○	○	○	○	○	○	I would NOT care about making sure I give police an alibi/explanation for why I was at the school

6. During the interview...
    - I would try to make lots of body movements (1)
    - I would try to act naturally (2)
    - I would try to stay still and NOT make many body movements (3)

7. During the interview...
    - I would try to look nervous or tense (1)
    - I would try to act naturally (2)
    - I would try to look calm and relaxed (3)

8. During the interview...
    - I would try to tell a very detailed story (1)
    - I would try to tell my story naturally (2)
    - I would try to tell a simple story with not a lot of details (3)

9. During the interview...
    - I would strongly deny guilt (1)
    - I would just focus on answering questions (2)
    - I would try to admit guilt (3)

10. During the interview...
    - I would try to include as much truthful information as possible (1)
    - I would try to tell the story naturally (2)
    - I would try to include as much false information as possible (3)

11. During the interview...
    - I would try to be helpful and answer all the questions (1)
    - I would try to act naturally (2)
    - I would try to be unhelpful and avoid answering the questions (3)

12. During the interview...
    - I would try to make eye contact with the officer (1)
    - I would try to act naturally (2)
    - I would try NOT to make eye contact with the officer (3)

Attention Checks:

1. What was stolen from your school?
2. Why are you being interviewed by police?

Stereotypical Lying Behavior: Now think about how you can tell when someone, like a friend or a parent, is lying to you and how you can tell when someone is telling the truth to you.

1. When people are lying, they act
    a. **calm** (1)
    b. **nervous** (2)
    c. **neither** calm nor nervous (3)
2. When people are lying, they act
    a. **silly** (1)
    a. **serious** (2)
    b. **neither** silly nor serious (3)
3. When people are lying, their **stories** are
    a. **more consistent** than usual (1)
    b. **less consistent** than usual (2)
    c. **neither** more nor less consistent than usual (3)
4. When people are lying, their **stories** are
    a. **longer** than usual (1)
    b. **shorter** than usual (2)
    c. **neither** longer nor shorter than usual (3)
5. Before answering questions, people who are lying **pause**
    a. **longer** than usual (1)
    b. **shorter** than usual (2)
    c. **neither** longer nor shorter than usual (3)
6. When people are lying, they **stutter**
    a. **more** than usual (1)
    b. **less** than usual (2)
    c. **neither** more nor less than usual (3)
7. When people are lying, they **shift their posture**
    a. **more** than usual (1)
    b. **less** than usual (2)
    c. **neither** more nor less than usual (3)
8. When people are lying, they **look at the other person's eyes**
    a. **more** than usual (1)
    b. **less** than usual (2)
    c. **neither** more nor less than usual (3)
9. When people are lying, they **touch and scratch themselves**
    a. **more** than usual (1)
    b. **less** than usual (2)
    c. **neither** more nor less than usual (3)
10. When people are lying, they use **hand gestures**
    a. **more** than usual (1)
    b. **less** than usual (2)
    c. **neither** more nor less than usual (3)

Attitudes towards Police Legitimacy Scale (Reynolds et al., 2018):

**The following Likert scale was presented under each response:*

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree

1. (B)Police officers usually make fair decisions when enforcing laws.
2. (O) Everyone is treated equally by the police
3. (Q)Police do their best to be fair to everyone.
4. (Q)Police officers treat people with respect.
5. (Q)Police officers usually have a reason when they stop or arrest people.
6. (O) I fear being talked to by the police (R)
7. (O) Police officers think they are better than everyone else (R)
8. (T)Police officers communicate well with people.
9. (O) If I were to interact with a police officer, I would be nervous (R)
10. (T)The presence of police makes me feel safe. (R)
11. (T)Police officers are generally kind.
12. (T)If I have a problem, I feel confident that the police can help me solve it.
13. (M)I'm not afraid to call the police when I need to.
14. (M)People should trust the police to help.
15. (O)Police officers consider all evidence they collect before making a decision.
16. (M)I feel that police officers are willing to listen to me when I come into contact with them.
17. (M)I believe what police officers tell me.
18. (M)I can rely on police officers to ensure my safety.
19. (O) When interacting with the police, I would do what they tell me to do.
20. (C)People should be confident that police officers are only there to help.

**B = Bias, Q = Quality of interpersonal treatment, T = Trustworthiness, M = Motivation, C = Being part of the community, O = Item not included in final ATPLS scale.*

Demographics:

1. What is your current age?
2. What grade are you currently in? *(Juveniles sample)*
3. What is your gender identity?
4. What is your race/ethnicity?
5. What is your highest level of education? *(Young adult and adult samples)*
6. Do you have any kids? If so, how many and what are their ages? *(Young adult and adult samples)*
7. Have you ever had any of the following interactions with police in your lifetime? Please select all that apply:

a. I have never interacted with the police.
b. I have been informally questioned by the police.
c. I have been formally interrogated by police about my involvement in a crime.
d. I have been taken into police custody but was not formally arrested.
e. I have been arrested by the police for a misdemeanor crime.
f. I have been arrested by the police for a felony crime.
g. I have had a police interaction not listed here. Please explain:

VITA

Talley Bettens was born in Brighton, MI to Carla and Jerry Bettens. She is one of three children, with older brothers Josh and Eric. She attended Brighton High School before continuing her education at Central Michigan University. There she studied Psychology, Sociology, and Substance Abuse Intervention and Prevention. After completing her Bachelor of Science degree in May of 2015, she accepted a research and teaching assistantship at the University of Tennessee at Chattanooga in the Research Psychology Master's Program. During her graduate career, Talley conducted research in and was Lab Manager of the Psych-Law Lab, taught undergraduate college courses (including Introduction to Psychology and Research Methods Lab), served as graduate coordinator for Research Methods Labs, and worked with the School of Education assisting with program evaluations and data management. Talley will graduate with a Master of Science degree in Psychology in May 2021 before continuing her education in a doctoral program.