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Brief report

**Changed responses under cross-examination: The role of anxiety and individual
differences in child witnesses**

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Short title/running head: CHILDREN, ANXIETY, INDIVIDUAL DIFFERENCES AND
CROSS-EXAMINATION

Abstract

The present study explored whether levels of anxiety, and a range of individual differences measures (age, IQ, and suggestibility), could predict performance during cross-examination questioning. Eighty-three children (aged 4-11 years) witnessed a staged event before being interviewed (3-6 days later) and cross-examined (ten months later). Results demonstrated that cross-examination induced a significant rise in anxiety levels. Further, recall of unchallenged details (based on children's initial testimony, which they reviewed prior to cross-examination) and anxiety levels were the only significant predictors of cross-examination performance. Further research is needed to explore the inter-relationship between anxiety and other individual difference measures on cross-examination performance, and to determine how to alleviate the anxiety of child witnesses (to enable them to achieve their best evidence in court). Preparation to ensure children understand the importance of attending to the recording of their original evidence may improve children's resilience under cross-examination and reduce anxiety levels.

Keywords: Child witnesses; Cross-examination; Intellectual disabilities; Anxiety; Individual differences

Brief Report. Changed responses under cross-examination: The role of anxiety and individual differences in child witnesses

In England and Wales, there is a discrepancy between how the primary evidence of a child victim or witness is obtained (presented to the court as evidence-in-chief, and collected in accordance with Achieving Best Evidence [ABE] guidelines; Ministry of Justice, 2011), and how that evidence is challenged in court during cross-examination (which is not required to adhere to ABE guidelines). Consequently, many of the techniques used, such as the use of leading questions, complex syntax (e.g., questions plus tags), and accusing witnesses of lying, are challenging for children to cope with (Plotnikoff & Woolfson, 2012; Spencer, 2012).

The negative effects of cross-examination on the accuracy of testimony have now been noted in several retrospective and empirical research studies. Reviewing court transcripts in which 5-13 year old children provided key evidence in sexual abuse trials, Zajac, Gross and Hayne (2003) noted that over 75% of children changed at least one aspect of their testimony during cross-examination. The high demands placed on a witness during interrogative questioning perhaps contribute to the significant number of instances in which children change their responses from correct to incorrect; this is particularly problematic for vulnerable groups, such as children (Zajac et al., 2003; Zajac & Hayne, 2006) and those with low levels of self-esteem, assertiveness and self-confidence (Zajac, Jury & O'Neill, 2009).

High levels of changed responses during cross-examination have also been found in a recent study exploring the effects of cross-examination on children with a range of intellectual abilities (IQs ranging from 47-121). Bettenay, Ridley, Henry and Crane (2014) found 98% of children (aged 4 to 11 years) changed at least one of their previous responses during cross-examination. However, there were no significant differences in how children with and without intellectual disabilities responded to challenges during cross-examination.

By analysing additional data collected as part of this research, the current investigation aimed to identify individual differences factors that may have rendered children more vulnerable to ceding during cross-examination challenges.

One such individual difference is suggestibility. Leading questions in witness interviews are known to result in suggestible responses (for reviews see Bruck & Melnyk, 2004; London, Henry, Conradt & Corser, 2013). Cross-examination is a witness interview and, as defence counsel's aim is to cast doubt on the witness's evidence by putting forward an alternative case (that of the defendant), questions are routinely framed so that the expected answer is implied, and the witness may accept the suggestion in their response. Standardised measures of suggestibility have been developed for use in legal contexts, most notably the Gudjonsson Suggestibility Scale (GSS; Gudjonsson, 1983; 2013). Here, participants are read a brief story they are then questioned on. The scale measures suggestibility by determining: (1) the extent to which a person succumbs to 15 misleading questions ('Yield 1'); and (2) the degree to which a person changes their original responses when questioned (for a second time) following negative feedback to either the 15 misleading questions (Yield 2) or to any of the 20 questions that comprise the questionnaire ('Shift'). The GSS (short) is a variant that has been adapted for use with children, including those with ID (Henry & Gudjonsson, 2007) and was used as an individual difference measure in the present study. Scores on both the full and short versions of the GSS (particularly Yield 1) are modestly related to accuracy to misleading questions following witnessed events in children with and without ID, with the correlations being somewhat stronger in those with ID (Henry & Gudjonsson, 2003; 2007). In fact, higher correlations in lower IQ groups are commonly found because of more consistently low performance across different measures (Detterman & Daniel, 1989).

Suggestibility, as measured by the GSS, is positively correlated with anxiety (see Gudjonsson, 2003; Ridley & Gudjonsson, 2013, for reviews). However, Bruck and Melnyk

(2004) concluded that the effects of anxiety and related constructs on children's suggestibility are mixed. In a study by Almerigogna, Ost, Bull and Akehurst (2007), with 8-11 year old children, it was found that state anxiety measured after a witness interview was associated with greater levels of suggestibility elicited through the using of misleading questions. Almerigogna et al. (2007) also manipulated the manner of the interviewer and found that children were both more suggestible and anxious when the interviewer was non-supportive (compared to supportive); a finding relevant to the present study due to the non-supportive nature of cross-examination questioning. Furthermore, Almerigogna et al. (2007) found that changes in pre- to post-interview state anxiety levels were related to suggestibility, with greater increases in anxiety being associated with fewer correct responses to misleading questions.

Other variables that will be considered in this study are age, IQ, and memory for unchallenged details about the event. In relation to age, older children are less likely to change responses under cross-examination than younger children, although they still do so to a worrying degree (e.g., Zajac & Hayne, 2006). This pattern is also observed in studies exploring the relationship between age and suggestibility (Ceci & Bruck, 1993; Ceci & Friedman, 2000). To our knowledge, the only study that has considered intelligence in relation to cross-examination questioning was by Bettenay et al. (2014). Dividing participants into one of three groups (typically developing, moderate intellectual disability (ID) or borderline ID), no significant group differences as a function of intellectual ability were observed. Studies of suggestibility and IQ in children, using a variety of suggestibility measures including the GSS, have found mild to moderate relationships (see London et al., 2013, for a review). Finally, including memory for unchallenged details allowed us to assess whether memory for the event at the time of cross-examination was significantly related to cross-examination performance.

The first aim of the current investigation was to determine the impact anxiety has on children's performance during cross-examination. The second aim was to explore whether we can predict children's performance under cross-examination based upon a number of additional individual differences factors, with the ultimate aim of identifying which children are in most need of support during the legal process. In this research, 83 children (aged 4-11 years) were cross-examined about a live magic show they had viewed ten months previously. A range of individual differences measures were assessed including: age; IQ; anxiety; memory for unchallenged details; and suggestibility. It was hypothesised that children's state anxiety levels would rise after cross-examination, demonstrating that the process of undergoing such questioning would induce anxiety. It was also predicted that anxiety levels would account for variance in children's performance on challenged questions during cross-examination. We expected age and memory for unchallenged responses to be negatively related to vulnerability to cross-examination challenges, while suggestibility (measured on the GSS) would be positively related. The effects of IQ on cross-examination challenges were harder to predict, as previous research has only assessed group differences, and not in relation to other individual differences variables (Bettenay et al., 2014); however, these findings are suggestive of IQ not being predictive of performance during cross-examination. Importantly, all of our predictions were tentative given this is the first study to explore the role of these factors in relation to cross-examination style questioning.

Method

Design

The study assessed the influence of five predictor variables – age, IQ, state anxiety and two measures of suggestibility – on cross-examination performance. Performance was

assessed on two dependent variables: (1) the total number of times a child ceded to the cross-examination challenge, and (2) the point during the four-point challenge at which the child ceded.

Participants

The sample comprised 83 children (38 males) aged 4 years 6 months to 11 years 0 months (mean = 9 years 0 months, SD = 1 year 8 months) with a range of intellectual abilities (mean = 84.64, SD = 18.54; range = 47-121). Further details concerning the characteristics and recruitment of the sample are presented in Bettenay et al. (2014)¹.

Materials and Procedure

This study was conducted in three phases.

Phase 1 – Viewing of a staged magic show. All children viewed one of several identical magic shows at their school; each lasting 20 minutes and involving eight tricks. The shows were performed by a female magician in a colourful outfit who sought to maximise children's attention to the event through frequent audience participation (e.g., calling out, pointing).

Phase 2 – Initial interview. Children were interviewed about the magic show three to six days after the event, either by a former police officer with specialist training in interviewing children, or by the first author (trained by the other interviewer). Interviews (lasting approximately 30-40 minutes, but varying as a function of how much each child could remember) were conducted according to ABE guidelines in place in England and Wales at the time of data collection (Home Office, 2007). Following a truth and lies exercise (which all children passed), the children were asked to provide a 'free recall' account of the event (e.g., "tell me everything you can remember about the show"). Further prompts were

given if there was no acknowledgement of the magic show. To elicit further details following free recall, all children were given two general prompts ('Can you tell me any more about it?' and then 'One more think?') and seven open-ended prompts about the magician and the tricks ('*what happened at the beginning?*', '*tell me about the person who performed the show*', '*tell me about the wands*', '*tell me about the colouring book*', '*tell me about the magic paint pot*', '*tell me about the coloured ropes in the bag*', '*what happened at the end?*'), followed by 31 questions on specific aspects of the show (e.g., "*what was the magician wearing?*", "*what book did the magician show you?*").

Overall recall was coded by giving children one point for every original and correct piece of information about the show (during both free and prompted recall). Inter-rater reliability, on 25% of interviews, was satisfactory ($r = .89$).

Phase 3 – Cross-examination interview. Ten months after the initial interviews (a delay reflecting that typically encountered for a case to be trialled in court in England and Wales; Plotnikoff & Woolfson, 2012), the children underwent a realistic cross-examination interview at their school. Interviews were conducted individually, in a quiet room at the school, by one of nine barristers-in-training. Each performed between 5 and 23 interviews as part of this study. The barrister informed the child they would be watching a video of the initial interview and that, following the viewing, they were to be asked some questions about what they had said, which should be answered truthfully.

To allow the performance of individual children to be compared, the cross-examination questions were drafted by noting elements of the magic show on which all children had been able to answer questions in the initial interview, before developing questions common to all the children and easily adapted to take into account individual variations in actual testimony. These comprised four-part structured challenges, designed to

exert increasing pressure upon the child to change their responses from their earlier testimony. Barristers-in-training completed all four parts of each of the challenge questions unless the child ceded to a challenge or said they did not know. At that point, they immediately moved on to the next question.

The cross-examination consisted of 23 questions. Eleven of these were identical to those used in the initial interview (and were therefore neither misleading nor designed to pressurise the child), and 12 questions challenged what the child had said in their initial interview. The cross-examination process lasted about 45 minutes, of which questioning took approximately 20-25 minutes. All children were given a full debrief at the end of the session, in which they were reassured that the questions were tricky for everyone and that they had done extremely well. Children were also rewarded with colourful stickers.

Three indices of performance were calculated.

1. Total number of changed responses (cedes) to the 12 challenges to evidence provided in the initial interview. Scores could range from zero (if they changed no responses) to 12 (if they changed all their responses). On average, the children changed their answers to 6.63 (SD = 3.57) of the 12 challenged questions (i.e., at least half), with ten children (12%) changing their answers to all cross-examination challenges. Overall, 98% of the sample ceded to at least one challenge during cross-examination.
2. 'Susceptibility to cross-examination'. As each child could be challenged up to four times, those who changed a response straightaway were deemed more susceptible than those who resisted until later challenges or did not cede at all (a score of 4 was assigned if the child ceded at the first challenge; 3 = ceded after two challenges; 2 = ceded after three challenges; 1 = ceded only at the fourth challenge; 0 = did not cede). Thus the minimum possible score was

zero and the maximum 48 (if a child ceded immediately on every question); high scores indicated lower resilience to cross-examination. The mean score on this measure was 16.78 (SD = 9.61).

3. Responses to unchallenged questions. These comprised questions identical to those given in the initial interview. One point was assigned for each correct answer (maximum score = 11). The children correctly answered between 2 and 11 questions (mean = 7.04, SD = 2.11).

Measures of anxiety and individual differences factors.

Anxiety. The State-Trait Anxiety Inventory for Children (STAIC; Spielberger, 1983) is a standardised self-report tool comprising two distinct anxiety constructs: trait and state. As the state scale measures current situational levels of anxiety, it is only performance on this aspect of the scale that was of interest in the current study. The state scale comprises 20 items (each measured on a three point scale) designed to assess how anxious the child is feeling at the time of testing; higher scores indicate higher levels of anxiety.

Although the STAIC was originally devised to test children aged 9-12 years, this tool may also be used by Kindergarten children, as well as older children who are below average in ability (Papay & Spielberger, 1986; Spielberger, 1983). Due to the reading ability of some of the children in this study (particularly the younger children, and those with lower IQs), items on the STAIC were read out to all children (as recommended by Papay & Spielberger, 1986). The state anxiety questionnaire was administered twice (directly before and after the cross-examination interview) by a familiar experimenter.

Age. Chronological age was assessed at the time of the initial interview (ten months before the cross-examination).

Intelligence. The Stanford-Binet Intelligence Scale (SB5; Roid, 2003), a widely used and standardised test of general intelligence, was used to establish children's IQ. The abbreviated version (comprising two subtests: Non Verbal Fluid Reasoning and Verbal Knowledge) was used. This test was administered on a separate occasion to phases 1-3.

Suggestibility. A short version of the Gudjonsson Suggestibility Scale Version 2 (developed by Henry & Gudjonsson, 2007), specifically designed to cater for less able children, was administered [note: norms are not yet available for the GSS2 (short)]. The measure involves reading participants a short narrative, after which they are asked to recount (in a free narrative) all they can remember of the story. This is followed by 16 specific questions. Of these, 12 questions measure the extent to which children succumb to misleading questions and interrogative pressure, while four questions are not misleading. Of particular relevance to the current investigation are 'Yield 1' and 'Shift'. 'Yield 1' was calculated from the number of incorrect (out of 12) responses to misleading questions prior to receiving negative feedback (as is typically encountered during cross-examination). 'Shift' represents the total number of changed responses after receiving negative feedback (out of 16) and, importantly, challenges during cross-examination could be perceived as implicit negative feedback. 'Yield 2' scores (as described in the introduction) were not used in the analysis, and henceforth only 'Yield' is referred to.

This test was administered on a separate occasion to phases 1-3.

Results

Data from the initial interviews and cross-examinations have been reported elsewhere (Bettenay et al., 2014). To avoid duplication of previously presented results, the analyses presented in this paper will focus on: (a) the performance of the children on the individual differences variables (age, anxiety, IQ, and measures of suggestibility); and (b) correlational

and regression analyses exploring the relationships between the individual difference variables in relation to cross-examination performance.

Means for the individual difference variables. As illustrated in Table 1, the sample comprised a wide range of ages and ability levels. State anxiety scores at time 2 were higher than those at time 1 ($t(83) = 6.49, p = .01$), suggesting that the cross-examination procedure increased the anxiety levels of the children. Regarding performance on the GSS2 (short), used to measure suggestibility, all children were able to recall at least two details about the story during free recall. The range of scores on the Yield measure varied widely (from 0-12) but over 50% of the children yielded to between three and six (out of 12) suggestive statements. Similarly, scores on the Shift measure varied considerably (0-13): just under 50% of children changed their answers on at least five occasions (out of 16).

[Insert Table 1 about here]

Correlational analyses exploring the relationships between the anxiety and individual differences variables and performance during cross-examination.

Table 2 displays correlations between the individual differences variables and the outcome measures from the cross-examination interviews. The strongest correlation was between two measures taken during cross-examination: the total number of cedes and susceptibility scores ($r = .95, p < .001$). Further, these two variables had a significant negative relationship with responses to unchallenged questions (repeated from the initial interview) ($r_s > -.50, p < .001$): higher numbers of correct responses to unchallenged questions were associated with fewer cedes and lower susceptibility to challenges. These four measures also displayed low/moderate significant correlations with several of the individual differences measures. Notably, variables indexing the degree to which children gave in to cross-examination challenges were related to age (greater age was associated with lower

levels of susceptibility and cedes) and anxiety levels at time 2 (i.e., post cross-examination: increased anxiety was associated with greater susceptibility and more cedes). In contrast, age, IQ and GSS Yield scores were significantly related only to responses to unchallenged questions (greater age and IQ were associated with more correct responses, while higher Yield scores were associated with fewer correct responses). Thus, there were a number of dissociations in the individual difference variables associated with responses to different types of questions (challenged versus unchallenged).

[Insert Table 2 about here]

Regression analyses predicting performance during cross-examination. Two linear multiple regressions were conducted to explore which of the individual differences variables (Age, IQ, Anxiety, GSS Yield, GSS Shift) were related to performance during cross-examination; DVs = (a) total number of cedes and (b) susceptibility. For both regressions, the following variables were entered: Age; IQ; Recall of Unchallenged Details; scores on GSS Yield; GSS Shift; and State Anxiety Time 2. Note that for all regression analyses reported in this paper, key statistical checks (e.g. Durbin–Watson, tolerance/variance inflation factor [VIF] statistics, Cook’s/Mahalanobis distances, standardised DF betas, plots of standardized residuals and predicted standardised values/ partial plots) were satisfactory (cf. Field, 2013), although four cases had leverage values greater than twice the average. As excluding these cases did not alter the results, the entire sample was utilized.

The first dependent variable considered was the number of times the child ceded to cross-examination challenges (out of 12). The overall regression model was statistically

significant [$F(6, 82) = 9.86, p < .001$]. The overall model accounted for 34.5% of the variance. The only significant predictors of performance were levels of anxiety and recall of unchallenged details (see Table 3).

[Insert Table 3 about here]

The second DV was susceptibility to cross-examination questioning (see Table 4). The overall regression model was also significant [$F(6, 82) = 7.56, p < .001$], explaining 30% of the variance. As before, the only significant predictors of performance were anxiety and recall of unchallenged details.

[Insert Table 4 about here]

Note: both regressions were repeated using the difference score for state anxiety (i.e., time 2 anxiety minus time 1 anxiety) but this did not materially change the results in either case.

Discussion

The present study explored the role of anxiety and other individual differences variables (age, IQ, recall of unchallenged details, suggestibility) on the performance of 4-11 year old children during cross-examination interviews. Although previous studies have found relationships between individual differences and performance during forensic interviews

(e.g., Henry & Gudjonsson, 2007), there has been little work exploring predictors of performance during cross-examination. This study sought to address this gap in the literature.

Inspection of mean scores on the STAIC (before and after the cross-examination interview) demonstrated that anxiety levels increased significantly as a function of cross-examination. Despite the current study being conducted in familiar and safe surroundings at school, with no serious consequences attached (e.g., getting a family member, or oneself, into trouble), an interview with ‘challenges’ seemed to have a similar impact to a non-supportive interview (Almerigogna et al., 2007; Almerigogna, Ost, Akehurst & Fluck, 2008). Furthermore, anxiety after cross-examination was associated with both a higher number of cedes and greater susceptibility to give in to questions that challenged the children’s testimony. The present results support Almerigogna et al.’s (2007) finding that anxiety is associated with suggestible responses to leading questions in a child witness interview and thus our contention (earlier) that the leading nature of cross-examination questions may result in suggestible responses.

The impact of anxiety on performance in the present study can be explained by cognitive theories of anxiety (Eysenck & Calvo, 1992; Derakshan & Eysenck, 2009). According to processing efficiency theory (Eysenck & Calvo, 1992), processing capacity is limited by worry in high anxious individuals. This may have affected the children’s ability to discriminate between their original responses and what was being communicated to them in the challenged questions (there was no relationship between anxiety and responses to unchallenged questions). Furthermore, in order to perform well, the children’s task was to answer questions accurately. If anxiety caused them to become distracted by negative feelings about the process, this could have adversely affected their performance, consistent with attentional control theory (Derakshan & Eysenck, 2009).

The importance of anxiety during cross-examination in this study was emphasised by the level of anxiety after cross-examination being one of only two significant predictors of performance during cross-examination (the other being recall of unchallenged details about the event), although the amount of variance it accounted for was modest. In contrast, despite age being strongly correlated with cross-examination measures, it was not a significant predictor once other factors were controlled, possibly because of shared variance with responses to unchallenged questions. Similarly, while scores on GSS Yield showed a modest correlation with the number of cedes to cross-examination, neither this measure nor GSS Shift scores predicted cross-examination performance.

The absence of a relationship between cross-examination performance and scores on the Yield and Shift GSS measures was unexpected, particularly if the ceding and susceptibility measures were tapping suggestibility. This is particularly pertinent for Shift, where changed responses are the result of negative feedback, and repeated challenges to the children's testimony could be considered as such. Changing responses to cross-examination may be a form of compliance or acquiescence rather than suggestibility. These constructs have received less research attention than suggestibility (although see McCloskey & Zaragoza, 1985, and Gilstrap & Ceci, 2005, for discussions of the relationship between suggestibility and acquiescence), and to our knowledge, no studies have looked at their relationship with anxiety in children. Further research could explore this issue.

The null effect of IQ was as expected, as the data were the same as that used to create categorical variables of intellectual disability in Bettenay et al. (2014), and no group differences were observed. Nevertheless, it was important to explore whether anxiety and suggestibility in this analysis would mediate the effect of IQ. There was no evidence this was the case.

Further research exploring the factors that may contribute to cross-examination performance is clearly warranted. Anxiety and related constructs such as stress and arousal need to be considered in conjunction with variables that have previously been found to relate to cross-examination performance, for example self-esteem, assertiveness and self-confidence (Zajac et al., 2009), as well as standardised cognitive (e.g., memory, attention) measures.

In addition to the limitations of this study highlighted above (e.g., limited number of individual difference measures) we acknowledge that the staged event witnessed was a positive one that in no way imitated the traumatic experiences of victims of abuse. Despite evidence that memory processes for traumatic and non-traumatic events are similar (Pezdek & Taylor, 2002), further studies using personally experienced trauma (e.g., hospital or dental procedures) would help to clarify this point.

To conclude, the key findings of this study were that cross-examination style questioning increases anxiety levels in children, and that this effect was a modest predictor of both the susceptibility to, and number of, changed responses. From a theoretical perspective, this study did not support the notion that changing responses under cross-examination is related to suggestibility as measured by the GSS. The strongest predictor of performance was responses to unchallenged questions, indicating that good memory inoculates against the effects of cross-examination. Preparation for children giving evidence in court to ensure they understand the importance of attending to the recording of their evidence in chief is crucial. The resulting confidence in their testimony should improve their resilience in the face of oppressive cross-examination and help to reduce anxiety levels.

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Table 1. Performance of the children on the individual differences variables

	Mean	SD	Range
Age (months)	108.63	21.67	55-133
IQ	84.64	18.54	47-121
State anxiety at time 1	27.71	3.95	20-41
State anxiety at time 2	33.17	7.75	20-55
GSS Yield	5.34	3.22	0-12
GSS Shift	5.49	3.11	0-13
Recall of unchallenged details	7.04	2.11	2-11

Table 2. Correlations between the state anxiety (time 1 and time 2) and individual differences variables (age, IQ, GSS Yield , GSS Shift) and performance on three measures taken during cross-examination (total number of cedes, susceptibility, recall of unchallenged details)

	IQ	State anxiety 1	State anxiety 2	GSS Yield	GSS Shift	Total cedes	Susceptibility	Correct responses
Age	-.28*	.09	-.02	-.22*	-.24*	-.26*	-.31**	.39***
IQ	--	-.31**	-.16	-.49***	-.23*	-.09	-.004	.32**
State anxiety 1		--	.28*	.12	.21	.17	.11	-.20
State Anxiety 2			--	-.02	.03	.35**	.28**	-.19
GSS Yield				--	.38***	.25*	.21	-.46***
GSS Shift					--	-.02	-.04	-.20
Total cedes						--	.95***	-.58***
Susceptibility							--	-.52***

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 3. Summary details of the linear multiple regression predicting cross-examination performance (DV = total number of cedes).

	B	SE B	<i>B</i>
Constant	6.22	4.22	
State Anxiety 2	.12	.04	.28**
Age	< .001	.02	-.001
IQ	.03	.02	.17
Recall of Unchallenged Details	-.91	.19	-.54***
GSS Yield	.17	.13	.15
GSS Shift	-.18	.11	-.16

*p < .05; **p < .01; ***p < .001

Table 4. Summary details of the linear multiple regression predicting cross-examination performance (DV = susceptibility to cross-examination).

	B	SE B	<i>B</i>
Constant	19.59	12.01	
State Anxiety 2	.29	.12	.23*
Age	-.04	.05	-.09
IQ	.09	.07	.18
Recall of Unchallenged Details	-2.14	.53	-.47***
GSS Yield 1	.40	.36	.13
GSS Shift	-.55	.31	-.18

* $p < .05$; ** $p < .01$; *** $p < .001$

Footnotes

¹ Although the original sample included 91 children, eight participants were excluded from the current investigation as data on the individual differences measures could not be collected from these children.