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The effect of cognitive load on faking interrogative suggestibility on the Gudjonsson Suggestibility Scale

Kim E. Drake [a,*], Sigrid Lipka [b], Charlotte Smith [c], Vincent Egan [c]

[a] School of Psychology, Social Work and Human Sciences, University of West London, TW8 9GA, UK
[b] School of Science, University of Derby, Derby, DE22 1GB, UK
[c] Department of Psychology, Forensic Section, University of Leicester, 106 New Walk, Leicester LE1 7EA, UK

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ABSTRACT

In the light of recent studies into the impact of cognitive load on detecting deception, the impact of cognitive load on faking on the Gudjonsson Suggestibility Scale (GSS) was investigated. Eighty undergraduate students participated in the study, and were randomly assigned to one of four conditions resulting from a combination of the factors: instruction type (genuine or instructed faking, see Hansen, Smeets, & Jelicic, 2009) and concurrent task (yes or no). Findings show that instructed fakers, not performing a concurrent task, score significantly higher on yield 1 in comparison to genuine interviewees. This is inline with previous studies into faking on the GSS. However, instructed fakers, performing a concurrent task, achieved significantly lower yield 1 scores than instructed fakers not performing a concurrent task. Genuine (non fakers) showed a different response to increased cognitive load during the dual-task paradigm. This study suggests that increasing cognitive load may potentially indicate (and preclude) faking attempts on the yield dimension of the Gudjonsson Suggestibility Scale.

1. Introduction

The aim of this study is to investigate to what extent increasing cognitive load during the GSS procedure may affect interrogative suggestibility and, especially, attempts at faking interrogative suggestibility. Interrogative suggestibility can be a serious psychological vulnerability during police questioning and is measured using the Gudjonsson Suggestibility Scale (GSS), which is widely used within the academic and applied forensic settings (Gudjonsson, 1984; Gudjonsson, 1987; Gudjonsson, 2003; Gudjonsson, 2010). Included [in this scale] are three measures of interrogative suggestibility: (i) yield 1 scores measure misinformation acceptance as a result of the pressure associated with questioning; (ii) yield 2 scores measure misinformation acceptance in the face of explicit critical feedback; and (iii) Shift scores measure the extent to which interviewees change their initial answers in response to critical feedback; this measures how sensitive interviewees are to pressure from the interviewer (also an indicator of suggestibility as well as a tendency to accept misleading information).

Several studies into faking on the GSS have highlighted features that may distinguish fakers from those who are genuinely suggestible (e.g. Baxter & Bain, 2002; Boon, Gozna, & Hall, 2008; Woolston, Bain, & Baxter, 2006). One of which is that those who fake tend to achieve high scores on the yield 1 subscale of the GSS in comparison to their shift scores. Those who attempt to fake on the GSS seem not to realise that changing/shifting answers in response to feedback, which is critical of their initial answer(s) may also be a sign of interrogative suggestibility (Baxter & Bain, 2002). This tendency though towards high yield scores within the faking condition might also be attributed to natural vulnerability within interviewees due to suggestibility or acquiescent responding (see the study by Pollock, 1996 on this issue). This means that high yield 1 scores in conjunction with relative low shift scores may not be a valid marker of faking, leading to a risk of false positives when classifying malingering if such a marker is used as a sign of faking. It appears that more research is needed to identify further signs of faking on the GSS.

1.1. Cognitive load

Cognitive Load Theory (CLT) proposes that working memory can only hold a limited amount of information and/or perform a limited number of tasks simultaneously. When undertaking tasks, the quantity of information and interactions that must be processed can lead to either [cognitive] overloading or under-loading of the finite level of working memory resources available. Every aspect of the task must be processed for complete learning to take place (Paas, Renkel, & Sweller, 2004).

* Corresponding author. Address: University of West London, Paragon House, Boston Manor Road, Brentford TW8 9GA, United Kingdom. Tel.: +44(0)20 8209 4146.
E-mail address: kim.drake@uwl.ac.uk (K.E. Drake).

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The more individuals have to learn or attend to, in a short amount of time, the more taxing it is on working memory, taking longer to process and learn the information (Sweller, 1988). Splitting attention, between two tasks, is an example of how cognitive burden can be imposed upon working memory (Chandler & Sweller, 1992; Ginns, 2006). If the cognitive load associated with a procedure is low, due to simple content or performing a single task, sufficient working memory resources remain allowing the individual to fully take-in and understand the task and/or instructions. When cognitive load is high, as a result of either difficult context or split-attention, due to performing dual tasks simultaneously, then the total cognitive load of that task may exceed the working memory resources available, resulting in failures in learning and comprehension (Ginns, 2006).

Research within the area of memory and interrogative suggestibility has demonstrated the importance of cognitive factors and efficiency in recollection performance as well as susceptibility/resilience to both misinformation and pressures during the GSS interview – and thus interrogative suggestibility (e.g. Merckelbach, Muris, Rassin, & Horselenberg, 2000; Vredeveldt, Hitch, & Baddeley, 2011). It may well be that, as cognitive load increases (due to split-attention) working memory resources are exceeded, which precludes individuals' ability to effectively critically evaluate the information in the GSS questions in light of the story that was read to them (at the start of the GSS procedure). Uncertainty regarding the required/correct answers becomes heightened and any negative feedback more effective, resulting in increased interrogative suggestibility in terms of the acceptance of misleading information (yield) and answer-changes in response to negative feedback (shift) (Gudjonsson & Clark, 1986).

1.2. Cognitive load and faking interrogative suggestibility

There are several possible reasons why being asked to fake on the GSS may seem, at first, to be cognitively demanding in comparison to performing the standard GSS interview: (i) instructed fakers may be more conscious that they are trying to fake (appear suggestible), and may therefore monitor their answers more carefully as well as monitor the interviewer's responses and behaviour more carefully (DePaulo & Kirkendol, 1989), and (ii) instructed fakers are often asked to role-play (e.g. lawyers may instruct clients to fake suggestibility, see Hansen et al., 2009) and they may become preoccupied by their instructed task (DePaulo et al., 2003). However, in studies into faking on the GSS, immediately prior to commencing the role-playing task, instructed-fakers are provided with information about what they need to do ("to trick the interviewer into believing that you are susceptible to accepting leading questions"). This equips them with knowledge that questions will be suggestive, and that they are to accept them; critical evaluation is thus no longer necessary, reducing any uncertainty, and rendering the cognitive load associated with the instructed-faker condition relatively low. Successful faking under these conditions, demonstrated through relatively high yield 1 scores, will be enabled.

When cognitive load is increased, through requiring instructed fakers to engage in a concurrent task during GSS interview (like in the present study, where a concurrent digit-span task – to split attention – is undertaken by a proportion of participants; Robbins et al., 1996; Vrij, Fisher, Mann, & Leal, 2008a; Vrij et al., 2008b), instructed fakers may become distracted, making the primary objective of faking on the GSS more difficult to achieve (Chandler & Sweller, 1992; Ginns, 2006). The cognitive load associated with performing a dual-task paradigm may be relatively high, resulting in failures in comprehension, and a lesser ability to focus on both the information within the GSS questions (to detect which are the suggestive questions) and the task of faking. Instructed-fakers, when performing a concurrent working memory task, may be less able to determine what the required answer(s) should be. In comparison to instructed-fakers without a concurrent task who typically score relatively high on the yield 1 dimension of the GSS (e.g. Baxter & Bain, 2002; Boon et al., 2008; Woolston et al., 2006), instructed-fakers with a concurrent working memory task will score significantly lower on yield 1.

Research within the area of detecting deception has already shown that increasing cognitive load during an interview (i.e. by asking participants to recall an event in reverse order or adopting a dual-task methodology; Robbins et al., 1996) can, to an extent, aid the facilitation of lie detection (see Granhag & Strömwall, 2002; Vrij et al., 2008a; Vrij et al., 2008b). Splitting attention may also reduce faking ability on the GSS.

Therefore, and in light of cognitive load theory also, it is proposed that cognitive load may render faking on the GSS more difficult to achieve, indicated through significantly lower yield 1 scores in comparison to those obtained by instructed fakers who are just required to fake (and not to perform a concurrent task). This is in contrast to how cognitive load is predicted to affect interviewees, naïve to the entails of the GSS; such participants may be rendered more suggestible on both the yield and shift dimensions of the GSS when cognitive load is increased, owing to elevated levels of uncertainty (Gudjonsson & Clark, 1986).

The following predictions are offered:

(1) In line with previous studies into faking on the GSS, instructed fakers in comparison to naïve participants will score significantly higher on the first round of misleading questions (yield 1 score) but will not differ significantly in term of shift scores.
(2) Instructed fakers, when performing a concurrent task, will score significantly lower on the yield 1 subscale in comparison to instructed fakers without a concurrent task.
(3) Naïve interviewees (i.e. those who are not instructed to fake and are naïve to what the GSS entails), performing a concurrent task, will conversely score significantly higher on the yield 1 and shift dimensions
(4) Working memory ability is a proposed covariate in this study.

2. Method

2.1. Participants

The sample consisted of 80 participants, 45 females and 35 males (mean age = 19.35 years, standard deviation = 1.41, range = 18–26). Participants were an opportunity sample, recruited through the experimental participation scheme and by email within the School of Psychology.

2.2. Materials

2.2.1. Gudjonsson Suggestibility Scale 1 (GSS1; Gudjonsson, 1984; Gudjonsson, 1997)

The GSS memory recall task consists of a narrative and a set of questions. The narrative is made up of 40 conceptual units occurring in a specific order in the form of a story. Each instance is scored as 'successfully recalled' if the interviewee is able to freely recall that instance. The words used (by the interviewee) to recall the instances need not be exactly as written in the narrative. The maximum free-recall score that can be achieved is 40, which would indicate that the interviewee has correctly recounted everything that occurred in the story. Furthermore, a set of 20 questions consisting of 15 misleading and 5 'true' filler questions is used in the questioning phase (see Procedure section below).

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2.2.2. Digit span concurrent task

Participants were presented with a series of five numbers taken from the Wechsler Memory Scale (1989). Five numbers were chosen as a result of conducting an initial pilot phase. During this phase, interviewee-self-reports suggested that asking interviewees to remember five numbers (whilst being interviewed on the GSS) was sufficient to allow investigation into the effect of cognitive load on instructed-malingering ability, without the danger of participants becoming over-burdened and disengaging.

2.3. Procedure

Following standard GSS procedure, the GSS narrative was read aloud by the interviewer and immediately afterwards, participants were asked to freely recall everything they could remember of the narrative (immediate free recall phase). In the traditional form of the GSS, the immediate free recall phase is followed by filler tasks, a delayed free recall phase and the questioning (or interview) phase. In the present study the delayed free recall phase was omitted for several reasons: (i) in the current study there was no filler, providing an inadequate time interval between immediate recall and the conventional delayed recall phase (Gudjonsson, 1997) and (ii) more recent studies have shown the delayed free recall phase is an unnecessary part of the procedure (see Smeets, Leppink, Jelicic, & Merckelbach, 2009), with little impact upon overall performance and suggestibility scores. Minimising participant fatigue, by reducing the length of the procedure, was an additional motivating factor in the decision to exclude the delayed free recall phase from the GSS procedure.

During the interview phase, 20 questions (of which 15 were misleading) were administered immediately after the free recall phase. Participants' responses were scored to provide the yield 1 score (the answers to the five 'true questions' do not contribute to this score). Immediately following the first question phase, negative feedback was given by the interviewer, using standard GSS instructions; the interviewee was told "You have made a number of errors, and it is therefore necessary to go through all of the questions once more and this time try to be more accurate". All 20 questions were then repeated, to measure the extent to which interviewees shift their initial (20) answers. A yield 2 score was calculated based on the number of the 15 misleading questions yielded to post-negative feedback. The four experiment groups followed identical procedures up until the interview phase, where different instructions were given depending on the condition that participants were assigned to.

For interviewees allocated to either the instructed-faking × no concurrent task condition, or the instructed-faking × concurrent task condition, the *instructions to fake* followed those provided by Hansen et al. (2009), and were delivered to each interviewee before the GSS question phase began. Interviewees were told: "You are going to be interviewed regarding the content of a story that you have just read. You should attempt to play the role of someone who is a suspect in a criminal investigation. You have the chance of getting off the hook if you can convince the interviewer that you are easily influenced. You should try to trick the interviewer into believing that you are susceptible to accepting leading questions, that is, questions that may assume or imply information that is not completely true or is misleading. You will also be given a couple of statements with which you can either agree or not agree. Again your chances to get off the hook rise, if you respond in a certain way. "Let the interviewer believe that you are eager to please other people and you try to avoid conflicts with others".

The instructions for the 'genuine' condition when there was a concurrent task were as follows: "You are now going to be interviewed on the content of the story that you have just been read. I am also going to present you with a series of numbers (see digit span task). Please try to remember these numbers as best as you can. At the end of the interview, I will ask you to recall those numbers." Participants were shown the numbers until the questions began. This was to increase the probability that participants were listening to the instructions given and were not instead preoccupied by the digit span task. The standard negative feedback phrase then followed.

For interviewees experiencing a concurrent task (i.e. those in the instructed-faking × concurrent task or those in the genuine × concurrent task conditions), the items of the Digit Span test were presented following the interview instructions (see above paragraphs) and before both sets of interview questions. Before the 20 questions were repeated, interviewees were given another series of digits to remember (whilst answering the 20 questions). This digit span task required participants to recall the five numbers immediately after answering each set of 20 questions.

2.4. Data analysis

The appropriateness of the working memory variables (the number of digits recalled correctly; NDRC, and the number of digits recalled in the correct order; NDCO; Wechsler, 1989) as covariates was ascertained first of all, to determine whether to use a multivariate analysis of covariance (ANCOVA) or a multivariate analysis of variance (ANOVA). Covariates are only appropriate if there is substantial correlation with the dependent variables (DV) (in this case, yield 1, yield 2, shift and total suggestibility scores) but not with any other covariate (Pallant, 2007; Stevens, 1996). The following process was used: The distribution of the proposed covariates and DVs were checked, revealing a flat distribution of the proposed covariates ($k = -2.01$; NDRC and $k = -1.78$; NDCO). Spearman correlation tests were thus used to check the relationships between the proposed covariates and the dependent variables. This showed a very strong relationship ($r = .933$, $p < .001$) between the NDRC and the NDCO. However, neither the NDRC nor NDCO correlated significantly with any of the DVs.

In light of the above results, a multivariate ANOVA – not an ANCOVA – was used to test the hypotheses, as NDRC and/or NDCO are not appropriate covariates (Tabachnick & Fidell, 2007). The independent variables are: (i) instructed-faking or no instructed-faking and (ii) concurrent task or no concurrent task. The dependent variables are the yield 1, yield 2, shift and total suggestibility scores.

Levene's test showed significant results for yield 1, yield 2 and shift, so it was decided to adopt a more stringent significance level (.01) for evaluating results involving these DVs. Total suggestibility though was not significant therefore the .05 significance level was used in this case.

3. Results

3.1. Descriptive statistics and hypothesis testing

Table 1 presents the means and standard deviations for the observed variables.

3.2. Yield 1

There was a significant main effect of instruction type: $F(1, 76) = 31.0$, $p < .001$, $\eta'^2 = .060$ and a significant main effect of concurrent task: $F(1, 76) = 12.8$, $p = .001$, $\eta'^2 = .020$. The interaction between instruction type and concurrent task was also statistically significant: $F(1, 76) = 26.4$, $p < 001$, $\eta'^2 = .051$.

Planned comparisons revealed that for instructed-fakers, yield 1 scores were significantly higher in the faking/no-concurrent task condition than in the faking/with-concurrent task condition:

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Table 1
Means and (in brackets) standard deviations of yield 1, yield 2, Shift and total suggestibility scores for concurrent task (with and without concurrent task) × instruction type (genuine and instructed faking condition).

Concurrent task	With		Without	
Instruction type	Genuine	Faking	Genuine	Faking
IR	15.6 (5.44)	16.6 (4.94)	16.1 (5.80)	17.5 (4.92)
Yield 1	4.40 (1.98)	4.65 (1.42)	3.50 (2.21)	9.70 (4.00)
Yield 2	5.65 (2.62)	6.10 (2.82)	4.30 (2.56)	8.20 (4.41)
Shift	3.25 (2.47)	5.65 (4.30)	2.95 (1.93)	3.80 (2.07)
Total suggest	7.65 (3.21)	10.3 (4.50)	6.45 (3.68)	13.5 (4.66)

Note: $N = 20$ per group. IR = immediate free recall; total suggest. = total suggestibility.

F (1, 38) = 28.3, $p < .001$, $\eta'^2 = .096$. Furthermore, yield 1 scores were significantly higher for participants in the faking/no concurrent task condition than for participants in the genuine/no concurrent task condition: F (1, 38) = 36.8, $p < .001$, $\eta'^2 = .152$. The difference in yield 1 scores was not statistically significant for participants in the genuine/no concurrent task condition compared with those in the genuine/with concurrent task condition: F (1, 38) = 1.83, $p = .184$.

3.3. Yield 2, shift and total suggestibility

For yield 2 and total suggestibility scores, the main effect of instruction type was statistically significant: F (1, 76) = 9.27, $p = .003$, $\eta'^2 = .024$ and F (1, 76) = 28.6, $p < .001$, $\eta'^2 = .100$ respectively. Planned comparisons revealed that interviewees in the faking/no concurrent task condition scored significantly higher than those in the genuine/no concurrent task condition on yield 2 and total suggestibility scores ($p = .001$, $\eta'^2 = .024$ and $p < .001$, $\eta'^2 = .052$ respectively). The main effect of instruction type on shift scores was not statistically significant under the more stringent significance level: F (1, 76) = 6.49, $p = .013$, $\eta'^2 = .027$. The main effect of concurrent task on yield 2, shift and total suggestibility scores was also not statistically significant.

4. Discussion

The aim of this study is to investigate to what extent increasing cognitive load during the GSS procedure may affect interrogative suggestibility, especially attempts at faking interrogative suggestibility. In line with cognitive load theory and research into detecting deception that has already shown how increasing cognitive load can facilitate the detection of deception (because deceptive behaviour is more difficult to achieve under increased cognitive load), it was proposed that instructed fakers would score significantly lower on the yield 1 dimension of the GSS than interviewees that are only required to attempt to fake on the GSS (and not to also perform a concurrent task). Conversely increasing cognitive load was deemed to significantly heighten yield 1 and shift scores in naïve participants (i.e. those who are not instructed to fake and are unaware of the entails of the GSS).

Current findings, despite the slight difference in methodology, appear in conjunction with previous research into faking on the GSS (see Baxter & Bain, 2002; Boon et al., 2008; Woolston et al., 2006), showing that instructed fakers scored significantly higher on the yield 1 subscale of the GSS in comparison to naïve participants. The fact that instructed fakers are given insights into what to expect from the GSS procedure, enables such individuals to overcome any uncertainty surrounding the correct answers needed. Under the instructed-faking condition, participants may be able to recognise which questions are the suggestive questions, and the required answers needed. The intrinsic cognitive load associated with the instructed-faking experimental condition may be relatively minimal, enabling effective comprehension and critical evaluation of the information in the GSS questions in light of the story (at the start of the GSS procedure). Uncertainty is therefore reduced which, when interviewees are instructed to fake, leads to the ability to fake suggestibility successfully indicated by relatively high yield 1 scores in comparison to naïve participants (Chandler & Sweller, 1992; Ginns, 2006; Gudjonsson & Clark, 1986; Paas et al., 2004; Sweller, 1988).

On exposure to added cognitive load, through being instructed to also engage in a concurrent digit-span working memory task, the amount of cognitive load increases significantly, which taxes working memory (Paas et al., 2004; Robbins et al., 1996); instructed fakers with the concurrent task scored significantly lower on the Yield 1 subscale compared with fakers without a concurrent task. By instructing fakers to perform a concurrent task during questioning, fakers' attention is split, making the primary task/objective of appearing suggestible on the GSS more difficult to achieve (DePaulo et al., 2003; Granhag & Strömwall, 2002; Vrij et al., 2008a; Vrij et al., 2008b). The intrinsic level of cognitive load associated with the instructed faking/concurrent task experimental condition is larger, exercising working memory capacity. The concurrent task may impede interviewees' ability to critically evaluate the incoming questions, increasing uncertainty, and precluding recognition of the required response(s), in order to appear suggestible (Chandler & Sweller, 1992; Ginns, 2006; Gudjonsson & Clark, 1986; Paas et al., 2004; Sweller, 1988). Faking on the yield 1 subscale of the GSS seems to be made more difficult to achieve under increased cognitive load, which is in line with results shown within the detecting deception literature (Vrij et al., 2008a; Vrij et al., 2008b).

The fact though that the yield 1 scores in the faking/concurrent task condition are still higher than in the naïve/no concurrent task condition suggests that a degree of faking may still have been possible; the cognitive load associated with the faking/concurrent task condition may not have been high enough to exceed working memory capacity, and preclude interviewees' engaging in the faking task. One limitation though within this study is that there is no way of knowing to what extent interviewees within the faking/concurrent task condition remained engaged with the dual-task paradigm throughout the GSS interview (despite the fact that the interviewees were asked to, at the end of the GSS procedure, recall the numbers they were asked to remember at the start of the interview). This could be a reason why appearing suggestible was still possible, to a degree, within this condition; at intervals throughout the interview, interviewees could well have been disengaging from the dual-task paradigm, focusing solely on the faking task (Chandler & Sweller, 1992; Sweller, 1988).

As predicted also, naïve participants, when instructed to undertake the concurrent task in conjunction to the GSS interview, did achieve higher yield 1 and shift in comparison to naïve interviewees not engaging in the concurrent task; though these increased effects are not statistically significant, as they have emerged to be within the faking conditions. Naïve interviewees under added cognitive load appear only marginally more suggestible on the yield 1 and shift dimensions, which was surprising. Perhaps naïve interviewees coped with the situation, and their uncertainty, not by yielding to the suggestive information but with alternative coping mechanisms. Research has highlighted, after all, the role of coping mechanisms in interrogative suggestibility (Gudjonsson, 1988; Gudjonsson, 1995). Further research is needed to ascertain whether this is the case.

Nevertheless, there still appears to be a difference in the way that instructed fakers and naïve interviewees respond (on the GSS) to the dual-task paradigm; this difference could well be another indicator of instructed-faking on the GSS. More research

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now needs to be conducted that controls for baseline levels of interrogative suggestibility (Pollock, 1996), varies type of cognitive load (DeLeeuw & Mayer, 2008) to explore the effect of cognitive load on interrogative suggestibility and faking interrogative suggestibility, delving deeper into the mechanisms that may be involved, and uses methods to ensure that interviewees within the faking/concurrent task condition remain engaged with the dual-task paradigm all the way through the GSS interview.

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