

**ON THE ROLE OF TRAIT-RELATED CHARACTERISTICS  
IN INTERROGATIVE SUGGESTIBILITY:  
AN EXAMPLE FROM ESTONIA**

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**Abstract.** The primary goal of this paper is to investigate whether interrogative suggestibility is related to certain personality traits in an Estonian sample of subjects ( $N = 61$ ; 20 men and 41 women; mean age = 20.6 years;  $SD = 2.98$ ). Results show that the means and standard deviations for different suggestibility scores in a sample of the Estonian population were all lower compared with those obtained in other European countries (UK, Poland, Iceland, Finland). No correlation of interrogative suggestibility with Big Five personality variables or state and trait anxiety was found. The only correlation that proved to be significant was between *yield2* and *shift* of interrogative suggestibility and low self-esteem.

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## **1. Introduction**

It has usually been the case that basic research on personality has sooner or later led to practical application. Typical contexts for this include education, medical practice, politics and applied legal disciplines. For instance, knowledge about an eyewitness's or suspect's personality can considerably improve forensic practices.

The question of general credibility of eyewitnesses and validity of their statements has interested psychologists and legal professionals over a century. It is known from the first studies of Cattell (1895) that suggestion has a direct influence upon human testimony. Binet (1900) and Stern (1910) elegantly demonstrated that suggestibility effects appear to be a function of situational and individual factors. Nowadays the assessment of an individual's level of interrogative suggestibility

has become an important part of many forensic psychology reports (Gudjonsson 1988a, 1995, Merckelbach et al. 1998, Munro and Carlin 2002), as it may reveal an individual's fitness to be interviewed and his or her psychological vulnerability (Gudjonsson et al. 2000).

It seems timely and important to launch suggestibility research in the broader context of forensic personality psychology also in Estonia. As a first step, we are interested in whether some standard methods used in Europe and findings gathered about personality characteristics in relation to suggestibility can be replicated with Estonian subject samples.

There are two main theoretical approaches to interrogative suggestibility – the 'individual differences approach' and the 'experimental approach' (Gudjonsson 1992, Schooler and Loftus 1986). The individual differences approach views suggestibility as being dependent on the coping strategies people can generate and implement when confronted with the *uncertainty* and *expectations* of the interrogative situation (Gudjonsson 1992). The main emphasis of the model is on explaining individual differences in interrogative suggestibility.

The experimental approach is illustrated by the work of Loftus and her colleagues and here the emphasis is on understanding the conditions under which leading questions are likely to affect the verbal accounts of witnesses (Loftus 1979). Schooler and Loftus (1986) suggested that the two approaches should be viewed as complementary, not competitive or mutually exclusive.

Both aspects were clearly present in the pioneering work of Binet (1900), who treated eyewitness suggestibility as an indicator of hypnotic suggestibility and who discovered empirical evidence for the differential suggestive effects of various types of questions. The same view was held by William Stern, who – in his later work – reviewed several forensic cases and concluded that suggestibility depends both on the characteristics of the witness and on the interview situation (Gudjonsson 1987, Hull 1933).

Gudjonsson and Clark (1986:84) define interrogative suggestibility as “the extent to which, within a closed social interaction, people come to accept messages communicated during formal questioning, as the result of which their subsequent behavioral response is affected”. Interrogative suggestibility comprises two main aspects: the tendency to be (mis)led by leading questions, and the tendency to shift initial answers in response to negative feedback (Bull 1995).

Gudjonsson (1992:117) argues that these two aspects of suggestibility are conceptually distinct and “reasonably independent of each other”, but “they are both mediated by similar factors, such as cognitive variables (memory, intelligence), anxiety, social factors, and coping skills. However, there is growing evidence that *yield 1* is *relatively* more related to cognitive variables, whereas *shift* is *relatively* more related to interpersonal and social factors” (Gudjonsson 1992:413).

Evidence for stable individual differences comes from correlational studies. Gudjonsson (1992) and several other authors have found substantial correlations between subjects' scores on Gudjonsson's test of interrogative suggestibility and different personality variables (anxiety, intelligence, self-esteem, and so forth).

Modern researches agree that not all individuals are equally likely to yield to the influence of suggestion (Eisen et al. 2002, Liebman et al. 2002). Some are more ready to accept misinformation and more influenced by negative feedback than others. A question that naturally arises is why some individuals are more suggestible than others – what factors account for individual differences in interrogative suggestibility? Is anything in the major personality traits (e.g. Big Five) related to inter-personal differences in suggestibility or are the differences, if any, more or less specific and minute?

*Agreeableness.* There is some evidence that highly agreeable individuals are more likely than less agreeable individuals to make errors when answering misleading questions, especially in situations where social pressure is high (Eisen et al. 2002). But as links between agreeableness and suggestibility have not been explored thoroughly, we cannot make any far-reaching conclusions.

*Neuroticism.* Gudjonsson (1983) has found a low but significant correlation between total suggestibility and neuroticism. The same results have been reported by Wolfradt and Meyer (1998). Haraldsson (1985) found no significant correlation between suggestibility scores and neuroticism (measured by the Eysenck Personality Questionnaire, EPQ).

*Extraversion.* Results here are controversial. Ward and Loftus (1985) found that introverts and intuitive individuals were more susceptible to misinformation, while Trouve and Libkuman found extraverts to be more suggestible (Schooler and Loftus 1993).

The Polish author Polczyk (2005) has found no correlation between interrogative suggestibility with neuroticism, extraversion, openness to experience, agreeableness and conscientiousness measured by the NEO Five-Factor Inventory (NEO-FFI; Costa and McCrae 1992).

Thus, we see that the results are inconclusive and even conflicting in some point.

*Social Desirability.* Social desirability is usually associated with 'lie scales', such as those measured by the Eysenck Personality Questionnaire (Eysenck and Eysenck 1975), or in our case by NEC/V4 (Nölvak and Pullmann 2002). In his early studies Gudjonsson (1983) found a modest correlation between suggestibility and social desirability measured by the EPQ Lie Scale (Gudjonsson 1983). Similarly, low but significant correlations have been reported by several other authors (Haraldsson 1985, Polczyk 2005, Richardson and Kelly 2004).

*Self-Esteem.* Studies by Gudjonsson and Lister (1984), and Gudjonsson and Singh (1984) have found a negative relationship between self-esteem and suggestibility, which supports the theoretical model of Gudjonsson and Clark (1986).

*Anxiety.* Interrogative suggestibility appears to be significantly mediated by anxiety processes (Gudjonsson 1988b). The general finding is that situational stress, that is state anxiety, seems to be more important than trait anxiety (Gudjonsson 1988b). But there are also studies that have found low but significant correlations between suggestibility and neuroticism (measured by the Eysenck Personality Questionnaire, EPQ) (Gudjonsson 1983). Wolfradt and Meyer (1998) found that suggestibility correlated positively with both trait and state anxiety.

Kassin and Kiechel (1996) suggest that anxiety as it relates to a suspect's vulnerability should be investigated thoroughly. Although anxiety could be examined as either a situational or personal variable, Gudjonsson (1992) recommends that state anxiety should be definitely investigated because compared to trait anxiety it has been linked to higher levels of suggestibility. This recommendation is in accordance with the well-known idea from cognitive psychology that state anxiety affects cognitive processes (Ridley and Clifford 2004). Eysenck's and Calvo's processing efficiency theory posits that anxiety reduces cognitive capacity, as it "uses the resources of the central executive component of the working memory system" (Eysenck 1992:131).

As interrogative suggestibility has not been studied in Estonia so far, the present study serves as a first attempt to collect data in the field and to compare the results with those gathered in other European countries. Considerable normative data have been collected in the UK and Iceland, but also in Finland and Poland. The results from these countries indicate that no substantial cross-cultural differences in interrogative suggestibility have been found (Haraldsson 1985, Polczyk 2005, Santtila et al. 1998). So these findings can serve as a basis for our assumption that in measures of suggestibility as related to other factors of psychological interest the Estonian population does not differ from populations mentioned above, and that any differences that may occur will be within reasonable limits.

## 2. Method

### 2.1. Participants

Participants were 61 undergraduate students (20 men, 41 women) from different universities in Tallinn (Tallinn University; Institute of Law, University of Tartu; Public Service Academy of Estonia). The mean age of participants was 20.6 (range 18–35 years),  $SD = 2.98$ .

Participants were told that they would participate in an experiment that studies relations between persons' memory and certain personality traits.

### 2.2. Measures

*Gudjonsson Suggestibility Scale 2* (GSS2; Gudjonsson 1997) employs a narrative paragraph describing a young boy losing control of his bike on a hill, which is read out to the subject. He or she is then asked to report all that can be recalled about the story (immediate recall and delayed recall can both be measured), he or she is asked 20 specific questions, 15 of which are misleading and suggestive. After answering the 20 questions the person is told that he or she has made a number of errors (even if no errors have been made), and it is therefore necessary to ask all the questions once more. The scale provides four scores:

(1) Yield 1 – the extent to which people give in to misleading questions. The range of possible scores is 0–15.

(2) Yield 2 – the extent to which people give in to misleading questions after interrogative pressure (negative feedback). Again, the range of possible scores is 0–15.

(3) Shift – any change in response to all 20 questions after negative feedback. Possible shift scores range from 0 to 20.

(4) Total suggestibility – this is the sum of Yield 1 and Shift. Therefore the range of scores is 0–35.

The scale has not been adapted and validated in Estonia as yet. Therefore, we have to postulate that we use it as a means to gather data as dependent variables in a quasi-experiment where GSS2 text and questions are regarded as independent variables. We also postulate that translation into Estonian has not changed the meaning of the text for the representatives of another European culture who are used as experimental subjects.

*Estonian version of the Rosenberg Self-Esteem Scale* (ERSES; Pullmann and Allik 2000). This 10-item scale was administered to participants to assess the level of global self-esteem. The participants responded to the items on a 5-point Likert type scale anchored by 1 (*strongly disagree*) to 5 (*strongly agree*). Higher scores represent higher levels of self-esteem. The internal reliability of the scale was  $\alpha = 0.84$ .

The Estonian translation of *State-Trait Anxiety Inventory* (STAI; Spielberger 1983) was used to measure state and trait anxiety. The participants have to respond to the 40 items on a 4-point Likert type scale. Scores on the STAI have a direct interpretation: high scores on their respective scales mean more trait or state anxiety and low scores mean less.

*NEC/V4* (Nõlvak and Pullmann 2002). To examine relations between interrogative suggestibility and certain personality dimensions, the shortened version of the Revised NEO Personality Inventory, *NEC/V4* (Nõlvak and Pullmann 2002) was administered to all participants. *NEC/V4* is an 85-item questionnaire which measures the five major domains of personality: *Emotional Stability*, *Conscientiousness*, *Agreeableness*, *Extraversion* and *Openness to Experience*. Responses were coded on a 5-point scale ranging from 1 (false) to 5 (true). The Cronbach alpha values were 0.85, 0.78, 0.76, 0.83 and 0.80 for the scales, respectively. A lie-scale is also added to the inventory in order to measure the tendency of individuals to present themselves in socially favourable terms (*Social Desirability*).

### 2.3. Procedure

The participants were asked to fill in a battery of questionnaires (*ERSES*; *NEC/V4*; *STAI*) by also providing standard demographic information about their gender, age and educational background.

One question, where participants were asked to estimate their own level of suggestibility on a 5-point Likert type scale ranging from 1 (*I am not suggestible*) to 5 (*I am very suggestible*) was added later to the questionnaires.

Testing was performed within small groups of 10–15 persons in each.

In order to administer the *Gudjonsson Suggestibility Scale 2* (GSS2), individual appointments were made with each of the participants. The GSS2 was administered in accordance with the recommendations made by Gudjonsson (1997). Participants were instructed to listen to a short story and to listen very carefully as they would be asked to recall as much as possible afterwards. The experimenter then read the narrative aloud to the participant, followed by the request to provide free recall (in written form). The only deviation from the standard procedure was that no delayed recall (usually after 50 minutes) was measured, as authors were mainly interested in possible relationships between interrogative measures and personality variables.

All testing sessions were conducted by the first author.

### 3. Results

#### 3.1. Relations between suggestibility and personality characteristics

Descriptive statistics, including means, standard deviations, and range for the measures of different suggestibility and personality variables, are reported in Table 1.

The mean for the total suggestibility score on the GSS2 in the Estonian sample is significantly lower [*Cohen's d* = 0.99, *effect size r* = 0.44;  $t = 5.6171$ ,  $df = 142$ ,  $p < 0.0001$ ] compared to the mean for the total suggestibility score in the UK sample reported by Gudjonsson in the manual (See Table 1; Gudjonsson 1997). One possible reason for that may be the homogeneity of the subject sample in the present study (participants all being undergraduate students, mean age was 20.6;

**Table 1. Means, standard deviations, and range for the GSS2 and individual differences measures in an Estonian sample (N = 61) and normative means and standard deviations for the GSS2 in a UK sample (N = 83)**

	M	SD	Range	Norm M <sup>a</sup>	Norm SD <sup>a</sup>
Immediate free recall	23.03	3.52	16–34	19.7	6.1
Yield 1	1.67	1.83	0–8	4.5	3.6
Yield 2	1.31	1.26	0–4	5.5	4.0
Shift	1.72	1.32	0–5	3.0	3.0
Total suggestibility	3.36	2.61	0–11	7.5	5.3
Emotional stability	38.85	9.95	16–60		
Extraversion	50.48	8.69	33–65		
Conscientiousness	41.00	6.92	16–53		
Agreeableness	41.13	6.50	25–55		
Openness to experience	32.38	5.73	16–42		
Social desirability	8.25	2.42	5–16		
Self-esteem	31.00	6.88	8–40		
State-anxiety	34.10	11.24	21–79		
Trait-anxiety	40.10	11.01	22–72		

<sup>a</sup> From Table 5.6 in Gudjonsson (1997)

range 18–35 years;  $SD = 2.98$ , while in the UK sample mean age was 30; range 16–69;  $SD = 8.8$ ), with subjects derived from a group not particularly suggestible; on the other hand, if this is the case, it only adds rigor to our results about personality factors possibly related to suggestibility.

Spearman's correlation coefficients were calculated among different suggestibility and personality variables (Table 2).

As can be seen from the results, the only correlation between suggestibility and personality variables that proved to be significant was between yield 2 and shift of suggestibility and self-esteem. Participants with a lower level of self-esteem are prone to be more suggestible in terms of interrogative suggestibility, especially when leading questions are asked and negative feedback is given.

The main personality traits measured by NEC/V4 (Nölvak and Pullmann 2002) did not correlate with suggestibility in our study. Whether this indicates that suggestibility might be involved in a new, separate personality factor or this result is a peculiarity of the present study sample should be investigated in future research.

**Table 2. Correlations between the different suggestibility variables and personality variables (N = 61)**

	Yield 1	Yield 2	Shift	Immediate Free Recall	Total Suggestibility
Yield 1		<b>0.47**</b>	<b>0.41**</b>	-0.24	<b>0.89**</b>
Yield 2			<b>0.89**</b>	-0.16	<b>0.78**</b>
Shift				-0.16	<b>0.77**</b>
Immed. free recall					-0.24
Total suggestibility					
Emotional stability	-0.15	-0.13	-0.15	0.02	-0.17
Extraversion	-0.04	-0.14	-0.13	0.07	-0.08
Conscientiousness	-0.01	-0.21	-0.19	-0.09	-0.11
Agreeableness	-0.05	0.06	0.01	0.00	-0.00
Openness to exper.	0.05	-0.02	-0.01	-0.04	0.05
Social desirability	-0.02	0.06	0.06	-0.08	0.02
Self-esteem	-0.19	<b>-0.32*</b>	<b>-0.29*</b>	0.08	-0.24
State-anxiety	0.03	0.14	0.20	0.02	0.11
Trait-anxiety	0.19	0.20	0.16	-0.09	0.18

\* Correlation is significant at the 0.05 level (two-tailed)

\*\* Correlation is significant at the 0.01 level (two-tailed)

### 3.2. Relations between different measures of suggestibility and gender

A comparison of male and female participants' total scores on interrogative suggestibility (3.15 and 3.46, respectively) showed no significant differences [*Kolmogorov-Smirnov*  $Z = 0.44$ ; *asympt.sig. (2-tailed)* = 0.99]. Males' and females' mean scores on yield1, yield2, shift and immediate free recall had also no significant differences. Yet the tendency points in the typical direction.

### 3.3. Correlations between self-estimated and experimentally measured suggestibility

As was said earlier, one question, where participants were asked to estimate their own level of suggestibility on a 5-point Likert type scale (1 = *I am not suggestible*; 5 = *I am very suggestible*) was added to the battery of questionnaires. The mean for self-estimated suggestibility was  $M = 2.85$ ,  $SD = 0.61$  ( $N = 60$ ). 26.2% of subjects rated themselves to be *not suggestible*, 60.7% declared themselves *suggestible to a certain degree* and 11.5% said they are *suggestible*. An analysis using Spearman's correlation coefficient revealed that the correlation between self-estimated and experimentally measured suggestibility was insignificant,  $r = 0.15$  ( $p = 0.26$ ), showing that participants are not able to estimate their own suggestibility accurately. This result was quite natural – it seems only human not to be good at making voluntarily self-discriminating statements.

## 4. Discussion

The present study was conducted in order to investigate a possible relationship between interrogative suggestibility and some personality traits (*extraversion, emotional stability, agreeableness, conscientiousness, openness to experience, social desirability, state anxiety, trait anxiety, self esteem*) in an Estonian sample.

The results indicate that the means and standard deviations for different suggestibility scores (*yield1, yield2, shift*) in a sample of the Estonian population were all lower compared with those obtained in British samples (Gudjonsson 1997). One possible reason for that may be the homogeneity of subjects in the present study (participants all being undergraduate students). The other possibility, to be hopefully examined in future studies, is that Estonians in general are less suggestible than the representatives of some other cultures or genotypes. (Indeed, Estonians are reputed to be stubborn. At least according to well-known social myth deeply rooted in Estonia.)

One central aspect of the present study is that no correlation between different suggestibility scores (*GSS2*) and the five personality factors from the *NEC/V4* were detected. This outcome is actually similar to the findings of Liebman and others (2002), and Polczyk (2005), and may indicate that interrogative suggestibility is independent from the basic personality traits as was stated by Polczyk (2005). Whether this could suggest another independent dimension of personality or whether it is just a small 'idiosyncrasy' of the personality domain is unclear at present.

State and trait anxiety measured by the *STAI* (Spielberger 1983) had no significant correlations with measures of interrogative suggestibility either. The same results are obtained by Polczyk (2005:184), who considered the fact intriguing, because "such a relationship has been noted in the literature and does make sense from the theoretical point of view". Gudjonsson and Clark (1986) have emphasized that the necessary conditions for the suggestibility to occur are uncertainty about the correct answer, trust in the interviewer, and the reluctance to



declare the uncertainty. So high anxiety (and also low self-esteem, which will be discussed below) may therefore increase the suggestibility of a person by making the interviewee more prone to try to please the interviewer as well as more vulnerable to any negative social feedback (Santtila et al. 1999).

One of the reasons why no correlation between suggestibility and high state-anxiety was detected may, of course, be the fact that the experimental situation was not stressful enough and there was no need for participants to feel anxious because stakes were not high for them. Several studies have tried to solve this problem by inducing anxiety to participants before measuring suggestibility, for example presenting anxiety-provoking stimuli or video-taping the testing procedure and thus creating a more tense atmosphere (Forrest et al. 2002, Ridley and Clifford 2004).

As can be seen from the results, the only correlation that proved to be significant between interrogative suggestibility and various personality variables was between yield2 and shift of suggestibility and self-esteem measured by *ERSES* (Pullmann and Allik 2000). Estonian subjects with a lower level of self-esteem are prone to be more suggestible in terms of interrogative suggestibility, especially when leading questions are asked and negative feedback is given. The same results have been reported by Gudjonsson (1992) and the results indicate that feelings of powerlessness and incompetence are particularly effective in inducing suggestibility. As noted by Campbell (1990) people with lower self-esteem have self-knowledge structures that are less clearly defined, less temporally stable and less internally consistent than those of individuals with higher self-esteem. „Therefore, people with low self-esteem are more susceptible to and dependent on the social environment which, in turn, leads to their greater sensitivity to self-intimidating and anxiety-provoking stimuli“ (Pullmann and Allik 2000:712), as is also the case during *GSS*.

In conclusion, we can say that although the *Gudjonsson Suggestibility Scale* has been criticized, because it is based on a verbally presented story that is quite unlike most real criminal incidents, perhaps limiting its validity (Milne et al. 2002), it is still one of the best instruments for measuring interrogative suggestibility. However, keeping the future in perspective, Calicchia and Santostefano (2004) propose that while clinicians, police, and the courts mostly deal with testimony encoded from visual and multimodal perspectives, it would be wise to start assessing interrogative suggestibility when the context is a real life event, not just a read-out-loud story.

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