THE MEASUREMENT OF POSTHYPNOTIC AMNESIA WITH THE HARVARD GROUP SCALE OF HYPNOTIC SUSCEPTIBILITY, FORM A

Shelagh Freedman

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By: Shelagh Freedman

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Signed by the final examining committee:

Dr. Andrew Chapman	Chair
Dr. Peter Shizgal	Examiner
Dr. Lucie Bonneville	Examiner
Dr. Jean-Roch Laurence	Supervisor

Approved by _____Dr. Jean-Roch Laurence_____

Chair of Department or Graduate Program Director

_____Dr. Brian Lewis_____

Dean of Faculty

Date _____August 30th 2012_____

Abstract

Shelagh Freedman

The Measurement of Posthypnotic Amnesia with the Harvard Group Scale of Hypnotic Susceptibility, Form A

The Harvard Group Scale of Hypnotic Susceptibility (HGSHS:A) has proven to be a reliable and efficient measure of hypnotizability (Siuta, 2010). However, the psychometric properties of the posthypnotic amnesia suggestion on this scale lack integrity (Sadler & Woody, 2004; Piesbergen & Peter, 2006). It is hypothesized that the ambiguously written instructions explaining the recall test to participants are obscuring measurement, resulting in non-amnesic participants being scored amnesic. To show participants can be scored amnesic for reasons not attributable to the suggestion, 81 participants were administered the HGSHS:A without the amnesia suggestion. No difference in amnesia pass rate was observed between this group compared to 78 participants administered the standard HGSHS:A. Modifying the instructions to more directly explain the task to participants significantly lowered the frequency of passing this suggestion. In addition, no lows were scored amnesic and the concordance between behavioural and subjective scores was improved with the new instructions. Retesting the modified instructions on participants not administered the amnesia suggestion (N = 65) resulted in participants nevertheless being scored amnesic. The results from this study indicate that 1) the HGSHS:A scoring is improperly classifying participants as amnesic 2) the modified instructions better capture the classic suggestion effect 3) a significant proportion of participants experience difficulty remembering the hypnotic suggestions

post-session, regardless of whether a suggestion for amnesia is administered. It is recommended that the written amnesia test instructions on the HGSHS:A be modified.

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This work is dedicated to my father, Edward Freedman, from whom I inherited my memory system and with whom I will forever miss making new memories.

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"If any one faculty of our nature may be called more wonderful than the rest, I do think it is memory. There seems something more speakingly incomprehensible in the powers, the failures, the inequalities of memory, than in any other of our intelligences. The memory is sometimes so retentive, so serviceable, so obedient; at others, so bewildered and so weak; and at others again, so tyrannic, so beyond control! We are, to be sure, a miracle every way; but our powers of recollecting and of forgetting do seem peculiarly past finding out."

JANE AUSTEN, *Mansfield Park*

The Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A; Shor & Orne, 1962) was derived from the individually administered Stanford Hypnotic Susceptibility Scale (SHSS; Weitzenhoffer & Hilgard, 1959). Its main purpose was time efficiency. This measure allows multiple participants to be simultaneously screened for hypnotic ability. It is entirely standardized and can be pre-recorded.

The HGSHS:A begins with the Head Fall suggestion; a practice suggestion where participants imagine their head falling forward. Participants next fixate on a spot on their hand, referred to as the target, while hypnosis is induced and the Eye Closure suggestion is administered. Ten additional suggestions follow, with the last of these being posthypnotic amnesia. Participants are told that they will not remember what has happened during the session, until they are given the cue, "Now you can remember everything."

Unlike the SHSS, the HGSHS:A is almost entirely self-scored. Eleven of the suggestions are evaluated by yes/no replies. Posthypnotic amnesia is the only experimentally scored suggestion. Immediately after being dehypnotized, participants open a response booklet and are given three minutes to "*list all the things that happened*

since you began looking at the target". If less than four hypnotic suggestions are reported, the participant is scored amnesic.

However, the test's instructions are ambiguous and instead of listing hypnotic suggestions, many participants describe their subjective impressions and experiences while fixating on the target (Bergman, Trenter & Kallio, 2003; Sadler & Woody, 2004). Perhaps participants do not realize that their memory is being tested? It is hypothesized that a misunderstanding of the task instructions is obscuring measurement of posthypnotic amnesia in the HGSHS:A and biasing positive amnesia scores.

The purpose of this work is to explore the effect the formulation of the instructions has on the results of the test. If participants can be scored amnesic for reasons not attributable to the suggestion, it follows that participants can be scored amnesic *sans* administration of the posthypnotic amnesia suggestion; the first experiment will test this idea. The second experiment will examine how modifying the posthypnotic amnesia test's written instructions changes the pass rate of the suggestion and the likelihood of being scored amnesic without suggestion.

As will be seen, the amnesia suggestion on the HGSHS:A is psychometrically weak, and its problems have long been noticed. It has a wildly varying pass rate and is not strongly correlated with hypnotic ability, or its subjective score. This in turn, affects the reliability of the entire scale and influences research conducted with the HGSHS:A and on hypnotic amnesia.

Posthypnotic Amnesia

Posthypnotic amnesia is defined as a temporary inability to recall the events that transpired during the hypnosis session. While participants vary in the extent their memory is affected, the more hypnotizable participants tend to remember the least (Hilgard, 1965). Like waking from a sleep, the memories feel inaccessible or fleeting. It is common for participants to describe the experience as *almost recall*:

> "It was like being on a merry-go-round and reaching for a ring. It's gone before you have a chance to grab it, and on the next time around you almost get it, but not quite. It's always just out of reach." (p. 181, Hilgard, 1965)

Posthypnotic amnesia is differentiated from other forms of amnesia and forgetting in that it is inorganic and reversible (Orne, 1966). With presentation of a prearranged cue, the memories return:

> "It was as if all the information was behind a curtain on the stage. I knew it was there, but I couldn't see it. When you said "now you can remember everything," it was as if the curtain just fell away" (p. 105, Hilgard, 1966).

How is it that participants can claim to momentarily not remember the experiences in which they just participated? As with all hypnotic phenomena, explanations can be roughly divided by whether hypnosis is viewed as an altered state of consciousness or a sociocognitive process. State theorists view hypnosis as a trance inducing procedure which changes normal brain functioning (Hilgard, 1977; Kihlstrom, 2007), while sociocognivists focus on contextual demands, and the beliefs and expectancies of participants (Coe, 1989; Spanos, Stam, D'Eon, Pawlak & Radtke-

Bodorik, 1980; Spanos, 1982). In the case of amnesia, debates have centered on the credibility of subjective reports.

The *functional ablation* hypothesis was offered as an early explanation of posthypnotic amnesia (see Messerschmidt, 1927). Taking subjective reports at face value, memory traces were thought to be isolated or lost until the appropriate cue allowed *reinstatement*. According to this theory, the amnesic material could not interact with other information stored in memory (Cooper, 1972). However, research eventually showed that the "forgotten" material continued to functionally wield influence. The amnesia "which appears superficially to be a complete wiping-out of memory, is by no means complete" (p. 138, Hull, 1933).

Hull was the first to note that posthypnotic amnesia was not a problem of memory retention, and work from his laboratory demonstrated that not all forms of memory were disrupted equally. Participants were taught to either associate nonsense information, or solve Stylus mazes in hypnosis. Their learning was then covered by amnesia. Although participants subjectively maintained an inability to consciously remember the learned material, they were shown to display a savings in relearning posthypnotically (Stickler, 1929 and Coors, 1928 - as described by Hull, 1933). This contradiction of claiming to not have access to material that has objectively been learned is referred to as the *paradox of posthypnotic amnesia* (Kihlstrom, 1977).

Studies have further shown that posthypnotic amnesia does not protect participants from retroactive inhibition (when the learning of a second list interferes with recall of a first list; Graham & Patton, 1968) and that recognition memory is less affected

(Barber & Calverley, 1966). The problem imposed by posthypnotic amnesia seems to specifically concern memory retrieval.

In a seminal experiment (Williamsen, Johnson & Eriksen, 1965), highly hypnotizable participants were taught a list of six words, either during hypnosis followed by amnesia or while normally awake (Controls). Participants then underwent a series of memory tests. As expected, when tested with free recall, amnesic participants displayed a significantly greater amount of forgetting than those who learned the material outside hypnosis. However, when the previously learned words and an additional six words were mixed and presented to participants as partial words (letters were deleted), a *priming* effect was observed. Controls and amnesic participants did not differ from each other when measured on a non-recall task. Both amnesic participants and controls were more capable and quicker at completing partial word solutions from the previously learned list.

With research establishing that the amnesic material remained active, the credibility of posthypnotic amnesia was called into question. The non-reporting of information can occur for various reasons. While participants may have temporarily forgotten the material, the contextual demands and the desire to please the experimenter may also make them simply unwilling to report it (Coe, 1978; Cooper, 1972). How can participants who remember, but choose not to disclose their memory, be differentiated from those who forget?

Making use of the *real-simulator design* (Orne, 1959), Williamsen *et al.* (1965) also taught the list of words to low susceptible participants instructed to behave *as-if* they had been hypnotized (that is, fake hypnosis; Simulators). Simulators allow the demand

characteristics of an experimental setting to be assessed. The Simulators underwent exactly the same procedure as the "real" participants; since they behaved differently than the amnesic high hypnotizables (Reals), it was concluded that the claims of amnesia were not the result of fakery or contextual cues. Compared to the real amnesic participants, the pretending-to-be-amnesic simulators "forgot" significantly more words with free recall, solved significantly fewer critical partial words, and took significantly longer to do so. The behaviour of the Simulators indicated that subjective reports of posthypnotic amnesia are credible, since the subjective experience is coupled with unique behaviour.

So why are participants not remembering the cognitively stored information? According to sociocognitive theorists, posthypnotic amnesia is not something that *happens*; it is something that participants *do* (Coe, 1978; Spanos, 1982). Participants are thought to either actively or nonconsciously engage in strategies to suppress the information, or to not expend the energy necessary for remembering. Some subjective reports imply this *amnesia by neglect*: "It is like knowing the material but not being able, or not desiring to put it into words" (p. 229, Cooper, 1972; Kihlstrom, Evans, Orne & Orne, 1980). The suggestion for amnesia specifically tells participants they *will find it to be so much of an effort to recall any of these things that* [*they*] *will have no wish to do so*. It can therefore be argued that amnesia by neglect has been suggested (Cooper, 1972).

Conversely, instead of focusing on how participants forget, Kihlstrom (1975) shifted the investigation to how participants fail to remember. With the emphasis properly on recall, Kihlstrom proposed the *disrupted retrieval* hypothesis; the most influential theory of posthypnotic amnesia (Evans & Kihlstrom, 1973). While some amnesic participants recall nothing from the hypnosis session, others do recall some

events. The difference between amnesic participants who recall nothing and those that recall some is thought to be only quantitative. By studying the material reported by amnesic participants, Kihlstrom showed that they exhibit *disorganized recall* (Evans & Kihlstrom, 1973; Kihlstrom & Wilson, 1974). That is, they tend to recall the events out of order, thereby showing impairment in the use of retrieval cues to consciously access memory. Accordingly, posthypnotic amnesia is thought to result from a dissociation between implicit and explicit memory (Kihlstrom, 2007). To the sociocognivists, however, disorganized retrieval is seen as a strategy to forget (Spanos & Bodorik, 1977; Radke & Spanos, 1981).

In summary, posthypnotic amnesia can be seen as occurring when a person either fails to remember or succeeds at forgetting (Davidson & Bowers, 1991). While the mechanisms that actually produce posthypnotic amnesia continue to elude researchers (Hilgard, 1977; Cooper 1979), progress, of course, depends on proper measurement of the phenomenon. In this case, the first step seems to be appropriately asking participants if they remember the hypnotic suggestions. Not understanding that hypnotic suggestions are to be recalled could also lead to their non-reporting.

Measuring Hypnotizability and Posthypnotic Amnesia

The advent of standardized hypnosis scales in the 1950s revolutionized hypnosis research by providing a means to measure and compare individual differences (Laurence & Perry, 1988). Previous measures investigated hypnotic depth and relied on experiential impressions. In contrast, the SHSS and HGSHS:A each administer twelve suggestions of

varying difficulty. Participants either pass or fail suggestions according to specific behavioural criteria based on overt responses.

For example, the Hands Moving Together suggestion on the HGSHS:A asks participants to imagine a magnetic force between their hands. If they later respond that their hands moved together six inches or more, they are scored as passing the suggestion. Since the SHSS is experimenter-scored, the experimenter observes the participant's responses and scores them accordingly. The correlation between observer and self-scored responses has been found to be high (r = .82; Shor & Orne, 1963).

In the case of both scales, passed items are summed to give a single score on twelve. This summary score indexes the participant's hypnotizability, that is, their responsiveness to hypnosis. The higher the score, the greater the participant's hypnotic ability. Participants are often further classified as High, Medium or Low. Those considered highly hypnotizable are generally required to pass a minimum of nine suggestions, whereas low hypnotizables score a maximum of three. Since the scales purposely include suggestions of varying difficulty, hypnotizability has a reasonably normal distribution (Hilgard, 1965; Woody & Barnier, 2008). This means that in a given sample approximately 10-15% of participants tend to be Low and about 10-15% High, while the rest fall in the Medium range.

Most hypnosis research depends on finding participants with either high or low hypnotizability, so they can be compared. While the SHSS is the gold standard for assessing hypnotic responsiveness, the procedure can last up to an hour and a half per participant, and the majority end up scoring Medium. The HGSHS:A was designed for

researchers to pre-select the most promising participants for SHSS testing. Over the years however, the HGSHS:A has surpassed the SHSS in popularity (Barnier & McConkey, 2004). Unfortunately, probably due to its efficiency, the majority of current hypnosis research is based solely on hypnotizability scores obtained with the HGSHS:A.

While the HGSHS:A has proven to be a valid and reliable measure of general hypnotizability (Woody & Barnier, 2008), it does not contain as many "hard" items as the SHSS. As a result, there is a ceiling effect on the HGSHS:A and participants scored High do not necessarily score High when tested on the SHSS (Perry, Nadon & Button, 1992). The previously mentioned Head Fall, Eye Closure and Hands Moving Together suggestions, all fall under the category of *ideomotor* items. These suggestions involve a thought translating into a movement, and are considered the simplest of suggestions. *Challenge* suggestions are considered more difficult, including a "challenge" to counter the suggested behaviour (eg. Imagine that your hand is glued to the chair and now try to lift it). The suggestions which require the most hypnotic ability are known as *cognitive* suggestions. When successful, these alter the perceptions or cognitive processes of the participant; as is the case with posthypnotic amnesia. Amnesia is one of only three cognitive items on the HGSHS:A, while it is one of seven on the SHSS (See Appendix A for a complete list of the HGSHS:A suggestions with their classification).

Both scales score a participant amnesic if they fail to report at least four suggestions. The dichotomous scoring of posthypnotic amnesia does not differentiate between amnesic participants who remember nothing and those who remember up to three suggestions. Likewise, participants who remember only four suggestions are classified the same as those who recall all the suggestions (a maximum of eleven on the

HGSHS:A). The HGSHS:A's Head Fall suggestion does not count toward the total remembered items (Shor & Orne, 1962). It is administered before participants are asked to stare at the target, which is where the instructions specify recall should begin.

While the suggestion and passing criteria are practically identical on the SHSS and HGSHS:A, it seems something was lost in translation when the posthypnotic amnesia procedure was molded for group testing. On the SHSS, there is no time limit imposed on recall, and participants have a moment to gather themselves before being tested for posthypnotic amnesia. In contrast, on the HGSHS:A written recall begins immediately after hypnosis is terminated and is capped at three minutes. While an experimenter records the participant's responses and asks, "Anything else?" when participants reach an impasse on the SHSS, the HGSHS:A participants are left to respond independently. Finally, although both scales ask participants to recall what has happened since they began looking at the target, the HGSHS:A also instructs them to "write down briefly" and to "not go into detail." Somehow, the differences in administration result in participants being less likely to report hypnotic suggestions during the test for amnesia on the HGSHS:A.

Posthypnotic amnesia is passed through the absence of a behaviour, participants do not need to have forgotten the suggestions, they simply need not report them (Cooper, 1972). If participants are not reporting suggestions because the instructions do not effectively explain the task, the test item would be invalidated. Particularly since the HGSHS:A contains relatively few cognitive suggestions, the integrity of the scale is affected by the quality with which posthypnotic amnesia is measured.

Spontaneous Posthypnotic Amnesia

Posthypnotic amnesia was once considered the defining characteristic of deep hypnosis (see Laurence & Perry, 1988). However, it is not thought to arise from hypnosis *per se* but in response to suggestion (Kihlstrom, 2007). Spontaneous amnesia, that is, posthypnotic amnesia arising without a suggestion, has been shown to occur relatively infrequently (Hilgard & Cooper, 1965). Ninety-one participants were administered the SHSS, both with and without a suggestion for amnesia, in a counterbalanced order (only some of the suggestions administered were repeated for both trials). Suggested amnesia was shown to occur significantly more often (35%), regardless of order. Only 7% of the sample displayed spontaneous amnesia on one of the two trials. Whereas highly hypnotizable participants were the most affected by suggested amnesia, spontaneous posthypnotic amnesia occurred in participants of all hypnotizabilities.

Yet, when Kihlstrom & Evans (1979) administered the HGSHS:A to participants of High and Low hypnotizability without the suggestion for amnesia, 31% of the sample was scored amnesic. Again, participants of both hypnotizability levels equally displayed "spontaneous" posthypnotic amnesia (10/29 and 6/22, respectively). While these results may show that highly hypnotizable participants may not more readily display spontaneous posthypnotic amnesia, they do call into question why so many participants are scored amnesic without the administration of the suggestion.

It is uncertain whether the HGSHS:A is more likely to cause spontaneous posthypnotic amnesia than the SHSS. However, it is certain that by scoring only behavioural responses, spontaneous posthypnotic amnesia is indistinguishable from the

non-reporting of suggestions. A misunderstanding of the amnesia test instructions on the HGSHS:A could certainly have led to the high display of "spontaneous" posthypnotic amnesia observed by Kihlstrom. These results certainly indicate that participants can be scored amnesic for reasons not attributable to the suggestion.

Pass Rate of Posthypnotic Amnesia on the HGSHS:A

One of the first apparent problems with the HGSHS:A's amnesia suggestion is its poor correlation with the SHSS's amnesia suggestion. The retest reliability of amnesia from the HGSHS:A to the SHSS was found to be only .39 (tetrachoric *r*; Evans & Thorn, 1966). This, however, should not have come as much of a surprise since the percentage of participants passing amnesia in the original HGSHS:A sample (48%; Shor & Orne, 1963) was considerably higher than on the SHSS (27%; Wietzenhoffer & Hilgard, 1962).

Attributing the HGSHS:A's high amnesia pass rate to either a lack of motivation or compliance stemming from the use of volunteers, Kihlstrom *et al.* observed that "the proportion [of participants] meeting the standardized criterion for posthypnotic amnesia is somewhat higher, and the correlation between amnesia and general hypnotic susceptibility is somewhat lower" on the HGSHS:A than the SHSS (p. 605, Kihlstrom, Evans, Orne & Orne, 1980). At that time, however, they had no way of knowing just how high and varied the HGSHS:A's amnesia pass rate would become.

The HGSHS:A has been translated into at least ten languages and the responsiveness of diverse cultures has been compared (Siuta, 2010). Table 1 presents the pass rate of each suggestion for thirteen countries, plus a recent sample from Concordia University (2009-2011; Freedman, Rossi & Laurence, 2012). As can be seen, the overall

similarities in pass rates and mean hypnotizability scores show the HGSHS:A to be internationally valid and reliable, and individual differences in hypnotizability to be universal (Siuta, 2010). Yet, an examination of the pass rate for posthypnotic amnesia exposes its poor reliability and seemingly random level of difficulty. It has the most varied pass rate of any suggestion, ranging from 13% in Israel, to 71% in Denmark (Lichtenberg, 2007; Zachariae, Sommerlund & Molay, 1996; respectively).

The higher the percentage of participants who pass a suggestion, the easier the item is considered. Ideomotor suggestions have the highest pass rates, while cognitive suggestions have the lowest. Country specific variations aside, the difficulty index of the various suggestions tend to maintain their positioning. While amnesia is considered a hard suggestion, a pass rate greater than 50% was documented in half the countries. In Sweden, the pass rate for amnesia (64%) was essentially equal to two of the ideomotor items (Hands Moving Together: 64% and Arm Lowering: 66%; Bergman, et al. 2003). The Italian sample also reported the same pass rate for amnesia as their Arm Lowering suggestion (56%; De Pascalis, Russo, Marucci, 2000). Arm Lowering is normally considered the easiest hypnotic suggestion (Hilgard, 1965). Is posthypnotic amnesia not a cognitively difficult suggestion?

With overall hypnotizability stable across samples and hovering in the middle (Range: 5.38 – 7.64), a substantial number of non-High hypnotizable participants must be passing posthypnotic amnesia. An analysis of the Concordia sample shows that while 64% of Highs passed posthypnotic amnesia, only 25% of those who passed the suggestion were highly hypnotizable. Most worrisome, 10% of the amnesic participants scored Low in overall hypnotizability. While some of the amnesic participants may have

Table 1. Percentage of Participants Passing the HGSHS:A Suggestions Internationally.

HGSHS: A Item	MON12 n=1161	POL n=1174	KOR n=271	ISR n=253	SWE n=291	ROM n=340	ITA n=376	FIN n=285	DAN n=376	SPA n=220	GER n=374	MON82 n=535	AUS n=1944	USA n=132
Head fall	60	54	73	48	70	68	70	84	86	73	73	65	61	86
Eye closure	67	66	84	78	76	60	62	86	48	64	73	63	57	74
Hand lowering	79	78	60	75	66	59	56	89	75	60	83	66	71	89
Arm immobilization	40	48	64	37	61	56	55	43	72	58	52	47	36	48
Finger lock	49	59	71	50	74	58	60	66	76	67	57	50	53	67
Arm rigidity	43	58	72	51	65	59	63	53	75	69	52	47	41	57
Hands moving together	76	71	78	76	64	61	64	78	78	79	74	64	71	86
Communication inhibition	39	61	54	51	56	52	48	56	73	74	49	43	42	50
Fly hallucination	13	12	19	15	14	34	28	28	38	29	47	23	25	39
Eye catalepsy	40	46	72	37	51	52	40	52	61	59	47	36	38	56
Post-hypnotic suggestion	17	55	14	30	15	35	35	37	11	29	31	15	17	36
Amnesia	32	16	54	13	65	30	56	53	71	52	36	19	33	48
Mean Percentage per item	46.3	52.1	57.9	46.8	56.4	52.1	53.1	60.4	63.6	59.4	56.1	44.8	45	61.3
Mean hypnotizability score	5.55	6.26	6.95	5.61	6.77	6.24	6.41	7.26	7.64	7.13	6.51	5.38	5.45	7.39

Note. MON12 = Montreal 2012; POL = Polish; KOR = Korean; ISR = Israeli; SWE = Swedish; ROM = Romanian; ITA = Italian; FIN = Finnish; DAN = Danish; SPA = Spanish; GER = German; MON82 = Montreal 1982; AUS = Australian; USA = American.

been inaccurately scored in overall hypnotizability, the fluctuating pass rate of amnesia suggests the problem lies more with the suggestion itself. Or, are we left to conclude that the ability to pass the amnesia suggestion is not hypnotiz-ability?

When the Spanish team piloted their translation of the HGSHS:A, they obtained a pass rate of 82% in response to amnesia (Lamas, Valle-Inclan, Blanco & Diaz, 1989). They realized this pass rate was too high, but assumed the problem was their translation. Examining the participants' written responses, they concluded that "it was not clear from the test instructions that [subjects] were meant to list only the suggestions considered as items by [experimenters]" (p. 265). They therefore made one modification and asked participants to "write down only the things they had been asked to do" (p. 265). This lowered the pass rate to 52% (which is still high).

Researchers have attempted to explain their high amnesia pass rate based on cultural and translational differences:

> DANISH (71%): "Whereas American students throughout their education are confronted with lists of facts (i.e., in the form of multiple-choice tests). This type of knowledge presentation has so far been almost absent in the Danish educational system, where students generally have been encouraged to respond in a more reflective, autonomous manner. This may be reflected in our observation that the Danish participants often wrote extensive reports on their subjective experiences, sensations, and feelings on the first page of the response booklet while omitting the item responses. This behavior seemed especially characteristic of the participants who had medium or low-medium scores, even though care was taken to explain that only very brief comments were required. One could hypothesize that the higher item pass percentage for [amnesia] in the Danish sample is partly related to a culturally specific test-response style" (p. 146, Zachariae, et al., 1996).

> FINNISH (53%): The high passing percentage in the Danish Spanish and Finnish samples might suggest "that the wording, 'Write a list of the

> things that happened since you began looking at the target' may lead to a somewhat different meaning when translated. In Finnish the verb *happen* (*tapahtua*) has a passive connotation (more like *occur*) and a better translation might have been the more active *tehdä* which is equal to *do* (Write… a list of the things that you *did* since you began looking at the target). …The Finnish students are also, like the Danish students, encouraged to respond in a reflective and autonomous manner; therefore, many of them listed different feelings and sensations and ran out of time before they even reached the first item" (p. 230 & 233, Kallio & Ihamuotila, 1999).

> SWEDISH (65%): "The subjects seem to have interpreted the question in the response booklet as referring to changes in the content of consciousness as a result of suggestions delivered during the induction procedure. In the English original, the verb "happen" is used in the response booklet. However, it might be better to use the verb "do" in the translated versions, as suggested by Lamas" (Spanish; p. 354, Bergman, et al., 2003).

Evidently, researchers from around the world have been noticing the same problem for over twenty years. The posthypnotic amnesia task instructions seem to mislead participants into reporting subjective experiences by asking them to list what *happened*. As a result, non-amnesic participants are scored amnesic. Indeed, the clarity of the question may vary with translation, and culture differences may influence hypnotic responses, yet clearer instructions may eliminate some of the variability seen across samples.

Subjective experience

With the modern scales' focus on overt behavioural responses, a wealth of experiential information has been lost (Woody & Barnier, 2008). True hypnotic responses are accompanied by a subjectively compelling experience, known as the *classic suggestion effect* (Bowers, 1981; Weitzenhoffer, 1974; 1980). For example, when it is

suggested that there is a magnetic force between a participants' hands, not only do participants' hands move together, they do so in a seemingly effortless and involuntarily manner. The behavioural scales do not measure this essential quality of hypnotic responses.

Kirsch, Council and Wickless (1990) devised a subjective scoring sheet for participants to complete after answering the behavioural questions on the HGSHS:A. For each suggestion, participants rated on a five-point Likert scale the extent to which they subjectively experienced the suggestion. For posthypnotic amnesia participants rated the degree to which they remembered, ranging from *1*. "I easily remembered everything" to *5*. "It was impossible to remember anything."

For both samples tested (Connecticut and North Dakota), the overall scale correlation between subjective and behavioural scores was quite strong (r = .84 for both samples). The individual item correlations were also found to be high, but with one exception. In both samples the point-biserial correlation between behavioural and subjective scores for posthypnotic amnesia "though significant, were relatively low" (p. 121; r^2 = .28 and .26 respectively). In fact, they were by far the lowest. The next lowest point-biserial correlations were .52 and .48 (Hand Lowering). Although they offer no further explanation, the authors state, "There is reason to believe, however, that the problem lies more with the behavioural assessment than the subjective rating of amnesia" (p. 120, Kirsch, et al., 1990).

Further evidence on the mismatch between behavioural and subjective scores of posthypnotic amnesia comes from the sample tested at Concordia (Freedman, Rossi &

Laurence, 2012b). Similar to the Kirsch et al. study, after completing the HGSHS:A's behavioural questionnaire, students dichotomously assessed whether they subjectively considered each suggestion successful. Of the 1156 participants who completed both the behavioural and subjective components, 32% were scored amnesic. However, 46% of those who scored amnesic subjectively rated the suggestion as unsuccessful. If the subjective aspect of this suggestion were required for passing, the pass rate would drop to 15%.

Further analysis showed that the largest discrepancy was with Low hypnotizables. Of the 15% of Lows who were scored amnesic, 77% regarded the suggestion unsuccessful. In contrast, 77% of the amnesic Highs considered the suggestion successful. Medium hypnotizables who passed posthypnotic amnesia were evenly split in classifying the subjective success of the suggestion. From these subjective mismatches, it is clear that participants not experiencing posthypnotic amnesia are nonetheless being scored amnesic. Again, clearer instructions may reduce the mismatches and better capture the classic suggestion effect.

Further Problems with the Posthypnotic Amnesia Suggestion

Problems with the measurement of posthypnotic amnesia on the HGSHS:A show up in various ways and affect the reliability and internal consistency of the entire scale. An analysis of the discriminatory power of the HGSHS:A suggestions, that is, the degree to which a suggestion is measuring the same thing as the rest of the scale, revealed the posthypnotic amnesia item explains the least variance ($R^2 = .13$; Piesbergen & Peter, 2006). The authors stated that, "from a purely test theoretical point of view, one could do

without the amnesia item with a discriminatory power of -0.0507" (p. 68). Accordingly, the internal reliability of the HGSHS:A achieved the highest gains with the elimination of posthypnotic amnesia (Cronbach's alpha: from $\alpha = .59$ to $\alpha = .64$). This, they concluded, "suggests a renunciation of this item" (p. 69).

Similarly, in an examination of 11 517 HGSHS:A scores obtained between 1962 and 2000, the posthypnotic amnesia suggestion consistently emerged as the most problematic (Sadler & Woody, 2004). Using a full information factor analysis that allows the calculation of the estimate of pseudoguessing for each item in the scale the authors reported that the pseudoguessing estimate for post-hypnotic amnesia was .22; in other words, among participants who otherwise score low in hypnotizability and should not be passing such a difficult item, 22% of them are expected to pass the suggestion nevertheless. By contrast, nine of the suggestions showed pseudoguessing parameters of exactly zero and one (the Hand Lowering suggestion) had a value that ranged from .00 - .04 (= .01). Correcting for pseudoguessing improved the factor loadings of amnesia considerably (from .38 to .54). As the authors concluded, the amnesia item seems to measure the right type of content 'but in a somewhat faulty way' (p. 142, Sadler & Woody, 2004).

Another full-information factor analysis combined the data obtained from participants who underwent both the SHSS and the HGSHS:A (Woody et al., 2005). The best-fit model found was a four-factor solution, in which the two posthypnotic amnesia suggestions arose as a separate factor. Nevertheless, the posthypnotic amnesia dimension was found to be the least intercorrelated with other factors, and only modestly related to hypnotizability ($r = .19$).

Is posthypnotic amnesia truly a separate sub-skill? Should the item be dropped entirely from the scale? As can be seen from these different analyses, until the measurement and scoring of this item can be better scrutinized, the verdict is uncertain.

Reversal

One of the key features of posthypnotic amnesia is that it is temporary and reversible (Hull, 1933; Orne, 1966). After amnesia is tested, the reversal cue is administered and participants are asked to report any newly recalled suggestions, yet scoring does not take this into account (Kihlstrom & Evans, 1976; Kihlstrom & Register, 1984).

Participants' behaviour on reversal has been shown to be related to hypnotizability (Kihlstrom & Evans, 1976). Although high hypnotizables tend to report the fewest suggestions during amnesia (Hilgard, 1966), they also tend to report more additional suggestions after reversal (ie. not recalled during amnesia testing; Nace, Orne & Hammer, 1974). Therefore, by the end of the hypnosis session, High and Low participants tend to recall approximately the same total number of suggestions (Kihlstrom & Evans, 1979). Although it makes sense that Highs recover more suggestions during reversal simply because they recalled fewer to begin with, thereby having a larger sample to choose from (Nace et al., 1974), they have been shown to have greater reversibility regardless (Kihlstrom & Evans, 1976). By matching participants for the number of suggestions recalled during amnesia and then analyzing the number of new suggestions reported during reversal, highs were shown to recall significantly more suggestions on reversal independent of initial recall.

A recall of two new suggestions after the cancellation of amnesia is considered "optimal" scoring for reversal (Kihlstrom & Register, 1984). Participants who are scored amnesic but fail to report at least two new suggestions during reversal are referred to as *pseudoamnesics* (Kihlstrom & Evans, 1977). That is, they reported few enough suggestions on the initial test for amnesia, but they failed to show the memories were recovered. On the other hand, *partial amnesics* refer to participants who initially recall more than three suggestions (non-amnesic) and then recall an additional two during reversal (Kihlstrom & Evans, 1977). Partial amnesia was found to correlate more strongly with hypnotizability and with the successful passing of amnesia on the SHSS than amnesia (Kihlstrom & Evans, 1973).

Might the problems associated with the posthypnotic amnesia suggestion on the HGSHS:A result from not taking reversal into account? Kihlstrom and Register (1984) proposed that participants be considered amnesic only if they met both the criteria of initial amnesia and reversal. However, this seems to do little more than lower the pass rate of the suggestion. The Swedish research team was able to lower their amnesia pass rate of 65% to a more acceptable 24% with the inclusion of reversal (Bergman et al., 2003). Likewise, only 13% of the participants from the Concordia sample would have been considered amnesic if passing both initial amnesia and reversal were required (Freedman, Rossi & Laurence, 2012).

Yet, the item-to-total correlation in Kihlstrom & Register's own sample (1984) only improved modestly with the inclusion of reversal (from $r = .14$ to $r = .22$). Similarly, while the joint scoring of amnesia and reversal successfully dropped the pass rate from 44% to14% in Connecticut and from 51% to 21% in North Dakota, this did not

improve the correlation between behavioural and subjective scores (Kirsch et al., 1990). Even with the inclusion of reversal, the correlation of the amnesia item to the total scale remained the lowest for both samples. Woody *et al.* (2005) also tried incorporating the reversal criteria in their factor analysis with combined HGSHS:A and SHSS scores. Yet, its inclusion was not found to change the factor solutions obtained, nor increase the reliability of the posthypnotic amnesia subscale. The inclusion of reversal does not seem to fix the methodological problems associated with the suggestion.

In Kihlstrom's own words concerning the inclusion of reversal, "this index remains contaminated by a variety of factors in addition to suggested amnesia. Not the least of these may be a misunderstanding of the amnesia query, so that many [participants] spend part or all of their time reporting incidental experiences rather than the critical suggestions" (p. 55, Kihlstrom & Register, 1984). If the problem is that participants are being initially incorrectly scored as amnesic, then adding the criteria of reversal only eliminates a portion of the participants; and not necessarily the right ones. Non-amnesic participants can still be scored amnesic. The problem has to be fixed at the level of initial amnesia. Participants need to realize on what they are being tested.

Woody & Sadler (p. 150, 2004) summarized the issue most specifically:

> "Some participants grossly misinterpret what is being asked of them … the instructions say to write "a *list* of the things that happened since you began looking at the target. Do *not* go into detail." … some participants write extensively about what was happening to them subjectively around the time they were looking at the target, and their account never makes its way forward to most of the actual suggestions. Hence, they appear spuriously to be amnesic. … It would be better to ask something like this, 'Now we would like to find out how many of the suggestions you can correctly recall. Please list all the things

> you were asked to do, no matter how you responded to them. You need not give too much detail for each suggestion."

The Present Study

While research has shown the amnesia test item in the HGSHS:A to be unreliable, and has pinpointed the problem, the present study will be the first to test whether modifying the task instructions improves the measurement of posthypnotic amnesia. It is hypothesized that the problem stems from the ambiguously worded written test instructions. This will be tested by 1) administering the HGSHS:A without a suggestion for amnesia to check whether participants can nonetheless be scored amnesic and 2) analyzing how modifying the instructions to more clearly explain the task impacts measurement of the phenomenon. For the purpose of this thesis, pass rate, number of items recalled, hypnotizability level and subjective ratings will be compared across four groups.

Hypotheses

1) Standard group (Standard)

Serving as the control group, participants will be administered the standard HGSHS:A. Based on the previous Montreal sample (Freedman, et al., 2012), it is expected that approximately 30% of participants will show posthypnotic amnesia. While the majority of these are expected to be highly hypnotizable participants, Mediums and Lows are also expected to be scored amnesic. Additionally, participants of greater hypnotizability are expected to subjectively experience the most difficulty in recall. It is expected that not all participants scored amnesic will subjectively rate the suggestion as successful. The majority of participants not considering the suggestion successful, but

nonetheless being scored amnesic, are expected to be of Medium and Low hypnotizability.

2) Standard instructions with no amnesia suggestion (StandNoSugg)

It is hypothesized that the test instructions are ambiguous enough to result in non-amnesic participants being scored amnesic simply because they do not understand their task. Therefore, a group of participants will be administered the HGSHS:A without the suggestion for amnesia to test whether participants can be scored amnesic for reasons not attributable to the suggestion. Based on previous research, it is expected that 20-30% of participants will be scored amnesic (Kihlstrom and Evans, 1979; Sadler & Woody, 2004). Since in this group participants scored amnesic are not actually expected to be experiencing posthypnotic amnesia, it is hypothesized that "amnesia" will occur equally among High, Medium and Low participants. It follows that no differences in ratings of difficulty in recall are expected. Furthermore, the subjective ratings of difficulty are expected to be lower in this group than groups administered the amnesia suggestion.

3) Modified instructions (Modified)

In order to test whether the standard instructions are indeed misleading, they will be modified to more clearly ask participants to list what they were asked to do over the course of the session. By doing so, it is expected that participants will list a greater number of suggestions, thereby lowering the amnesia pass rate. Since it is expected that participants scored amnesic will be experiencing posthypnotic amnesia, the majority scored amnesic are expected to be High. An indication of whether the modified instructions might increase the validity of the posthypnotic amnesia item on the

HGSHS:A is whether few Low and Medium participants are scored amnesic. Another indication of improved measurement will be if a greater proportion of participants scored amnesic also report the suggestion as subjectively successful. Experienced difficulty in recall ratings are expected to be similar to the standard group and vary with hypnotizability. Furthermore, a greater difference in subjective difficulty is expected between participants scored amnesic and non-amnesic with the modified instructions.

4) Modified instructions with no amnesia suggestion (ModNoSugg)

To solidify that the standard instructions are often misinterpreted, leading numerous participants to being erroneously classified as amnesic, a group of participants will be administered the modified instructions without the amnesia suggestion. Very few participants are expected to be scored amnesic in this group. Here, High, Medium and Low participants are expected to be equally likely to be scored amnesic. Ratings of experienced difficulty in recall are expected to be similar to the Standard-No-Suggestion group. Compared to all other groups, the number of items reported is expected to be the highest in this group, and the pass rate for amnesia the lowest. This group will further provide an index of spontaneous posthypnotic amnesia on the HGSHS:A.

Method

Participants

Three hundred and fifteen Concordia University undergraduate psychology students enrolled in a first year research methods course (Psyc 310) were administered the Harvard Group Scale of Hypnotic Susceptibility, Form A. Participants who fell asleep (7); did not attempt two or more of the behaviourally observable suggestions[1] (16); or mixed-up their amnesia and reversal responses (2) were removed from the dataset.

The final sample comprised 290 students (224 females and 66 males) aged 17-48 years old (= 21.86, *SD* = 5.11). Hypnotizability scores ranged from 0-11, with a mean score of 5.87 (*SD* = 2.43). While 90.6% of participants were self-scored as "perfectly fluent" in English, the sample was multilingual. At home, 16.1 % spoke French and 19.2% spoke an "other" language.

Participants were randomly assigned to one of four experimental conditions based on their scheduled class time[2]. A total of 18 hypnosis sessions were conducted with 4-21 participants per session (= 18.33, *SD* = 2.65). Groups did not differ demographically, or in hypnotizability. See Appendix B for demographic information on each group.

Measures

The Harvard Group Scale of Hypnotic Susceptibility: Form A (HGSHS:A; Shor & Orne, 1962) is a standardized procedure used to measure hypnotic ability. The

[1] Arm Lowering; Finger Lock; Arm Rigidity; Hands Moving Together

[2] Participants who received the original amnesia instructions (Standard; NoSuggestion) were enrolled in the Fall term and were tested between September 12-22, 2011. Participants receiving the modified amnesia instructions (Modified; ModifiedNoSuggestion) were enrolled in the Winter term and were tested from January 11-22, 2012.

procedure is administered in groups and consists of a relaxation based induction (participants are asked to imagine their muscles becoming progressively more relaxed) and twelve suggestions.

Suggestions vary in difficulty. Ideomotor suggestions, of which there are four, are the simplest and easiest to pass. They involve a thought translating into a movement. For example, the Hands Moving Together suggestion has participants imagine their outstretched arms becoming attracted by a magnetic force. The suggestion is considered successful if the participant's hands move together six inches. Challenge suggestions, also known as motor-inhibition suggestions (Woody et al., 2005), require more hypnotic ability. These suggestions (five) have participants imagine a state of affairs that would result in a lack of movement, if they were true. For example, the Arm Rigidity suggestion asks participants to imagine that their arm is stiff like an iron bar, and then challenges them to try to bend it. The suggestion is successful if the participant bends their arm less than two inches. The remaining three suggestions fall under the broad class of cognitive suggestions - the most difficult. Here, participants are given suggestions to alter their perception, thought, or memory. The Fly Hallucination suggestion asks participants to imagine a fly buzzing around their head and then asks them to shoo it away. The Posthypnotic Ankle Touch suggestion tests whether participants will touch their ankle posthypnotically, on cue. Lastly, the Posthypnotic Amnesia suggestion tells participants that they will temporarily find it difficult to remember the events of the hypnosis session and then tests whether they recall relatively few suggestions (max. 3). A list of the twelve suggestions, their order, classification, and scoring can be found in Appendix A.

Shor and Orne (1963) showed the internal consistency reliability of the HGSHS:A to be .80, with a validity coefficient of .74. Overall, this measure has been found to possess adequate psychometric properties (Piesbergen & Peter, 2006).

Procedure

All research was conducted ethically, according to human research protocol. Sessions began with participants reading over pre-experimental instructions (Appendix C), consenting to participate (Appendix D) and filling out demographic information (Appendix E, page 1). The experimenter[3] then gave a briefing on hypnosis and overview of the session's procedures (Appendix F). Following this, the original recording of the HGSHS:A script (Shor & Orne, 1962) was played via Compact Disc, either in its entirety or with the amnesia suggestion omitted.

After being dehypnotized, participants were asked to turn to the second page of their response booklets, where written instructions were provided asking the participant to list what they recall from the session (see below). The recording guided participants through the amnesia and reversal reporting.

As is standard protocol, after three minutes, the amnesia suggestion was cancelled for participants who had received the suggestion. All participants were then asked to turn to the third page of their booklet and had an additional two minutes to write down anything that they <u>now</u> remembered; that they did not previously remember (Appendix E, page 3).

[3] Two sessions were conducted by Erika Rossi, the Research Assistant. The rest of the sessions were conducted by the author.

Standard Group

This group received the original HGSHS:A, which includes the following suggestion for posthypnotic amnesia:

> ***In a moment, I shall begin counting backwards from 20 to 1. When I get to one, you will be fully alert in your normal state of wakefulness. You probably will have the impression that you have slept because you will have difficulty in remembering all the things I have told you and all the things that you did or felt. In fact, you will find it to be so much of an effort to recall any of these things that you will have no wish to do so. It will be much easier simply to forget everything until I tell you that you can remember. You will remember nothing of what has happened until I say to you "Now you can remember everything". You will not remember anything until then. After your open your eyes, you will feel fine…***

The written instructions asking participants to list the suggestions they remembered from the session were not modified, and read as follows:

> ***Now please write down briefly, in your own words, a list of all the things that happened since you began looking at the target. Please do not go into detail. Spend three minutes, no longer, for writing out your reply.***

Standard-No-Suggestion Group

Although this group received the original written instructions for reporting items, the posthypnotic amnesia suggestion was deleted from the hypnosis recording:

> ***In a moment, I shall begin counting backwards from 20 to 1. When I get to one, you will be fully alert in your normal state of wakefulness. You probably will have the impression that you have slept[4]. After you open your eyes, you will feel fine.***

[4] References to sleep are made throughout the HGSHS:A script.

Modified Group

This group received the amnesia suggestion, however, the written instructions asking participants to list items were modified to more explicitly explain that participants should be reporting the suggestions administered during the session[5]:

> ***Now please write down, briefly in your own words, a list of everything you were asked to do from the time you were looking at the target until the end of the session. Please do not go into detail, but try to mention all of the different things that you were asked to do. You have three minutes, no longer, for writing your reply.***

Modified-No-Suggestion Group

Participants in this group received the modified written instructions, but did not receive the amnesia suggestion.

After providing amnesia and reversal responses, participants completed response booklets at their own pace. Response booklets consisted of a series of forced-choice and open-ended questions concerning behavioural and subjective responses to the hypnotic suggestions (Appendix E).

Participants answered the eleven standard questions pertaining to their overt responses. For each suggestion, participants were asked to retrospectively assess their behavioural response according to specific criteria. For example, for the Arm Rigidity suggestion, participants were asked to choose whether their outstretched arm bent less than two inches, when it was suggested that their arm would become stiff like an iron bar.

[5] The modifications to the instructions were made to indicate that participants should report what they were asked to *do* across the duration of the session.

Based on Kihlstrom's extended version of the HGSHS:A response booklet[6], participants also completed questions concerning their subjective, inward experiences (*Did you feel the suggestion was successful, regardless of your behavioural response?*) and questions concerning the involuntariness of their responses (ie. *Did your arms feel as though they moved together involuntarily?*). Only participants administered the amnesia suggestion received questions concerning their subjective impressions of the amnesia suggestion: *Did you subjectively feel the suggestion for "temporary difficulty in remembering the events of hypnosis"* was successful or unsuccessful.

All participants responded to an additional five-point multiple choice question concerning their subjective difficulty recalling suggestions during the amnesia written test (Appendix E, p. 10). Also, participants were asked to describe how it felt trying to remember suggestions upon termination of hypnosis, and when tested for reversal. Questions pertaining to other cognitive suggestions were also administered. Only the behavioural scores and questions concerning the posthypnotic amnesia suggestion are analyzed in this thesis.

The procedure lasted an hour and 15 minutes. At the end of the session participants were asked not to discuss the experiment with their classmates and each booklet was verified for completeness. Participants received a debriefing form (Appendix G) and had a chance to discuss their experiences.

[6] Kihlstrom's modified HGSHS:A response booklet can be found online: http://socrates.berkeley.edu/~kihlstrm/PDFfiles/Hypnotizability/HGSHSAResponse1002.pdf

Scoring

Hypnotizability

A hypnotizability score was calculated for each participant by tallying the number of suggestions that were behaviourally successful. Since only half the participants received a suggestion for posthypnotic amnesia, this item did not count toward their total score. Hypnotizability scores could therefore range from 0-11.

Depending on the number of suggestions they passed, participants were classified as Low (0-3), Medium (4-7), or High hypnotizables (8-11).

Posthypnotic Amnesia

Participants' written recall tests for amnesia and reversal were transcribed and scored by two raters, blind to group membership and hypnotizability[7].

The scoring procedure for posthypnotic amnesia closely followed the guidelines of Shor and Orne (1962). A point was awarded for each critical suggestion listed, even if mentioned vaguely (eg. "Lifted my arm"). Each suggestion counted only once, regardless of the amount of detail provided. The Head Fall suggestion is normally excluded, since it is administered before participants stare at the target and hypnosis is induced. In this experiment, the amnesia suggestion was also not included as a critical item, since only half the participants received the suggestion. However, each rater identified and recorded all suggestions mentioned.

[7] The author and Marc Floréa

The total number of suggestions recalled per participant was calculated out of ten. If the participant listed less than four suggestions they were scored amnesic. If they listed four or more suggestions, they were scored non-amnesic. Any discrepancies between the raters were discussed. Unresolved differences were settled by a third party[8].

Subjective Difficulty in the Experience of Recall

Participants' responses to the 5-point multiple choice question, in which they were asked to rate their experience of difficulty in recall was scored from 0 to 4. While 0 indicated "no difficulty remembering most of what was suggested", 4 indicated the participant "could not remember most of what was suggested."

[8] Dr. Jean-Roch Laurence

Results

Main variables were normally distributed and minimal outliers and missing data were found. Data points that were three or more standard deviations from their group mean were replaced by the second highest score on that variable plus one unit to respect the extreme nature of the score. Unless otherwise stated, all tests of assessment met their statistical assumptions. Chi squares were evaluated with equal frequency distributions. All ANOVA follow-up comparisons used the Bonferroni correction (Tabachnick & Fidel, 1983).

Standard Instructions: With and Without the Amnesia Suggestion

As can be seen in Table 2, the base rate of posthypnotic amnesia was found to be 38.5%, as 30 of the 78 participants administered the standard HGSHS:A were scored amnesic. Overall, participants in the Standard group reported a mean total of 3.97 suggestions *(SD* = 2.19; Table 3). While participants who were scored amnesic reported = 1.60 items (*SD* = 1.10), participants scored non-amnesic reported = 5.46 (*SD* = 1.13). An independent T-test revealed that the number of items reported varied significantly between those who were scored amnesic and those who were not ($t(2,76) = 14.82$, $p = .000$, $\eta^2 = .74$).

Confirming that participants can be scored amnesic for reasons not attributable to the suggestion, 42% of participants were scored amnesic when no suggestion was administered (StandNoSugg group). Overall, participants recalled a mean total of 3.63 items (*SD* = 2.42). Again, an independent T-test showed that the number of items reported was significantly different between those who passed and failed amnesia ($t(2,79)$

Table 2. Posthypnotic Amnesia Pass Rate in Frequency and Percentage by Group and Hypnotizability.

	Standard		**StandNoSugg**		**Modified**		**ModNoSugg**		Total	
High	14/24	58.3%	7/22	31.8%	7/23	30.4%	4/20	20.0%	32/89	36.0%
Medium	12/38	31.6%	21/45	46.7%	8/33	24.2%	6/36	16.7%	47/152	30.9%
Low	4/16	25.0%	6/14	42.9%	0/10	-	0/9	-	10/49	20.4%
Total	30/78	38.5%	34/81	42.0%	15/66	22.7%	10/65	15.4%	89/290	30.7%

Table 3. Mean Number of Items Reported during Amnesia by Group and Hypnotizability.

	Standard	**StandNoSugg**	**Modified**	**ModNoSugg**	Total
High	3.04 (2.09)	4.32 (2.17)	4.60 (1.67)	4.55 (1.54)	4.09 (2.98)
Medium	4.39 (2.11)	3.24 (2.35)	4.85 (1.86)	5.06 (1.80)	4.31 (2.17)
Low	4.38 (2.21)	3.79 (2.89)	5.70 (1.77)	5.44 (0.73)	4.67 (2.25)
Total	3.97 (2.19)	3.63 (2.42)	4.88 (1.79)	4.95 (1.62)	4.30 (2.13)

= 17.34, p = .000, η^2 = .79; pass amnesia: = 1.12, SD = 0.91; fail amnesia: = 5.46, SD = 1.23).

To examine the effect of the suggestion on the incidence of amnesia, a Chi Square test of goodness of fit was conducted. No difference in frequency of amnesia was found between the Standard and StandNoSugg groups (χ^2 (1, N = 159) = 0.20, p = .652, η^2 = .04). To test whether administering the suggestion impacted participants of different hypnotizabilities differentially, a 2 (amnesia pass/fail) x 2 (Standard/StandNoSugg) Chi Square test of independence was performed for each hypnotizability level (High; Medium; Low). Although the difference did not reach significance (χ^2 (1, N = 46) = 3.23, p = .071, η^2 = .27), Highs receiving the suggestion tended to be more likely to be scored amnesic than Highs not administered the suggestion. In contrast, no statistically significant differences, or trends, were found between conditions for Medium (χ^2 (1, N = 83) = 1.96, p = .164, η^2 = .15) or Low hypnotizables (χ^2 (1, N = 30) = 1.07, p = .301, η^2 = .19).

To test whether hypnotizability level affected amnesia pass rate within groups, two 2 (amnesia pass/fail) x 3 (High; Medium; Low) Chi Square tests of independence were performed. In the Standard group, a significant effect of hypnotizability on amnesia pass rate was noted (χ^2 (2, N = 78) = 5.99, p = .049, η^2 = .28). Partitioning the Chi Square such that each possible 2x2 was tested, showed that Highs were significantly more responsive to the amnesia suggestion than Mediums (χ^2 (1, N = 62) = 4.32, p = .038, η^2 = .26) and Lows (χ^2 (1, N = 40) = 4.31, p = .038, η^2 = .33). No differences were found between Medium and Low participants administered the suggestion (χ^2 (1, N = 54) =

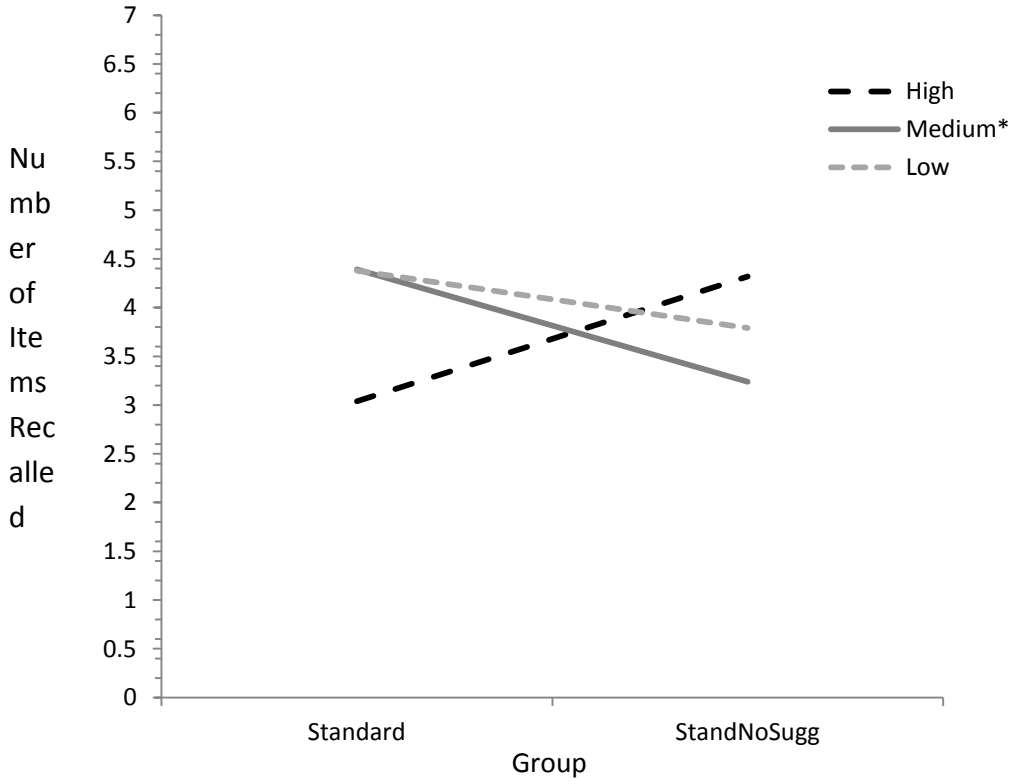
2.34, $p = .629$, $\eta^2 = .07$). On the other hand, no effect of hypnotizability was found on amnesia pass rate when the suggestion was not administered (χ^2 (2, $N = 81$) = 1.34, $p = .511$, $\eta^2 = .13$).

Although amnesia is usually assessed using a pass/fail criterion, the effects of hypnotizability and group membership on total number of items recalled was also explored. A 2 (group) X 3 (hypnotizability level) ANOVA revealed a significant interaction of group and hypnotizability ($F(2,157) = 4.26$, $p = .016$, $\eta^2 = .05$), but no main effects (see Figure 1). To ascertain where the differences were, simple pairwise comparisons were performed. Mediums were found to have recalled significantly fewer items in the StandNoSugg condition than the Standard condition (3.24, $SD = 2.35$ and = 4.39, $SD = 2.11$ respectively; $p = .02$). Additionally, two trends were observed. Highs reported fewer items when administered the suggestion ($p = .06$) and Highs recalled less than Mediums in the Standard group ($p = .072$). All other simple comparisons were non-significant (p-values ranged from 0.21 to 1.0). Means and standard deviations can be found in Table 3.

In summary, the administration of the suggestion did not affect the number of items recalled nor the amnesia pass rate. Mediums recalled significantly fewer items when no amnesia suggestion was given. While Highs were significantly more likely to be scored amnesic than Mediums in the suggestion condition, no differences in hypnotizability were found in the no-suggestion condition. Two trends showed that

Highs administered the suggestion tend to report fewer items and are more likely to be scored amnesic with the administration of the suggestion.

Figure1. Number of Items Recalled on Amnesia by Hypnotizability and Group (Standard and Standard-No-Suggestion).



*Note. * Significant at the .05 level.*

Modified Instructions: With and Without the Amnesia Suggestion

When the instructions for reporting items were modified, twenty-three percent of participants receiving the amnesia suggestion (Modified group), and fifteen percent not receiving the suggestion (ModNoSugg group) were scored amnesic. Contrary to hypothesis, regardless of whether the amnesia suggestion was administered, groups

receiving the modified recall task instructions did not differ significantly from each other in overall amnesia pass rate (χ^2 (1, N = 131) = 1.14, p = .285, η^2 = .09; see Table 2).

Furthermore, these groups did not differ in participants' mean total number of suggestions recalled (t(129) = -.251, p = .802; η^2 = .00; see Table 3). Participants who passed amnesia reported $_{items}$ = 2.47 (SD = 0.74) in the Modified group and $_{items}$ = 2.30 (SD = 0.95) in the ModNoSugg group. Participants who failed amnesia reported = 5.59 (SD = 1.3) in the Modified group and 5.44 (SD = 1.2) in the ModNoSugg group. An independent T-test revealed that participants scored as amnesic recalled significantly fewer suggestions than those not scored amnesic in both groups (Modified: t(2,64) = 8.67, p = .000, η^2 = .54; ModNoSugg: t(2,63) = 7.83, p = .000, η^2 = .49). However, due to the low frequency of amnesia, these results should be interpreted with caution.

Table 2 shows that, in general, more highs and more mediums were scored amnesic under the suggestion condition than the no-suggestion condition; however, due to observed cell counts of less than 5, Chi square calculations were not performed. Notably, no Lows were scored as amnesic under either condition when the instructions more explicitly asked participants to recall hypnotic suggestions.

To determine whether the administration of the suggestion or hypnotizability level had an impact on number of items recalled in the groups receiving the modified instructions, a 2(group) X 3 (hypnotizability level) ANOVA was conducted. No main effects for group membership (F(1,130) = 0.00, p =.951 η^2 = .00) or hypnotizability level were found (F(2,129) = 2.37, p = .098, η^2 = .04). Also, no interaction was found (F (2,129) = 0.16, p =.856, η^2 =.00). Means can be found in Table 3.

With the modified instructions, the amnesia pass rate was not found to differ significantly between the group receiving the suggestion and the group that was not administered the suggestion. Overall, neither the administration of the suggestion or hypnotizability level significantly affected the total number of suggestions reported when the instructions were modified. However, no Lows were scored amnesic.

Standard Instructions vs. Modified Instructions

The four groups were compared on number of items reported with a one-way ANOVA ($F(3,287) = 7.42$, $p = .000$, $\eta^2 = .72$). Pairwise comparisons showed that both groups receiving the modified instructions recalled significantly more items than both groups receiving the standard instructions (Standard vs. Modified: $p = .009$; Standard vs. ModNoSugg: $p = .005$; StandNoSugg vs.Modified: $p = .000$; StandNoSugg vs. ModNoSugg: $p = .000$).

Furthermore, a series of Chi Square tests of independence revealed that both groups receiving the modified reporting instructions were significantly less likely to be scored amnesic than the groups receiving the standard instructions (Standard vs. Modified: $\chi^2 (1, N = 144) = 4.12$, $p = .042$; Standard vs. ModNoSugg: $\chi^2 (1, N = 143) = 9.37$, $p = .002$; StandNoSugg vs. Modified: $\chi^2 (1, N = 147) = 6.06$, $p = .014$; StandNoSugg vs. ModNoSugg: $\chi^2 (1, N = 146) = 12.11$, $p = .001$.

In summary, modifying the instructions resulted in participants recalling significantly more suggestions and being significantly less likely to be scored amnesic.

Subjective Experience of Amnesia

Participants administered the amnesia suggestion (N = 144; Standard and Modified groups) were asked to rate the suggestion as either subjectively successful or unsuccessful. Half of these participants rated the suggestion as successful (50%). A series of Newcombe-Wilson tests for differences in proportion revealed that a significantly greater proportion of Highs (66%) compared to Mediums (46.5%; C.I. = 0.08 - 0.37) and Lows (C.I. = 30.8%; 0.13 - 0.58) considered the posthypnotic amnesia suggestion subjectively successful. Lows and Mediums were not found to differ significantly (C.I. = -0.37 - 0.06). Overall, an independent T-test showed that participants who rated the suggestion successful recalled significantly fewer items (= 3.75, SD = 1.64) than those who rated it as unsuccessful (= 5.03, SD = 2.25; $t(2, 142) = 3.9$, $p = .000$, $\eta^2 = .10$).

While 42.3% of participants in the Standard group subjectively rated the suggestion as successful, only 54.5% of these were scored amnesic. Problematically 40% of participants who were scored amnesic rated the suggestion as unsuccessful. As can be seen from Table 4, of the 16 Mediums and Lows scored amnesic, 50% of them rated the suggestion unsuccessful. In the Modified group, 35.9% of the 59.1% of participants who rated the suggestion successful were scored amnesic. In sharp contrast to the Standard group, when administered the modified instructions, only 1 participant who rated the suggestion as unsuccessful was scored amnesic.

Regardless of whether the amnesia suggestion was administered, all participants responded to a 5-point Likert-scale question assessing the degree of difficulty experienced recalling suggestions post-session. To analyze whether participants passing

Table 4. Behavioural and Subjective Amnesia Score Mismatches by Group and Hypnotizability.

		Standard			**Modified**		
		Pass Amnesia	Fail Amnesia		Pass Amnesia	Fail Amnesia	
				Total			Total
Highs	Sub pass	10	5	15 (62.5%)	7	9	16 (69.6%)
	Sub fail	4	5	9 (37.5%)	-	7	7 (30.4%)
Mediums	Sub pass	7	6	13 (34.2%)	7	13	20 (60.6%)
	Sub fail	5	20	25 (65.8%)	1	12	13 (39.4%)
Lows	Sub pass	1	4	5 (31.3%)	-	3	3 (30.0%)
	Sub fail	3	8	11 (68.7%)	-	7	7 (70.0%)
Total	Sub pass	18 (60.0%)	15 (31.3%)	33 (42.3%)	14 (93.3%)	25 (49.0%)	39 (59.1%)
	Sub fail	12 (40.0%)	33 (68.7%)	45 (57.7%)	1 (6.7%)	26 (51.0%)	27 (40.9%)
	Total	30 (38.5%)	48 (61.5%)	78	15 (22.7%)	51 (77.3%)	66

amnesia compared to participants failing amnesia rated subjective impression of recall differently depending on whether or not they had received the suggestion or modified instructions, a 4 (group) X 2 (pass/fail amnesia) ANOVA was conducted. A main effect for group was found ($F(3,287) = 5.67$, $p = .001$, $\eta^2 = .06$). Pairwise comparisons showed that participants in the Modified group rated subjective impression of recall as significantly more difficult (= 1.67, $SD = 1.14$) than those in the Standard (= 1.10, $SD = 1.16$; $p = .002$) and StandNoSugg group (= 1.25, $SD = 1.15$; $p = .013$). No other statistically significant differences were found between groups (p-values from .08 - 1.0; means can be found in Table 5). A main effect for whether participants were scored amnesic was also found, with those passing amnesia rating their experience of recall as more difficult than those failing amnesia ($F(1, 289) = 13.57$, $p = .000$, $\eta^2 = 0.05$; pass amnesia: = 1.62, $SD = 1.29$; = 1.23, $SD = 1.06$).

Although no interaction was observed ($F(3, 287) = 0.96$, $p = 0.41$, $\eta^2 = .01$), given the exploratory nature of this analysis, a priori hypotheses were examined. It was hypothesized that amnesic participants administered the suggestion would experience greater difficulty in recall post-session, especially in the Modified group. Pairwise comparisons showed that amnesic participants in the Modified group (= 2.33, $SD =$ 0.98) rated their subjective difficulty in recall significantly greater than amnesic participants in both the Standard (= 1.37, $SD = 1.33$; $p = .038$) and StandNoSugg groups (= 1.38, $SD = 1.30$; $p = .037$). It was also hypothesized that participants in groups administered the modified instructions would show a greater difference in subjective difficulty if they were scored amnesic than if they were not. As hypothesized, pairwise comparisons showed that participants who passed amnesia rated difficulty of

Table 5. Mean Subjective Difficulty in the Experience of Recall by Group and Hypnotizability. Standard Deviations in Parentheses.

	Standard		**StandNoSugg**		**Modified**		**ModNoSugg**		Total	
	N		N		N		N		N	
High	24	1.58 (1.32)	22	2.00 (1.35)	23	1.87 (1.10)	20	1.70 (1.08)	89	1.80 (1.21)
Medium	38	1.03 (1.08)	45	1.13 (0.87)	33	1.64 (1.08)	36	1.56 (1.08)	152	1.32 (1.05)
Low	16	0.56 (0.81)	14	0.43 (0.94)	10	1.30 (1.42)	9	0.56 (0.53)	49	0.67 (0.99)
Total	78	1.10 (1.16)	81	1.25 (1.15)	66	1.67 (1.14)	65	1.46 (1.08)	290	1.35 (1.15)

recall significantly higher than those who failed amnesia in the Modified (pass amnesia: = 2.33, *SD* = 0.98 vs. fail amnesia: = 1.47, *SD* = 1.12; *p* = .009) and ModNoSugg groups (pass amnesia: = 2.10, *SD* = 1.10 vs. fail amnesia: = 1.35, *SD* = 1.04; *p* = .050), but not in the Standard (= 1.37, *SD* = 1.33 vs. fail amnesia: = 0.94, *SD* = 1.02; *p* = .099) and StandNoSugg groups (pass amnesia: = 1.38, *SD* = 1.30 vs. fail amnesia: = 1.15, *SD* = 1.02; *p* = .352). While assumptions of normality and homogeneity of variance were met, results should be interpreted with caution due to unequal and low N sizes. Only 15 and 10 participants passed amnesia in the Modified and ModNoSugg groups, respectively.

To assess the impact of the amnesia suggestion on subjective impression of recall while taking hypnotizability into account, a 4 (group) by 3 (hypnotizability level) ANOVA was conducted. A main effect for hypnotizability was found (F (2, 288) = 15.38, p = .000, η^2 = .10). Main comparisons showed that Highs (= 1.80, *SD* = 1.21) rated recall as significantly more difficult than Mediums (= 1.32, *SD* = 1.05; p = .006) and Lows (= 0.67, *SD* = 0.99; p = .000). Mediums also rated recall as significantly more difficult than Lows (p = .002). Again, a main effect for group was found (F(3, 287) = 2.65, p = .049, η^2 = .001). Participants in the Modified group reported difficulty in recall as significantly greater than the Standard group (p = .038). No interaction was observed (F(6, 284) = 1.01, p = .418, η^2 = .02).

To investigate the a priori hypothesis that participants of different hypnotizabilities would vary in their subjective ratings only in groups administered the suggestion, simple comparisons were examined. In the Standard group, Highs (= 1.58,

SD = 1.32) were found to be significantly different from Lows (= 0.56, *SD* = 0.81; *p* = .011), while in the StandNoSugg group Highs were significantly different from Mediums (Highs: = 2.00, *SD* = 1.35 vs. Mediums: = 1.13, *SD* = 0.87; *p* = .007) and Lows (= 0.43, *SD* = 0.94; *p* = .000). In the ModNoSugg group, Highs were again found to be significantly different from Lows (Highs: = 1.70, *SD* = 1.08 vs. Lows: = 0.56, *SD* = 1.46; *p* = .026). In this group, Mediums (= 1.56, *SD* = 1.08) were also significantly different from Lows (*p* = .040). All other differences were not significant with *p*-values ranging from .10 to 1.0.

The results from the subjective scores show the modified instructions reduced the discrepancy between behavioural and subjective scores, with fewer participants rating the suggestion unsuccessful scored amnesic. While the administration of the suggestion was not found to increase the subjective experience of difficulty in recall, participants with greater hypnotizability experienced more difficulty overall. In general, participants scored amnesic rated their experience of recall significantly more difficult than those not scored amnesic. The differences between amnesic and non-amnesic participants were significant in groups administered the modified instructions

Discussion

The results clearly indicate that the amnesia test item on the HGSHS:A does not solely measure posthypnotic amnesia. Administering the standard HGSHS:A, with and without the suggestion for posthypnotic amnesia, resulted in the same proportion of participants being scored amnesic (38% and 42% respectively). Even an analysis of the overall number of suggestions reported failed to differentiate the group receiving the suggestion. Unquestionably, participants can be scored amnesic for reasons not attributable to the suggestion.

Nevertheless, the suggestion seems to have had an effect on participants with greater hypnotizability. As predicted, participants of all hypnotizabilities were scored amnesic when administered the standard instructions. Yet, Highs were significantly more likely to be scored amnesic than Mediums and Lows when the suggestion was administered. Furthermore, Highs administered the suggestion behaved differently than Highs not administered the suggestion. Although the differences were not significant, they reported fewer items and were more likely to be scored amnesic when administered the suggestion. Mediums and Lows, did exactly the opposite. Mediums reported significantly more items when they were told to forget.

This may help explain why the pass rate of amnesia was higher than expected in the group not administered the suggestion. It is possible that the administration of the suggestion actually helps some participants understand that their memory is being tested. As such, the following would be expected: 1) Highs would report fewer suggestions when administered the suggestion due to its temporary effect on their memory recall and

2) participants less susceptible to the suggestion would report fewer items when not administered the suggestion; which is exactly what was observed. With the task instructions imprecise and participants not told they will forget what has happened during the session, they may have become even less likely to discern the need to report suggestions on the recall test. It is also possible that since the hypnosis session can be uneventful for Lows and Mediums, they had less to report with the instructions asking participants to report what they *did*. It is therefore thought that the misunderstanding of the task due to the ambiguity of the instructions was inflated without the administration of the amnesia suggestion.

The results from the subjective scores further show that non-amnesic participants were scored amnesic with the standard instructions. Overall, participants' subjective ratings were indicative of their behaviour. Participants who rated the suggestion successful recalled significantly fewer items. Yet, the behavioural scoring of amnesia was found to poorly indicate subjective impressions. When administered the suggestion, forty percent of participants who were scored amnesic rated the suggestion unsuccessful. As hypothesized, the majority of these mismatches were found with Medium and Low participants, indicating that they should not have been scored amnesic.

Also, for both groups administered the standard instructions, differences in subjective difficulty of recall post-session, did not differ significantly between participants scored amnesic and those that were not. The standard testing of posthypnotic amnesia on the HGSHS:A is not capturing the classic suggestion effect (Weizenhoffer, 1974; 1980). Participants are being scored amnesic without the accompanying subjective experience.

Modifying the written task instructions to more explicitly convey that participants should be recalling suggestions seems to improve participants' understanding of the test requirements. This was first evidenced with participants' more clearly written memory recall reports. Scoring the amnesia test responses can be challenging. Since participants usually do not seem to understand that they are to be listing hypnotic suggestions, they write about subjective experiences. Even when they do mention suggestions, they are often described vaguely (Kihlstrom & Evans, 1978). This can make identifying the number of suggestions listed difficult for the scorer. With the modification to the instructions, both raters observed they had an easier time identifying the number of suggestions listed and classifying participants as either amnesic or non-amnesic.

As expected, the modified instructions significantly increased the overall number of suggestions reported and significantly dropped the likelihood of being scored amnesic for both groups. When administered the suggestion, the pass rate of posthypnotic amnesia lowered to 23%. This pass rate is theoretically acceptable and shows amnesia to indeed be a difficult hypnotic suggestion (Hilgard, 1965). It is also in line with the 27% amnesia pass rate observed on the SHSS (Wietzenhoffer & Hilgard, 1962).

Most importantly, the new instructions prevented any Lows from being scored amnesic in this sample. While Highs and Mediums had similar rates of amnesia in both modified conditions, not a single Low was scored amnesic. This indicates that the posthypnotic amnesia item on the HGSHS:A is more strongly related to hypnotizability than previous research has been able to show.

The subjective ratings provide further evidence that the modified instructions improve the validity of the amnesia test item. While with the standard instructions many participants who rated the suggestion unsuccessful were scored amnesic, with the new instructions only one participant who was scored amnesic rated the suggestion as unsuccessful. Simply modifying the instructions practically eliminated participants from being scored amnesic without also considering the suggestion subjectively successful.

There was, however, a trade off to the increased specificity of the amnesia test. While the pass rate was lowered with the modified instructions, the proportion of participants considering the suggestion successful was not. As a result, the sensitivity of the test decreased. Therefore, a larger proportion of participants considering the suggestion subjectively successful were not scored amnesic. Every hypnotic test item is experienced on a continuum. The degree to which a participant subjectively feels they have experienced a suggestion does not necessarily translate into a strong enough behavioural response. For example, a participant whose hands come together three inches during the Hands Moving Together suggestion may rate the suggestion as successful. However, since their hands did not move together at least six inches, the suggestion is not considered behaviourally successful. The behavioural and subjective mismatches most problematic to hypnotizability testing are when the behavioural response is not accompanied by the subjective experience. The modified instructions greatly reduced this problem with the amnesia item.

Furthermore, participants who were scored amnesic in the modified groups rated their difficulty in recall as significantly greater than participants who were not scored amnesic. The standard instructions failed to differentiate participants in this regard. In

addition, participants who were scored amnesic in the Modified group rated their experienced difficulty in recall as significantly greater than amnesic participants in both standard conditions. This in itself is unsurprising, having already seen that participants scored amnesic in the standard groups did not necessarily subjectively experience the phenomenon.

Yet, the Modified group was found to have rated their experience of recall post-session significantly higher than both groups administered the standard instructions. It is possible that the clearer instructions had the added effect of making participants aware they were having difficulty remembering. People do not always realize what they forget, until they are asked to remember. Perhaps explicitly asking participants to recall what transpired during the hypnosis session caused them to rate their experience of recall as more difficult. Even if many or all suggestions were recalled, the task could have been subjectively experienced as requiring effort.

The expected differences between groups in experienced difficulty of recall were not observed. Groups administered the standard instructions did not differ in their ratings. Likewise, no differences were found between groups administered the modified instructions. Contrary to hypothesis, the posthypnotic amnesia suggestion was not found to have significantly affected ratings of subjective difficulty in recall.

Difficulty in recall was found to be more dependent on participants' hypnotizability. Highs rated their experienced difficulty greater than Mediums and significantly greater than Lows. Even when no amnesia suggestion was administered, Highs rated their experience of recall as significantly more difficult than Lows. For

Highs, it seems, participating in the HGSHS:A affected their experienced difficulty in recall post-session . This may partially explain the high incidence of "spontaneous" posthypnotic amnesia observed in the Modified-No-Suggestion group.

Surprisingly, even with the modified instructions, the group administered the suggestion and the group not administered the suggestion were not found to differ significantly in the pass rate of amnesia. Fifteen percent of this sample seemingly showed spontaneous posthypnotic amnesia. This rate is twice as high as the 7% found on the SHSS (Hilgard & Cooper, 1965), and substantial enough to raise questions. Furthermore, all ten participants were of High or Medium hypnotizability, which indicates that participants were differentially affected. With the task instructions clear and no posthypnotic amnesia suggestion administered, these results either indicate a high rate of spontaneous posthypnotic amnesia, or are suggestive of further confounds.

A re-examination of the response booklets of this sub-sample did not indicate any special circumstances that might have affected amnesia responses. In fact, when asked to describe how it felt to try to remember, most expressed difficulty:

- *It was hard, I mostly remembered the suggestions that I was given at the beginning.*
- *I felt like I barely remembered anything. I only remembered what was successful.*
- *I found it very difficult to remember most of the event of the hypnosis session.*

Some also indicated they did not feel completely alert immediately after the hypnosis session:

- *It was hard. I was still asleep, but still remembered.*
- *It felt difficult because of the state of inactivity and confusion following it. However, after a few seconds the session was easy to remember, and the different suggestions were also easy to recall.*

Numerous participants from all groups, regardless of whether they were scored amnesic, described feeling groggy and not having enough time to write their recall reports:

- *The first about a minute I didn't remember anything. Slowly things started to return.*
- *I just felt rushed to explain everything in 3 minutes, I didn't feel I forget anything, I just didn't have time to write it.*
- *It was ok but I felt I was not ready to develop on everything. The same way that you have difficulty talking about your dreams when you just wake up. But 3 min. seemed short.*

Unlike the SHSS, the HGSHS:A amnesia test occurs immediately after the termination of hypnosis and is timed. It is possible that this affects whether participants are scored amnesic. Studies have found that if given more time, some participants recall more suggestions (Kihlstrom et al., 1980; Kihlstrom, Easton & Shor, 1983). This was interpreted as "a remission or decay of the amnesic process with the passage of time" (p. 319). It is conversely possible that participants simply did not have long enough to show that they were not amnesic. Participants of higher hypnotizability have been shown to experience hypnosis at a greater depth (Pekala & Kumar, 2007) than Low participants. Additionally, as shown by Perry and Laurence (1980), Highs reported a substantial degree of depth even once hypnosis had been formally terminated. It follows that Highs

in particular, may require at least a short delay before having to report on their experiences.

Another possible confound is the continual references to the similarities between hypnosis and sleep on the HGSHS:A. It has been argued that references of sleep constitute an indirect suggestion to forget since people believe they do not remember what occurs when they are asleep (Dittborn & Aristeguieta, 1962). References to sleep might affect the amnesia results in two ways. They could potentially cause some participants to exhibit what appears to be spontaneous posthypnotic amnesia. Or, they may increase participants' grogginess post-session, thereby affecting how quickly participants are able to recall suggestions on the amnesia test.

The beliefs and expectations of hypnosis may also affect participants' recall behaviour. A survey of 645psychology students in the 1960s found that 74% of participants agreed with the statement, "People usually forget what happened during the trance as soon as they wake up from it" (London, 1961). Yet, studies examining how participants' expectations of becoming amnesic affected their response, have found little correlation (Young & Cooper, 1971; Shor, 1971; Ashford & Hammer, 1978). However, none of these studies took hypnotizability into account.

A recent survey at Concordia assessed the beliefs people hold about memory in general and about their own memory functioning (Freedman & Laurence, 2012). The results showed that Highs and Lows were significantly different in their beliefs concerning the permanency of memory and their experience of memory distortions and intrusions. If Highs and Lows tend to differ in their memory style and their beliefs about

memory, it is possible that these differences extend to different experiences of recall post-hypnosis.

Additional research is required to better identify factors that may lead to posthypnotic amnesia. Research investigating suggested amnesia with the HGSHS:A needs to take the 15% pass rate without suggestion observed in this study into account. A true understanding of suggested amnesia will control for potential confounding factors beyond the phrasing of the recall instructions. How the removal of references to sleep, the addition of a delay before recall reports, or a lengthened recall time affect posthypnotic amnesia could be easily studied. Variations in the memory systems or styles of participants with different hypnotic abilities may also influence the occurrence of posthypnotic amnesia. Future research on hypnotic amnesia, and hypnosis in general, could benefit from a systematic investigation of these differences. Likewise, understanding how the greater depth experienced by Highs during and after hypnosis might affect memory and cognition could be of value.

Difficulty in recall post-session was assessed with a 5-point multiple choice question. The observed means of Lows and Highs indicate that Lows felt they could remember most of what was suggested, and Highs experienced at least some difficulty remembering most of what was suggested, regardless of experimental condition. This, however, does not necessarily translate into behaviour. Overall, the number of suggestions recalled was low. Did motivation or normal forgetting play a role (Cooper, 1972; Coe, 1978)? Perhaps Lows were less motivated to prove their memory. Or, perhaps Highs were able to report suggestions regardless of the experienced difficulty. It

is also possible that participants have a hard time deciphering exactly what constitutes a hypnotic suggestion.

More specific questions concerning participants' experience of recall may have proved helpful. The question asked in this study may have biased participants, especially those who subjectively experienced hypnosis, to report difficulty in recall by stating that it is a common occurrence with hypnosis. A better question may have asked participants to compare their experience of memory after hypnosis with their normal experiences of memory.

This study was limited by sample size. Various analyses of interest could not be performed and small and unequal cell sizes may have affected some of the reported results. In particular, analyses involving Low participants and participants scored amnesic in the modified instruction conditions contained too few participants. A larger sample could further test if the modified instructions improve the psychometric properties of the item and the HGSHS:A.

The HGSHS:A is the most commonly used procedure for measuring hypnotizability (Barnier & McConkey, 2004). Moreover, numerous studies examining the phenomenon of posthypnotic amnesia have been based on the written reports obtained from the HGSHS:A. Participants' basic misunderstanding may explain some of the discrepant findings and problems with replication in the literature.

Conclusions

The results from this study conclusively show that measurement of posthypnotic amnesia with the standard HGSHS:A is obscured by noise and fails to capture the phenomenon. Participants scored amnesic were of all hypnotizabilities and many of them subjectively rated the suggestion as unsuccessful. It is clear that the test instructions for recall need to be modified. As is, they do not adequately explain to participants that their memory for the hypnotic suggestions administered during the session is being tested. This is evidenced by the high rate of participants scored amnesic without the administration of the suggestion and the significant drop in pass rate with modified instructions. Clarifying the task instructions was found to improve the measurement of posthypnotic amnesia: no lows were scored amnesic and the behavioural scores were found to better represent subjective experiences.

Interestingly, this study also found that participants experience difficulty in recall after the HGSHS:A, regardless of whether a suggestion for posthypnotic amnesia was administered. This seems especially true for those with greater hypnotizability. Fifteen percent of participants administered the modified instructions, but no suggestion for amnesia, were nonetheless scored amnesic. Moreover, the majority of these participants described experiencing difficulty in recall. These results imply that the HGSHS:A has a high rate of "spontaneous" posthypnotic amnesia, perhaps resulting from other confounds. Further research is needed to better identify these factors and differentiate the *artifact and essence* of suggested posthypnotic amnesia (Orne, 1959).

The results from this study have important implications for hypnosis research. A major problem in the measurement of posthypnotic amnesia with the HGSHS:A has been convincingly demonstrated and a simple solution is offered. It is recommended that all research involving the HGSHS:A modify the amnesia test instructions accordingly.

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Appendix A

HGSHS:A Suggestions

HGSHS:A Suggestions.

	Suggestion	Description	Type	Scoring (pass)
1.	Head Fall	Imagine neck limp; head falling forward	ideomotor	Head must fall at least 2” forward
2.	Eye Closure	Eyelids heavy	ideomotor	Eyes close before told to close them
3.	Arm Lowering	Imagine something heavy in outstretched arm	ideomotor	Arm lowers at least 6”
4.	Arm Immobilization	Arm heavy, glued to lap; try to lift it	challenge	Hand does not raise more than 1”
5.	Finger Lock	Fingers are tightly interlocked; try to separate them	challenge	Fingers do not completely separate
6.	Arm Rigidity	Outstretched arm stiff like iron; try to bend it	challenge	Arm bends 2” or less
7.	Hands Moving Together	Imagine magnetic force attracting hands	ideomotor	Hands move together at least 6”
8.	Communication Inhibition	Cannot shake head no; try to shake it	challenge	Head did not shake
9.	Fly Hallucination	Imagine an annoying fly is buzzing around you; get rid of fly	cognitive	Outward acknowledge. of fly
10.	Eye Catalepsy	Eyes tightly shut; try to open them	challenge	Eyes remain closed
11.	Posthypnotic Suggestion (Ankle Touch)	Touch ankle when you hear a tap post-session	cognitive	At least a partial movement toward ankle
12.	Posthypnotic Amnesia	Will forget what has happened during the session	cognitive	3 or less items reported in 3 minutes

Appendix B

Demographic Information by Group

Demographic Information by Group.

	Standard	**StandNoSugg**	**Modified**	**ModNoSugg**
N participants	78	81	66	65
N female	55	58	54	57
N male	23	23	12	8
N High	24	22	23	20
N Medium	38	45	33	36
N Low	16	14	10	9
Mean HGSHS:A (SD)	5.72 (2.55)	5.80 (2.47)	5.88 (2.43)	6.12 (2.25)
Mean age (SD)	22.22 (5.42)	22.65 (5.86)	20.98 (4.41)	21.32 (4.24)
Language				
N English	50	48	39	48
N French	16	15	12	3
N “other”	12	18	13	12

Appendix C

Pre-session Instructions

Instructions

- Please turn OFF your cell phones, watches, etc. (OFF not vibrate).
    - The idea is to not have anything disturb you or those around you.
- If you have gum in your mouth – please dispose of it.
- Please sign the top half of the consent form before the session begins.
    - The bottom half can be signed at the end of the session.
- Next, fill out the first page of the booklet with your name, etc.
    - Please make sure your student ID number is correct.

DO NOT OPEN THE BOOKLET UNTIL INSTRUCTED TO DO SO.

It is important that you make sure to **ANSWER EVERY QUESTION** and that you provide only one answer per question. Please do not circle two answers or the middle mark.

- If the answer is unclear to you, use your best judgment or put up your hand.

At the end of the session

- Please check over your response booklet to make sure you've answered every question.
- Sign the bottom half of the consent form (consent to keep data).
- Stay quietly in your seat until the class is dismissed.
- You will receive a debriefing form as you leave the class.

Thank you!

Appendix D

Consent Form

CONSENT TO PARTICIPATE IN RESEARCH

This is to state that I agree to participate in the program of research being conducted by Dr. Laurence in the Department of Psychology at Concordia University.

A. PURPOSE

I have been informed that the purpose of this research is concerned with further understanding the nature of hypnosis, hypnotizability and its correlates.

B. PROCEDURES

I will be asked to participate in a research study that involves the group administration of a combination of hypnotic test items (ex: hand lowering, arm rigidity, etc.). My participation will also involve answering a questionnaire about my experience of hypnosis.

C. CONDITIONS OF PARTICIPATION

- I understand that I am free to withdraw my consent and discontinue my participation at any time without negative consequences.
- I understand that my participation in this study is CONFIDENTIAL.
- I understand that the data from this study may be published.

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT.
I FREELY CONSENT AND VOLUNTARILY AGREE TO PARTICIPATE IN THIS STUDY.

NAME (please print): _____

SIGNATURE: _____

DATE: _____

CONSENT TO HAVE DATA KEPT AND ANALYZED
(to be signed at end of session)

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT.
I FREELY CONSENT AND VOLUNTARILY AGREE TO HAVE MY DATA KEPT AND ANALYZED.

NAME (please print): _____

SIGNATURE: _____

DATE: _____

Research Manager: Shelagh Freedman
Email: laurencelab@gmail.com
Phone Number: 848-2424 x 2213; Room: LOY PY-037
If at any time you have questions or concerns regarding your rights as a research participant, please feel free to contact Kyla Wiscombe, Office of Research (Compliance Officer) at:
(514) 848-2424 x 7481; *kwiscomb@alcor.concordia.ca*

Appendix E

HGSHS:A Response Booklet

HARVARD GROUP SCALE OF HYPNOTIC SUSCEPTIBILITY: FORM A
Response Booklet

Name: _____ Date: _____/_____/___

Birthdate: _____/_____/_____ Age: _____ Gender: _____ Student ID: _____

Telephone: _____ Tel. 2: _____

Email: _____ Occupation: _____

Study discipline: _____ Year(s) in program: _____

First language spoken at home: _____ How fluent are you in English? (*circle one*) Not very fluent / Somewhat fluent / Perfectly fluent

Number of years of education (starting at Gr.1): _____

Have you ever taken a class with Dr. Laurence? _____

Currently taking psychotropic medication: Yes No

History of problems with attention: Yes No

Colourblindness: Yes No

Head Injury: Yes No

Have you ever seen anyone on television or in the movies who was hypnotized? Yes No

Have you ever read a novel about anyone who was hypnotized? Yes No

Have you ever known anyone who was hypnotized? Yes No

Have you yourself ever been hypnotized before? Yes No

- *If so, please cite the circumstances and briefly describe your experience…*

PLEASE DO NOT OPEN THIS BOOKLET

UNTIL THE EXPERIMENTER

Now please write down briefly in your own words a *list* of everything you were asked to do from the time you were looking at the target until the end of the session. Please do *not* go into detail, but try to mention all of the different things that you were asked to do. You have three minutes, no longer, for writing your reply.

PLEASE DO NOT TURN THIS PAGE

UNTIL THE EXPERIMENTER

On this page please write down a list of anything else that you now remember that you did not remember previously. Please do *not* go into detail. Spend two minutes, no longer, in writing out your reply.

PLEASE DO NOT TURN THIS PAGE

UNTIL THE EXPERIMENTER

PLEASE *DO NOT* CHANGE ANY ENTRIES ON THE EARLIER PAGES

You can fill out the rest of this booklet at your own pace.

Do not return to previous pages.

BEHAVIOURAL, OUTWARD RESPONSES

Listed on the next three pages, in chronological order, are the specific suggestions that were administered to you during the standardized hypnotic procedure. We would like you to estimate whether or not you *objectively responded* to these suggestions; i.e., whether or not *an onlooker* would have observed that you did or did not make certain definite responses by certain specific, pre-defined criteria.

In this section we are interested in your estimates of your *outward behaviour* and *not* in what your *inner, subjective experience* was like. Later on you will be given more opportunity to describe your inner, subjective experience, but in this section refer only to the outward behavioural responses irrespective of what the experience may have been like subjectively.

It is understood that your estimates may in some cases not be as accurate as you might wish them to be and that you might even have to guess. But we want you to make whatever you feel to be your *best estimates* regardless.

Beneath a description of each of the suggestions are two sets of responses, labeled **A** and **B**. Please *circle* either A or B for each question, whichever you judge to be more accurate.

Please answer every question

---

1. HEAD FALLING

You were first told to sit up straight in your chair for 30 seconds and then to think of your head falling forward. Would you estimate that *an onlooker* would have observed that your head fell forward at least 2 inches (5 cm) during the time you were thinking about it happening?

Circle one:

A. My head fell forward at least 2 inches (5 cm).

B. My head fell forward less than 2 inches (5 cm).

2. EYE CLOSURE

You were next told to rest your hands in your lap and pick out a spot on either hand as a target and concentrate on it. You were then told that your eyelids were becoming tired and heavy. Would you estimate that *an onlooker* would have observed that your eyelids had closed before the time you were told to close them deliberately?

Circle one:

A. My eyelids had closed by then.

B. My eyelids *had not* closed by then.

3. LEFT HAND LOWERING

You were next told to extend your left arm straight out and feel it becoming heavy as though a weight were pulling the hand and arm down. Would you estimate that *an onlooker* would have observed that your hand lowered at least 6 inches (15 cm) before the time you were told to let your hand down deliberately?

Circle one:

A. My hand lowered at least 6 inches (15 cm) by then.

B. My hand lowered less than 6 inches (15 cm) by then.

4. RIGHT ARM IMMOBILIZATION

You were next told how heavy your right hand and arm felt and then told to try to lift your hand up. Would you estimate that *an onlooker* would have observed that you did not lift your hand and arm up at least 1 inch (2.5 cm) before you were told to stop trying?

Circle one:

A. I *did not* lift my hand and arm at least 1 inch (2.5 cm) by then.

B. I did lift my hand and arm 1 inch (2.5 cm) or more by then.

5. FINGER LOCK

You were next told to interlock your fingers, told how your fingers would become tightly interlocked, and then told to try to take your hands apart. Would you estimate that *an onlooker* would have observed that your fingers were incompletely separated before you were told to stop trying to take them apart?

Circle one:

A. My fingers were still incompletely separated by then.

B. My fingers had completely separated by then.

6. LEFT ARM RIGIDITY

You were next told to extend your left arm straight out and make a fist, told to notice it becoming stiff, and then told to try to bend it. Would you estimate that *an onlooker* would have observed that there was less than 2 inches of arm bending before you were told to stop trying?

Circle one:

A. My arm was bent less than 2 inches (5 cm) by then.

B. My arm was bent 2 or more inches (5 cm) by then.

7. MOVING HANDS TOGETHER

You were next told to hold your hands out in front of you about a foot (30 cm) apart and then told to imagine a force pulling your hands together. Would you estimate that *an onlooker* would have observed that your hands were not over 6 inches (15 cm) apart before you were told to return your hands to their resting position?

Circle one:

A. My hands *were not* more than 6 inches (15 cm) apart by then.

B. My hands were still more than 6 inches (15 cm) apart by then.

8. COMMUNICATION INHIBITION

You were next told to think how hard it might be to shake your head to indicate "no", and then told to try. Would you estimate that *an onlooker* would have observed you make a recognizable shake of the head "no" before you were told to stop trying?

Circle one:

A. I *did not* recognizably shake my head "no".

B. I did recognizably shake my head "no".

9. EXPERIENCING OF FLY

You were next told to become aware of the buzzing of a fly which was said to become annoying, and then you were told to shoo it away. Would you estimate that *an onlooker* would have observed you make any grimacing, any movement, any outward acknowledgement of an effect regardless of what it was like subjectively?

Circle one:

A. I did make some outward acknowledgement.

B. I *did not* make any outward acknowledgement.

10. EYE CATALEPSY

You were next told that your eyelids were so tightly closed that you could not open them, and then you were told to try to do so. Would you estimate that *an onlooker* would have observed that your eyes remained closed before you were told to stop trying?

Circle one:

A. My eyes remained closed.

B. My eyes had opened.

11. TOUCHING LEFT ANKLE

You were next told that after you were awakened you would hear a tapping noise at which time you would reach down and touch your left ankle. Would you estimate that *an onlooker* would have observed either that you reached down and touched your left ankle, or that you made any partial movement to do so?

Circle one:

A. I made at least a partial observable movement to touch my left ankle.

B. I *did not* make even a partial movement, which would have been observable, to touch my left ankle.

SUBJECTIVE IMPRESSIONS OF RESPONSE

During the recording, several suggestions were administered. We are interested in your impressions about how you experienced these suggestions. The items, listed in the order presented, are described briefly below. For each item, please check the appropriate column (do not check the middle).

Item	Suggestion	Successful	Unsuccessful
1.	Head falling forward.		
2.	Eyes becoming heavy and closing.		
3.	Extended left arm becoming heavy and pulling down.		
4.	Right arm heavy and difficulty in lifting it.		
5.	Difficulty in separating interlocked fingers.		
6.	Extended left arm becoming stiff and difficult to bend.		
7.	Outstretched arms, hands being pulled together.		
8.	Difficulty in shaking head "no".		
9.	Getting rid of annoying fly.		
10.	Difficulty in opening eyes.		
11.	Touching left ankle at tapping sound.		
12.	Temporary difficulty in remembering events of hypnosis.		

EXPERIENCE OF RECALL

1. It happens that participants report difficulty remembering what happened during the hypnosis session. When you came out of hypnosis, you were given 3 minutes to list what happened, how did it feel to try to remember?

2. Then you were told to turn the page and given another 2 minutes to write down what you remember. What happened then, and how did this compare to trying to remember before?

MEMORY RECALL

Following a hypnosis session, participants sometimes report experiencing difficulties remembering all the different suggestions administered.

1. **When you were first asked to write down everything that you remembered from the session, would you say that:**

    a. I had no difficulty remembering most of what was suggested.

    b. I had some difficulty at first, but then it came back to me.

    c. I had some difficulty remembering most of what was suggested.

    d. I had a lot of difficulty remembering most of what was suggested.

    e. I could not remember most of what was suggested.

2. **When you were then asked to turn the page and write down anything new that you remembered, would you say that:**

    a. I did not remember anything new.

    b. I remembered some new suggestions.

    c. I remembered many new suggestions.

    d. I still had some difficulty remembering most of what was suggested.

    e. I still could not remember most of what was suggested.

EXPERIENCING OF FLY

3. **When you were told to become aware of the buzzing of a fly, did you experience the presence of a fly in any way? For example, you could have felt it, or heard it, or seen it, but not necessarily made any outward movement.**

    a. No – I did not experience the presence of a fly in any way.

    b. Yes – I experienced the presence of a fly in some way.

TOUCHING LEFT ANKLE

You were told that after you were awakened you would hear a tapping noise at which time you would reach down and touch your left ankle.

4. **When you heard the tapping noise, did you remember being told to touch your ankle?**

    a. Yes - I did remember being told to reach down and touch my ankle.

    b. No - I did not remember being told to reach down and touch my ankle.

5. **Regardless of whether or not you made any movement to touch your ankle, did you feel compelled to reach down and touch your ankle?**

    a. No – I did not feel compelled to reach down and touch my ankle.

    b. Yes – I felt some compulsion to reach down and touch my ankle.

SUBJECTIVE, INWARD RESPONSES

The suggestions are listed, again in chronological order, on the next four pages. This time, you should focus on your *subjective feelings* while responding to these suggestions, regardless of what an objective onlooker would have observed, and even if you responded only partially to a suggestion.

People respond to hypnotic suggestions in a variety of ways.

• Sometimes, their response is mostly voluntary and deliberate. For example, when it is suggested that their hands are moving together (Item #3), they purposefully direct the movement of their hands most of the time.

• Sometimes their response is mostly involuntary and automatic. For example, they may find their hands moving together without their helping them.

• And, of course, sometimes there is no response at all.

To the extent that you responded positively to any of the suggestions, whether fully or only in part, please on the next four pages indicate to what degree your response was voluntary, and to what degree it was involuntary. For each of the suggestions, please circle the letter corresponding to the description that most closely characterizes your experience.

Again, it is understood that your estimates may in some cases not be as accurate as you might wish them to be. But we want you to make whatever you feel to be your *best estimates* regardless. Please answer ALL questions.

Please DO NOT return to earlier pages

---

1. HEAD FALLING

You were first told to sit up straight in your chair for 30 seconds and then to think of your head falling forward.

Circle one:

A. I did not follow the instructions.

B. I followed the instructions, but my head did not fall forward.

C. My head fell forward, but only because I purposely lowered it.

D. My head fell forward, and some of the movement felt involuntary.

E. My head fell forward, and the movement felt completely involuntary.

2. EYE CLOSURE

You were next told to rest your hands in your lap and pick out a spot on either hand as a target and concentrate on it. You were then told that your eyelids were becoming tired and heavy.

Circle one:

A. I did not follow the instructions.

B. I followed the instructions, but my eyes did not close.

C. My eyes closed, but only because I purposely closed them.

D. My eyes closed, and some of the movement felt involuntary.

E. My eyes closed, and the movement felt completely involuntary.

3. LEFT HAND LOWERING

You were next told to extend your left arm straight out and feel it becoming heavy as though a weight were pulling the hand and arm down.

Circle one:

A. I did not follow the instructions.

B. I followed the instructions, but my arm did not lower.

C. My arm lowered, but only because I purposely lowered it.

D. My arm lowered, and some of the movement felt involuntary.

E. My arm lowered, and the movement felt completely involuntary.

4. RIGHT ARM IMMOBILIZATION

You were next told how heavy your right hand and arm felt and then told to try to lift your hand up.

Circle one:

A. I did not follow the instructions.

B. I followed the instructions, but I could still lift my hand and arm.

C. My hand and arm did not lift, but only because I did not try to lift them.

D. My hand and arm did not lift, and it felt partly involuntary.

E. My hand and arm did not lift, and it felt completely involuntary.

5. FINGER LOCK

You were next told to interlock your fingers, told how your fingers would become tightly interlocked, and then told to try to take your hands apart.

Circle one:

A. I did not follow the instructions.

B. I followed the instructions, but I could still separate my fingers.

C. My fingers stayed interlocked, but only because I did not try pulling them apart.

D. My fingers stayed interlocked, and it felt partly involuntary.

E. My fingers stayed interlocked, and it felt completely involuntary.

6. LEFT ARM RIGIDITY

You were next told to extend your left arm straight out and make a fist, told to notice it becoming stiff, and then told to try to bend it.

Circle one:

A. I did not follow the instructions.

B. I followed the instructions, but I could still bend my arm.

C. My arm did not bend, but only because I did not try to bend it.

D. My arm did not bend, and it felt partly involuntary.

E. My arm did not bend, and it felt completely involuntary.

7. MOVING HANDS TOGETHER

You were next told to hold your hands out in front of you about a foot (30 cm) apart and then told to imagine a force pulling your hands together.

Circle one:

A. I did not follow the instructions.

B. I followed the instructions, but my hands did not move together.

C. My hands moved together, but only because I purposely moved them.

D. My hands moved together, and some of the movement felt involuntary.

E. My hands moved together, and the movement felt completely involuntary.

8. COMMUNICATION INHIBITION

You were next told to think how hard it might be to shake your head to indicate "no", and then told to try to do so anyway.

Circle one:

A. I did not follow the instructions.

B. I followed the instructions, but I could still move my head.

C. My head did not move, but only because I did not try to move it.

D. My head did not move, and it felt partly involuntary.

E. My head did not move, and it felt completely involuntary.

9. EXPERIENCING OF FLY

You were next told to become aware of the buzzing of a fly which was said to become annoying, and then you were told to shoo it away.

Circle one:

A. I did not follow the instructions.

B. I followed the instructions, but I did not experience the presence of a fly.

C. I swatted at the fly voluntarily, but I did not experience the presence of a fly.

D. I swatted at the fly, and my response was partly involuntary.

E. I swatted at the fly, and my response was completely involuntary.

10. EYE CATALEPSY

You were next told that your eyelids were so tightly closed that you could not open them, and then you were told to try to do so.

Circle one:

A. I did not follow the instructions.

B. I followed the instructions, but I could still open my eyes.

C. My eyes stayed closed, but only because I did not try opening them.

D. My eyes stayed closed, and it felt partly involuntary.

E. My eyes stayed closed, and it felt completely involuntary.

11. TOUCHING LEFT ANKLE

You were next told that after you were awakened you would hear a tapping noise at which time you would reach down and touch your left ankle.

Circle one:

A. I did not follow the instructions.

B. I followed the instructions, but did not make any movement toward my ankle.

C. I made some movement or touched my ankle, but it was completely voluntary.

D. I made some movement or touched my ankle, and some of the movement felt involuntary.

E. I made some movement or touched my ankle, and it felt completely involuntary.

12. POST-HYPNOTIC RECALL

During the session you were told that after you were awakened you would have difficulty remembering what happened during the session until you were told "Now you can remember everything".

Before being told that you could remember, how did it feel to attempt to remember?

Circle one:

A. I did not follow the instructions.

B. I followed the instructions, but could still remember most or all suggestions.

C. I forgot some of the suggestions, but I was not actively trying to remember them.

D. I forgot some of the suggestions even though I was trying to remember them, and part of my forgetting felt involuntary.

E. I forgot some of the suggestions and it felt completely involuntary

After you were told: "Now you can remember everything", how did it feel to attempt to remember?

Circle one:

A. I did not follow the instructions.

B. I followed the instructions, and could remember easily new suggestions.

C. It was difficult to remember new suggestions, so I did not actively try to remember more.

D. It was difficult to remember new suggestions, even though I tried. Part of my forgetting still felt involuntary.

E. It was difficult to remember new suggestions, even though I tried. My forgetting felt completely involuntary.

Thank you for your participation!

If you would like to mention anything else about your experience, please do so in the space below.

Appendix F

HGSHS:A Preamble

HGSHS:A Preamble

Hello everyone, and thank you for coming. Today you will be participating in a hypnosis experiment run by Dr. Laurence's Memory and Hypnosis lab. If you've ever been curious about hypnosis this is a great way to inform yourself as you will be listening to a standardized research CD. What that means is that thousands of people have listened to the same CD and researchers use it to make sure sessions are as similar as possible. Research hypnosis is not like stage hypnosis, which some of you may be familiar with; you will not be asked to do anything embarrassing, nor will you be doing anything against your will. Most people find the experience to be interesting and relaxing.

Because this is a group session, it is important to be mindful of your neighbors, and we ask that you remain in your seat with your eyes closed till the end of the session in order to not disturb the others. Similarly, if you're chewing gum, please take the time now to spit it out as it can be a distraction. Also, it is important that all cell phones and electronic devices are OFF, not just set to vibrate, as the room will be very quiet and the vibrations easily heard. If you wear glasses, it is up to you whether to take them off or not; whatever is most comfortable is best, however, if you need them for reading, keep them on the table in front of you as you will be asked to fill out a questionnaire immediately after the session. Your comfort is important, so feel free to adjust yourself in your chair as needed, just be mindful of others and try to not to disturb them.

The CD will explain everything as you go along, including when to open and fill in your booklet. Once the CD is over, you can finish the questionnaire at your own pace. The best advice we can give you is to listen to the CD and **let whatever is happening happen.** Just be part of the experience. If you hear noises in the hallways, it's completely normal- we're on campus, and it's to be expected. It doesn't mean that it isn't working or that you aren't hypnotized, just try to refocus your attention back to the voice on the CD.

One thing that is important to note is the difference between an instruction and a suggestion. Throughout the experience, the CD will instruct you to do certain things. It is important for you to cooperate and follow these instructions. Each suggestion is preceded by an instruction, and this is where you may vary individually in how you respond. An example of an instruction would be "please stand up straight", while a suggestion would sound something like "now that you are standing, you might feel light and comfortable". Hypnosis is not magic, so if you don't follow the instructions, you won't have any experience. The more you cooperate, the greater the chance that you will have a rich hypnotic experience.

Once the session is over and you have completed the questionnaires, please go over your booklet to ensure that you have answered every question and circled only one response per question. This will only take a few moments, but will help keep the

information as accurate as possible. Once you're finished the booklet, remain seated and raise your hand- someone will come by and check it for you.

After the session, you are all responsible for completing a set of questionnaires that has been posted online. Please do this within the next few days as we want to get your responses as quickly as possible. There are instructions posted on the Moodle site as to how to get in, but basically you'll be clicking on a link which will bring you to the survey login page. Once there, you'll need to create an account. All you'll need to enter is a user name, password, name and e-mail. Please use your myconcordia ID as your username. Once you make and save an account, you'll be led directly to the survey. There are 4 questionnaires, but they're all in one file, so once you've completed the set you're done. If you need to stop halfway through, or accidentally close the window, just click back on the link. If you had logged out, all you need to do is log back in and it will bring you to your last completed page. If you just closed the browser, then you won't even need to log back it, you'll be brought directly to your last completed page. You'll know how much left you have to complete by looking at the progress bar on the top right of the page. When you finish the last page, it is imperative you click 'done' or your data will be lost and you'll be penalized for not having completed the questionnaire. There's no need to print or submit anything, once you click 'done' we get sent the information automatically.

This session is one of a few ongoing experiments at the Hypnosis lab, and we use it as a sort of screening. We might want to contact you about participating in another study, but if you do not wish to be contacted, there is a sheet at the back of the booklet that you can fill out after the sessions stating that you'd rather not be contacted. Please note that if you do not sign this sheet, all you're saying is that you're OK with our contacting you- you are in no way agreeing to future studies, and if we do contact you, you are free to decline. Should you decide to participate in any of our other studies, we would of course compensate you for your time, either with participant pool credits or by putting your name in a draw for cash prizes.

Now I'd like to ask everybody to back your chairs up so that if you extend your arms in front of you, you wouldn't be touching anything, while also spacing out so that your neighbors on your sides aren't too close. You should be able to move your arms to the side without touching anybody or anything. Please sit with your legs uncrosses, and relax your hands in your lap. Just get comfortable in your chair and we will begin shortly.

Are there any questions? Once the CD plays, it starts right away, so take a moment to relax.

Appendix G

Debriefing Form

Are You Hypnotizable?

Faculty Supervisor: Dr. Jean-Roch Laurence **Research Manager**: Shelagh Freedman

Purpose of Study

The purpose of this study is to determine participants' degree of hypnotizability when administered the Harvard Group Scale of Hypnotic Susceptibility (HGSHS:A). This study also investigates correlations of hypnotizability, such as empathy and cognitive style.

Thank you for your participation!

Contact Information

If you have any questions concerning the experiment you participated in, please contact:

Shelagh Freedman
laurencelab@gmail.com
(514) 848-2424 x 2213

Dr. Jean-Roch Laurence
jr.laurence@concordia.ca
(514) 848-2424 x 2480

Psychology Department Ethics Committee
Dr. Virginia Penhune (Chair)
virginia.penhune@concordia.ca
(514) 848-2424 x 7535

Human Research Ethics Committee
(514) 848-2424 ext.: 4888
Kyla Wiscombe (Compliance Officer)
kwiscomb@alcor.concordia.ca
(514) 848-2424 x 7481

Further Reading

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