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The effects of interviewer instructions and interviewee motivation on the use of "don't

know" responses to interview questions

by

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A Thesis
Submitted to Faculty of Graduate Studies
through Psychology
in Partial Fulfillment of the Requirements for
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at the University of Windsor

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Canadä

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ABSTRACT

The present study examined how the manner by which "don't know" (DK) responses are handled by interviewers affects the amount and quality of information gathered from witnesses. The study examined the separate and combined effects of manipulating interviewer instructions regarding DK responses (encouraging or discouraging the use of DK responses), and personal motivation to respond accurately (low or high motivation) on responses to non-leading answerable and unanswerable questions. Results indicate that interviewer instructions significantly impact use of DK responses and interact with motivation to impact accuracy of responses to answerable questions. Clarification of DK responses led to recoding a statistically significant proportion as of those responses as either correct or incorrect, leading to increased output. Accuracy for unanswerable questions increased, while accuracy for answerable questions decreased. Question type was a key factor in determining accuracy of responses upon clarification.

DEDICATION

To my parents, for their continuous love, support, and encouragement throughout my academic endeavours.

To Kurtis, Athena, and Zeus, for their love, companionship, and support.

ACKNOWLEDGEMENTS

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CHAPTER I

Introduction

It is well recognized that interviewers across a variety of settings (e.g. clinical,

forensic) face a number of challenges when attempting to gather information in the most

complete and accurate manner. In fact, these two goals, completeness and accuracy of

information, may actually be in conflict with one another. In order for someone to

provide a report that is as complete as possible, they must provide every single piece of

information they possibly can. However, all of the information reported may not be

accurate. People may provide an estimate or best guess if they cannot recall everything

about which they are being asked.

As such, when answering questions, interviewees are susceptible to making two

potential types of errors: errors of commission (adding novel information) and errors of

omission (leaving out correct information that may be relevant). The balancing act

between errors of omission and commission is related to the concept of the tradeoff

between quantity and accuracy of information (Koriat & Goldsmith, 1996). Errors of

omission can negatively impact the quantity of information that is obtained. The

information an interviewee chooses to omit results in less information obtained by the

interviewer. Errors of commission can negatively impact the accuracy of information that

is obtained. If an interviewee begins adding incorrect information to their account, the

accuracy of the account is diminished. Because of this, there is a quantity of information

vs. accuracy of information tradeoff inherent to interviews. In order to provide as much

information as possible, an interviewee must not withhold any information, regardless of

whether they are certain it is accurate. For example, an individual may be instructed to

answer all questions they are asked. This will maximize the information obtained. However, in order to be as accurate as possible, an interviewee must withhold information about which they are not certain or which they are ignorant. The outcome of this tension between amount and accuracy determines the quality of the information obtained. These challenges are particularly relevant to forensic interviewing settings, whereby the decision to arrest, charge, and convict an individual may be based largely on eyewitness testimony – testimony that may not be entirely complete or accurate.

In any interview setting, there are known factors that may influence the quantity and quality of information obtained. For example, some research has demonstrated that question type (e.g. open-ended or specific questions) can significantly impact the response to the question. Unfortunately, while studies have demonstrated that open-ended questions, whereby the individual is free to respond in their own words, are the ideal way to obtain information (at least initially), they are rarely used by forensic interviewers (e.g. Peterson & Grant, 2001). Additionally, court records show that even in court settings, open-ended questions are often not used and lawyers instead tend to use specific questions (Peterson & Grant, 2001).

Specific questions are defined as either forced choice (multiple choice) questions or yes/no questions. One problem with using specific questions is that they can foster a response bias. For example, research has demonstrated that children tend to have a "yes" response bias to yes/no questions, meaning that they are more likely to respond "yes" to the question, regardless of whether or not "yes" is the correct response (Peterson & Grant, 2001). Additionally, in a lab-based study of multiple choice questions conducted with children, Walker, Lunning, and Eilts (1996, as cited in Peterson & Grant, 2001)

found that even when none of the response choices were correct, children still chose one of the options. Because of these issues, it becomes evident that question type can significantly influence the quality of information obtained. Question type can also significantly influence the quantity of information obtained. Forced choice questions often lend themselves to one word or one sentence answers, whereas open ended questions or free recall can provide investigators with full accounts of an event, from the perspective of the individual, embedded with details that may not have been discovered using forced choice questions. Open-ended questions can even increase accuracy by not forcing interviewees to choose one answer from a list of (possibly incorrect) answers and also by allowing them to choose what to omit.

Commonly, interviewers focus only on the substantive responses that have been provided to them and they often overlook responses that appear to provide no information. One such response is the "I don't know" (DK) response. When a person responds DK during an interview, the question may be reiterated or it may be dropped altogether. Recently, however, some hypotheses have been developed as to what a DK response may mean.

Reviews of the topic (Scoboria, Mazzoni, & Kirsch, 2008) suggest that the DK response may have more than one meaning. One hypothesis is that DK responses may be an aspect of responding that reflects meta-cognitive monitoring and that they should be permitted (if not encouraged) under appropriate circumstances (Koriat & Goldsmith, 1996). What is meant by meta-cognitive monitoring are the processes whereby individuals distinguish what information they can or cannot provide when questioned. Koriat and Goldsmith (1996) posit that individuals evaluate the quality of information

they have in memory in relation to the question being asked and then decide how to respond. They have proposed a model to explain how this is done. First. an individual engages in a process of memory retrieval and monitoring. whereby they assess the responses available in memory and assess the probability that these are correct. An individual then employs a control mechanism that determines whether or not to volunteer the best available answer by comparing the assessed probability with a pre-set response criterion. This criterion is set based on implicit or explicit payoffs: the gain of providing a correct response versus the cost of providing an incorrect response. The decision whether or not to supply an answer is based on the monitoring output (i.e. what information was generated) as well as whether the assessed probability of being correct is greater than the response criterion probability.

According to Koriat and Goldsmith (1996), a DK response represents opting out from responding when the opportunity to choose not to answer is available and the response criterion probability is high. Under these circumstances, DK responses may reflect expressions of ignorance because an individual has determined they have insufficient information in memory to answer the question and so they respond DK.

Another hypothesis suggests that DK responses may be a way for the interviewee to resist speculation (Poole & White, 1991). Rather than attempting to guess an answer or to confabulate a response, the DK response allows a person to "opt out" of answering.

A third hypothesis posits that DK responses are actually correct responses (Roebers & Fernandez, 2002). When needed information is not present. DK may actually be a correct response; akin to saying "the information was not presented to me" This is based on the distinction between answerable and unanswerable questions. Answerable

questions are questions based on information available to the interviewee and, as such, can be answered. Unanswerable questions are questions about information that was never available to the interviewee and, thus, cannot be answered. In this context, DK responses to unanswerable questions are thought to be correct responses. This is based upon the assumption that DK responses to unanswerable questions always reflect a statement of "it was not there"

According to Scoboria et al. (2008), and based on these hypotheses and upon data from their study, DK responses appear to have at least three distinct meanings: 1) the information was not provided; 2) the subject is unsure or unable to provide a response; or 3) the information was provided, but the specific details needed to answer the question are not recalled. Alternatively, it has also been suggested that someone may respond DK because they are indifferent or because they do not hold a particular opinion about the subject of interest (Gritching, 1994).

As Scoboria et al. (2008) argue, the meaning of a DK response is thus ambiguous until the reason for providing it is clarified. Typically interviewees are not queried as to what they mean when they respond "don't know" and, as such, valuable information may be lost should the interviewer proceed to a new line of questioning without clarifying the nature of the DK response. The accuracy of a DK response is also unknown unless the question is known to be answerable or unanswerable. In many real-world settings (e.g., eyewitness interviews) it is often unknown whether a question posed by an interviewer is answerable or unanswerable, as the interviewer was not present at the scene of the incident.

This issue is not trivial. In the context of research on accuracy of responding, it suggests that accuracy and quantity estimates may be mis-estimated. For example, upon clarifying DK responses, Scoboria et al (2008) found that the overall quantity of responses increased (i.e. clarifying DK responses led to an increase in substantive responses provided) while accuracy for unanswerable questions remained stable and accuracy for answerable questions decreased significantly. This is because when a DK response is clarified to mean "the information was not presented", it becomes a correct response to an unanswerable question (increasing accuracy slightly) but it is an incorrect response to an answerable question (decreasing accuracy more substantially).

In addition to understanding what is meant by a DK response, it is also important to understand the conditions under which DK responses are made and to best encourage their use, where appropriate. One must be cautious as to how this is done, however, so as not to encourage a DK response set (i.e., excessive and inappropriate use of DK responses to questions). For example, (Moston, 1987) demonstrated that encouraging DK when interviewing children can lead to an increase in the use of DK with no net gain in the proportion of correct answers. Work which has examined DK training with children has shown that more complex instructions can improve the use of DK responses (Saywitz & Moan-Hardie, 1994), and for adults a simple encouragement to say DK has been shown to enhance resistance to misleading questioning (Gudjonsson & Hilton, 1989). Thus, while promising, evidence for the effectiveness of DK instructions is mixed. DK instructions should be further studied and refined so that they can be most effectively promoted.

Unfortunately, in some circumstances, DK responses may actually be *discouraged* (either deliberately or implicitly) by interviewers who are interested in getting as much information as possible. Research has shown that repeated questioning (Howie, Sheehan, Mojarrad & Wrzesinska, 2004) and misleading questioning (Scoboria, Mazzoni, Kirsch & Milling, 2002; Scoboria, Mazzoni & Kirsch, 2006) undermine DK rates. Indeed, pressuring witnesses to respond has been shown to reduce the accuracy of information gathered by promoting speculation and guessing (Poole & White, 1991). Thus a variety of factors appear to discourage the use of DK responses.

Research on DK responses in interview settings is clearly needed, as the demands and dynamics of face-to-face interviews are complex. For example, there are well-documented examples of how interviewers may directly or indirectly affect interviewee responses (e.g. Kassin, Goldstein, and Savitsky; 2003; Loftus, 1979) Interviewers may directly affect interviewee responses by asking leading questions. Leading questions are questions that suggest a particular response to the respondent. For example, an interviewer may ask "What colour was the car?" which implies both that a car was present and that it was perceived by the witness. Another way interviewers may directly affect interviewee responses is by providing misleading information in the questions they ask (e.g., Loftus, 1979). Misleading questions are leading questions that provide or suggest incorrect information in the structure of the question. For example, an interviewer may ask the question "What colour was the getaway car?" when in fact the suspect had been driving a truck. Misinformation has been frequently demonstrated to lead interviewees to endorse the incorrect information and respond in manners that confirm

the information (e.g. Roebers & Schneider, 2000; Roebers, Schwarz, Neumann, & Roland, 2005; Scoboria, Mazzoni, Kirsch, & Roland, 2002).

Interviewers may also subtly and indirectly affect interviewee responses. For example, Kassin, Goldstein, and Savitsky (2003) demonstrated that when interviewing suspects, an interviewer's preconception of guilt or innocence biased the way they interviewed the suspect, leading them to primarily ask questions that confirmed their preconceived notions. For example, if interviewers believed the suspect was guilty, they would ask questions aimed at confirming or revealing the suspect's guilt. By contrast, if they believed the suspect was innocent, interviewers asked questions aimed at establishing the suspect's innocence. Interviewees in the guilt-presumptive condition reacted to the underlying assumption of guilt inherent in the interviewer's demeanor and the questions being asked in a way that confirmed the interviewer's suspicion of guilt. When the suspect truly was guilty, they were often "caught" However, when the suspect was actually innocent, their increasingly vehement denials where interpreted by interviewers to be further proof of their guilt.

As previously noted, some research has been conducted with children about how direct instructions from an interviewer regarding the use of DK as a response option will affect DK responses. Peterson and Grant (2001) examined the effects of presenting children with DK as an allowable response to both multiple choice and yes/no questions. In their study, children engaged in interactions with two experimenters. One was the primary experimenter who remained with the child for the duration of the experimental session and the second experimenter came and went throughout the session. One week later, a third experimenter questioned the child about the events from the experimental

session using a combination of multiple choice and yes/no questions. Half of the children were told that sometimes people don't know the answer to a question and that it was fine to say "I don't know" if they did not know the answer to a question. The other half of the children were given no such instructions. Analyses revealed that there was no main effect for instructions but the type of question made a difference. Children were more likely to say DK, regardless of instructions, to multiple choice questions in which no option was correct. In addition, younger children were more likely than older children to say DK to the "no correct choice" questions. The results of this study do not necessarily imply that DK instructions are ineffective. Rather, they demonstrate that children may already sometimes use DK as a viable response option under appropriate settings. More work with children may be required to see if DK instructions have any value in fostering suitable use of DK responses at various age levels.

While preceding work suggests that DK responses can be enhanced, the effect of systematically encouraging versus discouraging DK responses had yet to be examined. This was one of the goals of the current study. In this study, interviewer instructions were divided into two categories: encouraging DK responses and discouraging DK responses. In the DK encouraged condition, participants were instructed to use DK as a viable response option and were encouraged to use it whenever they felt it was appropriate (i.e., if they were uncertain about a question). In the DK discouraged condition, participants were encouraged to provide complete answers and to avoid using DK unless absolutely needed. As of yet, the only type of explicit DK instructions to be tested have been instructions allowing or encouraging the use of DK responses (e.g. Peterson & Grant, 2001). However, it is likely that DK responses are often discouraged in naturalistic

interviews, in favor of collecting the maximum information possible. As it is well established that forcing individuals to answer questions negatively affects the accuracy of information gathered, then discouraging DK responses in the interest of maximizing output should operate in a similar way, if to a somewhat lesser effect (Koriat & Goldsmith, 1996; Roebers & Fernandez, 2002). Furthermore, while studies have had conditions whereby participants are not *encouraged* to use DK, there have not been conditions whereby participants are explicitly asked not to respond DK. Often, the non-DK conditions do not mention DK as a responses option at all which is a confounding factor. This study will further our understanding of the effects of interviewer instructions by examining the separate effects of both encouraging and discouraging DK responses.

Empirical work on the relationship between a second variable of interest, motivation, and response accuracy has suggested that higher motivation to respond accurately tends to result in better accuracy, but at the cost of a reduction in the total number of questions answered. A study by Koriat and Goldsmith (1996) examined the effects of moderate versus high accuracy motivation on the accuracy of responses to a general knowledge test. Two versions of the test were used: a recall version (blank line next to each question) and a recognition version (correct answer plus four foils listed in multiple choice format). In Phase 1, participants took either the recall or the recognition test under forced-report conditions. Participants were required to answer all questions, regardless of whether they knew the response. In addition they were also asked to assess the likelihood that their answer was correct. After completing Phase 1, participants immediately completed Phase 2 by taking the same test again but under free-report conditions, meaning they could choose whether to answer each question. Phase 2 was

split into two conditions: moderate incentive and high incentive. Those randomly assigned to the moderate incentive condition were told they could earn $0.50 for each correct response but would lose an equivalent amount for each incorrect response. Those in the high incentive condition were told they could earn $0.50 for each correct response but would be penalized $5.00 for each incorrect response. Results indicated that the option of free-report allowed participants to improve their accuracy relative to the forced-report. This resulted in the predicted quantity-quality tradeoff, with higher quality of responses co-occurring with an overall decrease in quantity of responses. Additionally, participants in the high incentive condition had better accuracy performance than participants in the moderate incentive condition.

Another study by Roebers, Moga, and Schneider (2001), using children and young adults as participants also examined the effect of accuracy motivation on accuracy of responding. The researchers recruited kindergartners, first-graders, second-graders, and young adults to participate in the study. Participants were shown a short video about a conflict between two groups of children. Approximately three weeks after watching the video, each participant was interviewed by a female experimenter and asked open ended questions about the video. Participants in each age group were randomly assigned to one of three conditions: forced report, free report, or free report plus incentive. In the forced report condition participants were told they had to answer each question and if they weren't sure they had to guess. In the free report and the free report incentive conditions, participants were told to answer the question if they could but they could respond using DK if they were unsure of the answer. The children in the free report plus incentive condition were told they would receive a token for each correct answer and would have

to give the experimenter one of their tokens for an incorrect answer. Additionally, they were told that if they answered DK, the token would remain neutral (in the middle). The children were then told that at the end of the study, they would be able to use their tokens to "buy" a prize of their choice, with the better prizes being worth more tokens (motivation to provide as many correct responses as possible). The adults in the free report plus incentive condition were told they would be given 50 German pence (about $0.25 U.S.) for each correct answer and that they would lose the same amount for an incorrect answer. As with the children, DK responses would be neutral. Adults were told they would be able to keep all of the pence they accumulated. Results demonstrated that, in general, all participants were the least accurate in the forced report condition and were the most accurate in the free report plus incentive condition. Though younger children overall were less accurate than older children and adults, the option of answering DK to a question as well as being rewarded for every correct response appeared to benefit the accuracy of all participants, regardless of their age. A further study by Roebers (2006), once again employing children, found that both moderately and highly motivated participants provided more accurate responses to interview questions than those who had been offered no incentive for accuracy.

In the present study, interviewee motivation and response accuracy were examined in relation to instructions which encourage versus discourage the use of DK responses, in response to answerable and unanswerable non-leading questions. Based upon prior work (e.g. Koriat & Goldsmith, 1996; Roebers, Moga & Schneider, 2001), participants received an accuracy motivation manipulation designed to promote high or low motivation to respond accurately to the interview questions. In the low accuracy

motivation condition, participants received a reward for each correct response to an interview question and a small penalty for an incorrect response. In the high accuracy motivation condition, participants received a reward for each correct response to an interview question but lost ten times the reward amount for an incorrect response.

These instructional and motivational manipulations are meant to reflect the demands of various real-world interviews. For example, when questioned about a recently witnessed crime, witnesses may be highly motivated to provide investigators with as much accurate information as possible. However, they may also be discouraged from using DK by being told to provide an answer for every question.

The current study

This study examined the separate and combined effects of accuracy motivation and DK instructional set upon accuracy and output in response to non-leading answerable and unanswerable interview questions. The study builds on the framework described in Scoboria, Mazzoni & Kirsch, 2008. Briefly, participants viewed a short video of a mock crime and police chase. They provided a free recall, completed a short distracter task, and then a second free recall. Participants then received either high or low motivational incentive to provide accurate responses. Half of the participants were encouraged to use DK as response option and the other half were discouraged from using DK unless they absolutely had to. Participants then answered a series of answerable and unanswerable questions about the video. All participants were asked to rate how confident they were in their response after each question. After completing the questions, participants were questioned about the meaning of any DK responses they provided. Based on these clarifications, the overall accuracy of the responses was determined.

Hypotheses

Hypothesis 1 (General). Based on current understanding of how interviewers can

impact their interviewees and how interviewee motivation can affect responding, it was

hypothesized that those in the DK encouraged/high accuracy motivation condition would

provide the most DK responses. Rather than attempting to guess, they would be more

likely to respond DK because they've been told it is an acceptable response and they are

highly motivated to only provide accurate information. It was also hypothesized that

those in the DK discouraged/low accuracy motivation condition would provide the fewest

of DK responses.

Of particular interest was the DK discouraged/high accuracy motivation

condition, as conflicting demands are likely created in this group. Participants were

discouraged from using DK as a response and were expected to provide the interviewer

with as much information as possible. However, they were also highly motivated to be as

accurate as possible and, in the case of unanswerable questions, DK may in fact be the

most accurate response. As such, the accuracy of the responses was expected to decrease

if the participant adhered to the interviewer's instructions. This condition set a very

ambitious goal: to provide a memory report that is both complete *and* entirely accurate.

Participants here must weigh the risks of both commission and omission errors before

deciding to answer.

This condition is of particular interest because it is very similar to the conditions

under which many real-world eyewitness interviews occur. Many eyewitnesses are highly

motivated to help investigators as best as they can. However, in the interest of gathering

as much information as possible, investigators often explicitly tell the witness to answer

all questions to the best of their ability, regardless of uncertainty. This essentially discourages the witness from saying DK. As such, this condition is the most forensically relevant condition in terms of its ecological validity and generalizability. It is also the most interesting from a research standpoint because it is difficult to predict the outcome. Given the evidence that interviewers can significantly impact the responses of interviewees, even unintentionally, it was hypothesized that interviewer instructions may override motivation to be accurate, resulting in fewer DK responses.

Hypothesis 2 (Question Type). With respect to question type (e.g. answerable vs. unanswerable), it was hypothesized that those in the DK encouraged/high accuracy motivation condition will provide the most DK responses to unanswerable questions. Furthermore, it was hypothesized that those in the DK encouraged/high accuracy motivation condition will provide more DK responses to answerable questions as well, because their response criterion is set higher than the other three conditions. It was hypothesized that because they are highly motivated to be accurate and they have been encouraged to use DK, they will be more likely to use it at the slightest uncertainty. When weighing their response options, interviewees may be more likely to decide it is better to say DK than to be incorrect. Additionally, it was hypothesized that those in the DK discouraged/low motivation condition would provide the fewest DK responses to both question types.

Hypothesis 3 (Clarification). Based on the results of Scoboria et al. (2008), it was hypothesized that clarifying the meaning of DK responses would result in re-coding of a statistically significant proportion of responses as either correct or incorrect. For example, DK responses that are made in response to unanswerable questions but reflect

the assertion that the information was not there would be coded as correct. Conversely, DK responses to answerable questions that reflect the assertion that the information was not present would be re-scored as incorrect. However, some DK responses to both types of questions will reflect instead confusion and uncertainty, thus illustrating the ambiguous nature of these responses. Scoboria et al. (2008) re-coded 37.5% of DK responses as either correct or incorrect. Based on this result, it was hypothesized that at least a similar number of DK responses in the current study would be re-coded as correct or incorrect.

If some DK responses to unanswerable questions are re-scored as correct, it will result in increased response output (i.e. more tangible responses) and the overall accuracy of responses to unanswerable questions is hypothesized to either remain stable or possibly increase. By contrast, if some DK responses to answerable questions are re-scored as incorrect, it will result in increased response output; however it is hypothesized that the overall accuracy of responses to answerable questions will decrease.

CHAPTER II

Method

Participants

One hundred and eleven participants (72% female; ages 18 to 48, mean 23.5, SD 6.87) were recruited from the University of Windsor Psychology Department Participant Pool. Participants were undergraduate students and received course credit for their participation.

Design

The study employed a 2 (accuracy motivation between subjects) x 2 (interviewer instructions between subjects) x 2 (question type within subjects) x 2 (clarification of DK responses within subjects) mixed design. Individual participants were randomly assigned to experimental conditions.

Materials

Video stimulus. A video segment depicting a non-violent burglary and subsequent police chase was used in the present study. This video segment has been used in prior studies examining eyewitness accuracy and is meant to simulate the conditions under which a person may witness an actual burglary. The video originates in the work of Zaragoza and Mitchell (1996).

Question set. A set of 27 (answerable and unanswerable) non-leading questions was presented to participants (see Appendix C). The questions have been developed in prior unpublished research at the University Windsor to query material that is and is not present in the abovementioned video. These questions have been used in previous studies that made use of the same video. The questions consist of eleven answerable, eleven

unanswerable, and five other questions. The questions used in analyses included the two

sets of answerable and unanswerable questions.

Coding of questions. The questions were coded by an independent rater and were

initially coded as correct, incorrect (error) or DK for both answerable and unanswerable

questions. Clarified DK responses were re-coded to reflect the true meaning of the DK

response (i.e. the participant truly does not know; the information was not in the video;

or, the participant cannot recall the information). DK responses that were clarified to

mean the participant truly does not know remained coded as DK for both types of

questions. For answerable questions, clarification that the information was not in the

video was coded as an error and clarification that the information was in the video but the

participant cannot recall the information remained coded as DK. For unanswerable

questions, clarification that the information was not in the video was coded as a correct

response and clarification that the information was in the video but cannot be recalled

was coded as an error. As such, the total number of correct responses for answerable

questions could not increase; however, the total number of errors had the potential to

increase. Unanswerable questions had the potential for increase in both number of correct

responses and number of errors.

Procedure

Before beginning data collection, this project and its procedures were reviewed by

the University of Windsor Ethics Review Board. This study received clearance to from

the Ethics Review Board to be conducted in the manner presented below.

Participants were recruited for individual experimental sessions. Upon arrival,

participants were greeted by an experimenter and were given a copy of the informed

consent form to read and sign. Any questions the participant has about the study, or their participation in it, were addressed at that time. Participants also received a basic demographic form to fill out. Participants were next informed that they would watch a video about which they would have to answer questions. Participants then viewed the video, after which participants provided free recall, completed a 20 minute distracter task that consisted of solving paper and pencil logic problems, and completed a second free recall.

Participants were told that they would now be questioned about what they witnessed. Depending on the experimental condition, participants received either high or low motivational incentive to be accurate. In the low motivation condition, participants were told that they would receive a monetary reward ($0.25) for each correct answer they provide and a penalty (lose $0.25) for incorrect responses. In the high motivation condition, participants were told that they would receive a monetary reward for each correct response they provide ($0.25) and a monetary penalty ($2.50) for each incorrect response they provide. In both motivational conditions DK responses will be considered neutral, resulting in no gain or loss (see Appendix A). Participants were asked not to discuss the payout scheme with the experimenter who was coming in to interview them. During the course of questioning, participants did not receive feedback from the experimenter as they responded to each question in order to reduce the likelihood that they would lose motivation should they answer a series of questions incorrectly.

After receiving the motivational instructions, the participants were greeted by a second research assistant. This assistant was unaware of the existence of the accuracy motivation manipulation and, as such, they were unaware of the level of accuracy

motivation for the participant. The second assistant provided the participant with instructions regarding how to answer the questions about the video. Half of the participants were encouraged to use DK as a response option if they were unsure, uncertain, or did not know the answer to a question. The other half of the participants were discouraged from using DK as a response option unless they absolutely had to (see Appendix B).

All participants were then asked the sets of answerable and unanswerable questions. As previously noted, answerable questions are those which can be answered accurately by the participant because the necessary information was provided to them; while unanswerable questions are those that cannot be answered by the participant because the necessary information was not available. All responses were transcribed verbatim. Participants were also asked to rate their confidence in each response, using a 7-point scale (1= Not confident to 7=Extremely confident). Following the questions, participants were asked to clarify their DK responses. Specifically, participants were asked to explain what they meant when they said DK. They were provided with three options (they really did not know; the information was not in the video, or; they cannot recall the information) as well as the opportunity to provide any other reason for DK responses.

Finally, participants were debriefed using a debriefing letter which fully informed them of the goals and hypotheses of the study. The debriefing was presented in this manner so that the second research assistant would remain unaware of the motivation manipulation and of the study hypotheses. Regardless of their actual accuracy in

responding, all participants received an equal payout ($5) upon completion of the study.

This was given to all participants by a separate assistant at the end of the semester.

CHAPTER III

Results

Analyses

Before beginning analyses, the data were first examined to determine whether

there were any outliers. Ten outliers exceeded a three standard deviation cut-off across

the dependent variables. However when subsequent analyses were run both including and

excluding outliers, there were minimal differences in the results. It was therefore

determined that the outliers did not significantly impact the results and they were

consequently retained in the analyses.

The assumptions of ANOVA were verified to ensure they had not been violated.

All variables appeared to be distributed normally and there was no excessive skewness or

kurtosis. Additionally, Box's M-test and Levene's Test were not significant for any of the

dependent variables, indicating that the assumption of homogeneity of variances was not

violated.

The data were analyzed using four separate 2x2x2x2 mixed ANOVAs. Accuracy,

DK responses, correct responses and errors were examined as a function of question type

(answerable, unanswerable), clarification (initial DK response, clarified DK response),

instructions (DK encouraged, DK discouraged), and motivation (high accuracy

motivation, low accuracy motivation). Group means are presented in Table 1.

Accuracy

A marginally significant 3-way interaction was found between question type,

motivation and instructions, $F(1, 107) = 3.81$, $p = .054$, indicating that the relationship

between motivation and instructions depended on the type of question being asked. A

significant 2-way within-subjects interaction was also found between clarification and

question type, $F(1, 107) = 40.92$, $p < .01$. Additionally, main effects were found for

question type, $F(1, 107) = 8.89$, $p < .01$, clarification, $F(1, 107) = 4.55$, $p < .05$, and

Table 1
Table of Group Means

Motivation Level	Don't Know Instructions	Variable	Pre-Clarification		Post-Clarification	
			Mean	Standard Deviation	Mean	Standard Deviation
Low	Discouraged					
		Answerable Correct	3.98	1.69	3.98	1.69
		Answerable DK	3.18	2.17	2.39	1.74
		Answerable Error	3.77	1.87	4.55	1.68
		Unanswerable Correct	3.80	1.72	5.95	1.92
		Unanswerable DK	3.52	1.82	0.80	1.00
		Unanswerable Error	3.68	2.06	4.25	2.08
		Answerable Accuracy	0.52	0.19	0.46	0.17
		Unanswerable Accuracy	0.52	0.22	0.59	0.20
	Encouraged					
		Answerable Correct	4.44	1.63	4.44	1.63
		Answerable DK	4.17	1.80	3.46	1.69
		Answerable Error	2.39	1.21	3.09	1.32
		Unanswerable Correct	3.20	1.61	5.74	1.84
		Unanswerable DK	5.37	2.74	1.98	1.81
		Unanswerable Error	2.43	1.79	3.28	1.48
		Answerable Accuracy	0.65	0.17	0.59	0.16
		Unanswerable Accuracy	0.62	0.22	0.63	0.15
High	Discouraged					
		Answerable Correct	4.61	1.70	4.61	1.70
		Answerable DK	3.00	2.20	2.25	1.80
		Answerable Error	3.36	1.87	4.11	1.72
		Unanswerable Correct	4.11	1.75	6.11	2.16
		Unanswerable DK	3.45	2.55	0.88	1.28
		Unanswerable Error	3.45	2.51	4.02	2.29
		Answerable Accuracy	0.59	0.17	0.53	0.17
		Unanswerable Accuracy	0.58	0.24	0.61	0.21
	Encouraged					
		Answerable Correct	3.63	1.87	3.63	1.87
		Answerable DK	4.70	2.27	3.54	2.35
		Answerable Error	2.68	1.64	3.84	1.76
		Unanswerable Correct	3.57	1.71	6.50	1.84
		Unanswerable DK	5.32	2.25	1.43	1.26
		Unanswerable Error	2.11	1.58	3.07	2.06
		Answerable Accuracy	0.56	0.23	0.47	0.20
		Unanswerable Accuracy	0.66	0.23	0.69	0.20

instructions, $F(1, 107) = 4.31$, $p < .05$ (see Appendix D, Table 2.1 and Table 2.2).

To examine the 3-way interaction, separate 2x2 ANOVAs were conducted to understand the relationship between motivation and instructions for answerable and unanswerable questions. For answerable questions, a significant interaction between motivation and instructions was revealed, $F(1, 107) = 5.89$, $p < .05$. Post-hoc t-tests revealed that in the low motivation condition, those who were encouraged to use DK had significantly higher accuracy than those who were discouraged from using DK, $t(53) = 2.76$, $p < .01$. Of those in the DK encouraged condition, accuracy was higher in the low motivation condition than in the high motivation condition, $t(53) = 1.97$, $p = .054$. However, motivation and instructions did not interact to predict response accuracy to unanswerable questions. For unanswerable questions, only a main effect for instruction type was found, $F(1, 107) = 3.97$, $p < .05$. Those who were in the DK encouraged condition demonstrated higher accuracy on average than those in the DK discouraged condition.

Additional post-hoc t-tests were run to examine the 2-way interaction between question type and clarification. The first set of paired-sample tests indicated that following clarification, accuracy for answerable questions decreased, $t(110) = 8.52$, $p < .01$, while accuracy for unanswerable questions increased, $t(110) = 2.49$, $p < .05$. While accuracy did not differ by question type before clarification, following clarification accuracy differed significantly, $t(110) = 5.26$, $p < .01$. The ANOVA also revealed main effects for clarification, $F(1, 110) = 4.54$, $p < .05$, and question type, $F(1, 110) = 8.77$, $p < .01$, however, these main effects are qualified by the interaction, given that there is only a difference in accuracy between the question types after clarification.

Don't Know Responses

Similar analysis of DK responses revealed a 3-way interaction between clarification, question type and instructions, $F(1, 107) = 5.06$, $p < .05$. 2-way interactions between clarification and question type, $F(1, 107) = 152.95$, $p < .01$, and clarification and instructions, $F(1, 107) = 6.16$, $p < .05$, as well as main effects for clarification, $F(1, 107) = 290.52$, $p < .01$, question type, $F(1, 107) = 7.41$, $p < .01$, and instructions, $F(1, 107) = 20.07$, $p < .01$ (see Appendix E, Table 3.1 and Table 3.2).

The 3-way interaction was examined using two separate 2x2 ANOVAs that examined the effects of clarification and instructions on answerable and unanswerable questions. For answerable questions there was a main effect observed for clarification, $F(1, 107) = 98.69$, $p < .01$, but the interaction between clarification and instructions was not significant. Clarification of DK responses made to answerable questions led to a decrease in such responses, regardless of instructional condition. For unanswerable questions, there was a main effect observed for clarification, $F(1, 107) = 267.44$, $p < .01$, as well as a significant interaction between clarification and instructions, $F(1, 107) = 6.80$, $p < .01$. Those in the DK encouraged condition had significantly more DK responses than those in the DK discouraged condition before clarification $t(109) = 4.19$, $p < .01$. Post-clarification, the number of DK responses was still greater in the DK encouraged condition, $t(109) = 3.31$, $p < .01$, though the difference between conditions was reduced.

Plotting the within-subjects main effect for clarification revealed that clarification of DK responses resulted in significantly fewer "true" DK responses (i.e. the participant said they actually did not know the answer to the question) across conditions and resulted in the re-coding of other clarified DK responses as either errors or correct responses.

Finally, the between-subjects main effect of instructions suggests that those who were in the DK encouraged condition provided more DK responses than those who were in the DK discouraged condition. Those in the DK encouraged condition also provided more DK responses to unanswerable questions than to answerable questions.

Correct Responses

Analyses of correct responses revealed several significant effects, including 3-way interactions between question type, motivation, and instructions. $F(1, 107) = 5.16$, p <.05, and clarification, question type, and instructions, $F(1, 107) = 4.66$, p <.05: 2-way interactions between clarification and question type, $F(1, 107) = 245.80$, p <.01 and clarification and instructions, $F(1, 107) = 4.66$, $p < .01$; and main effects for clarification. $F(1, 107) = 245.80$, $p < .01$; and question type, $F(1, 107) = 13.13$, $p < .01$ (see Appendix F, Table 4.1 and Table 4.2).

To examine the 3-way interaction between question type, motivation and instructions, separate 2x2 ANOVAs were conducted to examine the relationship between motivation and instructions for each question type. For answerable questions, the only significant effect was an interaction between motivation and instructions. $F(1, 107) = 4.86$, p <.05. Post-hoc t-tests revealed that those in the high motivation condition, who were discouraged from using DK, made significantly more correct responses than those who were encouraged to use DK, $t(54) = 2.056$, $p < .05$. Additionally, those in the DK encouraged condition, who had low motivation, made marginally significantly more correct responses than those in the high motivation condition, $t(53) = 1.73$, $p = .09$. There were no significant main effects or interactions for correct responses to unanswerable questions.

A separate 2x2 ANOVA was conducted to examine the relationship between clarification and instructions. Since it was not possible for correct responses to answerable questions to increase following clarification (no clarified DK response led to additional corrects for answerable questions), only unanswerable questions were examined. Results revealed a significant main effect for clarification, $F(1, 107) = 248.69$, $p < .01$, as well as a significant interaction between clarification and instructions, $F(1, 107) = 4.76$, $p < .05$. A post-hoc t-test revealed that clarification of DK responses led to a significant increase in correct responses to unanswerable questions for both DK encouraged, $t(54) = 11.81$, $p < .01$ and DK discouraged, $t(55) = 10.42$, $p < .01$. Initially, those in the DK encouraged condition had fewer correct responses than those in the DK discouraged condition. However, after clarification, the number of correct responses did not differ significantly between the two instructional conditions.

Error Responses

A within-subjects main effect was found for clarification, $F(1, 107) = 118.61$, $p < .01$, indicating that clarification of DK responses lead to an increase in the number of errors across conditions (see Appendix G, Table 5.1). A between-subjects main effect was found for instructions, $F(1, 107) = 14.05$, $p < .01$, and revealed that those who were encouraged to use DK made fewer errors than those who were discouraged from using DK (see Appendix J, Table 5.2). No interactions were observed for error responses.

CHAPTER IV

Discussion

This study examined whether specific instructions regarding DK responses significantly impact an interviewee's decision to use DK as a response option. Additionally, it also examined the effect of accuracy motivation on the use of DK responses. The results of this study provide information about the effects of interviewer instructions and interviewee motivation on responses to interview questions and DK responses in particular. The results also highlight the importance of clarifying DK responses, as clarification led to changes in the number of correct and error responses, which in turn affected the overall accuracy of the responses. This section begins with a discussion of the results in relation to the study hypotheses and will broaden to cover additional findings, limitations, implications of the study and future directions for this type of research.

The first hypothesis stated that participants in the DK encouraged/high accuracy motivation condition were expected to provide the most DK responses. It was also hypothesized that those in the DK discouraged/low accuracy motivation condition would provide the fewest DK responses. The DK discouraged/high accuracy motivation condition was highlighted as a condition of particular interest, as this condition was meant to reflect the demands of a real-world investigative interview. In many such interviews, the interviewee may be highly motivated to help the investigator by providing accurate information but they may also be told to answer all questions and to refrain from leaving out information, even if they are unsure. This places conflicting demands on the interviewee: do they provide any and all information (DK discouraged) or do they refrain

from providing information about which they are uncertain (high accuracy motivation). It was hypothesized that instructions not to use DK would override motivation to be accurate.

The results of the study partially support the first hypothesis. Participants in the DK encouraged condition made more DK responses, in general, than did those in the DK discouraged condition. This supports the hypothesis that encouraging DK responses will lead to more DK responses, however; it appears that motivation was not a strong factor in predicting number of DK responses. The prediction that participants in the DK encouraged/high accuracy motivation condition would provide more DK responses than the other three conditions was not supported.

Examination of the highlighted condition (DK discouraged/high motivation) revealed that participants made fewer DK responses to both answerable and unanswerable questions than did those in the DK encouraged condition. This supports the hypothesis that instructions would override motivation to be accurate.

The second hypothesis addressed DK responses with respect to question type. It stated that those in DK encouraged/high motivation condition would provide the most DK responses to unanswerable questions and that they would provide more DK responses than the other three conditions to answerable questions as well. Additionally, it was hypothesized that those in the DK discouraged/low motivation condition would provide the fewest DK responses to both question types.

Results partially support the second hypothesis. Participants in the DK encouraged condition made more DK responses to unanswerable questions than participants in the DK discouraged condition, as predicted, but there was no difference by

motivational condition (i.e. those in the DK encouraged/high accuracy motivation condition did not make more DK responses than those who were encouraged but with low motivation). Participants in the DK encouraged condition also made more DK responses to answerable questions than those in the DK discouraged condition, but again there was no difference across motivational condition, which does not support the hypothesis.

The third hypothesis addressed clarification of DK responses. It was predicted that clarification of DK responses (asking participants what they meant when they replied DK to a question) would result in the recoding of a statistically significant proportion of responses as either correct or incorrect (error). It was hypothesized that recoding DK responses as correct would lead to increased output but that accuracy would remain stable or increase slightly. It was also hypothesized that recoding DK responses as errors would also lead to increased output but that accuracy would decrease.

Clarification of DK responses did indeed lead to recoding a statistically significant proportion of responses as either correct or error and the number of "true" DK responses (i.e. the participant truly did not know) decreased across all four conditions. Overall, accuracy for answerable questions decreased after clarification while accuracy for unanswerable questions increased after clarification. This result is not surprising, given that there was no possibility of re-coding responses as correct for answerable questions (i.e. stating that the information was not present is an error and stating that the information was present but cannot be recalled is still a DK). Additionally, stating that the information was not present is a correct response for an unanswerable question, while stating the information was present but cannot be recalled is an error. Participants were

often able to recognize and articulate that the information sought by unanswerable

questions had not be provided, leading to the increase in accuracy.

Based on the results presented, it appears that instructions, whether they are

encouraging or discouraging the use of DK responses, play an important role in the use of

DK responses. By contrast, motivation did not appear to have any significant direct effect

on the use of DK responses. However, there were some differences in the way the

manipulation was delivered in this study versus prior studies that have used it

successfully (e.g. Koriat & Golsdmith, 1996; Scoboria & Harris, 2007). One difference

was that two separate people delivered the motivation manipulation and the instructions.

It may be that the person who delivered the instructions was more convincing or more

forceful in their delivery that the person who delivered the motivation manipulation. The

stronger effect of instructions may also be due to a recency effect. Participants first

received the motivation manipulation and then met a second experimenter who delivered

the instructions. When they were subsequently asked to answer questions, the instructions

may have been the more salient information in their minds. A study which balanced the

order of the motivation manipulation and delivery of instructions would help to clarify

this.

Motivation was not without its effects. A further examination of the data revealed

a significant interaction between motivation and instructions for response accuracy to

answerable questions. Specifically, for those in the low motivation condition, instructions

made a difference. Those who were encouraged to use DK had higher response accuracy

than those who were discouraged from using DK. Within the DK encouraged condition,

level of motivation made a difference. Those who were highly motivated to be accurate

had lower response accuracy than those who had low motivation to be accurate. A possible explanation for this finding may be that those in the DK encouraged/low accuracy motivation condition had higher accuracy because, although they answered fewer questions overall, those they answered were correct. In contrast, those in the DK discouraged/low accuracy motivation condition answered more questions overall but fewer of these responses were correct.

While the instructions appear to have impacted participants' usage of DK responses, it does not appear that the decision to adhere to these instructions impacted participants' memories. Clarifying DK responses led a significant increase in correct responses to unanswerable questions, indicating that participants were able to remember or distinguish that the information in question was not presented. Participants who were encouraged to say DK may have responded DK to these ambiguous questions rather than attempting to explain that the information was not present because that is what they were told to do (i.e. use DK if unsure/uncertain). It is worth noting that those in the DK discouraged condition made more errors than those in the DK encouraged condition. This may be due to the fact that they provided more responses to unanswerable questions (since they were discouraged from using DK), which would result in more errors.

Clarification of DK responses is also very important. As this study illustrates, clarifying the meaning of a DK response can increase output, as well as change the overall accuracy of the account. Given that DK responses can have a number of different meanings, it is important to find out what someone truly means when they said DK.

It also is important to note that question type plays an important role in both participants' use of DK responses (all participants made more DK responses to

unanswerable questions than to answerable questions), and the accuracy of DK responses upon clarification. As noted, DK responses to answerable questions did not result in an increase in correct responses whereas as certain clarifications of DK responses led to an increase in correct responses to unanswerable questions. Question type is highlighted here because, in an investigative setting, interviewers may not know whether the type of question they are asking is answerable or unanswerable, as they were not present at the scene of the incident. Since instructions appear to influence responses to interview questions, one must be cautious as to how these instructions are used in order to maximize responses to answerable question while minimizing responses to potentially unanswerable questions.

Implications

This study helps to illustrate the power of social pressure in an interview setting. This study actually employed very little social pressure – the instructions given to participants were simple and delivered in a non-threatening manner. However, even simple instructions yielded significant differences in responding between groups. Given this effect, it is hard not to think of the much more explicit social pressure inherent in an investigative interview setting. Witnesses are often pressured to provide the investigator with as much information as possible and are discouraged from opting out of answering a question. However, as this study illustrates, instructing people to respond to every question and not say DK leads to more output but less accuracy. While investigators may believe their tactics yield more information, some of this information may be incorrect.

This has major ramifications. The (false) information obtained from a witness may be used to create a description of a suspect. Someone matching this description may

then be *falsely* accused of committing a crime. This entire chain of events transpires because an interviewee is unable or not allowed to tell an investigator they do not know the answer to a question or cannot confirm a detail, resulting in a speculative answer.

Limitations

One potential limitation of this study is that the accuracy motivation manipulation may not have been as successful as planned. As discussed, variations in the manipulation may have led to a less significant effect.

Another potential limitation is that there is no control condition to compare DK responses to. A condition whereby no instructions regarding DK responses are given would help to provide a baseline for comparison to see how many DK responses participants would spontaneously provide. This would allow for a better understanding of just how much encouraging and discouraging DK affects its actual use as a response option.

Future Directions

Now that a relationship between instructions and DK responses has been established, future studies need to examine how instructions can be further refined to optimize the use of DK where appropriate (e.g. unanswerable questions) and minimize their use where inappropriate (e.g. answerable questions). Future studies could examine the effects of encouraging and discouraging DK and compare them to a condition where DK is not even mentioned and no instructions are given. Additionally, instructions regarding the use of DK could be compared to a forced response condition, whereby participants are told they must provide an answer to every question. Furthering our understanding of how DK instructions impact the quality and quantity of response can

help these types of instructions become more refined, with the goal of eventually being able to provide guidelines to interviewers on their use.

Additionally, as noted, clarification of DK responses is crucial to understanding what is meant by a DK response and to help determine its accuracy. Guidelines surrounding how to query DK responses without being leading are also needed to compliment instructions governing their use.

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Appendix A

Accuracy Motivation Script

Low Accuracy Motivation:

You are now going to meet a second experimenter who is going to ask you questions about the video you watched. For every question you get right, you will earn 25 cents. For every question you get wrong, you will lose 25 cents. If for any reason you are unsure, you can say that you do not know. There is no award or penalty when you say this. Overall, you have the potential to earn about $5. You will earn the most by getting questions right without getting other questions wrong. You will not be informed of how you are doing while the questions are being asked. No matter how you do, you will not go below zero to owe any money.

High Accuracy Motivation:

You are now going to meet a second experimenter who is going to ask you questions about the video you watched. For every question you get right, you will earn 25 cents. For every question you get wrong, you will lose two dollars and fifty cents. If for any reason you are unsure, you can say that you do not know. There is no award or penalty when you say this. Overall, you have the potential to earn about $5. You will earn the most by getting questions right without getting other questions wrong. You will not be informed of how you are doing while the questions are being asked. No matter how you do, you will not go below zero to owe any money.

Appendix B

Don't Know Instructions Script

Don't Know Encouraged:

I am going to ask you a series of questions about the video you watched. Please answer every question to the best of your ability. Because I am interested in obtaining the most accurate information that you may remember, you should respond "I don't know" as frequently as needed. This is preferable to providing answer when you do not actually remember.

Don't Know Discouraged:

I am going to ask you a series of questions about the video you watched. Please answer every question to the best of your ability. Because I am interested in obtaining any and all information that you remember, you should respond "I don't know" only if you absolutely must. This is preferable to answering that you do not remember.

Appendix C

Question Set

1. How many robbers were there?
   (Not scored)

2. What did the robber's vest say on the back?
   Answerable

3. Where did the robbers say they were going after the robbery?
   Unanswerable

4. What did the witness say about the robbers?
   Unanswerable

5. Where did the police think the robbers were going?
   Answerable

6. What evidence did the robber leave as to where he had exited the house, if any?
   Answerable

7. Did the robber take any jewellery?
   Answerable

8. What did the witness tell the police about herself when she called?
   Answerable

9. What did the robber do with the stolen objects during the chase?
   Answerable
10. When did the police turn on their **lights?
   Answerable

11. What evidence, if any, did the robber leave that he had been in the bedroom?
   Answerable

12. What was the driver of the robbers' car wearing?
   Answerable

13. Why were the police parked where they were when they spotted the robbers?
   Unanswerable

**14. What did the robber do upon entering the car?
   Answerable

15. How did the robber get into the house?

Unanswerable

16. Did the robber take anything from the living room?
Answerable

17. Did the robbers know the people who lived in the house that they robbed?
Unanswerable

18. What did the police have to say about the speed of the robber's car during the chase?
Answerable

19. What was the colour of the carpet in the bedroom?
Answerable

20. What was the robber's criminal history, if any?
Unanswerable

21. Where the robbers related?
Unanswerable

22. What was on the shirt that the robber in the house was wearing?
Answerable

23. How old were the robbers?
Unanswerable

24. How did the robber feel while in the house?
(Not scored)

25. Why did the robber leave the house?
(Not scored)

26. How did the witness feel during the robbery?
(Not scored)

27. What gender(s) were the police officers?
(Not scored)

Appendix D

Accuracy Tables 2.1 & 2.2

Table 2.1

Tests of Within-Subjects Contrasts (Accuracy)

Source	Clarif	Qtype	Type III Sum of Squares	df	Mean Square	F	Sig
Clarif	Linear		.032	1	.032	4.553	.035
Clarif * Mot	Linear		.005	1	.005	.674	414
Clarif * Instr	Linear		.012	1	.012	1.736	.190
Clarif * Mot * Instr	Linear		.001	1	.001	.117	.733
Error(Clarif)	Linear		.742	107	.007		
Qtype		Linear	.470	1	.470	8.885	.004
Qtype * Mot		Linear	.098	1	.098	1.863	.175
Qtype * Instr		Linear	.028	1	.028	.522	.471
Qtype * Mot * Instr		Linear	.201	1	.201	3.811	.054
Error(Qtype)		Linear	5.655	107	.053		
Clarif * Qtype	Linear	Linear	.285	1	.285	40.915	.000
Clarif * Qtype * Mot	Linear	Linear	.000	1	.000	.033	.857
Clarif * Qtype * Instr	Linear	Linear	2.91E-005	1	2.91E-005	.004	.949
Clarif * Qtype * Mot * Instr	Linear	Linear	.013	1	.013	1.882	.173
Error(Clarif*Qtype)	Linear	Linear	.745	107	.007		

Table 2.2

Tests of Between-Subjects Effects (Accuracy)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	149.087	1	149.087	1715.060	.000
Mot	.016	1	.016	.183	.670
Instr	.374	1	.374	4.308	.040
Mot * Instr	.173	1	.173	1.989	.161
Error	9.301	107	.087		

Appendix E

Don't Know Tables 3.1 & 3.2

Table 3.1

Tests of Within-Subjects Contrasts (DK)

Source	Clarif	Qtype	Type III Sum of Squares	df	Mean Square	F	Sig
Clarif	Linear		442.094	1	442.094	290.523	.000
Clarif * Mot	Linear		1.061	1	1.061	.698	405
Clarif * Instr	Linear		9.371	1	9.371	6.158	.015
Clarif * Mot * Instr	Linear		2.252	1	2.252	1.480	227
Error(Clarif)	Linear		162.824	107	1.522		
Qtype		Linear	26.896	1	26.896	7.412	.008
Qtype * Mot		Linear	1.352	1	1.352	.373	.543
Qtype * Instr		Linear	.304	1	.304	.084	.773
Qtype * Mot * Instr		Linear	4.037	1	4.037	1.112	.294
Error(Qtype)		Linear	388.254	107	3.629		
Clarif * Qtype	Linear	Linear	145.721	1	145.721	152.946	.000
Clarif * Qtype * Mot	Linear	Linear	.006	1	.006	.007	.935
Clarif * Qtype * Instr	Linear	Linear	4.820	1	4.820	5.059	.027
Clarif * Qtype * Mot * Instr	Linear	Linear	.041	1	.041	.043	.836
Error(Clarif*Qtype)	Linear	Linear	101.945	107	.953		

Table 3.2

Tests of Between-Subjects Effects (DK)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	4236.233	1	4236.233	444.823	.000
Mot	.178	1	.178	.019	.891
Instr	191.143	1	191.143	20.071	.000
Mot * Instr	.180	1	.180	.019	.891
Error	1019.004	107	9.523		

Appendix F

Correct Tables 4.1 & 4.2

Table 4.1

Tests of Within-Subjects Contrasts (Correct)

Source	Clarif	Qtype	Type III Sum of Squares	df	Mean Square	F	Sig.
Clarif	Linear		160.082	1	160.082	245.796	.000
Clarif * Mot	Linear		.107	1	.107	.165	.686
Clarif * Instr	Linear		3.034	1	3.034	4.658	.033
Clarif * Mot * Instr	Linear		.495	1	.495	.760	.385
Error(Clarif)	Linear		69.687	107	.651		
Qtype		Linear	55.601	1	55.601	13.126	000
Qtype * Mot		Linear	6.799	1	6.799	1.605	.208
Qtype * Instr		Linear	.014	1	.014	.003	.954
Qtype * Mot * Instr		Linear	21.872	1	21.872	5.163	.025
Error(Qtype)		Linear	453.247	107	4.236		
Clarif * Qtype	Linear	Linear	160.082	1	160.082	245.796	.000
Clarif * Qtype * Mot	Linear	Linear	.107	1	.107	.165	.686
Clarif * Qtype * Instr	Linear	Linear	3.034	1	3.034	4.658	.033
Clarif * Qtype * Mot * Instr	Linear	Linear	495	1	.495	.760	.385
Error(Clarif*Qtype)	Linear	Linear	69.687	107	.651		

Table 4.2

Tests of Between-Subjects Effects (Correct)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	9063.236	1	9063.236	1277.614	.000
Mot	2.507	1	2.507	.353	.553
Instr	6.853	1	6.853	.966	.328
Mot * Instr	8.593	1	8.593	1.211	.274
Error	759.045	107	7.094		

Appendix G

Error Tables 5.1 & 5.2

Table 5.1

Tests of Within-Subjects Contrasts (Error)

Source	Clarif	Qtype	Type III Sum of Squares	df	Mean Square	F	Sig.
Clarif	Linear		70.118	1	70.118	118.612	.000
Clarif * Mot	Linear		494	1	494	.836	.363
Clarif * Instr	Linear		1.741	1	1.741	2.945	.089
Clarif * Mot * Instr	Linear		.635	1	.635	1.074	.302
Error(Clarif)	Linear		63.254	107	.591		
Qtype		Linear	3.953	1	3.953	.983	.324
Qtype * Mot		Linear	2.368	1	2.368	.589	445
Qtype * Instr		Linear	.909	1	.909	.226	.635
Qtype * Mot * Instr		Linear	6.623	1	6.623	1.647	.202
Error(Qtype)		Linear	430.343	107	4.022		
Clarif * Qtype	Linear	Linear	.337	1	.337	.771	.382
Clarif * Qtype * Mot	Linear	Linear	.165	1	.165	.378	.540
Clarif * Qtype * Instr	Linear	Linear	.206	1	.206	470	494
Clarif * Qtype * Mot * Instr	Linear	Linear	.251	1	.251	.573	.451
Error(Clarif*Qtype)	Linear	Linear	46.850	107	.438		

Table 5.2

Tests of Between-Subjects Effects (Error)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	5067.460	1	5067.460	596.360	.000
Mot	1.138	1	1.138	.134	.715
Instr	119.364	1	119.364	14.047	.000
Mot * Instr	5.824	1	5.824	.685	.410
Error	909.213	107	8.497		

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