

Michelle C. Phillips  
Jennifer M. C. Vendemia  
University of South Carolina, Columbia  
South Carolina  
USA

## Individual Differences in Comparison Question Anxiety

The comparison question polygraph test (CQT) is a well-known technique for the detection of deception in legal and criminal settings (Raskin et al., 1989). According to Raskin and colleagues, the CQT was developed to address the limitations of the relevant-irrelevant (R-I) test, which uses only two types of questions, relevant and neutral. In the R-I test, neutral questions do not have any salience (i.e. are not relevant) for the innocent examinee. In this sense, they function as a “control” condition. However, there is no method for determining if the observed reactions to relevant questions are caused by deception or by other factors, such as anxiety, examiner demeanor, or simply the accusatory nature of the questions. In the CQT, according to Raskin and colleagues, examinees are presented with three types of questions: relevant, comparison, and irrelevant questions. Comparison questions (CQs) are designed to give innocent examinees a chance to be more concerned with questions other than the relevant questions. In this way, they function as

a “placebo” condition (hence the term comparison instead of control). CQs are salient to innocent examinees, but do not directly relate to the specific event probed by relevant questions.

Honts (1994) addressed a series of fundamental assumptions that must be upheld in order for a CQT to be sensitive to deception on relevant questions. The first assumption is that individuals attempting to lie to the central issues will respond with greater physiological reactivity to the relevant questions. The second assumption is that although innocent individuals know that the relevant questions are important, they will have greater responses to the CQs.

Examiners base this assumption on the reasoning that innocent examinees know they did not commit the crime in the relevant questions, but they are either lying or uncertain about their responses to the CQs. In order to create conditions of uncertainty, CQs must be similar to the central issue but be more vague, cover more time, and be more general (Raskin et al., 1989). There are two types of CQs: exclusive and non-exclusive or inclusive. An exclusive comparison is a question of the same type or category as the relevant issue but excludes the relevant issue by use of a time constraint (Krapohl, Sturm, 2002). An example of an exclusive comparison question would be “Did you ever rob a bank before October 15<sup>th</sup>, 2005?” A non-exclusive or inclusive comparison question overlaps the relevant issue by time or location (Krapohl, Sturm, 2002). An example of a non-exclusive comparison question would be “Have you ever stolen anything in your life?”

The purpose of the comparison question is to elicit a fear of consequences (Reid, Inbau, 1977; Gustafson, Orne, 1963; Davis, 1961) or guilt in the innocent examinees.

The elicitation of guilt is loosely based on the concept of guilt complexes as originally discussed by Jung and Wertheimer (see Wertheimer et al., 1992 for a review). Both researchers separately applied association texts to deception detection using the word association test. This test delivers a prime word, and then participants respond with the word that most quickly comes to mind. The cognitively based spreading-activation theory of semantic processing (see Collins, Loftus, 1975 for a review) suggests that semantic primes elicit information organized within a loose construction of ideas. Priming words within a semantic network triggers activation of the entire network. For guilty individuals, relevant questions are associated with and activate information related to the central issue. For innocent individuals, the relevant questions deliver a less intense prime to the association network. The goal of the comparison question construction is to maximize primes associated with “guilt complexes” for innocent individuals.

Arising from the nature of CQT construction, an important issue in the effective use of CQs in polygraph examinations has been the proper selection and phrasing of CQs to suit each examinee (Harmon, Reid, 1955; Reid, 1947). Along those lines, Reid points out that if the examiner has information concerning an offense or situation involving the subject (of less importance than the pertinent crime), a comparison question based on the information will serve as a good indicator of the subject's responsiveness and will thus provide a good comparative response. According to Harmon and Reid, in selecting a section of CQs, an examiner should follow the following principles:

1. The question must be one to which the subject will answer "no".
2. Either the examiner should know from the facts in his possession that the subject's "no" answer is a lie, or he should be reasonably certain that the answer is untrue.
3. The examinee should believe that the question is important to the procedure and the final test results.
4. The question should concern a matter of lesser weight than the pertinent questions. (p. 579).

Since 1955, the general guidelines for constructing such CQs have remained unchanged and little work has been done to examine how individual differences influence responses to CQs. The overall goal of the current behavioral study is to examine, in a group of average college students, differences in guilt (as measured by anxiety related to responding) elicited by a group of CQs. Three potential mechanisms associated with priming guilt through comparison questions have been proposed. The first goal of the present study is to distinguish the mechanism that best describes the patterns of anxiety shown in this testing situation.

The first mechanism proposes that situational salience is responsible for differential patterns of responding to the questions (Vendemia, 2002). In a specific setting or situation, innocent examinees will show the strongest reactions to questions that are the most salient or threatening in that particular situation (Vendemia, 2002). For example, in a scenario where the CQT is given in a workplace setting, examinees are likely to show the strongest reactions to CQs concerning workplace infractions.

A study done by Bradley and Black (1998) provides evidence for the situational salience mechanism. This study manipulated the types of CQs given to students in a mock-crime study. Half of the students received CQs about cheating and plagiarism from a professor and half of the students received standard CQs. Bradley and Black reasoned that students would feel that it was undesirable or dangerous for a professor to conclude that they were cheaters or plagiarists. Results showed that the CQs oriented toward the aca-

demic context better distinguished between guilty and innocent individuals than standard questions. Therefore, participants were more likely to score as innocent when actually innocent. This was presumably because in a school setting, students are more likely to be concerned by infractions related to cheating and plagiarism than infractions present in the standard CQs.

The second mechanism stems from Kohlberg's theory of moral development (Kohlberg, Hershey, 1977; Snarey et al., 1985). Kohlberg proposes discrete stages of moral development, which every child passes through. In the first level, the pre-conventional level, children see right and wrong in terms of physical or hedonic consequences (e.g. reward and punishment) or in terms of the authority and power of those who enforce the rules (e.g. "If I do this, Mommy will yell at me"). In the second level, the conventional level, adolescents see right and wrong in terms of loyalty to social order and actively maintaining, supporting, and justifying the social order. In the third and last level, the post-conventional level (reached by age 18 or later), there is an effort to define moral values and principles that have validity apart from social order or the authority of those enforcing the rules. This includes the development of universal principles of justice and respect for human rights.

This mechanism emphasizes one's current understanding of ethical reasoning as accounting for specific patterns of responding to CQs. This mechanism hypothesizes that the examinee's current stage of ethical development will determine which questions elicit the most guilt. For example, if someone is currently operating in the second, conventional level of moral reasoning, he/she will probably react most strongly to questions probing small violations that are designed to maintain the social order (e.g. substance use infractions).

Based on a moral reasoning theory developed by Carol Gilligan (1982, 1987, 1999), men and women develop different approaches to moral reasoning. Specifically, in her view, men see morality more in terms of justice. This concept of justice is based on abstract, rational principles by which all individuals will end up being treated fairly. Women, on the other hand, see morality more in terms of compassion, human relationships, and special responsibilities to those with whom an intimate relationship is shared. Women are more inclined to see morality as an issue of caring and relationships rather than of justice and rights.

The second goal of the present study is to examine possible sex differences in anxiety elicited by the different CQs. Examining sex differences is especially important and relevant because currently, the CQT is given without regard for sex differences in physiological responding. Despite this, sex has been identified as an important characteristic of the interviewee which may play

a role during the interrogation process (Vendemia, 2002). Therefore, examining sex differences in responding to CQs may help polygraph examiners better structure their interviews to suit individual differences. Because they develop different approaches to moral reasoning, men and women should see different types of questions as more threatening. Based on Gilligan's (1982, 1987, 1999) theories, one would expect women to respond more strongly to questions that deal with wrongs done to friends and family and questions that have less to do with fairness and justice and more to do with violating one's own moral standards. In contrast, one would expect men to react more strongly to questions that don't bear heavily on one's own moral code but are still considered "breaking the law" and can be punished.

The third mechanism proposes that examinees will show the strongest reactions to questions that deal with societal taboos. Such questions are likely to include infractions that are considered by society to be shameful. These questions are therefore likely to bring up feelings of shame and guilt in examinees and, as a result, evoke large physiological reactions. Recent work by Thonney and colleagues provides evidence for this mechanism. They conducted two studies, which compared the use of shame-arousing stimuli and neutral stimuli with the Guilty Knowledge Test. In both studies (Thonney et al., 2005 and 2006), the polygraph tests yielded significantly higher accuracy rates when the shame-arousing stimuli were used compared to when the neutral stimuli were used. In other words, examinees showed larger physiological responses to shame-arousing stimuli, which boosted the test's ability to classify individuals based on responsiveness.

We administered a questionnaire to undergraduates asking them to rate how anxious they would feel if faced with answering questions about their actions and character with negative consequences for "wrong" answers. The present study asks several research questions. Do the questions fall into different content categories based on participants' responses? Because the CQs vary quite widely, we predict that for a given group of people, the questions do fall into different content categories. Based on three potential mechanisms associated with priming guilt through comparison questions, the present study hypothesizes three possible specific patterns of differences among the predicted categories. First, if situational salience is operating in this case, students should rate questions concerning infractions likely to be committed by college students (minor legal infractions and rule breaking (e.g. substance use, cheating) as evoking higher anxiety than those less likely to be committed by college students. Second, if level of ethical reasoning is operating in this case, based on the theory that people change from social order maintenance to an independent ethical code as a moral guideline around age 18, students should rate

questions pertaining to personal ethics and integrity as evoking higher anxiety than other questions. Third, if societal taboos are operating in this case, questions pertaining to shameful conduct should be rated as evoking higher anxiety than other types.

Do men and women respond differently to these questions? Because women and men develop different approaches to moral reasoning, it is expected that their behavior to certain types of questions will be different. Specifically, it is expected that men will respond with more anxiety to questions pertaining to societal rules and regulations (not necessarily shameful or serious). It is also expected that women will respond with more anxiety to questions pertaining to wrongs against other people and one's own moral code.

## Methods

### Participants

Three hundred sixty-nine undergraduates at the University of South Carolina (USC) volunteered to participate in this online study. Of the original 386 respondents, 17 respondents were dropped because they failed to follow experimental procedure. Ages in the final sample ranged from 18 to 24 ( $M = 19.06$ ,  $SD = .83$ ; women = 296, men = 73). The sample was 78% Caucasian, 14% African-American, 2% Asian, 2% Hispanic, 1% Native American, and 3% Other Ethnicity. This sample matched the demographic stratification of the university population. All participants received course credit and were recruited through the USC Psychology Department's online participation pool.

### Measures

The measure used in this study was a questionnaire designed by members of our lab to assess anxiety elicited by polygraph test CQs. The measure consisted of 178 commonly used CQs. Questions were excluded from the measure if they contained offensive material or were incomprehensible for the average college student. Each question was followed by five possible answer choices: No Anxiety, Some Anxiety, Average Anxiety, Strong Anxiety, and Extreme Anxiety. In addition to the CQs, the questionnaire included five questions about demographic information. See Appendix A for a copy of the questions.

### Procedure

Once participants signed up for the study via the online participation pool, they were directed to a website where they could fill out the questionnaire.

Three different versions of the questionnaire were constructed. All three versions had the same questions but in a different order. Participants were randomly assigned to fill out one of the three versions. Once at the website, participants first read an informed consent page and then agreed to consent to the study. Following this, they completed the questionnaire.

After completing the demographic information, the instructions told participants to: Imagine that you have just entered a room in which a man is seated behind a desk. He is reading from a folder labeled with your name. He asks you to take a seat. During the next hour, he will be asking you personal questions about your actions and character. 'Wrong' answers to these questions could have extremely negative consequences for your future. Please answer these questions and rate them as to how much anxiety each one would cause you to feel under those circumstances. Answer honestly. Your responses are completely anonymous.

Participants then completed the 178 items. After completing the questionnaire, they read a debriefing page explaining the purpose of the study and were thanked for their participation.

## Results

The first part of the data analysis process consisted of basic data screening. The data were evaluated for mean, standard deviation, skewness, and kurtosis. Two of the questions, specifically "Were you ever involved in anything that would cause me to question your integrity?" and "Did you ever take any government supplies for your own use?", had very high skewness and kurtosis values as compared to the other questions in the data set. Histograms of these two questions were examined and they were both highly positively skewed. Because there were a large number of questions (178), these two questions were deleted from further analysis. In addition, during the original data entry, the data for nine questions were accidentally omitted, leaving 167 questions.

To potentially categorize the questions, a factor analysis extraction with an oblique Promax rotation was performed with SPSS on 167 items for the 369 participants. Factors with an Eigenvalue greater than one were retained. Ten factors were subsequently retained. After examining which questions loaded highest on each of the ten factors (factor loading of .5 and above), we labeled the factors based on the content of these questions. The resulting ten categories were Shameless Legal Infractions, Small Rules/Regulations Infractions, Personal Ethics Infractions, Personal Gain Infractions, Workplace Infractions, Moral Code Infractions, Shameful Infractions, Acquaintance Infractions, Integrity Infractions, and General Infractions (e.g. Did you ever break the law?). These categories explained approximately 56% of the variance in

the ratings. An average rating to the questions in each category was computed for each person. A new variable was then created to represent each category, the values of which were each person's average anxiety score to the subset of questions that represent each category.

A 2 X 10 MANOVA was used to assess the effects of infraction category and sex on average anxiety scores. Pairwise comparisons (Tukey's post-hoc tests) were used to compare the categories in order to test the three hypotheses for specific patterns of differences among the categories. Because sphericity could not be assumed, multivariate F-tests are reported. Overall, the anxiety scores to the questions tended to be low to moderate. As predicted, the main effect of infraction category was significant ( $F(9, 359) = 13.68, p < .05, \eta^2 = .26$ ). The effect size indicates a moderate effect of infraction category. Means (with error bars representing one standard error) for the infraction categories are presented in Figure 1 below.

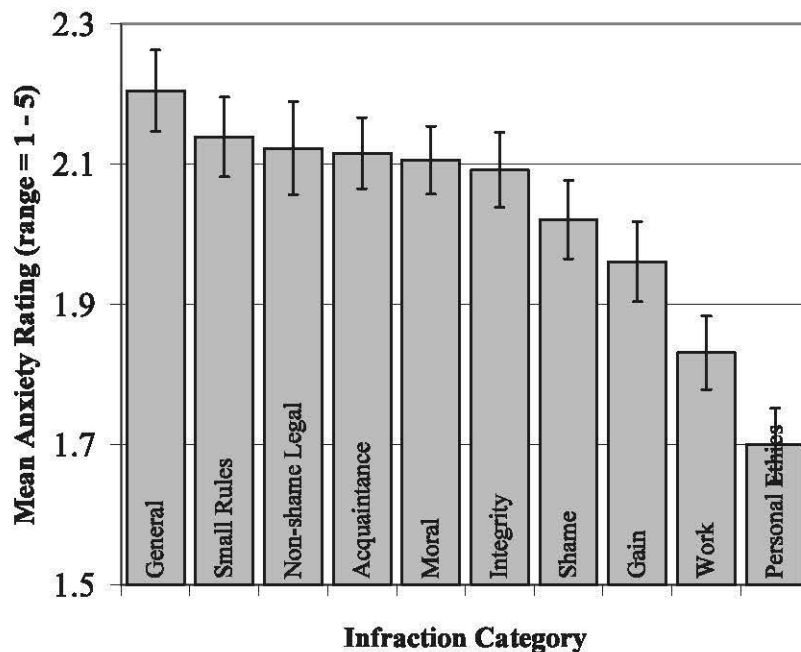


Figure 1. Average Anxiety Ratings for Infraction Categories in College Students (N=369).

Using Tukey's post-hoc tests, pairwise comparisons were performed on all the categories in order to compare them and test the three hypotheses for specific patterns of differences among the categories. Results of the pairwise comparisons are presented in Table I below. The first mechanism predicted that participants should rate questions concerning infractions likely to be committed by college students (shameless or minor legal infractions and rule



breaking (e.g. substance use infractions) as evoking higher anxiety than those unlikely to be committed by college students. In line with this explanation, General, Shameless Legal, and Small Rules/Regulations infractions, while not significantly different from each other, were significantly higher than most of the other categories. They also had the three highest means (Figure 1).

The second mechanism predicted that students should rate questions pertaining to personal ethics and integrity as evoking higher anxiety than other questions. In contrast to this explanation, the personal ethics category was actually significantly lower than all other categories. In addition, individuals rated the integrity category as significantly more anxiety provoking than only three other categories and its mean was in the middle of the category means (Figure 1). The third mechanism predicted that questions pertaining to shameful conduct should be rated as evoking higher anxiety than other types. In contrast, the Shameful category was significantly higher than only two other categories. In addition, the mean for shameful infractions was at the lower end of the category means (Figure 1.).

While the main effect of sex was significant ( $F(1, 367) = 4.42, p < .05, \eta^2 = .012$ ), with men ( $M = 2.11, SE = .07$ ) reporting on average more anxiety than women ( $M = 1.95, SE = .04$ ), as expected, the interaction between infraction category and sex was significant ( $F(9, 359) = 2.88, p < .05, \eta^2 = .067$ ). This indicates that the effect of sex differed as a function of category.

Table I. Significant Differences in Anxiety Ratings between Infraction Categories

	General	Small Rules	Non-shame Legal	Acquaintance	Moral	Integrity	Shame	Gain	Work	Personal Ethics
General	—			.089(.044)	.098(.048)	.113(.049)	.184(.054)	.244(.059)	.373(.047)	.505(.064)
Small Rules		—					.118(.051)	.178(.057)	.308(.058)	.439(.072)
Non-shame Legal			—					.162(.08)	.291(.06)	.423(.073)
Acquaintance				—				.155(.063)	.285(.048)	.416(.059)
Moral					—			.145(.055)	.275(.047)	.407(.053)
Integrity						—		.131(.054)	.285(.048)	.416(.059)
Shame							—		.189(.051)	.321(.061)
Gain								—	.130(.061)	.261(.056)
Work									—	.132(.057)
Personal Ethics										—

Format: Mean difference (SE); Row > Column  
All differences adjusted for multiple comparisons

Follow-up independent samples *t*-tests were done on the four categories that represented the hypothesized sex differences. The first hypothesis predicted that men would react with more anxiety to the Shameless Legal and Small Rules/Regulations categories. As predicted, men did react with more anxiety (mean difference =  $-.275$ ,  $SE = .132$ ) to the Shameless Legal category ( $t(367) = -2.077$ ,  $p < .05$ ,  $d = .267$ ). The effect size indicates a small effect for this category. Although not significant, the anxiety increase in men for the Small Rules/Regulations category (mean difference =  $-.209$ ,  $SE = .113$ ) did approach significance. The second hypothesis predicted that women would react with more anxiety to the Acquaintance and Moral Code categories. In contrast to this prediction, men and women did not react differently to the Acquaintance category or the Moral Code category. Power analyses were conducted for these two effects using Monte Carlo power simulations, and the power to find each effect was .835 and .835 respectively.

## Discussion

Overall, the anxiety scores tended to be low to moderate. This is presumably because the questions were not given in a formal exam scenario. In such a scenario, where the stakes are higher, elicited anxiety and, presumably, level of guilt may be greater. As expected, the questions could be put into content categories based on how much anxiety they elicited. This supports the notion alluded to earlier that for a given group of people, the nature of the reactions elicited by the CQs vary as a function of their content. The present study investigated three possible mechanisms associated with priming guilt through comparison questions as an explanation for specific patterns of differences among the categories. Situational salience (Vendemia, 2002) seems to be the best explanation for this situation. General, Small Rules, and Shameless Infractions, infractions commonly committed by college students, were rated higher than most other categories. These results are also in line with the findings in Bradley and Black (1998). Understanding of ethical reasoning and societal taboos do not seem to be appropriate explanations for the pattern of responses seen in this study. Concerning understanding of ethical reasoning, it is possible that the students in this study have not progressed to the last level of ethical development and therefore the Personal Ethics and Integrity categories did not elicit higher levels of anxiety than the other categories. In fact, Kohlberg and Hersh (1977) point out that some people do not ever reach the third level of ethical reasoning. Concerning the societal taboos explanation, it seems that the students in this study did not find the Shameful Infractions more anxiety-

provoking than other categories. This is in contrast to findings in Thonney et al. (2005 and 2006). One possible reason why the Shameful Infractions did not elicit higher levels of anxiety compared to the other categories is that the present study did not include very shameful infractions that are obvious societal taboos (e.g. sexual offenses). These were not included because they were deemed inappropriate for the present study. Overall, however, it is plausible that the categories involved in the second and third explanations may not have elicited the highest levels of anxiety because unlike General, Small Rules, and Shameless Infractions, college students do not commit them frequently.

The present study hypothesized sex differences in four of the 10 categories. Specifically, we predicted that men would react with more anxiety to questions pertaining to shameless and minor law- and rule-breaking (Small Rules and Shameless) categories. As predicted, men did report more anxiety to the Small Rules and Shameless categories. However, these effects were small. These results are in line with Gilligan's (1982, 1987, 1999) theories regarding sex differences in development of moral reasoning.

It was also hypothesized that women would react more strongly to questions that deal with wrongs done to friends and family and questions that have less to do with fairness and justice and more to do with violating one's own moral standards (Acquaintance and Moral categories). Contrary to what was expected, women did not react with more anxiety to the Moral or Acquaintance categories. These results are not in line with Gilligan's (1982, 1987, 1999) theories. Power analyses were conducted on both these effects and this study had adequate power to find both effects. It seems, then, that in the data there were no differences between men and women in these two categories. It is possible that women were engaging in more self-monitoring than men. That is, women might have been reporting less anxiety than they actually felt because it would be more socially appropriate in this situation. In fact, several studies have found that women engage in more self-monitoring than men (e.g. Hall, 1984; Cole, 1986). Future research should include a self-monitoring scale to explore this possibility.

This study has several implications for the field of polygraph examination. The fact that the questions could be placed into content categories based on how much anxiety they elicit emphasizes that for an individual or group, not all CQs are created equal. Some may elicit more physiological arousal than others may during a polygraph exam. The findings emphasize the role of individual differences in the CQT and in turn the importance of taking into account those individual differences when constructing an exam. Specifically, it seems that Vendemia's (2002) situational salience theory may currently be

the best explanation for the pattern of differences in arousal seen during an exam. While more research clearly needs to be done, this may be the most efficient technique for polygraph examiners when constructing an exam for an individual, as the examiners will want to choose CQs that produce the largest amount of physiological arousal in the innocent examinee.

Although the findings produced mixed results concerning sex differences, it seems that there may be some differences in men and women concerning physiological arousal during an exam. While women may be self-monitoring during a low-stakes survey such as the present one, they may not be doing so in a true forensic exam scenario. Future endeavors should attempt to examine sex differences in a higher-stakes situation. The present study in combination with future research on the CQT may warrant a revision of administration of the CQT that takes into account sex differences in arousal levels.

Important to note is that the present investigation included only inclusive CQs. There has been an ongoing debate for some time regarding the relative importance of inclusive versus exclusive CQs in the CQT (see Gordon, Fleisher, 2006 for a recent discussion of this issue). While recent work suggests they may work equally well in a forensic exam scenario (F. Horvath, personal communication, January 25, 2008), it may be important for future research to take into account both types of questions.

## References

Bradley, M. T., Black, M. E. (1998), *A Control Question Test Oriented Towards Students*, *Perceptual and Motor Skills*, 87, 2, 691.

Cole, P. (1986), *Children's Spontaneous Control of Facial Expression*, *Child Development*, 57, 1309.

Collins, A. M., Loftus, E. F. (1975), *A Spreading-Activation Theory of Semantic Processing*, *Psychological Review*, 82, 407.

Davis, R. C. (1961), *Physiological responses as a means of evaluating information*, [in] *The Manipulation of Human Behavior*, eds. A. D. Biderman & H. Zimmer (pp. 142-169), Wiley, New York.

Gilligan, C. (1982), *In a different voice: Psychological theory and women's development*, Harvard University Press, Boston.

Gilligan, C. (1987), *A different voice in moral decisions*, [in] *Speaking of faith: Global perspectives on women, religion, and social change*, eds. D. L. Eck & D. Jain (pp. 236-245), New Society, Philadelphia.

Gilligan, C. (1999), *New maps of development: New visions of maturity*, [in] *Theoretical foundations and biological bases of development in adolescence*, eds. R. M. Lerner & J. V. Lerner (pp. 121-134), Garland, New York.

Gordon, N. J., Fleisher, W. L. (2006), *Effective Interviewing and Interrogation Techniques* (2nd ed.), Academic Press.

Gustafson, L. A., Orne, M. T. (1963), *Effects of Heightened Motivation on the Detection of Deception*, *Journal of Applied Psychology*, 34, 562.

Hall, J. (1984), *Nonverbal Sex Differences: Communication Accuracy and Expressive Style*, Johns Hopkins University Press, Baltimore, MD.

Harmon, G. W., Reid, J. E. (1955), *The Selection and Phrasing of Lie-Detector Control Questions*, *The Journal of Criminal Law, Criminology, and Police Science*, 46, 4, 578.

Kohlberg, L., Hersh, R. H. (1977), *Moral Development: a Review of the Theory*, *Theory into Practice*, 16, 53.

Krapohl, D., Sturm, S. (2002), *Terminology Reference for the Science of Physiological Detection of Deception* (2nd ed.), American Polygraph Association.

Raskin, D. C., Kircher, J. C., Horowitz, S. W., Honts, C. R. (1989), *Recent laboratory and field research on polygraph techniques*, [in] *Credibility Assessment*, ed. J. C. Yuille (pp. 1-24), Kluwer Academic Publishers, London.

Reid, J. E. (1947), *A Revised Questioning Technique in Lie Detection Tests*, *Journal of Criminal Law and Criminology*, 37, 542.

Reid, J. E., Inbau, F. E. (1977), *Truth and Deception (The Polygraph "Lie Detector")* (2nd ed.), The Williams and Wilkins Company, Baltimore, MD.

Snarey, J. R., Reimer, J., Kohlberg, L. (1985), *Development of Social-Moral Reasoning among Kibbutz Adolescents: A Longitudinal Cross-Cultural Study*, *Developmental Psychology*, 21, 3.

Thonney, J., Kanachi, M., Sasaki, H., Hatayama, T. (2005), *Eye Blinking as a Lie-Detection Index in an Emotionally Arousing Context.*, *Tohoku Psychologica Folia*, 64, 58.

Thonney, J., Kanachi, M., Sasaki, H., Hatayama, T. (2006), *Guilt and Shame in Japan: Data Provided by the Thematic Apperception Test in Experimental Settings*, *North American Journal of Psychology*, 8, 1, 85.

Vendemia, J. M. C. (2002), *Hobson's Choice: The Relationship between Consequences and Comparison Question*, *Polygraph*, 31, 20.

Wertheimer, M., King, D. B., Peckler, M. A., Raney, S. (1992), *Carl Jung and Max Wertheimer on a Priority Issue*, *Journal of the History of the Behavioral Sciences*, 2, 45.

## Appendix A. Questionnaire Items

1. Did you ever do anything illegal?
2. Are you absolutely trustworthy?
3. Did you ever make false entries on an official form or document?
4. Did you ever violate a traffic law?
5. Did you ever commit a sin (and not ask forgiveness)?
6. Did you ever say something derogatory about another person behind his or her back?
7. Are you really an honest and trustworthy person?
8. Did you ever pass a bad check knowing you did not have adequate money in the bank?
9. Have you ever done anything which could cause scandal in your church?
10. Did you ever lie to a personal friend?
11. Did you ever lie to a previous supervisor?
12. Did you ever ask someone to cover up for you?
13. Did you ever possess anything illegally?
14. Did you ever lie to get even?
15. Did you ever reveal anyone's personal secret?
16. Did you ever disclose a secret that was told to you in confidence?
17. Did you ever lie to someone in a position of authority?
18. Have you ever misused police equipment?

19. Did you ever deliberately conduct yourself in a dishonorable manner?
20. Have you ever falsified your qualifications?
21. Did you ever intentionally lie to anyone about anything?
22. Have you ever spoken disrespectfully of other church members?
23. Have you ever witnessed a violation of the law and not taken appropriate action?
24. Did you ever knowingly violate any company rules or policies?
25. Did you ever lie for your protection?
26. Did you ever lie to protect your status?
27. Did you ever lie to suit your own interests?
28. Did you ever steal anything from your work place?
29. Did you ever lie to someone who trusted you?
30. Did you ever knowingly possess any stolen property?
31. Did you ever violate your own integrity?
32. Did you ever deliberately do anything dishonest?
33. Did you ever say something that you later regretted?
34. Did you ever lie to a child about anything?
35. Are you the type of person who would betray a friend?
36. Did you ever involve yourself in black-market activity?
37. Did you ever violate a hunting law?
38. Did you ever lie to get out of trouble?
39. If there were something that might limit your access to classified information would you tell me about it?
40. Did you ever lie to a policeman?
41. Did you ever hide any information from a personal friend?
42. Did you ever spread malicious gossip or rumors about anyone?
43. Did you ever do anything in your personal life of which you are not proud?
44. Did you ever violate your own professional ethics code?
45. Did you ever lie to a cop?
46. Did you ever do anything for which you could lose your job?
47. Did you ever deliberately lie to your boss?
48. Did you ever do anything in school (college) that you are now ashamed of doing?
49. Would anyone that knows you well describe you as a difficult person?
50. Were you ever involved in anything that would cause me to question your integrity?
51. Have you ever accepted anything of value from business people?
52. Did you ever say anything about someone that wasn't true?
53. Did you ever do anything to get even?

54. Did you ever reveal a confidence entrusted to you by a relative?
55. Are you the type of person who would take credit for someone else's work?
56. Did you ever lie to make yourself important?
57. Have you ever falsely represented your background data?
58. Did you ever misrepresent the facts to gain some benefit?
59. Did you ever betray anyone who placed total trust in you?
60. Did you ever commit a criminal offense?
61. Did you ever steal anything from a friend?
62. Are you the type of person who occasionally drinks too much?
63. Did you ever fail to accept responsibility for your own actions?
64. Did you ever spread malicious gossip about anyone?
65. Have you ever padded an expense account?
66. Are you the kind of person that feels it is acceptable to lie to get what you want?
67. Do you ever gossip or rumor about other church members?
68. Did you ever possess anything for which you could have been arrested?
69. Did you ever take any government supplies for your personal use?
70. Did you ever falsify any document to obtain credit or a loan?
71. Did you ever cheat in school?
72. Did you ever misrepresent the facts to protect yourself?
73. Did you ever cheat?
74. Did you reveal information entrusted to you by a friend or relative?
75. Did you ever take credit for something you really did not do?
76. Did you ever take police equipment for your personal use?
77. Did you ever do anything that could bring shame upon yourself or your family?
78. Have you ever disrespectfully criticized your minister (Priest, Rabbi, etc)?
79. Did you ever steal government property?
80. Did you ever lie to a close friend about anything?
81. Did you ever try to deceive someone by lying?
82. Did you ever hide a safe combination in an unauthorized location for your personal convenience?
83. Did you ever lie to make yourself look important?
84. Did you ever take credit for something you did not do?
85. Are you the type of person that talks about people behind their backs?
86. Could you be accused of not working a full day while receiving a full day's pay?
87. Did you ever steal anything from your employer?



88. Have you ever mistreated a person under arrest?
89. Did you ever speak disrespectfully of any boss or supervisor?
90. Did you ever possess any item you weren't supposed to?
91. Did you ever lie to avoid the responsibilities for your actions?
92. Did you ever hide any information from a relative?
93. Have you ever padded your expense account?
94. Did you ever make false entries on a claim?
95. Did you ever possess any contraband?
96. Did you ever ask someone to lie for you?
97. Did you ever steal anything from someone who trusted you?
98. Would anyone that knows you describe you as a person who enjoys manipulating friends?
99. Have you ever lied to a superior officer?
100. Did you ever lie to get out of an obligation?
101. Did you ever abuse a position of trust?
102. Did you ever disclose a personal secret furnished to you by a friend?
103. Did you ever deliberately lie to someone who really trusted you?
104. Are you the type of person who would betray the trust of a friend?
105. Did you ever lie to get out of an obligation?
106. Did you ever steal anything from a relative?
107. Are you the type of person who would lie if you made a mistake?
108. Did you ever do anything while drinking that you are now ashamed of doing?
109. Did you ever take any company supplies for your personal use?
110. Have you ever lied to a co-worker (partner)?
111. Did you ever deliberately do anything unethical?
112. Did you ever misuse your position for personal profit or gain?
113. Have you ever make any false claim for reimbursement?
114. Have you ever submitted a false claim for expenses?
115. Did you ever violate an honor code?
116. Did you ever make false entries on an employment application?
117. Are you the type of person who cannot be trusted with a personal secret or confidence?
118. Did you ever deliberately lie to someone in authority for any reason at all?
119. Did you ever disclose a friend's secret that had been told to you in confidence?
120. Have you ever shoplifted anything from a store?
121. Did you ever lie to make yourself more important?
122. Did you ever cheat on your time card?

123. Did you ever deliberately provide false or misleading information on any official document?
124. Did you ever steal anything from your government?
125. Have you ever lied on a deposition?
126. Did you ever violate any of the laws of the US?
127. Are you completely honest with others who trust you?
128. Did you ever misrepresent the truth to gain some benefit?
129. Did you ever betray the trust of a friend?
130. Did you ever lie to a relative about anything?
131. Have you ever discussed sensitive police information with persons who did not have the need to know?
132. Did you ever do anything illegal in your country?
133. Did you ever falsify a form for personal gain?
134. Did you ever steal anything and not get caught?
135. Have you ever falsified your accomplishments?
136. Have you ever conducted personal business on company time?
137. Did you ever lie to keep from getting in trouble?
138. Did you ever make false entries on a report?
139. Did you ever say something in anger that you later regretted?
140. Did you ever possess any illegal substance?
141. Did you ever reveal a confidence entrusted to you by a friend?
142. Have you ever lied on a police document or report?
143. Did you ever obtain anything by unlawful means?
144. Did you ever lie to a relative?
145. Did you ever cheat in school?
146. Did you ever steal anything of value?
147. Did you ever disregard a rule or regulation because you thought it was necessary?
148. Did you ever cheat on your time card?
149. Did you ever lie because you thought you would not get caught?
150. Did you ever deliberately do anything dishonest?
151. Would any of your fellow employees describe you as someone who is difficult to work with?
152. Did you ever falsify a form for personal gain?
153. Did you ever betray the trust of a relative?
154. Did you ever lie to protect your position?
155. Did you ever violate any of the laws of your country?
156. Did you ever violate a fishing law?
157. Did you ever say anything about someone that wasn't true?
158. Did you ever take credit for something you did not do?

159. Did you ever reveal the answers to an examination?
160. Did you ever involve yourself in customs violations activity?
161. Have you ever lied in court?
162. Did you ever help a fellow officer cover up a mistake?
163. Did you ever do anything that you would be ashamed to tell someone about?
164. Did you ever do anything that could cause you a loss of position or status?
165. Did you ever lie to a previous coworker?
166. Did you ever misrepresent the facts for personal gain?
167. Did you ever lie to cover up a mistake?
168. Did you ever steal company property?
169. Did you ever disregard or flaunt a rule or regulation because you thought it was foolish or unnecessary?
170. Would anyone that knows you well describe you as someone they did not trust?
171. Did you ever hurt someone who trusted you?
172. Did you ever intentionally mislead or deceive your friends?
173. Did you ever do anything for which you could be fired?
174. Did you ever violate your own code of ethics?
175. Did you ever do anything that you want to keep hidden?
176. Have you ever done anything that would cause me to question your integrity?
177. Would any of your co-workers characterize you as being dishonest, unethical, or incompetent?
178. Did you ever do anything which would reflect negatively on your character?