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Effects of cover letter subject line and open-ended question response area on responding to an internet survey

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EFFECTS OF COVER LETTER SUBJECT LINE AND
OPEN-ENDED QUESTION RESPONSE AREA ON
RESPONDING TO AN INTERNET SURVEY

Thesis

Submitted to

The College of Arts and Sciences of the
UNIVERSITY OF DAYTON

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The Degree

Master of Arts in Psychology

by

Michael Patrick Linegang

UNIVERSITY OF DAYTON

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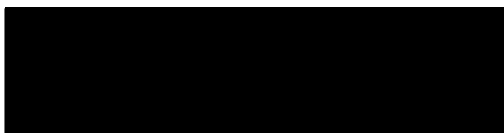
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ABSTRACT

EFFECTS OF COVER LETTER SUBJECT LINE AND OPEN-ENDED QUESTION RESPONSE AREA ON RESPONDING TO AN INTERNET SURVEY

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University of Dayton, 2006

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To ensure that the data and conclusions derived from Internet questionnaires are valid, survey designers and researchers must understand the implications of their questionnaire design decisions. This paper describes an Internet-based survey in which the text of the email cover-letter subject line and the size of response area provided for open-ended question responses were manipulated. This study showed that the content of an email subject line and the size of a text box provided for open-ended responses significantly effects: survey response rate, quantity of open-ended response data, and quality of open-ended response data. Further, this study identified differences in respondent behavior for positively and negatively directed open-ended questions. Of the available theoretical constructs postulated to explain respondent behavior, the "Trust"

component of Social Exchange Theory, as well as Self-Perception Theory, and Commitment/Involvement Theory each provided plausible explanations for portions of the effects connected to the subject line variable. Meanwhile, Cognitive Dissonance Theory provided the most plausible explanations for the effects connected to the text-box size variable. This study offers recommendations about the characteristics of a unified, multi-stage theory of survey response behavior, and offers practical guidance for the utilization of open-ended questioning in internet-based research, to support methodological advances in qualitative Internet-based research.

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TABLE OF CONTENTS

ABSTRACT.....	iii
ACKNOWLEDGEMENTS.....	v
TABLE OF CONTENTS.....	vi
LIST OF FIGURES	ix
LIST OF TABLES.....	xi
CHAPTER I. INTRODUCTION.....	1
The Internet as Tool for Questionnaire Research	1
Overview of Relevant Literature	4
Open Ended Question Literature	4
Response Rate Effects.....	8
Theoretical Considerations	16
Overview of this Study	24
Predictions.....	25
CHAPTER II. METHOD.....	28
Materials	28
Participants.....	30
Independent Variables	30
Procedure	32

Dependent Measures.....	33
CHAPTER III. RESULTS	37
Overall Survey Response Rate.....	39
Item Response Rate to Open Ended Items in the Survey	40
Number of Words for Open Ended Items	42
Content Analysis of Responses Provided for Open-Ended Items	44
Number of Topics Provided in Open Ended Items.....	46
Value of Responses for Open Items.....	47
Post-hoc Analysis.....	52
CHAPTER IV. DISCUSSION.....	56
Practical Implications – Response Rate Behavior & Email Subject Line	56
Practical Implications – Open-ended Question Response Behavior & Text Box Size.....	58
Practical Implications – Conclusions.....	61
Theoretical Implications – Predictions from Social Exchange Theory	62
Theoretical Implications – Alternative Theories for Respondent Behavior .	64
Theoretical Implications – Conclusions.....	67
Recommendations for Future Research	68
Conclusion	69
REFERENCES	72
APPENDICES	79
APPENDIX A. ADDITIONAL FIGURES	80
APPENDIX B. ADDITIONAL TABLES	84

APPENDIX C. TEXT OF EMAIL PRENOTIFICATION.....	87
Group A – Pre-notification email	87
Group B – Pre-notification email.....	87
Group C – Pre-notification email.....	87
Group D – Pre-notification email	88
APPENDIX D. TEXT OF EMAIL COVER LETTERS	89
Group A – Cover Letter email	89
Group B – Cover Letter email	89
Group C – Cover Letter email	90
Group D – Cover Letter email	90
APPENDIX E. TEXT OF REMINDER EMAILS	91
Group A – Reminder email.....	91
Group B – Reminder email	91
Group C – Reminder email	92
Group D – Reminder email.....	92
APPENDIX F. INSTRUCTIONS FOR CONTENT ANALYSIS	93
APPENDIX G. QUESTIONNAIRE.....	98

LIST OF FIGURES

1. Timeline for participant contacts	28
2. Six-line text box design (left) and one-line text box design (right).....	31
3. Response Rate Effects as a function of Email Subject Line and Text Box Size.	40
4. Mean Number of Words in Responses to Open-Ended Questions.....	43
5. Mean Number of Topics in Responses to Open-ended Questions (38 and 39).	46
6. Distribution of Open-ended Response Value Ratings.	47
7. Distribution of open-ended response value ratings (collapsed groups).	48
8. Collapsed Value Ratings by Text Box Size for Negative Responses (#39).	49
9. Interaction of Subject Line and Text Box Size on Collapsed Value Rating Distribution for Negative Question Type (#39).	51
10. Distribution of Response Value Ratings by Gender for Negative Question Type (#39)	52
11. Distribution of Response Value Ratings by Major School of Study for Negative Question Type (#39).	54
12. Response Rate Effects as a function of Email Subject Line and Text Box Size.	63
13. Boxplot of distributions for total number of words in responses to open-ended questions, by email subject line and text box size groups.	80

14. Boxplots of distributions for number of words in responses to positive open-ended questions, by email subject line and text box size groups.	81
15. Boxplots for distributions of number of words in responses to negative open-ended questions, by email subject line and text box size groups.	82
16. Median number of words in responses to open-ended questions, by email subject line and text box size groups.....	83

LIST OF TABLES

1. Internet-based Research Preconceptions and Findings (Gosling, et. al 2004).....	2
2. Opportunities and Challenges for Internet-based Research*	3
3. Hypothesized effects based on social exchange theory	26
4. Independent Variable manipulations within and between groups.	30
5. Number of participants by experimental group	32
6. Coding process for open-ended question response content.	34
7. Distributions for survey questionnaire respondents and first-year student population by gender and major school of study.	37
8. Survey Response Rates by Experimental Group	39
9. Item response rates for open-ended questions.	41
10. Response pattern for Positive and Negative Open-ended Questions.....	41
11. Means (and standard deviations in parenthesis) for number of words in responses to open-ended questions.....	42
12. Distribution of Collapsed Value Ratings by Text Box Size for Negative Question (#39).....	49
13. Interaction of Subject Line and Text Box Size for Collapsed Value Ratings on the Negative Question Type (#39).....	50
14. Distribution of Collapsed Value Ratings by Gender for Negative Question (#39)...	52

15. Distribution of Collapsed Value Ratings by Major School of Study for Negative Question (#39).	54
16. Number of words per topic for all open-ended responses (38 and 39).	59
17. Hypothesized effects based on social exchange theory	62
18. Item response rates for all open-ended questions (38 and 39).....	64
19. Mean number of topics in responses to open-ended questions (38 and 39), with standard deviations provided in parenthesis.	84
20. Distribution of Value Ratings	85
21. Distribution of collapsed value ratings.	85
22. Distribution of Collapsed Value Ratings by Text Box Size for Positive Question Type (#38).....	85
23. Distribution of Collapsed Value Ratings by Subject Line Group for Positive Question Type (#38).....	86

CHAPTER I

INTRODUCTION

Questionnaires are used to collect data in numerous fields of research.

Researchers use these data to draw conclusions about attitudes, beliefs, behaviors, and other phenomena associated with large populations of individuals. To ensure that the data and conclusions are valid, researchers must understand the implications different questionnaire methods and questionnaire design decisions have for their data. This study describes some of the implications associated with design decisions in creating internet-based questionnaires. The primary issues examined in this study are:

- 1) the effect of email cover-letter subject line on questionnaire response rates and
- 2) the effect of item response area on the quantity and quality of data obtained from open-ended question items in an internet-based questionnaire environment.

The Internet as Tool for Questionnaire Research

Questionnaire research via Internet-based methods has become an increasingly common form of research as Internet access has expanded over the past decade. Internet-based questionnaire research typically takes one of two forms: 1) email questionnaires or 2) website-based questionnaires. Email questionnaires are questionnaires that are distributed via email, where *the questionnaire is contained within the body of the email* itself. Participants complete the questionnaire within their email client, and typically

return the completed questionnaire via email. Website-based questionnaires are questionnaires that are hosted on a website. Participants for website-based studies are also often contacted via email, but in this case, the *email message contains a hyperlink to the website* where the questionnaire is hosted. Participants may also be recruited to the website through other means (e.g. search engines, online or offline advertising, etc), but in all cases, the participant completes the questionnaire by visiting the website, and submits their responses through the website.

Increasing use of Internet-based questionnaire methods has raised concerns about the validity of data collected through the internet. Gosling, Vazire, Srivastava, and John (2004) examined six preconceptions about internet data, summarized in Table 1. Gosling, et al.'s analysis suggests that Internet-based questionnaires are a viable means for collecting valid survey response data.

Table 1. Internet-based Research Preconceptions and Findings (Gosling, et. al 2004).

Preconception	Finding
Internet samples are not diverse.	Internet samples are equally diverse or more diverse in comparison to traditional methods reported in literature.
Internet samples are socially maladjusted.	Internet users exhibit similar amounts of social interaction and social involvement as non-users.
Internet findings do not generalize across presentation formats	Internet results appear to replicate with other presentation formats
Internet-questionnaires are adversely affected by nonserious responses.	Participant responses for Internet-questionnaires are as reliable as responses for traditional paper-and-pencil studies.
Internet questionnaire findings are adversely affected by anonymity.	Anonymity in Internet-questionnaires may lead to repeat responders. Steps must be taken to minimize repeat response effects.
Internet-questionnaire findings are inconsistent with findings from other methods.	Internet questionnaire methods appear to produce similar second-order effects as traditional methods.

In addition to transferring traditional research methods to a new mode of presentation, the Internet presents researchers with new opportunities and new challenges for survey research methods. Table 2 provides a summary some of the opportunities and

Table 2. Opportunities and Challenges for Internet-based Research*

Internet Opportunities	Internet Challenges
<ul style="list-style-type: none"> • Faster data collection (e.g. rapid response rates for surveys distributed by email; general public surveys can be made accessible to entire internet population) • Faster / more accurate data reduction since data is submitted directly to a database • Less intrusive • Lower cost per questionnaire • Ability to design adaptive questionnaires (e.g. tailor the questionnaire design in real-time based on participant responses) • Increased geographic reach • Ability to create highly interactive and engaging questionnaires a research methods 	<ul style="list-style-type: none"> • Population may not be representative (e.g. Internet not as widely spread as other channels of communication; Traditional sampling methods difficult to apply due to lack of centralized source for email addresses.) • High startup costs and fixed costs for conducting internet research • Difficulties associated with maintaining respondent anonymity and confidentiality • Inability to control the setting in which the participant completes a questionnaire • Difficulties obtaining informed consent, debriefing, and assessing impacts from research methods

* A compilation of discussions and findings from Kraut, et al., 2004; Tingling, et al. 2003; Dillman, 2000; Dommeyer and Moriarty, 2000; Schaefer and Dillman, 1998; Mehta and Sivadas, 1995

challenges associated with Internet-survey research when compared to traditional survey research methods (e.g. paper questionnaires sent by mail, telephone interviews, and face-to-face interviews). These and other issues have been identified and explored in the growing literature-base for internet-based questionnaire methodology (e.g. Kraut, et al., 2004; Tingling, Parent, & Wade, 2003; Dillman, 2000; Dommeyer & Moriarty, 2000; Schaefer & Dillman, 1998; Mehta & Sivadas, 1995). This study contributes to that growing literature base by examining one opportunity and one challenge.

An Opportunity. Much of the existing literature has focused on the potential benefits associated with quantitative research conducted via the internet. Internet-questionnaires also provide new opportunities for qualitative research. This study examines the effect of a manipulation in the design of open-ended questions on the nature of qualitative data collected via the internet questionnaires. Specifically, this study manipulates the size of the response area provided for open-ended question responses.

A Challenge. Obtaining a representative sample of participants is the fundamental prerequisite for survey research, regardless of the media in which that research is

conducted. Response rate is often the primary measure used to evaluate the representativeness of a survey. However, a high response rate does not guarantee that participant responses are representative of the population to which they are intended to generalize. If a participant sample represents some skewed subset of the population as a result of the methods employed in obtaining the sample, the survey results will not generalize, regardless of the response rate. This study examines the effect of manipulations in an email subject line description of a survey on the response rate and nature of responses for an internet survey.

Overview of Relevant Literature

Three areas of research are of direct relevance to the present study. First, the research examining differences in responses to open ended questions based on mode of presentation provides a basis for the study of qualitative data collection in the Internet environment. Second, survey research examining methods for improving response rates provides guidelines for the study of representativeness and response rates in the Internet environment. And finally, this study will be related to several competing theoretical models of survey response behavior in an attempt to explain respondent behavior.

Open Ended Question Literature

Open-ended questions have traditionally been avoided for self-administered survey formats. Dillman (2000) states that, "an inability to get adequate answers to open-ended questions is often identified as a chief disadvantage of self-administered surveys." Bourque and Fielder (1995) recommend that open-ended questions should be avoided in self-administered surveys. They argue that open-ended questions will likely yield a low response rate since respondents endure an increased cognitive burden when they are

required to develop their own answers and that respondents must endure a physical burden in the writing process. Following that line of reasoning, while the cognitive burden still lies with the respondent, it is possible that a computer-based survey would yield better response rates to open-ended questions if respondents perceive typing to be less physical burden than writing.

Several studies suggest that open-ended questions do in fact yield increased responses when administered via a computer. Truell, Bartlett, and Alexander (2002) reported significantly higher item response rates for a questionnaire completed on the Internet compared to a paper format. While their study did not specifically speak to the issue of open-ended question response rates, their questionnaire contained 5 open-ended questions and 5 closed-ended questions, so an increased response rate for open-ended questions is likely. Bratton and Newsted (1995) compared paper and pencil surveys to computer-administered surveys. They noted that respondents provided longer answers to open-ended questions on the computer-administered survey. Similarly, Bachmann, Elfrink and Vazzana (1996) compared email surveys to mail surveys. They found that while the overall item non-response rate was greater in the email survey, the open-ended questions had longer responses in the email survey. Meanwhile, Schaefer and Dillman (1998) quantified the effect, in a comparison of mail and email surveys. They found that open-ended questions yielded 10 words per question via mail, in comparison to 40 words per question via email. These studies suggest that even though open-ended questioning has been avoided in traditional survey research, it may be a more viable approach in internet-based surveys.

Open-ended questioning methods would allow researchers to access data that was inaccessible via other methods. Lau and Chung (2005), in a discussion of survey research for use in medical education indicate that, "by encouraging open-ended responses, we were able to uncover previously unknown data." Open-ended questions afford respondents the ability to provide specific explanations in their own words, whereas closed-ended questions restrict responders to conform their answers to predefined categories selected by the researcher. Open-ended questioning can be especially useful in examining topics for which existing research is lacking (e.g. new research topics; clarification of quantitative data). "The appeal of this type of data is that it can provide a somewhat rich description of respondent reality at a relatively low cost to the researcher." (Jackson & Trochim, 2002). Internet questionnaires could potentially make qualitative research more practical if they produce high quality data.

The question of quality has been addressed to some degree in several other studies. Higgins, Dimnik, and Greenwood, (1987) compared the quality of answers on paper-based questionnaires and CRT-based questionnaires. Their study found that open-ended questions had more complete answers in the CRT version; however, the study did not clearly define the nature in which these answers were "more complete." Similarly, in a study that compared paper self-administered questionnaires to face-to-face interviews, Erickson and Kaplan (2000) found that self-administered questionnaires yielded "richer and more provocative responses to open-ended questions." Grant, Teller, and Teller (2005) cites respondents' "willingness to answer open-ended questions extensively" as one of the key advantages to Internet-based surveys. Overall, these studies suggest an

increase in quality of data obtained through open-ended questions on computer-based questionnaires, though the definition of quality is somewhat vague.

There is also a large research base showing increases in data quality for sensitive and personal questions on the internet. This research found that respondents were likely to respond with a greater degree of accuracy and in a more truthful manner when questions were presented in a computerized format. For example, Turner, et. al (1998) found that respondents reported a greater amount of socially undesirable behaviors if a questionnaire was presented in a computer based format. Numerous other studies have verified these effects for a variety of sensitive questions and modes of presentation (e.g Aquilino, Wright, & Supple, 2000; Gribble, et al., 2000; Hallfors, Khatapoush, Kadushin, Watson, & Saxe, 2000; Johnson, et al., 2001; Murphy, Durako, Muenz, & Wilson, 2000; Rogers, Miller, & Turner, 1998; Williams, et al., 2000). While this line of research does not deal directly with open-ended questions, it shows that computerized formats can potentially improve data quality. It is possible that a computerized format will produce similar increases in response accuracy for general open ended questions as has been found for questions dealing with sensitive information.

Overall, this literature shows a variety of potential effects for open-ended questions in an internet survey environment. Computerized formats yield an increased *quantity* of responses to open-ended questions in terms of number of words as well as item response rate. Additionally, computerized formats have provided higher *quality* responses to sensitive questions, suggesting that quality might also be improved in general open-ended questions. Finally, open-ended questions appear to yield higher quality data when presented in computerized formats, self-administered formats, and

Internet-based formats, although the definition of quality has not been consistently defined in these studies. Response Rate Effects

A significant body of research exists, having examined response rates and the factors that influence response rates in survey research from both internet and traditional formats. This research has led to several basic principles for increasing response rates; including personalization of contacts, multiple contacts, and providing incentives to potential participants. Jobber, Saunders, and Mitchell (2004) conducted a regression analysis of 30 mail surveys, showing that inclusion of any monetary incentive raises response rates by 15%, with approximately a 2% increase per dollar based on the size of the incentive. Cook, Heath, and Thompson (2000) conducted a meta-analysis of survey response rates for internet-based survey research. They found that the primary factors influencing internet-survey response rates were the number of times the researcher contacted the pool of respondents, the level of personalization in those contacts, and the use of "precontacts" prior to the delivery of survey. Note that incentives were not identified as a primary factor influencing response rates for internet-based research. Nonetheless, incentives and participant contacts are two significant lines of research for the design of internet-based surveys.

Contact Effects. Cook, et al. (2000) showed that contacts with respondents are one of the most important aspects in a survey's design. Survey design research has examined how the design of initial respondent contacts affects response rates in internet surveys. Kaplowitz, Hadlock, and Levine (2004) examined the use of postcard pre-contact and follow-up contacts for surveys delivered via email (with a postal mail survey used as a control group for comparison). They found that postcard notifications did

increase response rates for email surveys, but the highest response rate was obtained from the control group (postal mail with postcard pre-notification and follow-up notification). Schaefer and Dillman (1998) conducted a comprehensive comparison of a survey sent by email to the identical survey sent via traditional mail. The mail survey, including pre-notification, resulted in a baseline response rate of 57.5%. In comparison, the email survey resulted in a 58% response rate when a pre-notification was sent via email. However, when the pre-notification was sent by regular mail and the survey was sent via email, the response rate dropped to 48.2%. These studies suggest that email-based precontacts increase the response rate for an internet survey.

Research has shown that personalization of contacts is an influential factor in the effectiveness of email-based contacts. Heerwegh (2005) examined the effect of personalization of email contacts on response rate and on the level of commitment exhibited by respondents (measured by assessing break-off rates of respondents that log in to the questionnaire website but do not complete the questionnaire). Results showed a significantly higher response rate for groups receiving email messages with personalized salutations, but no difference in break-off rates between groups. Heerwegh's study also examined whether personalization impacts data quality (measured by assessing social desirability effects in responses to sensitive questions). While no significant differences were found in responses to sensitive questions, groups that received personalized emails had significantly higher ratings of uneasiness during questionnaire completion (measured by participant responses on a debriefing questions, "to what degree did you feel at ease to honestly and sincerely respond to the questions?"). This greater degree of uneasiness along with several comments on open-ended questions led Heerwegh to speculate that

personalization of email contacts could result in significant effects on participant responses for studies involving populations where anonymity is more important. Since Heerwegh's study used a student population from the same university conducting the study, personalization of contacts may have been a less influential variable than it might be for populations that do not have a shared affiliation with the researcher. Overall, this study suggests that personalized contact can increase response rates, but may have secondary effects on the quality of data provided by respondents.

Research also lends insight into more subtle effects associated with the design of email contacts. Porter and Whitcomb (2005) examined the effect of one portion of the email contact, the email subject line, on the response rates for an internet survey. Porter and Whitcomb (2005) distinguished between two different populations of respondents:

- 1) a "high involvement" population of university undergraduate students from the university conducting the survey vs.
- 2) a "low involvement" population of high school seniors who had requested information but had not submitted applications for admissions to the university conducting the survey.

Their study manipulated three pieces of content in the email subject line:

- 1) the name of the university (included vs. excluded);
- 2) the reason for the email ("survey" was included vs. excluded);
- 3) a request for help (included vs. excluded); and

The content of the subject line was varied in a 2x2x2 factorial design (i.e. If all three pieces of content were included, the email subject line stated: "{Liberal Arts University} survey: Request for assistance." All factorial combinations presented a subset of that

content, and if all three pieces of content were excluded, then the email subject line was blank.) Surprisingly, the blank subject line resulted in the highest response rate for both groups, but statistical significance was not reported. For both groups, inclusion of the word “survey” in the subject line yielded a *lower* response rate, though this result was only statistically significant for the low involvement group. And for both groups, inclusion of the university sponsor’s name in the subject line yielded a *lower* click-through rate (i.e. opening the survey regardless of whether the survey was completed and submitted). Again this result was only statistically significant for the low involvement group. Overall, this study indicates that a blank subject line is as good, if not better than other seemingly relevant information for the subject line of a survey contact email. Further, this study shows that design features as subtle as a single word in an email contact message can impact the final response rate for an internet survey. Porter and Whitcomb (2005) speculated that the information provided in the subject line may have caused respondents to perceive the email as “Spam”. The content of the email subject line is a variable that will be manipulated in this current study; as such the results of the Porter and Whitcomb (2005) study will be revisited later in this paper.

In summary, survey design literature has demonstrated that email contact messages can have a significant positive impact on response rates for internet surveys, but there is not yet a clear recommendation for the design of effective email contact messages. Personalization of these email contacts appears to have a positive impact on response rate overall, but may have unclear secondary effects on the data provided by respondents. And while it has been shown that the detailed design of the subject line for an email contact can impact the overall response rate for a survey, the research in this

area does not yet offer guidance about that type of subject line information that would be predicted to produce the highest response rate.

Incentive Effects: Jobber, et al., (2004), in their regression analysis of 30 surveys delivered by mail, showed that incentives significantly improve the response rates for mail surveys (~15% over no incentive). Researchers have reported several studies attempting to identify useful applications of incentives for internet surveys. Tuten (2004) compared the effects of two different prize drawing incentives in which the notification of prize drawing results was manipulated (i.e. notification immediately following the study vs. delayed notification). Two control groups were included in the study (one receiving no incentive and the other receiving a copy of the results of the study as a nominal incentive). This study found that participants who were offered an incentive prize draw with immediate notification of results were more likely to complete all survey items than those in the other conditions (6.0% higher than delayed notification; 7.3% higher than nominal incentive; 14.3% higher than no incentive). It should be noted that this study was conducted with a somewhat unique population: a population recruited from employment search websites aimed at the general public in Croatia. This study suggests that incentives can have a positive effect on response rates, comparable to the effects reported for mail surveys, for certain groups or situations.

However, other studies have shown that incentives appear to be less effective in improving response rates for internet-based surveys. Kypiri and Gallagher (2003) compared several different nominal incentives (e.g. a ball-point pen, \$1 voucher for a cookie, \$5 voucher for a sandwich) and various combinations of these incentives to determine their effect on response rates in an internet survey. Their study found no

difference in effect for the different incentives, and led Kypiri and Gallagher to conclude that email contacts and intensive follow-up with potential respondents were possibly more influential factors than token incentives. Cobanoglu and Cobanoglu (2003) compared the effects of a nominal incentive presented prior to participation (a luggage tag) to a larger prize drawing awarded after survey completion (a prize drawing for a PDA). Their study found that a combination of both incentives, the nominal incentive up-front, along with a prize drawing upon completion, yielded a statistically significant increase in response rate in comparison to either prize alone or a control group; but the prize drawing alone yielded no difference from a control group that received no incentive. Porter and Whitcomb (2003) investigated the effectiveness of lottery incentives for improving internet survey response rates, by comparing response rates for groups offered entry in \$50, \$100, \$150, and \$200 lotteries with a control group offered no incentive. All lottery incentive groups achieved marginally higher response rates in comparison with the control group, but only the \$100 lottery achieved statistical significance (with a 2.3% increase response rate over the control group). Overall, these studies suggest that incentives have positive, but weaker, effect in increasing response rates for internet surveys in comparison to the ~15% increase in response rate for mail surveys described in the Jobber, et al., (2004) regression analysis..

O'Neil and Penrod (2001) discuss a study examining the effects of several methodological variables on response patterns in an internet-based mock-jury study. In this study, participants were recruited through the internet to visit a website. At that website, participants were asked to read material about a mock-trial, and complete a questionnaire within which they provided their verdict for the case and responded to

questions about their attitude towards the death penalty and their beliefs and understandings regarding particular aspects of the case in question. O'Neil and Penrod found a marginally significant difference, where participants who were offered payment were *less likely* to finish the questionnaire than those who were offered no incentive (36.9% dropout rate with payment vs. 27% dropout rate without payment; $p=.054$). This result suggests that in some situations, providing incentives to participants in an internet study may actually act as a *disincentive* to participation. O'Neil and Penrod speculated that offering payment may decrease the participants' intrinsic motivation for completing the study. However, they noted no difference in the amount of time dedicated to completing the study between the reward and non-reward groups, which suggests equal levels of intrinsic motivation.

Overall, literature on the use of monetary and token incentives for participation in email and internet surveys provides a mixed picture. Some incentives, for some studies, appear to yield significant increases in response rate. Other incentives, for other studies, yield marginal improvements in response rate. And some incentives, for still other studies, yield potentially significant reductions in response rate.

Further, the literature does not offer insight into the potential effect of incentives beyond response rate. O'Neil and Penrod (2001) discuss sources of error which may reduce the validity and generalizability of results from a particular study. They note that rewards for participation "could replace the participants' intrinsic motivation to complete a study, which would increase measurement error because differently motivated participants might perceive the stimulus materials or questions differently. Participants may give poorer quality responses when they consider themselves to be participating just

to get a monetary reward" (p. 227). Existing research has not clearly addressed the question of whether incentives affect the quality of the data provided by study participants.

Interactions between Incentives and Contact Notifications – The “Spam” Effect?

There appears to be significant complexity in the main effects for manipulations of email contact notifications and incentives for internet survey results. The interaction of these two variables offers an intriguing research question: how does emphasis of incentives within an email contact notification effect survey response rates and survey data quality? Kent and Brandal (2003) examined the effect of the type of information provided in email notifications on response rates for an internet survey. Amongst several factors examined in the study, they compared an email with a heading emphasizing an incentive (“win a weekend for two”) to an email with a heading displaying the name of the company conducting the survey. The email emphasizing the incentive resulted in a significantly lower response rate. Further, their survey questionnaire gathered data about respondent attitudes towards Spam email in comparison to permission-based email, finding that permission-based emails were viewed more favorably than Spam emails.

Orr (2005) identified Spam as "one of the most significant problems with email invitations to web surveys" (p.266). Kent and Brandal (2003) point to Spam as a major challenge for online email survey research. Porter and Whitcomb (2005) comment on the possibility for subject line manipulations to yield negative response rate effects if it results in the email resembling Spam. There is a need for research guiding the design of email contacts for internet surveys to account for the detrimental “Spam effect” on participant response. Porter and Whitcomb (2005) noted that "response rates" may not be

an optimal measure for evaluating the effect of email subject lines since survey response is such a multi-stage process. There is a need for research examining the effects of email contact notification design on other measures of survey quality in addition to response rate. The present study fills some of this gap in existing research for the practice of survey research on the internet.

Theoretical Considerations

While there are a large number of empirical studies describing respondent behavior, providing practical guidance for survey research on the internet, there is no unified theoretical model to explain respondent behavior. Without a unified model, it is difficult to predict how new survey design approaches will affect respondent behavior. There are several competing models in survey design literature, each of which explains certain aspects of respondent behavior. Albaum, Evangelista, and Medina (1998) described four theoretical models of survey response behavior: Exchange Theory (or Social Exchange Theory), the Theory of Involvement / Commitment, Cognitive Dissonance Theory, and Self-Perception Theory. While each of these theories explains some empirical results, the survey design field presently lacks a unified theory to explain respondent behavior at a more global level. Additionally, several of these theories center on the concept of individuals maintaining internally consistent behavior (which is difficult to utilize as a guide for practical survey research). It would be valuable to consolidate the related concepts from different theories into a unified theory for survey response behavior. The following section outlines the basic components of several individual theories and describes how each theory is applicable to survey response behavior.

Exchange Theory. Social Exchange Theory has been used to describe and explain several aspects of survey design research findings, mostly dealing with response rate effects. Dillman (2000) has been a strong proponent of social exchange theory as a useful model for survey design. In this role, exchange theory provides three basic characteristics that may drive respondent behavior. The theory predicts that the respondent's decision to respond is a function of the individual's perception of the potential rewards gained by responding, balanced by the perceived costs incurred in responding. These rewards and costs are mediated by the trust developed between the respondent and the researcher. The greater the trust, the more the respondent is likely to believe that the long term rewards will in fact come to fruition. Therefore, a survey's response rate is likely to be highest when the experience of completing a survey is rewarding (monetarily or otherwise), the respondent's cost to complete the survey is low (again, monetarily or otherwise), and the respondent's level of trust for the researcher is high.

This theoretical framework is useful for explaining several well-documented experimental results. For example, the inclusion of a monetary incentive has been found to increase response rates in many instances (Dillman, 2000). These results can be explained as an increase in the participant's perception of the rewards of responding. Further, the incentive is even more effective if presented with the initial request for participation (Dillman, 2000). Social exchange theory explains this result as an effect of the increase in trust resulting from the researcher's willingness to provide the incentive prior to the respondent incurring any costs. Additionally, survey response rates are higher when the cover letter accompanying the questionnaire is signed by a legitimate,

respected sponsor conducting the research (Dillman, 2000). This result is explained as an increase in respondent trust for the respected researcher.

While the evidence seems to support exchange theory as a model for explaining response rates, it is unclear whether these same mechanisms explain data quality provided by respondents. Further, the predictive value of this model is not always clear. This model does not always offer a clear predicted effect due to the interactive nature of the trust mechanism mediating rewards and costs. For example, the principle of rewards suggests that describing an incentive in the subject line of an email cover letter would increase response rate for the survey enclosed in the email (due to an increase in respondent awareness of the rewards associated with responding). However, the principle of trust suggests that emphasis of this incentive may in fact cause the respondent to perceive the email as less professional or less legitimate, and hence would predict a reduced response rate. The conflicting predictions obtained from two principles of this model make it difficult to predict the overall effect of these types of design decisions. Further, when the theory yields conflicting predictions for one manipulation, it becomes increasingly difficult to predict the overall effect of successive manipulations. This decreases the overall predictive value of the model.

Note that social exchange theory blends an externally measurable viewpoint of a survey's design with a second viewpoint of that survey design which is internal to the respondent (and not easily measured externally). Pure economic exchange theory suggests that the total present-value of rewards to the respondent must be greater than or equal to the total present-value of costs to the respondent for a behavior to be economical for that respondent. This component by itself could be easily defined external to the

individual respondent. In contrast, the trust component of social exchange theory, closely related to the psychological theory of attribution (Kelly, 1973), suggests that the individual human responder makes a determination about the survey researcher's traits based on awareness of some limited aspects of that survey researcher's behavior and/or characteristics. This component is not easily defined external to the respondent. This conflict between external visibility and internal respondent tendencies is the feature that lends great explanatory power to social exchange theory, but also results in weak predictive power for certain survey design features.

Commitment / Involvement Theory. Albaum (1987) identified the theory of Commitment as a plausible theory to explain survey response behavior. Becker (1960) described the basic foundation of the theory of commitment, stating "diverse activities have in common the fact that they are seen by the actor as activities which, whatever their external diversity, serve him in the pursuit of the same goal." Therefore, an individual's behavior is a function not of one isolated decision, but the decision within a larger context. Commitment is operationalized through three basic principles:

1. The decision to act must have consequences on other items not directly related to the specific decision.
2. These other items are a result of the person's previous behavior.
3. The committed person must be aware that the specific decision has ramifications that lie beyond the decision itself.

Placing these principles into the context of survey research, the individual's decision to respond to the survey, and the quality of the response will be a function of their level of commitment to the survey. The individual's level of commitment is

determined by the individual's previous decisions and the tangent attributes of the survey that are related to previous decisions. In order for the commitment to be increased, these related attributes must not only be present, but the individual must be *aware* that the decision to respond or not respond will affect these other attributes. The resultant behavior will be consistent with the individual's committed values, as defined by their previous behaviors.

This type of framework can be used to describe several findings from empirical survey research. For example, it has been found that individuals tend to display the same response behavior consistently (Brennan & Hoek, 1992). This result can be explained in that the individual has developed a commitment to returning surveys in a certain manner. Therefore, this behavior will be maintained in future surveys.

While it can be used for explanation, the theory may be more useful for its predictive ability. The third principle seems to have significant implications for the design of initial contacts and cover letters for survey research materials. If these materials emphasize the peripheral aspects of a survey that will relate to the respondent's previous behaviors, the individual is likely to become aware that the decision whether or not to respond will have ramifications for that individual's peripheral interests. The theory would predict a response rate and response quality consistent with the person's interest in the peripheral items. Therefore, when a person is enticed to associate important peripheral interests with the response decision, the response rate and response quality are predicted to increase. Thus, researchers would be wise to identify common values and interests within their target population, and emphasize how a given survey relates to those interests. This type of prediction would seem to be valuable, but there is

little empirical evidence to validate whether or not this theory truly displays predictive validity for a variety of manipulations.

Cognitive Dissonance. Cognitive dissonance theory postulates that a person will attempt to reduce internal psychological inconsistencies (dissonance) and will avoid situations and behaviors that will be perceived as inconsistent (Festinger, 1957).

Therefore, the mere presence of psychological dissonance will be a motivating factor for consistent behaviors. As applied to survey response behavior, it is postulated that most individuals maintain a belief that they are helpful individuals. Failure to respond to a survey would be inconsistent with that belief, and thus would create cognitive dissonance. Therefore, the person will act in a manner to reduce the dissonance created by failing to respond. The simple resolution would be to respond to the survey, but the dissonance may also be resolved by merely delaying the decision whether or not to respond. By putting off the decision, the individual may "avoid completing the questionnaire without having to reject the request outright." (Evangelista, Albaum, & Poon, 1999)

Cognitive dissonance theory has been used to explain the experimental finding that a small monetary incentive included with a request for participation will increase the overall response rate (Hackler & Bourgette, 1973). It is theorized that the implied acceptance of money makes failure to respond even more dissonant. This increased dissonance will lead to increased dissonance-reducing behavior, and ultimately result in an increased response rate. However, research by Furse, Stewart and Rados (1981) suggests that dissonance is an effective motivator for only some respondents, and that a dissonance-based motivator will only be effective for a segment of a population.

Repeated use of the same motivator with a given population will not yield any further increase in response rate.

Considering the usefulness of dissonance theory for predicting and explaining survey response behavior, the predictions and explanations provided by this theory will only be applicable to a segment of the overall respondent population. Further, creating dissonance is predicted to increase several possible dissonance-reducing behaviors, of which, actually responding to the survey is only one possibility from this set of behaviors. Therefore, creating dissonance in survey respondents will not necessarily lead to the desired result of increased response rate. Additionally, increasing response rate through dissonance creation will not necessarily lead to increased response quality since respondents acting merely to reduce their personal internal discomfort are not predicted to yield higher quality data. Overall, while dissonance theory can explain response behavior, it will not necessarily lead to useful behavioral predictions.

Self-perception theory. The theory of self-perception postulates that respondents' internal perceptions of "who they are" drive their behavior. Any given person will behave in a manner consistent with this internal perception. With regards to survey response behavior, self-perception theory hypothesizes that if a given person perceives himself as a respondent (or the type of person that would respond to a survey) they will be more likely to respond (Albaum, et al., 1998). Therefore, the goal of initial survey contacts is to help the individual label himself as a respondent.

This theory has been applied to such results as the "foot-in-the-door" technique (e.g. Allen, Schewe, & Wijk, 1980; DeJong, 1979; DeJong, 1981). This method has found that having participants first complete a very short questionnaire, and then

presenting the larger questionnaire can increase that overall response rate. Self-perception theory explains that the initial questionnaire aids the respondents in perceiving themselves as a respondent, increasing the likelihood that they will behave as respondents for the larger questionnaire. While this application has been successful, self-perception theory has not been extensively applied to other response behaviors.

Other theoretical perspectives. In addition to the four theories described above, several other theoretical perspectives have been offered to explain survey response behavior. Many of these theories blend aspects of the above described theoretical perspectives, emphasize components of the above theoretical perspectives, expand on above theories, or otherwise define theoretical perspectives which are analogous to concepts described above (but uniquely tailored). Several theories appearing in recent literature are mentioned here as illustrations of possible alternate theoretical perspectives:

- Tuten (2004) points to a pure economic exchange theory as an alternative to social exchange theory.
- Kropf and Blair (2005) offer the concept of cooperation as a normative behavior to enhance the social exchange theory perspective (i.e. Cooperative behavior is a social norm that acts as an intangible reward or cost across populations. It can be incorporated into social exchange theory as a specific subset of internal rewards or internal costs to the respondent.)
- Groves, Singer and Corning (2000) describe Leverage-Saliency Theory, which essentially offers an extreme definition of rewards and costs as variables which are completely internal to individual respondents, and hence cannot be accurately measured from an external viewpoint (i.e. Every individual has a specific bias

towards each aspect of a survey's design, causing each aspect of a survey's design to have a different degree of reward or cost (i.e. leverage) for the individual. The level of emphasis (i.e. salience) given to each aspect of a survey's design determines the degree to which that aspect's reward or cost is considered by the individual in making their response decision.)

Overview of this Study

This study examined the effects of two primary manipulations: manipulation of the subject line text in a survey's email cover letter, and manipulation of the vertical size of the response area for open-ended questions. These manipulations were examined for their effects on survey response rate as well as their effects on open-ended question responses. The results are viewed in the context of the theoretical viewpoints described above.

In manipulating the email appearance, the rewards component of exchange theory suggests that emphasizing incentives may increase response rate. This study compares the effectiveness of a "Tangible Reward Emphasis" email subject line designed to increase response rates by increasing the prominence of an incentive motivator in the initial contact (in addition to the topic of the survey) to a "No Tangible Reward Emphasis" email subject line design (solely emphasizing the topic of the survey). This comparison manipulates the contents of the email subject line used in all survey recipient contacts.

This study explores several questions as an extension of previous research on open-ended questions. While it has been established that various types of computer-based questionnaires yield longer responses to open-ended questions than paper

questionnaires, none of these studies has attempted to manipulate the presentation format of the individual open-ended items. This study examines whether the manipulation of response area for open-ended questions in an Internet questionnaire affects the *quantity* of responses.

Additionally, previous research has suggested that a self-administered environment and a computer-based format may improve the *quality* of response to open-ended questions, but this effect has not been clearly defined or examined. This study examines the effects of response area on the quality of responses to the open-ended questions through a content analysis of the responses. Quality of responses is derived from a revised version of the verbal protocol analysis scheme used by Ohnemus (1993) and Hackman (1993).

Predictions

There is no empirical research that has examined these types of open-ended question design manipulations or these particular subject line design manipulations, much less the combination of open-ended manipulations with subject line manipulations. Therefore, empirical research offers little in the way of a clear predicted effect. The theoretical frameworks suggest several potential outcomes for the combination of manipulations in this study, but these predicted outcomes are in opposition depending on the emphasis given to a particular theory or theory component. Since the predicted outcomes from each of the theories described above are not necessarily congruent, this study will examine the results from an exploratory viewpoint. The results of this study will be used to examine the utility of each theory for explaining this type of manipulation. Specific emphasis will be given to examine the predicted outcomes offered by Social

Exchange Theory. Other theories described above will be examined post-hoc in the discussion section.

Predictions Based on Social Exchange Theory. Social exchange theory explains survey response behavior based on the survey recipient's perception of the rewards and costs associated with a survey, mediated by the trust developed by the researcher. Table 3 describes the predicted effects based on the rewards and costs components of the social exchange theory model.

Table 3. Hypothesized effects based on social exchange theory

Subject Line	Theoretical Implication		Hypothesized Effect
Tangible Reward Emphasis	Increased Reward	→	Increased Response Rate
No Tangible Reward Emphasis	Decreased Reward	→	Decreased Response Rate
Response Area			
Small Area	Reduced Cost	→	Increased Item Response Rate
Large Area	Increased Cost	→	Decreased Item Response Rate

The subject line manipulations are designed to examine the predictive value of the rewards component of social exchange theory. Increasing the prominence of the incentive in the "Tangible Reward Emphasis" subject line would be hypothesized to increase the respondent's perception of the rewards associated with the survey. This suggests a greater response rate would be expected from the email with the "Tangible Reward Emphasis" subject line when compared to the "No Tangible Reward Emphasis" subject line. If this study yields a greater response rate from the Tangible Reward Emphasis group, the rewards component would appear to be the dominant component of the model for this type of manipulation. In the contrary, if the No Tangible Reward Emphasis yields a greater response rate, the data would support an argument that the rewards component is not a dominant predictor for this type of manipulation.

The manipulation of the response area focuses on the predictive ability of the costs component of exchange theory. Potentially, the increased response area would be perceived as increasing the "amount" of response that the researcher expects from the respondent. This increased response area would then represent an increased cost for responding, suggesting a reduced response rate or an increase in item non-response. However, the smaller response area is predicted to represent a lower cost, and thus yield a higher item response rate. If the results of this study support this prediction, it will indicate that the cost component is an effective predictor for this type of manipulation. However, if the results of this study contradict this prediction, it would indicate that the cost component is not dominant and would require an alternate explanation.

CHAPTER II

METHOD

The context for this study was a survey of undergraduate students inquiring into their experiences with computers purchased from their university. The survey was conducted in the fall of 2000. The manipulations took place within the email messages used to contact the survey recipients and within the questionnaire itself.

Materials

Figure 1 provides an overview of the timeline for the survey. A pre-notification email (Appendix C) was sent to all potential respondents prior to the study. The pre-

Day 1 (Wednesday) - Email prenotification distributed (N=1602)
Day 8 (Wednesday) - Email cover letter distributed (N=1602) \\
Day 11 (Saturday) - Candy bars & tags distributed to dormitories
Day 15 (Wednesday) - Email reminder letter distributed (N=1602)
Day 21 (Tuesday) - Deadline for completion of survey

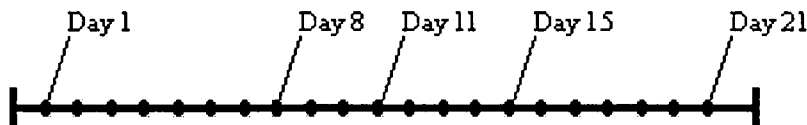


Figure 1. Timeline for participant contacts

notification email alerted potential participants that the survey was "Coming Soon".

Seven days later, an email cover letter was sent to each respondent, providing a link to the questionnaire hosted on a website. The text of the email cover letter provided respondents with basic information about the survey, a hyperlink to one of four website

addresses where the survey was hosted, and information about food incentives provided to respondents (see Appendix D for the complete text of the email cover letter).

Experimental manipulations were made within the text of the email subject line. Four different website addresses were used to group respondents into one of the four experimental groups described in the Procedure section below.

Following the email cover letter, incentives were delivered directly to potential respondents. Small candy bars were delivered to all first year residence halls and a raffle was held for a set of gift certificates to local restaurants. Tags were attached to the candy bars asking respondents to check their email to participate in the survey. All first year students were also included in a raffle for gift certificates to local restaurants. Note that all first year students were included in the raffle, regardless of the student's participation in the survey. This approach was used for two reasons: 1) to allow respondents to maintain anonymity, since limiting raffle participation to respondents would require tracking the identity of respondents, and 2) to frame the raffle as a good faith gesture instead of payment for participation. Incentives delivered prior to survey completion are strongly recommended in comparison to incentives delivered upon completion of the survey (Dillman, 2000). The email cover letter informed all respondents about the raffle. Information about the raffle was also used as an experimental manipulation of the email subject line, as described in the Independent Variable section below. Finally, a reminder email, with similar content to the original email, was sent to all respondents on Day 15 (Appendix E).

The questionnaire asked participants to respond to 37 closed-ended questions about a participant's experience using computers and their experience with a mandatory

computer purchase program (see Appendix G). Following the closed-ended questions, two open-ended questions were presented. The first question (Positive Question Type, #38) asked participants to “Please describe your POSITIVE experiences with the computer you purchased through UD. Include comments regarding hardware, software, support services, and cost.” The second question (Negative Question Type, #39) asked participants to “Please describe your NEGATIVE experiences with the computer you purchased through UD. Include comments regarding hardware, software, support services, and cost.” The response area for these two questions was manipulated as an Independent Variable in the study, as described below.

Participants

The participants for this study were 1602 first-year students at the University of Dayton. These individuals were required to purchase a computer as a part of their enrollment in the university. All participants had an email account with the university or had provided an alternative personal email account to the university. All contacts with the participants took place via the email account on record with the university. The response rate was 27.2%, with 436 respondents completing the questionnaire. Independent Variables

Three independent variables were manipulated in a 2x2x2 design with two between-subjects variables and one within-subjects variable (Table 4).

Table 4. Independent Variable manipulations within and between groups.

		Positive Question	Negative Question
No Tangible Reward Emphasis Subject Line	6 Line Text Box	Group A	
	1 Line Text Box	Group B	
Tangible Reward Emphasis Subject Line	6 Line Text Box	Group C	
	1 Line Text Box	Group D	

Response area (Text Box Size) was manipulated between subjects with levels “1 Line” and “6 Line.” Question Type (“Positive” and “Negative”) was manipulated within subjects. Figure 2 displays the appearance of the six-line and one-line text box designs

<p>38. Please describe your POSITIVE experiences with the computer you purchased through UD. Include comments regarding hardware, software, support services, and cost.</p> <div data-bbox="232 515 671 656" style="border: 1px solid black; height: 68px; width: 285px;"></div> <p>39. Please describe your NEGATIVE experiences with the computer you purchased through UD. Include comments regarding hardware, software, support services, and cost.</p> <div data-bbox="232 795 671 934" style="border: 1px solid black; height: 67px; width: 285px;"></div> <p>Thank you for taking time to complete this survey. <input type="button" value="Submit Survey"/></p>	<p>38. Please describe your POSITIVE experiences with the computer you purchased through UD. Include comments regarding hardware, software, support services, and cost.</p> <div data-bbox="857 497 1245 520" style="border: 1px solid black; height: 11px; width: 252px;"></div> <p>39. Please describe your NEGATIVE experiences with the computer you purchased through UD. Include comments regarding hardware, software, support services, and cost.</p> <div data-bbox="857 648 1245 669" style="border: 1px solid black; height: 10px; width: 252px;"></div> <p>Thank you for taking time to complete this survey. <input type="button" value="Submit Survey"/></p>
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Figure 2. Six-line text box design (left) and one-line text box design (right).

for the positive and negative question types. Email Subject Line was manipulated between subjects with levels “Tangible Reward Emphasis” and “No Tangible Reward Emphasis.” Participants in the Tangible Reward Emphasis group received email contacts with the words “FREE FOOD!!!” emphasized in the subject line. Participants in the No Tangible Reward Emphasis group received emails that did not include the words “FREE FOOD!!!” in the subject line. Additionally, the respondent characteristics (gender and major school of study) were examined as passively manipulated variables.

Procedure

Participants were split into four experimental groups (A, B, C, and D) based on a factorial combination of the two between-subjects independent variables (Text Box Size and Email Subject Line). Table 5 displays the division of subjects in the four groups. All

Table 5. Number of participants by experimental group

		Email Subject Line		
		No Tangible Reward Emphasis	Tangible Reward Emphasis	Both Subject Line Groups
Text Box Size	6 Line	400 (A)*	401 (C)	801
	1 Line	401 (B)	400 (D)	801
	Both Text Box Groups	801	801	1602

*Letters in () indicate group

participants were exposed to two levels of the Question Type independent variable. Order of presentation was held constant, with all participants receiving the Positive question type prior to the Negative question type. The constant presentation format was used to obtain a better sample size, than would have been achieved if eight different Internet questionnaire sites had been used to include a randomized presentation order.

All participants received three contacts: a pre-survey notification, a survey notification, and a reminder notice. All email contacts displayed the Email Subject Line according to the level selected for each group. The "Tangible Reward Emphasis" groups received subject line text: "FREE FOOD!!! UD Computer Survey" in all contacts, while the "No Tangible Reward Emphasis" groups received subject line text: "UD Computer Survey" in all contacts. Emails were sent to all groups at approximately the same time on the same date.

The survey notification and reminder notice contained a link to one of four websites containing the Internet Questionnaire. Two of the sites (A & C) contained the 6

Line Text Box for the two open-ended questions, and the other two sites (B & D) contained the 1 Line Text Box. In order to distinguish the four groups by subject line, additional text (“Now Available” or “Available Now”) was added to both subject lines. While this did create a potential confound, it was necessary in order to distinguish the groups. The final text for the four groups is displayed below.

- **Group A** – 6-Line Text Box with “No Tangible Reward Emphasis” Subject Line:
“UD Computer Survey Now Available.”
- **Group B** – 1-Line Text Box with “No Tangible Reward Emphasis” Subject Line:
“UD Computer Survey Available Now.”
- **Group C** – 6-Line Text Box with “Tangible Reward Emphasis” Subject Line:
“FREE FOOD!!! UD Computer Survey Now Available.”
- **Group D** – 1-Line Text Box with “Tangible Reward Emphasis” Subject Line:
“FREE FOOD!!! UD Computer Survey Available Now.”

Participants that clicked the link in the email message were taken to a website hosting the survey. Participants accessed the Internet Questionnaire by logging in with their username and password. The 37 Closed-ended questions were identical on all versions of the questionnaire. The text box size for the open-ended questions 38 and 39 was manipulated according to the Text Box Size variable for each group. Upon clicking the submit button at the end of the questionnaire, the participant’s responses and the respondent’s browser type were recorded.

Dependent Measures

Basic dependent measures were collected in the form of the survey response rate, response rates for individual items in the questionnaire, and responses to survey questions

in the questionnaire. The responses to open-ended questions #38 and #39 were coded into several additional dependent measures summarized in Table 6.

Table 6. Coding process for open-ended question response content.

Level Coding	Dependent Measure	Method
Quantitative Analysis – Part I	Number of Words	MS Word – Word Count
Quantitative Analysis – Part II	Number of Characters	MS Word – Character Count
Qualitative Analysis – Part I	Number of Topics	Category Development by 4 Raters Ratings by 3 Independent Raters
Qualitative Analysis – Part II	Value of Responses	Ratings by 3 Independent Raters

The quantity of responses was coded according to the number of words and number of characters provided for each question. Both of these measures were extracted for each response using the “Word Count” function in Microsoft Word 2000 software.

The quality of response was coded via a two-part content analysis. The first part of the content analysis analyzed the responses to determine the number of topics in each response. Four raters developed categories of topics post-hoc based on a review of the types of ideas presented in the open-ended response data. Three different raters independently examined the responses to categorize the ideas presented in each response into topics and provide a count of the number of topics presented in each response. Inter-rater reliability was evaluated by Kendall’s Coefficient of Concordance.

The second tier of the content analysis coded the quality of responses based on the value each response had for improving the computer system being evaluated in the survey. The coding system was based on a modified verbal protocol analysis scheme utilized by Ohnemus (1993) and Hackman (1993). The responses were categorized into five levels of value: No Value, Generic Statement (Low Value), Categorical Value (Moderate Value), Explanatory Value (Moderate Value), and High Value. Detailed

descriptions of this rating scheme are provided in Appendix F. Basic definitions of the five levels are provided here:

- 0 = "No Value" – Statements that are irrelevant to the computer system being evaluated or provide no categorical issues to be addressed. (e.g. "no comment")
- 1 = "Generic Statement"; general comments, non-specific categories, non-specific explanation. Statement is related to the question but does not provide any specific information. (e.g. "I like my computer.")
- 2 = "Categorical Value" – Statements that provide a categorical issue but offer no explanatory information. These statements would require substantial probing for elaboration. (e.g. "I like Lotus Notes.")
- 3 = "Explanatory Value" – Statements that provide explanatory information to describe an issue or the situation involved, but do not identify a specific category of the computer system to which the explanation relates. (e.g. "It's good that I could keep in touch with my friends.")
- 4 = "High Value" – Statements that provide a categorical issue as well as explanatory information for the issue. (e.g. "I liked Lotus Notes because it allowed me to keep in touch with my friends.")

Three content analysts rated the value of all the responses independently, based on the above definitions and the instructions provided in Appendix F. The analysts read the entire response for each respondent, split the response into units for each distinct idea presented, and then rated the value of each idea. Therefore, any given response could be given multiple value ratings for the different ideas presented within the block of text. For those responses that addressed multiple ideas, only the idea with the highest value rating

for each response was used for analysis. Inter-rater reliability was evaluated statistically using Kendall's Coefficient of Concordance.

CHAPTER III

RESULTS

The computer survey yielded an overall response rate of 27.2% (436 respondents from a pool of 1602 individuals invited to participate in the survey). Table 7 displays

Table 7. Distributions for survey questionnaire respondents and first-year student population by gender and major school of study.

		Distribution of Questionnaire Respondents	Distribution of First-Year Student Population
Gender	Male	38.3%	47.2%
	Female	61.7%	52.8%
Major School of Study	Arts & Sciences	54.9%	51.9%
	Engineering	23.0%	17.8%
	Education	12.6%	11.7%
	Business	9.4%	18.6%

the distributions of respondents according to Gender and Major School of Study, in comparison to distributions of the first-year student population from which participants were contacted. Females were slightly over-represented, students from the School of Business were slightly under-represented, and students from the school of Engineering were slightly over-represented. Dependent measures were collected and analyzed for significant effects according to the following plan:

- Response rate as a function of subject line and response area was evaluated using Chi-square tests. This analysis examined main effects of subject line and response

area as well as the simple effects from the combination of these two variables on response rate.

- Item Response Rate for Open-ended questions as a function of subject line and response area was evaluated using Chi-square tests. This analysis was performed separately for question #38 and for question #39, and also for the combination of responses to questions #38 and #39. The analysis evaluated main effects of subject line and response area as well as the simple effects from the combination of these two variables on item response rate.
- Number of words in the open-ended responses as a function of subject line, response area, and question type was evaluated using a 2x2x2 Mixed Groups ANOVA. Interactions were explored upon finding a significant omnibus F value.
- Number of ideas in the open-ended responses as a function of subject line, response area, and question type was evaluated using a 2x2x2 Mixed Groups ANOVA. Interactions were explored upon finding a significant omnibus F value.
- Value of ideas in the open-ended responses as a function of subject line, response area, and question type were evaluated using the Mann-Whitney U test. The analysis conducted pair-wise comparisons of main effects and additional pair-wise comparisons of the simple effects for combinations of the subject line, response area, and question type variables.

Overall Survey Response Rate

Overall survey response rate was examined to determine the effect of experimental manipulations between groups (Table 8). No main effect was identified for the Text Box Size variable ($\chi^2 (1, N=1602) = 0.32, p = .575$), but a significant main

Table 8. Survey Response Rates by Experimental Group

		Email Subject Line		
Text Box	Size	No Tangible Reward Emphasis	Tangible Reward Emphasis	Both Subject Line Groups
6 Line		33.0%** (N=132 of 400)	20.2%** (N= 81 of 401)	26.6% (N=213 of 801)
	1 Line	27.7% (N=111 of 401)	28.0% (N=112 of 400)	27.8% (N=223 of 801)
Both Text Box Groups		30.3%* (N=243 of 801)	24.1%* (N=193 of 801)	27.2% (N=436 of 1602)

** $p < .001$; * $p = .005$

effect of Email Subject Line was identified ($\chi^2 (1, N=1602) = 7.88, p = .005$). The “No Tangible Reward Emphasis” subject line resulted in significantly more responses (30.3% response rate) than the “Tangible Reward Emphasis” subject line (24.1% response rate). However, the effect of subject line was isolated to the Six Line Text Box group ($\chi^2 (1, N=801) = 16.81, p < .001$). There was no effect of Subject Line within the One Line Text Box group ($\chi^2 (1, N=801) = 0.010, p = .937$). For the respondents that received a questionnaire with 6-line text boxes, the No Tangible Reward Emphasis group had a significantly higher response rate (33.0%) than the Tangible Reward Emphasis group (20.2%). There was no difference between the subject line groups for respondents that received questionnaires with 1-line text boxes (27.7% and 28.0%). Figure 3 provides a summary view of the subject line variable main effect and simple effects mediated by the text box size variable.

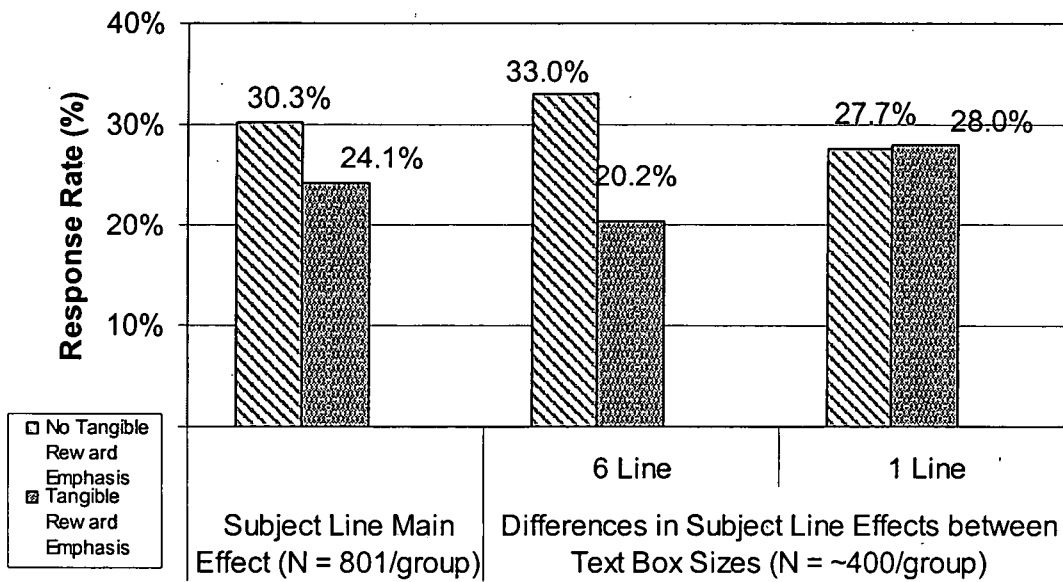


Figure 3. Response Rate Effects as a function of Email Subject Line and Text Box Size.

Item Response Rate to Open Ended Items in the Survey

Recall that two open-ended questions were included in the survey, one soliciting descriptions of positive experiences with a computer purchased from the university (Question #38) and one soliciting descriptions of negative experiences with a computer purchased from the university (Question #39). The item response rates for these open-ended questions were tested for significant differences between the different treatment groups. No significant differences were identified in the Chi-square tests for examining the 12 possible main effects and simple effects for each open-ended question's item response rates. The Text Box Size and Email Subject Line manipulations had no effect on item response rates for open-ended questions. The lowest p-value was the main effect of Text Box Size within the Negative Question type ($\chi^2 (1, N=436) = 0.799, p = .371$). Table

9 displays the item response rates for questions #38 and #39, illustrating the consistency in item response rates across the different experimental groups.

Table 9. Item response rates for open-ended questions.

Positive Question (#38)		Email Subject Line		
		No Tangible Reward Emphasis	Tangible Reward Emphasis	Both Subject Line Groups
Text Box Size	6 Line	73.5% (N=97 of 132)	72.8% (N=59 of 81)	73.2% (N=156 of 213)
	1 Line	72.1% (N=80 of 111)	76.8% (N=86 of 112)	74.4% (N=166 of 223)
	Both Text Box Groups	72.8% (N=177 of 243)	75.1% (N=145 of 193)	73.9% (N=322 of 436)
Negative Question (#39)				
Text Box Size	6 Line	83.3% (N=110 of 132)	84.0% (N=68 of 81)	83.6%^ (N=178 of 213)
	1 Line	80.2% (N=89 of 111)	80.4% (N=90 of 112)	80.3%^ (N=179 of 223)
	Both Text Box Groups	81.9% (N=199 of 243)	81.9% (N=158 of 193)	81.9% (N=357 of 436)

^ p=.371

Item response rates for Question #38 and #39 were collapsed to allow examination of response differences between the positive and negative question items (Table 10). The vast majority of respondents responded to both open-ended questions.

Table 10. Response pattern for Positive and Negative Open-ended Questions

Responded to Neither	Responded to Positive Only	Responded to Negative Only	Responded to Both	All Responses
16.3% (N=71)	1.8% (N=8)	9.9% (N=43)	72.0% (N=314)	100% (N=436)

item response It should be noted that of the 51 respondents who responded to only the positive or negative questions, 84 percent opted to respond to only the negative question. However, the small number of respondents in these two cells (N=51) did not provide sufficient power to test for any effects of subject line or box size variables within that group.

Number of Words for Open Ended Items

For each open-ended question, regardless of question type, participants provided an average of 21 words per response. Analysis of variance of number of words provided across Question Types within-subjects, and between Box Size and Subject Line groups

Table 11. Means (and standard deviations in parenthesis) for number of words in responses to open-ended questions.

Both Open-ended Questions (#38 & #39)			
Email Subject Line			
	No Tangible Reward	Tangible Reward	Both Subject
	Emphasis	Emphasis	Line Groups
Text Box 6 Line	50.5 (44.5)	52.2 (50.5)	51.1 (46.8)**
Size 1 Line	32.8 (35.3)	33.0 (31.7)	32.9 (33.5)**
Both Text Box	42.4 (41.4)	41.0 (41.7)	41.8 (41.5)
Groups			
Positive Question (#38)			
Email Subject Line			
	No Tangible Reward	Tangible Reward	Both Subject
	Emphasis	Emphasis	Line Groups
Text Box 6 Line	17.8 (17.1)	18.2 (19.7)	18.0 (18.1)*
Size 1 Line	12.9 (15.8)	12.9 (14.1)	12.9 (14.9)*
Both Text Box	15.6 (16.7)	15.1 (16.8)	15.4 (16.7)***
Groups			
Negative Question (#39)			
Email Subject Line			
	No Tangible Reward	Tangible Reward	Both Subject
	Emphasis	Emphasis	Line Groups
Text Box 6 Line	32.7 (39.1)	34.0 (41.9)	33.2 (40.1)*
Size 1 Line	19.9 (28.7)	20.1 (23.6)	20.0 (26.2)*
Both Text Box	26.8 (35.2)	25.9 (33.1)	26.4 (34.3)***
Groups			

*** $p < .001$; ** $p < .001$; * $p = .014$

identified a significant omnibus $F(1,432) = 454.51, p < .001$. Table 11 summarizes these findings. Figure 13, Figure 14, and Figure 15 in Appendix A provide box plots showing medians and inter-quartile ranges for the number of words in responses to open-ended questions. Figure 16 in Appendix A shows differences in median number of words

across the subject line and box size groups. A significant main effect for question type was identified, with participants providing significantly more words for the Negative question type ($M=26.4$ words for question #39) than for the Positive question type ($M=15.4$ words for question #38) ($F(1,432) = 45.01$; $p < .001$). There was a significant main effect for the Box Size variable, with respondents provided significantly more

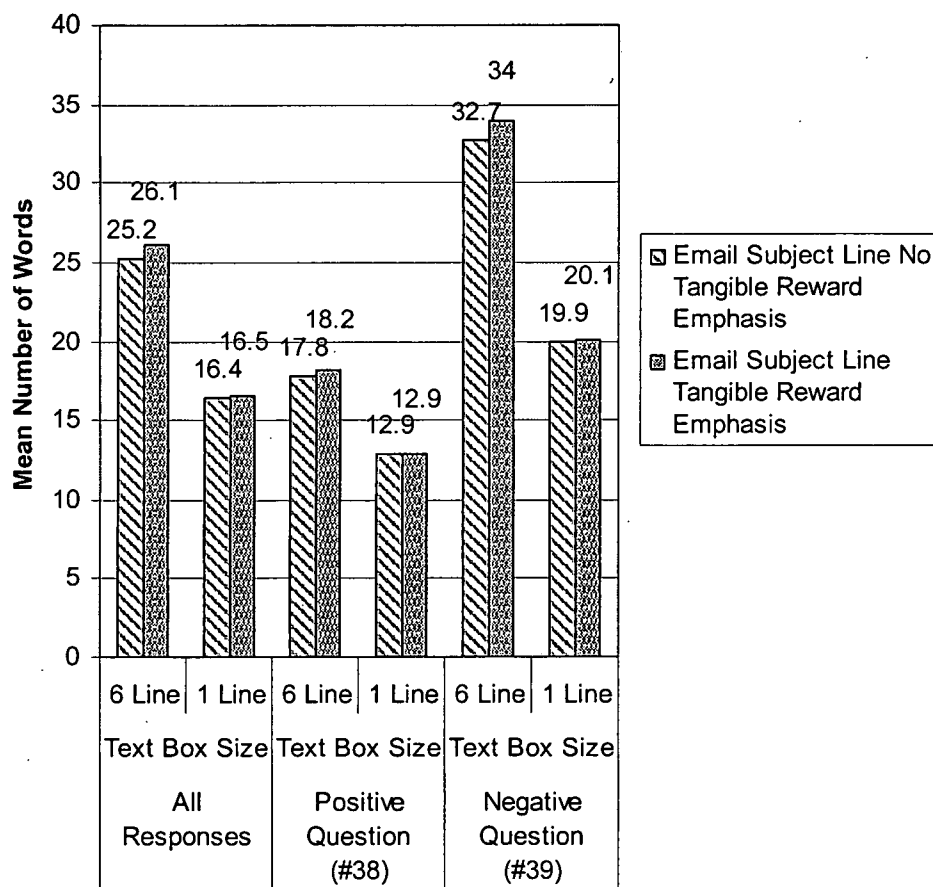


Figure 4. Mean Number of Words in Responses to Open-Ended Questions.

words in the 6-line text boxes ($M=51.1$ words for the 2 questions) than in the 1-line text boxes ($M=32.9$ words for the 2 questions) ($F(1,432) = 21.89$, $p < .001$). A significant interaction was also identified for Question Type and Box Size ($F(1,432) = 6.067$, $p = .014$), with Box Size showing a differential effect between the two question types. The

Six Line Text Box yielded a significantly greater increase in words over the One Line Text Box for the Negative Question (33.2 words vs. 20.0 words = 13.2 more words) in comparison to the increase produced for the Positive Question (18.0 words vs. 12.9 words = 5.1 more words). Figure 4 provides a visual depiction of these main effects and interaction effects.

Content Analysis of Responses Provided for Open-Ended Items

Recall that a two-part content analysis was applied to the responses provided for all open-ended questions. Each open-ended response was coded with a rating for the number of topics addressed in the response. The topic ratings were coded in two parts. First, a group of 4 raters developed topic categories by consensus after reviewing all open-ended responses. Second, a different group of 3 independent raters applied the topic categories to all open-ended responses, producing a rating of the number of topics addressed in each response. Inter-rater reliability for these three raters exceeded the $p=.01$ level using Kendall's Coefficient of Concordance. For ratings of the number of topics in responses to the Positive question (#38), $W(3,436)=0.901$, $p<.01$. For ratings of the number of topics in responses to the Negative question (#39), $W(3,436)=0.884$, $p<.01$.

Given the high level of agreement, the median of the three individual ratings was used as a single rating of the number of topics addressed in each response. The median was applied as the measure of central tendency for the three independent ratings due to the ordinal nature of the number of topics. It could be argued that the number of topics could be considered a scalar variable, but since individual ratings were used, and the scales of those individual ratings may be different, treating the data as an ordinal variable

provided a more conservative approach and also ensured that a single integer number of topics could be defined for each response. Once collapsed, the value was treated as a scalar value to allow for the application of analysis of variance tests for significance.

The second part of the content analysis rated the value of each response. In this analysis, four independent raters categorized each response into one of five categories according to the highest value portion of the response. The categories were "No Value", "Generic Statement", "Categorical Value", "Explanatory Value", and "High Value" (where high value statements provided both a specific categorical issue and provided a specific explanation of the nature of that categorical issue). Inter-rater reliability for these four raters exceeded the $p=.01$ level using Kendall's Coefficient of Concordance. For ratings of the value of responses to question #38, $W(4,436)=0.847, p<.01$. For ratings of the value of responses to question #39, $W(4, 436)=0.826, p<.01$.

Given the high level of agreement, the mode of the four individual ratings was used to collapse into a single rating of the value for each response. The mode was applied as the measure of central tendency for the four independent ratings due to the nominal nature of the rating scheme (i.e. no clear ordinal relationship could be defined between the "Categorical Value" and "Explanatory Value" categories). For the limited number of responses ($N = 11$ for responses to the Positive question (#38); and $N = 14$ for responses to the Negative question (#39)) where there was no agreement in the independent ratings (and hence no mode value could be identified), the group of independent raters was brought together to achieve consensus on the appropriate rating for the response in question.

Number of Topics Provided in Open Ended Items

For each open-ended question, regardless of question type, participants provided an average of 1.17 topics per response. Analysis of variance in number of topics provided across Question Types within subjects, and between Box Size and Subject Line

Mean Number of Topics in Responses to Open-Ended Questions

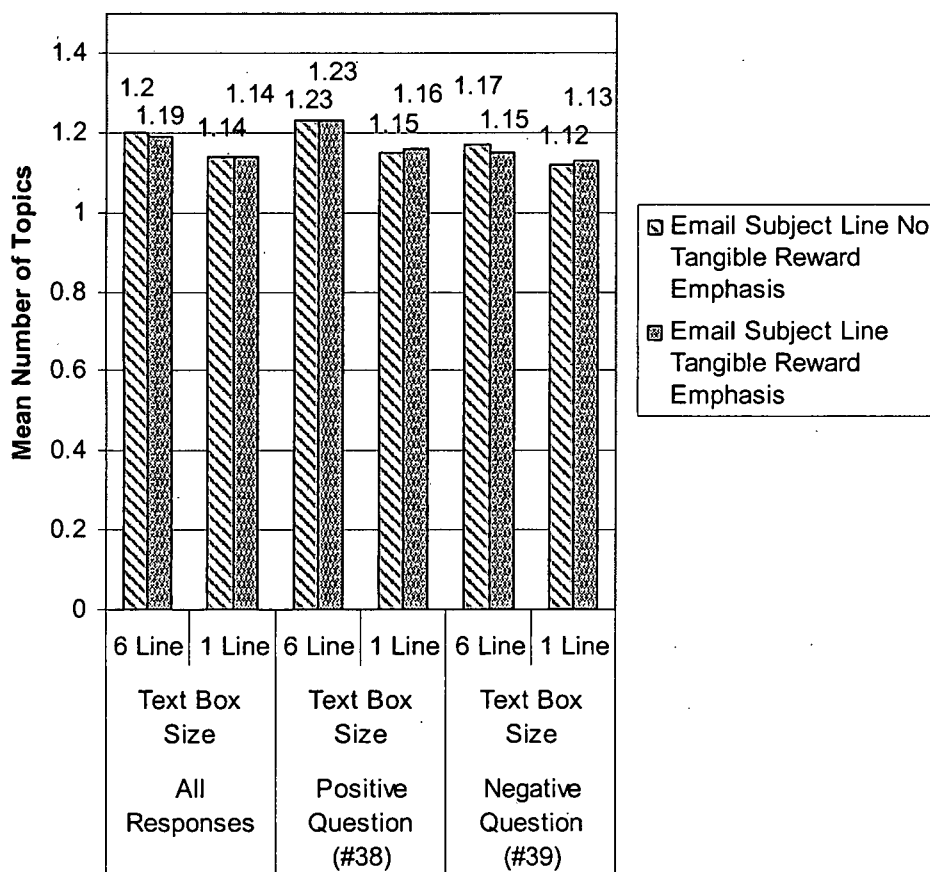


Figure 5. Mean Number of Topics in Responses to Open-ended Questions (38 and 39).

groups identified a non-significant omnibus $F(1,432) = .810, p = .369$. There are no significant differences in the number of topics provided between groups or within subjects. Figure 5 (and Table 19 in Appendix B) summarize these findings.

Value of Responses for Open Items

For each open-ended question, regardless of question type, the highest value topic in each response averaged a mode value rating of "High Value" or "No Value" with 25.7% of responses being categorized in each category. Figure 6 (and Table 20 in Appendix B) summarize the distribution of ratings across both question types.

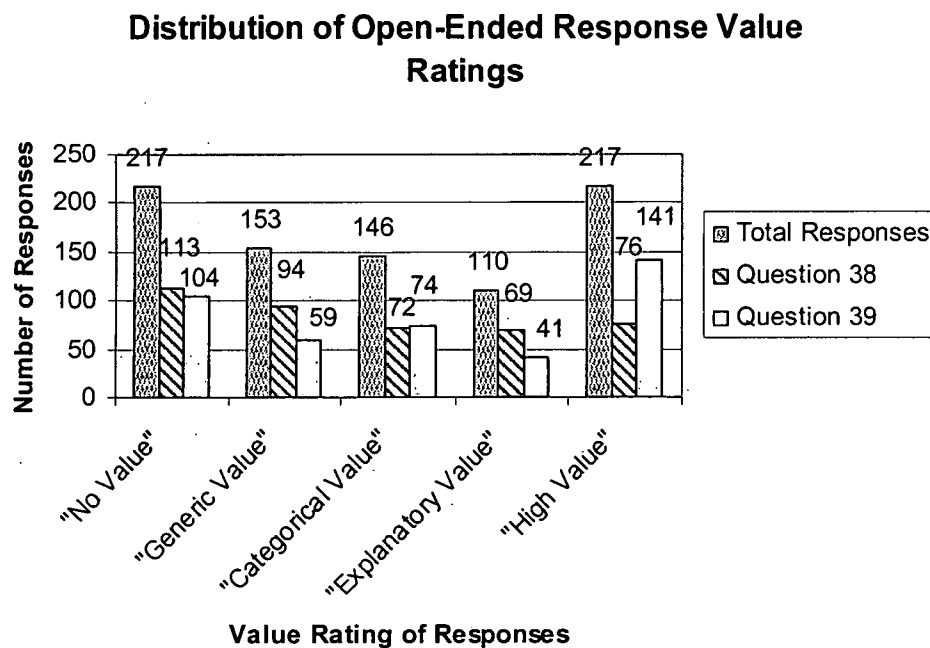


Figure 6. Distribution of Open-ended Response Value Ratings.

Using the full set of 5 value rating categories, chi-square tests for significance identified several non-significant trends, but only one test reached the $p < .05$ level. To achieve greater statistical power, the 5 value rating categories were collapsed into 3 categories according to the following scheme:

- "Low Value" = Original "No Value" and "Generic Statement" categories
- "Medium Value" = Original "Categorical Value" and "Explanatory Value" categories

- “High Value” = Original “High Value” category (both Categorical & Explanatory Value)

Under this collapsed rating scheme, the highest value topic in each response averaged a mode value rating of “Low Value” with 43.9% of responses being categorized as “Low Value”. Figure 7 (and Table 21 in Appendix B) summarize the distribution of the

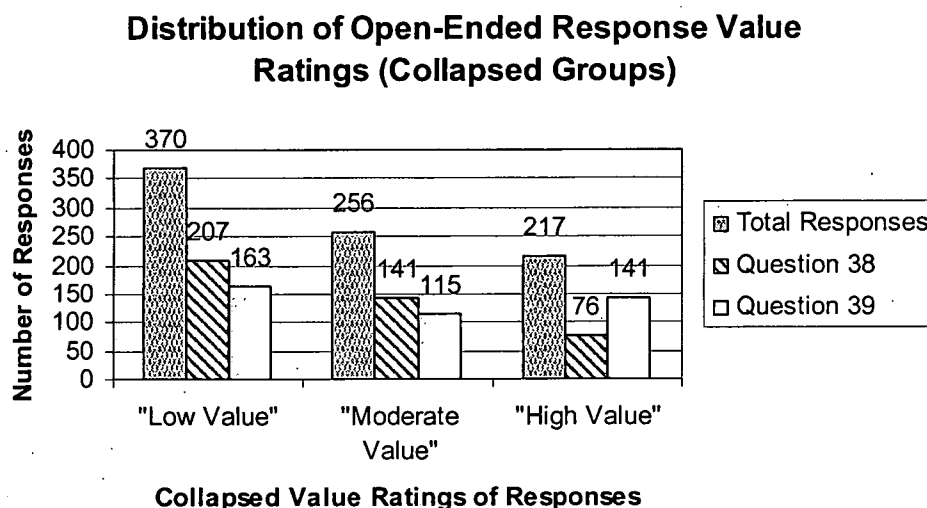


Figure 7. Distribution of open-ended response value ratings (collapsed groups).

collapsed ratings. The collapsed categories represent ordinal data, which allowed a more powerful Mann-Whitney U test to be applied. Several significant or marginally significant results are described below.

No significant effects were identified for the positive question type (#38). The lowest p-value for the positive question type effects was found in a test of differences between the value of the responses in the one-line and six-line text box groups ($U = 21119$; $p = .214$). Table 22 and Table 23 in Appendix B display the distributions of value ratings across the text box size and subject line groups.

For the negative question type (#39), a significant effect of text box size was identified ($U = 18930$; $p = .005$). Table 12 shows that the six-line text box resulted in a significantly greater percentage of High Value responses, while the one-line text box

Table 12. Distribution of Collapsed Value Ratings by Text Box Size for Negative Question (#39).

Question 39	"Low Value"	"Moderate Value"	"High Value"	All Responses
Six Line	68 33.3%*	54 26.5%	82 40.2%*	204 100%
One Line	95 44.2%*	61 28.4%	59 27.4%*	215 100%
Both Text Box Size Groups	163 38.9%	115 27.4%	141 33.7%	419 100%

* $p = .005$

Distribution of Collapsed Value Ratings for Question 39 by Text Box Size Group

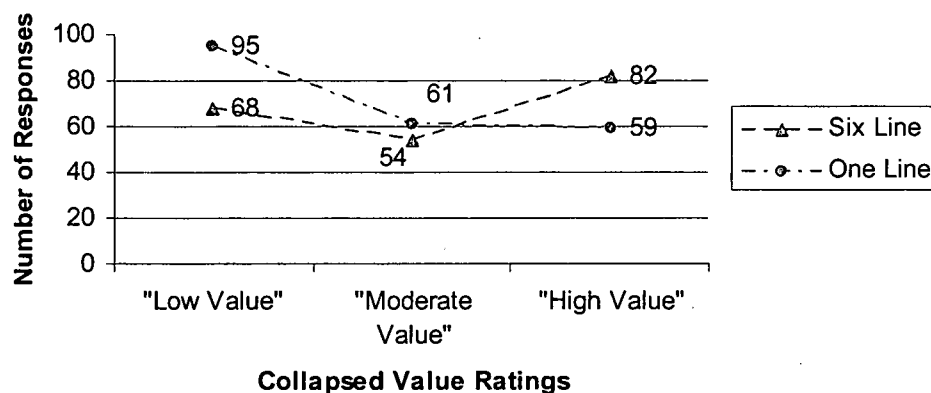


Figure 8. Collapsed Value Ratings by Text Box Size for Negative Responses (#39).

resulted in a significantly greater percentage of Low Value responses. Figure 8 shows that by increasing the text box size to six-lines, a distribution skewed towards Low Value responses was converted to a "V" shaped distribution with a greater percentage of High Value responses.

For the negative question type, a significant simple effect for the text box size variable was identified within the Tangible Reward Emphasis group. Within the Tangible Reward Emphasis group, use of a six-line text box resulted in significantly less Low Value responses ($U = 3546$, $p = .031$). Within the No Tangible Reward Emphasis group, use of a six-line text box resulted in a trend towards a greater percentage of High Value responses in comparison to the one-line text box ($U = 5986$, $p = .095$) (see Table 13 and Figure 9).

Table 13. Interaction of Subject Line and Text Box Size for Collapsed Value Ratings on the Negative Question Type (#39).

Question 39		"Low Value"	"Moderate Value"	"High Value"	All Responses	
No Tangible Reward Emphasis	Six Line	42	32	53	127	
		33.1%	25.2%	41.7%^	100%	
	One Line	45	28	33	106	
		42.5%	26.4%	31.1%^	100%	
	No Tangible Reward Subtotal		87	60	86	233
			37.3%	25.8%	36.9%	100%
Tangible Reward Emphasis	Six Line	26	22	29	77	
		33.8%*	28.6%	37.7%	100%	
	One Line	50	33	26	109	
		45.9%*	30.3%	23.9%	100%	
	Tangible Reward Subtotal		76	55	55	186
			40.9%	29.6%	29.6%	100%

* $p=.031$; ^ $p=.095$

Collapsed Value Ratings by Subject Line and Text Box for Negative Question Type

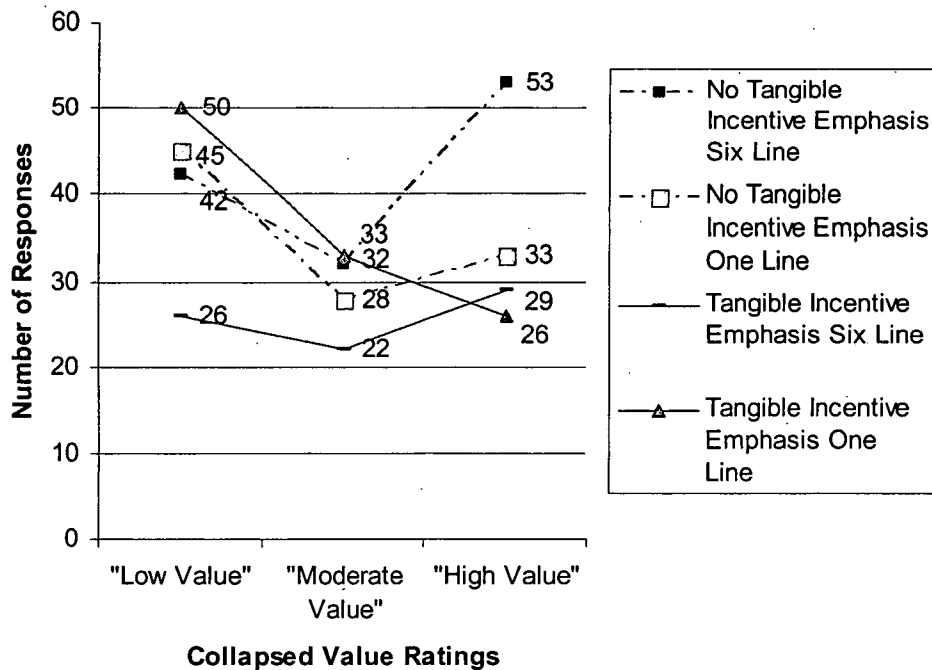


Figure 9. Interaction of Subject Line and Text Box Size on Collapsed Value Rating Distribution for Negative Question Type (#39).

Overall, these results suggest that the use of a Six-Line text box for a Negative question type can produce an increased percentage of High Value responses and a decreased percentage of Low Value responses in comparison to a One-Line text box. However, trends suggest that this effect is most heavily localized to groups that are self selected from a No Tangible Reward Emphasis in the email cover letter. A Tangible Reward Emphasis in the email appears to yield respondents who do not provide a greater percentage of High Value responses when queued by a Six-Line text box, and perhaps yield fewer responses all-together when faced with a Six-Line text box.

Post-hoc Analysis

Several post-hoc analyses were conducted to identify unexpected effects of variables measured in the study.

Effect of Gender. A significant main effect of gender was identified for the value of responses for the negative question type ($U = 17051$, $p < .001$). Table 14 shows that

Table 14. Distribution of Collapsed Value Ratings by Gender for Negative Question (#39).

Question 39	"Low Value"	"Moderate Value"	"High Value"	All Responses
Female	117 45.2%	67 25.9%	75 29.0%*	259 100%
Male	46 28.8%	48 30.0%	66 41.3%*	160 100%
Both Gender Groups	163 38.9%	115 27.4%	141 33.7%	419 100%

* $p < .001$

male participants provided a greater percentage of High Value responses to the negative questions than did female participants (see Figure 10 for a visual depiction of the shift towards High Value responses in the Male distribution).

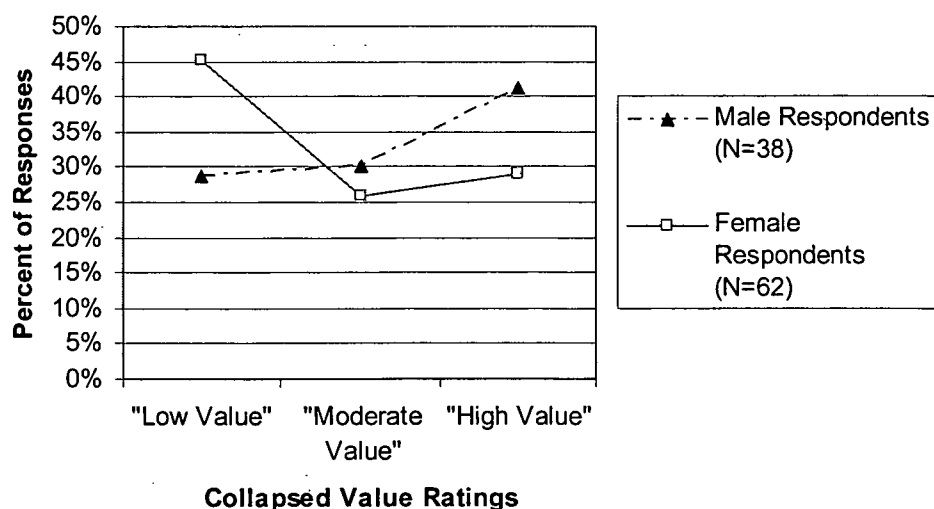


Figure 10. Distribution of Response Value Ratings by Gender for Negative Question Type (#39)

Further, a significant main effect of gender was identified for the number of topics provided in the negative question type. Male participants' responses to the negative question had a greater number of topics ($M=1.26$) than the female participants' responses ($M=1.07$) ($F(1,434) = 4.113, p=.043$).

Finally, a significant interaction effect between the question type variable and gender was identified for the number of words provided in open-ended question responses. Female participants responded with significantly more words for the positive question type ($M=16.8$) than male participants ($M=13.1$) ($F(1,434) = 5.226, p=.023$). Male participants responded with significantly more words for the negative question type ($M=31.2$) than female participants ($M=23.5$) ($F(1,434) = 5.205, p=.023$).

Taken together, these three effects suggest that for this questionnaire, male participants were inclined to "vent" a significantly greater quantity of negative feedback (measured in number of words and number of topics), and provided a greater percentage of High Value descriptions of their negative experiences.

Effect of Major School of Study. A significant effect of major school of study was identified for the value of responses provided for the negative open-ended question ($\chi^2(6, N=418) = 14.15, p=.028$). Therefore, the differences in value of responses for each major school of study were tested in pair-wise comparisons using the Mann Whitney U test. Respondents from the School of Engineering provided a significantly greater percentage of High Value responses in comparison to each of the other schools (Engineering vs. Arts & Sciences: $U = 8949, p = .002$; Engineering vs. Business: $U = 1296.5, p = .002$; Engineering vs. Education: $U = 2084, p = .041$). Table 15 provides

the distributions of value ratings for each major school of study, and Figure 11 provides a visual representation of the differences between these distributions.

Table 15. Distribution of Collapsed Value Ratings by Major School of Study for Negative Question (#39).

Question 39	"Low Value"	"Moderate Value"	"High Value"	All Responses
Engineering	27 28.4%	22 23.2%	46 48.4%	95 100%
Arts & Sciences	96 41.4%	65 28.0%	71 30.6%	232 100%
Business	19 50.0%	11 28.9%	8 21.1%	38 100%
Education	20 37.7%	17 32.1%	16 30.2%	53 100%
All Majors	162 38.8%	115 27.4%	141 33.7%	419 100%

* $p < .001$

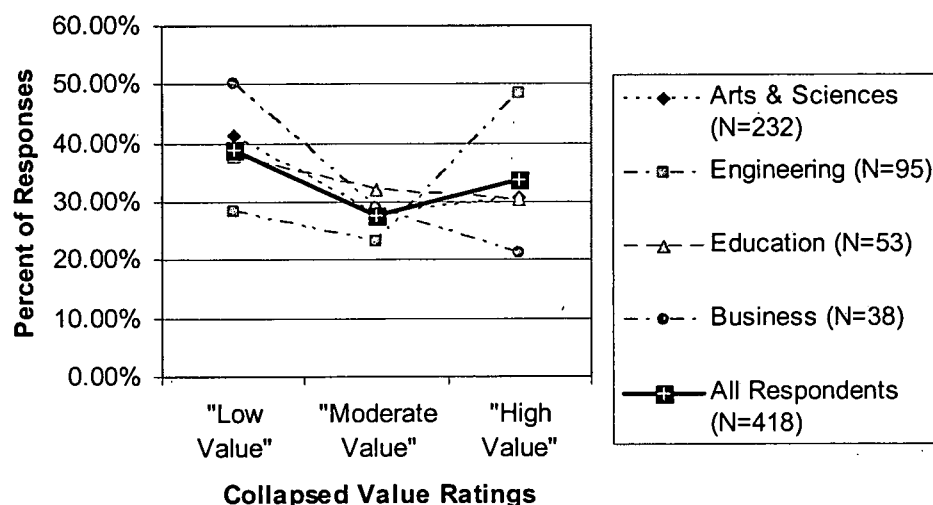


Figure 11. Distribution of Response Value Ratings by Major School of Study for Negative Question Type (#39).

Similarly, a significant effect of major school of study was identified for the number of words provided in responses to the negative open-ended question ($F(3,431) = 4.998, p = .002$). The overall mean was 26.5 words. Respondents from the School of

Engineering provided significantly more words ($M=37.9$ words) while respondents from the other major schools of study were not significantly different from the overall mean (Education $M=24.2$; Arts & Sciences $M=23.0$; and Business $M=21.7$).

Taken together, these results suggest a similar “vent box” effect to the differences seen between gender groups. Participants from the School of Engineering were more likely to provide a greater quantity of words and a greater proportion of High Value responses for the negative question.

CHAPTER IV

DISCUSSION

This study showed that the content of an email subject line and the size of a text box provided for open-ended responses both have a measurable impact on questionnaire respondent behavior. Some unexpected interactions between these two aspects of a survey design were identified as well. Further, this study identified differences in respondent behavior for positively and negatively directed open-ended questions. These results have implications for the practice of questionnaire construction and for the examination of theories about respondent behavior.

Practical Implications – Response Rate Behavior & Email Subject Line

This study found a main effect for the subject line variable. These results suggest that a “No Tangible Reward Emphasis” focus in the email subject line will produce higher response rates than a “Tangible Reward Emphasis” focus. However, in this study, this main effect for the subject line was actually a result of differences in response rate from the groups that were provided with questionnaires containing a 6-Line Text Box. No differential effect of subject line was present in the groups that were provided with questionnaires containing a 1-Line Text Box.

This significant interaction effect suggests that a “No Tangible Reward Emphasis” focused subject line will produce higher response rates than the “Tangible

Reward Emphasis” focused subject line only if the questionnaire that is accessed through the email containing that subject line includes large text box response areas for open-ended questions. There is no obvious practical or theoretical explanation for this kind of interaction effect! Questionnaire response is a multi-stage process, and the subject line manipulations and text box manipulations are at very different points in that process. The subject line of the email is one of the first survey features seen by the respondent (before they even open the email message, much less click the link within the email to view the questionnaire). The text boxes for the open-ended questions were one of the last survey features seen by the respondents in this study (since the open-ended questions were located at the very end of the questionnaire, after 37 closed-ended questions, and right before the submit button for completing the survey). It is quite difficult to explain the interaction of two subtle manipulations in survey design on participant response rates when those manipulations are separated by the content of an email message, a hyperlink to a questionnaire, and 37 closed-ended questions. The effect does not appear to be a spurious statistical anomaly ($p < .001$), but given the lack of any clear explanation, this effect needs to be replicated in other studies. The most plausible explanation is that the content of the subject line resulted in the self-selection of individuals with different “willingness to respond” characteristics.

This unexpected interaction bears some striking resemblance to an unusual effect reported in O’Neil and Penrod (2001). O’Neil and Penrod found that individuals who were offered payment were LESS likely to finish their mock-jury survey than those who were not (36.9% dropout rate with payment vs. 27% dropout rate without payment). O’Neil and Penrod speculated that offering payment decreases the participants' intrinsic

motivation for completing the study; hence the group that received payment was less motivated to complete a demanding study. However, they noted that there was no difference in the amount of time dedicated to completing the study between the reward and non-reward groups, which suggests equal levels of intrinsic motivation for the two groups.

In the case of this computer survey, perhaps the “Tangible Reward Emphasis” group had less intrinsic motivation than the “No Tangible Reward Emphasis” group. Perhaps the large six-line text boxes displayed on the questionnaire were the proverbial “straw that broke the camel’s back” for the group that lacked intrinsic motivation, but provided some additional intrinsic incentive to the group that was driven by intrinsic motivation. However, as in the O’Neil and Penrod study, this computer survey study found other indicators that suggest no difference in level of motivation between the “Tangible Reward Emphasis” and “No Tangible Reward Emphasis” groups. The two subject line groups were virtually identical in terms of number of words provided in the open-ended responses and number of topics addressed in the open-ended responses. The potential influence of intrinsic vs. extrinsic motivation could provide a logical explanation for some of the unexpected results in this study, and merits further research.

Practical Implications – Open-ended Question Response Behavior & Text Box Size

Using a larger text box yields a significantly larger number of words (Mean = 25.6) than smaller text boxes (Mean=16.4). At the surface, this would suggest that survey designers would be encouraged to use large text boxes to increase the amount of data that is yielded from a study. But the content analysis conducted in this study

suggests that the decision process should consider several additional factors before settling on a specific design for the open-ended response area.

The content analysis in this study identified the number of topics addressed in each response and the value of the descriptions provided in each response. There was no statistical difference between the number of topics addressed in the smaller text box and the larger text box. If a researcher's objective in asking open-ended questions is simply to identify new topics for future research, this study actually suggests that a smaller text box may yield the same quantity of topics as the larger text box in a smaller number of words. If the researcher intends to perform a content analysis scheme by hand, then a smaller number of words per response may be highly desirable. Consider the following analysis of second-order measures. The number of words per topic for the open-ended responses can be calculated based on the number of words per response and the number of topics per response (Table 16).

Table 16. Number of words per topic for all open-ended responses (38 and 39).

		Email Subject Line		
		No Tangible Reward Emphasis	Tangible Reward Emphasis	Both Subject Line Groups
Text Box	6 Line	22.9	23.9	23.3
Size	1 Line	14.8	15.4	15.1
Both Text Box		19.3	19.0	19.1
Size Groups				

The average number of words per topic for the 1-line text box was 15.1 compared to 23.3 for the 6-line text box. Multiplying this average by 100, analysts for this study were required to read 1510 words to identify 100 topics in the 1-line text box responses, but would need to read 2330 words to identify 100 topics in the 6-line text box responses.

This suggests that an analysis of the contents of a 1-line text box could result in the identification of the same number of topics based on an analysis of 35% fewer words.

If an automated analytical procedure were employed, this study offers a different recommendation for open-ended question response area design. Recent advances in automated text analytical techniques offer researchers new options for content analysis. For example, Jackson and Trochim (2002) discuss concept mapping as an alternative approach to content analysis for open-ended questions. Concept mapping is a hybrid approach that applies statistical coding techniques (e.g. multi-dimensional scaling) as well as human-rater coding to produce a final categorization of responses. Similarly, Grant, et al. (2005) utilized qualitative analysis software to conduct a text analysis for open-ended question responses. They recommend that researchers apply techniques that will maximize the number of words provided in response to open-ended questions to better support the use of this type of automated processing. For researchers that intend to apply automated analytical techniques for content analysis, and thus require large datasets to achieve accurate results, this study suggests that increasing the size of the text box will yield a greater quantity of words for use in content analysis.

Further, if the research goals associated with the study seek detailed explanations rather than simple topic definitions, this study recommends a larger open-ended question response area. This study found statistically significant results which indicate that for questions seeking negative feedback, a large response area yields a higher percentage of "High Value" responses (i.e. responses that provide both a clearly defined category and a clear explanation of the issue associated with that category). In addition, results from this study suggest that a high level of emphasis given to incentives associated with a study

may have a negative impact on respondent motivation to provide high value responses for open-ended questions. Further research may clarify the impact of incentives on the quality of data provided by respondents.

Practical Implications – Conclusions

This study suggests that incentives should not be emphasized in the subject line of an email cover letter. Participants in the Tangible Reward Emphasis groups in this study had a lower overall response rate, produced the same quantity of data, and displayed a trend towards producing less “high quality” data than participants in the other groups.

This study suggests that the size of the text box for open-ended questions can be manipulated to tailor the quantity and quality of responses provided by respondents to the specific needs of the researcher. Participants in this study who received a smaller text box yielded a smaller quantity of words and trended towards a reduction in number of “high quality” responses. Participants in this study who received a larger text box produced a greater quantity of words and trended towards providing a greater number of “high quality” responses.

But surprisingly, participants who received the larger text box yielded a lower overall survey response rate when their email message subject lines emphasized the incentive. This result adds further credence to the recommendation for avoiding Tangible Reward Emphasis in the email subject line. Further study of this unexplained interaction between text box size and email cover letter subject line is required to understand the full implications of this finding.

Theoretical Implications – Predictions from Social Exchange Theory

Social Exchange Theory offered the following hypothesized effects from the experimental manipulations (Table 17). The results of this study suggest that the

Table 17. Hypothesized effects based on social exchange theory

Subject Line	Theoretical Implication		Hypothesized Effect
Tangible Reward Emphasis	Increased Reward	→	Increased Response Rate
No Tangible Reward Emphasis	Decreased Reward	→	Decreased Response Rate
Response Area			
Small Area	Reduced Cost	→	Increased Item Response Rate
Large Area	Increased Cost	→	Decreased Item Response Rate

“Reward” component of social exchange theory is not a dominant predictor for the subject line manipulation. The “Tangible Reward Emphasis” subject line response rate was significantly lower than the “No Tangible Reward Emphasis” subject line. Perhaps these results indicate that the “Trust” component of social exchange theory is a more dominant predictor of survey response rate behavior than the “Rewards” component. In hindsight, it could be argued that the Tangible Reward Emphasis manipulation (emphasizing “FREE FOOD” in front of “UD Computer Survey”) is a strong manipulation of the “Trust” component. In that vein, these results indicate that giving the tangible reward higher billing than the legitimacy of the organization conducting the study could reduce the level of trust respondents gain from the initial email contact. If they perceive the initial contact as “junk mail” rather than a “legitimate research request”, their response rate will be much lower. The results of this study, the trust component of exchange theory, and previous empirical research all suggest that a survey is likely to yield a low response rate if it appears similar to junk mail.

However, no aspect of the theory (Trust, Reward, or Cost) predicted the interaction effect in response rate found by this study (Figure 12). It is possible that the

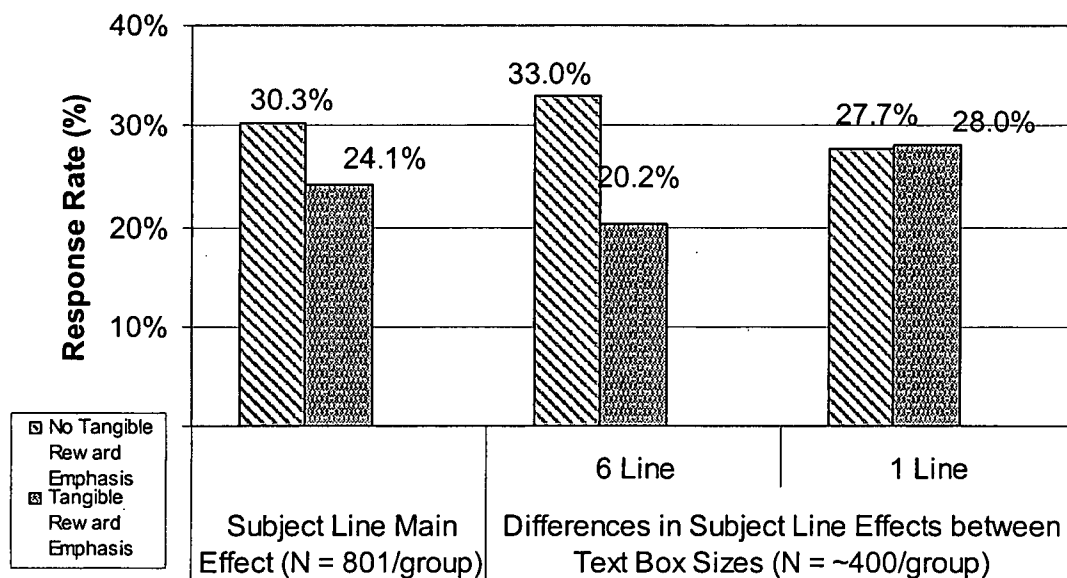


Figure 12. Response Rate Effects as a function of Email Subject Line and Text Box Size.

predicted reduction in item response rate from the “Cost” component was actually manifested as a reduction in overall response rate that was only present in the participant pool that responded to the increased “Reward” from the “Tangible Reward Emphasis” group. This explanation seems far from parsimonious. Perhaps the concepts of intrinsic and extrinsic motivation (or commitment and involvement) can be incorporated into Social Exchange Theory to provide additional explanatory value. This concept is described in the following section, entitled: “Theoretical Implications – Alternative Theories for Respondent Behavior”.

Meanwhile the Response Area manipulations did not produce the predicted effects predicted by the “Cost” component of this theory. There was no difference in

item response rate based on the Text Box Size differences (Table 18). Perhaps the respondents did not perceive any “cost difference” between a large and small text box,

Table 18. Item response rates for all open-ended questions (38 and 39)

		Email Subject Line		
		No Tangible Reward Emphasis	Tangible Reward Emphasis	Both Subject Line Groups
Text Box Size	6 Line	78.4%	78.4%	78.4%
	1 Line	76.1%	78.6%	77.4%
	Both Text Box Size Groups	77.3%	78.5%	77.9%

but instead responded to it as a “demand” characteristic of the researcher. However, groups that received the larger text box did actually incur a greater cost (as indicated by the significantly larger number of words provided by those respondents), however, that increased cost did not impact the overall response rate. This suggests that the Cost component of social exchange theory did not effectively explain these low level respondent behaviors.

Theoretical Implications – Alternative Theories for Respondent Behavior

The “Trust” component of Social Exchange Theory provided an adequate explanation for the increased response rate resulting from the “No Tangible Reward Emphasis” subject line, but otherwise, Social Exchange Theory was unable to explain other aspects of respondent behavior. As discussed in Chapter 1, several alternative theories have been offered to explain survey respondent behaviors.

Cognitive Dissonance. Cognitive Dissonance theory, as applied to survey response behavior, postulates that most individuals maintain a belief that they are helpful individuals, and that the effort to behave in a manner consistent with that belief drives respondent behavior.

Under Cognitive Dissonance Theory, the “Tangible Reward Emphasis” subject line would be predicted to have no effect on respondent behavior since the presence of an incentive would not be a necessary feature for a “helpful individual”, and therefore, that incentive would not increase the likelihood of helpful individuals responding to the survey. The lower response rate from the Tangible Reward Emphasis group identified in this study does not contradict Cognitive Dissonance theory, but Cognitive Dissonance theory does not offer a clear explanation for that lowered response rate.

Cognitive Dissonance Theory suggests that an increased response area would produce an increased quantity of words from respondents, since “helpful individuals” would seek to provide a quantity of response near the level of response suggested by the survey design. Similarly, this theory may explain why the quantity of topics did not differ, since “helpful individuals” would seek to provide as many topics as possible, within the response area provided. As such, Cognitive Dissonance Theory may be well suited for explaining respondent behaviors at lower levels of granularity than overall survey response rate.

Commitment / Involvement Theory. Commitment / Involvement Theory, as applied to survey respondent behavior, indicates that an individual's decisions when responding to a survey will be a function of their level of commitment to the survey.

Under Commitment Theory, the "Tangible Reward Emphasis" subject line would yield response behaviors biased towards a commitment to obtain the incentive, while the "No Tangible Reward Emphasis" subject line would yield responses biased towards a commitment to the topic of the survey. This theory does not suggest a difference in response rate, but does suggest differences in the quality of the data provided by the respondents from each group. Respondents who are committed to obtaining the incentive would be predicted to provide lower quality data than respondents who are committed to the topic of the survey. The results of this study showed some differences in the quality of data provided by respondents from the two subject line groups. Since the manipulation of subject line was a relatively subtle manipulation, perhaps a more dramatic manipulation of commitment variables would yield significant differences in data quality. As such, Commitment Theory appears to offer some unique explanations for the respondent behaviors in this study not offered by other theoretical perspectives. Further, this theoretical perspective seems somewhat related to the concepts of intrinsic and extrinsic motivation suggested as an explanation for the more unexpected results of this study.

Self-perception theory. The theory of self-perception postulates that the goal of initial survey contacts is to help the individual label himself as a respondent, so that the individual's perceptions of "who they are" drive their behavior towards responding in the desired manner.

Under Self-perception Theory, the “Tangible Reward Emphasis” subject line would bias the respondent pool for the study towards individuals who perceive themselves as incentive-driven individuals, while the “No Tangible Reward Emphasis” subject line would bias the respondent pool for the study towards individuals who perceive themselves as survey respondents. This theory does not suggest a difference in response rate (since there is no knowledge of the distribution of “incentive-driven” individuals vs. “survey respondent” individuals in the overall population contacted for the study). However, this theory could potentially suggest differences in the quality of the data provided by the respondents from each group, since the subject line would lead to self-selection by individuals with different motivational characteristics. Self-selected respondents who are incentive-driven might be predicted to provide a minimum level of response effort necessary to obtain the incentive. Thus, incentive-driven respondents might be predicted to provide lower quality data than self-selected respondents who are not incentive driven. The results of this study showed some differences in the quality of data provided by respondents from the two subject line groups. As such, Self-perception Theory may offer explanations for these respondent behaviors. However, the theory remains weak in its predictive ability for overall response rate, unless researchers have a priori knowledge of the distribution of self-perceived characteristics across the pool of potential respondents.

Theoretical Implications – Conclusions

Of the available theoretical constructs postulated to explain respondent behavior, the “Trust” component of Social Exchange Theory, as well as Self-Perception Theory, and Commitment/Involvement Theory each provided plausible explanations for different

portions of the effects connected to the subject line variable. Meanwhile, Cognitive Dissonance Theory provided the most plausible explanations for the effects connected to the text-box size variable.

Survey response behavior is a multi-stage process, beginning with initial contacts viewed by potential participants, ultimately leading to the submission of completed responses containing data of varying degrees of quality. It would seem that a multi-stage process such as this would require a multi-stage theory to adequately predict and explain behaviors along that process. This study is not comprehensive enough to offer detailed guidance on the construction of a unified theory, but it seems to indicate value in future research exploring a combination of components from each of these theoretical perspectives as a unified theory of respondent behavior. Perhaps components of each theory could be mapped to the stages of survey response to produce a predictive and explanatory model of survey respondent behavior.

Recommendations for Future Research

The results from this study's manipulation of the subject line variable are consistent with results found in other studies that manipulated an email subject line variable (i.e. Porter and Whitcomb, 2005). But no other studies were identified that manipulated a text box size variable in the survey response environment, therefore replication of this study's text box size effects is of prime importance for future research.

The survey environment used for this study was a computer satisfaction survey (a relatively specialized, technical topic) conducted in a university setting (a population with a narrow age and educational distribution). Future research should examine whether the effects identified in this study are consistent across other survey topics and across

different populations. Replication of the gender differences and differences found between major schools of study would be of prime interest in these future studies.

The present study was conducted in the fall of 2000. Since that time, internet usage has continued to increase, and with it, Spam email messages have increased dramatically. The subject line manipulations in this study speak directly to the influence of Spam on survey respondent behavior. Further research is necessary to provide better recommendations to survey designers about ways to design email requests and related survey materials so as not to be categorized as Spam.

To address the theoretical issues, future research should attempt to measure the effects of survey design manipulations at each stage of the respondent decision-cycle. This study was not equipped to assess the drop-out rate of respondents over the course of the survey response cycle, therefore it is unclear at what point in that process the manipulated variables truly had their effects (i.e. To what degree are the subject line effects a result of the respondent's decision to open the email message, decision to click the link to the survey, decision to complete portions of the survey, or some other decision point in the survey response process?). Future studies could lend insight into the effect of the initial email contact on respondent drop-out rates at each stage of the respondent decision cycle, and also identify the effects of respondent self-selection biasing on the quantity and quality of data produced for each aspect of a survey questionnaire.

Conclusion

There are numerous strategies for the collection of qualitative data via the internet. The human factors community as well as many other research and practice communities can benefit from better access to this type of data. For example, in their

review of online methods for market research, Miller and Dickson (2001) discuss the potential online survey methods may have for interactive product testing of early prototype concepts. Miller and Dickson's review notes that "on-line research is well suited to the development of iterative studies ... iterative on-line research would provide a smooth learning path, with information organized into small chunks or steps that are within the capacity of management teams to understand." While quantitative data will always be desirable, the implementation of rapid, iterative research methods to problem areas like product design seem to call for qualitative and exploratory research as an integral portion of the research plan.

This study offers practical guidance for the utilization of open-ended questioning in internet-based research, to support advancement in methods for qualitative research. This study also provides insight into the value of existing theories for guiding the conduct of qualitative research over the internet. As discussed in the introduction, open-ended questioning is an approach that has been avoided in traditional questionnaire research methods, largely due to perceived barriers for participant willingness to respond, and researcher effort required to process the data. New technology appears to offer solutions to both of these practical barriers. This study shows that participants readily provided substantial quantities of data for open-ended questions presented over the internet, and that design decisions made by the researcher can influence the quality and quantity of those data. Further, automated text analytical techniques provide a new set of tools that alleviate some of the difficulties associated with processing open-ended question data (e.g. Jackson & Trochim, 2002; Grant, et al., 2005). This study provides a useful

foundation for the development of improved practical methods and theoretical guidance
for qualitative questionnaire-based research via the internet.

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APPENDICES

APPENDIX A
ADDITIONAL FIGURES

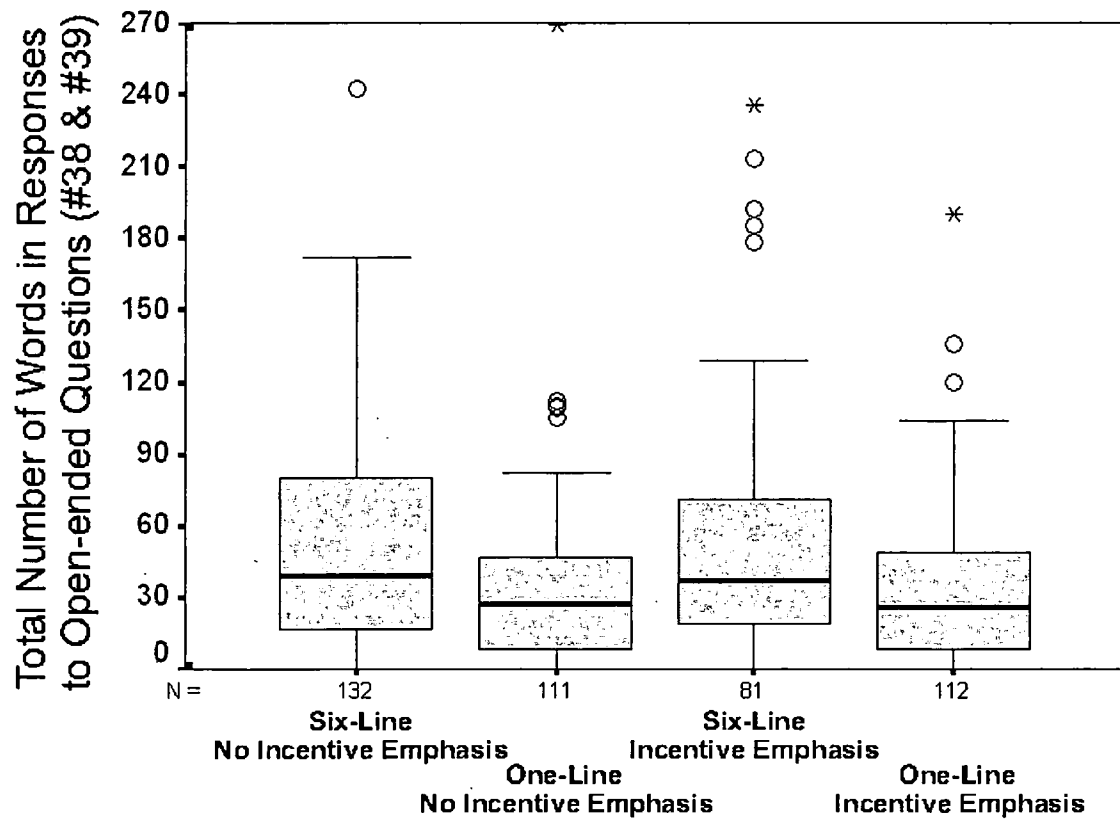


Figure 13. Boxplot of distributions for total number of words in responses to open-ended questions, by email subject line and text box size groups.

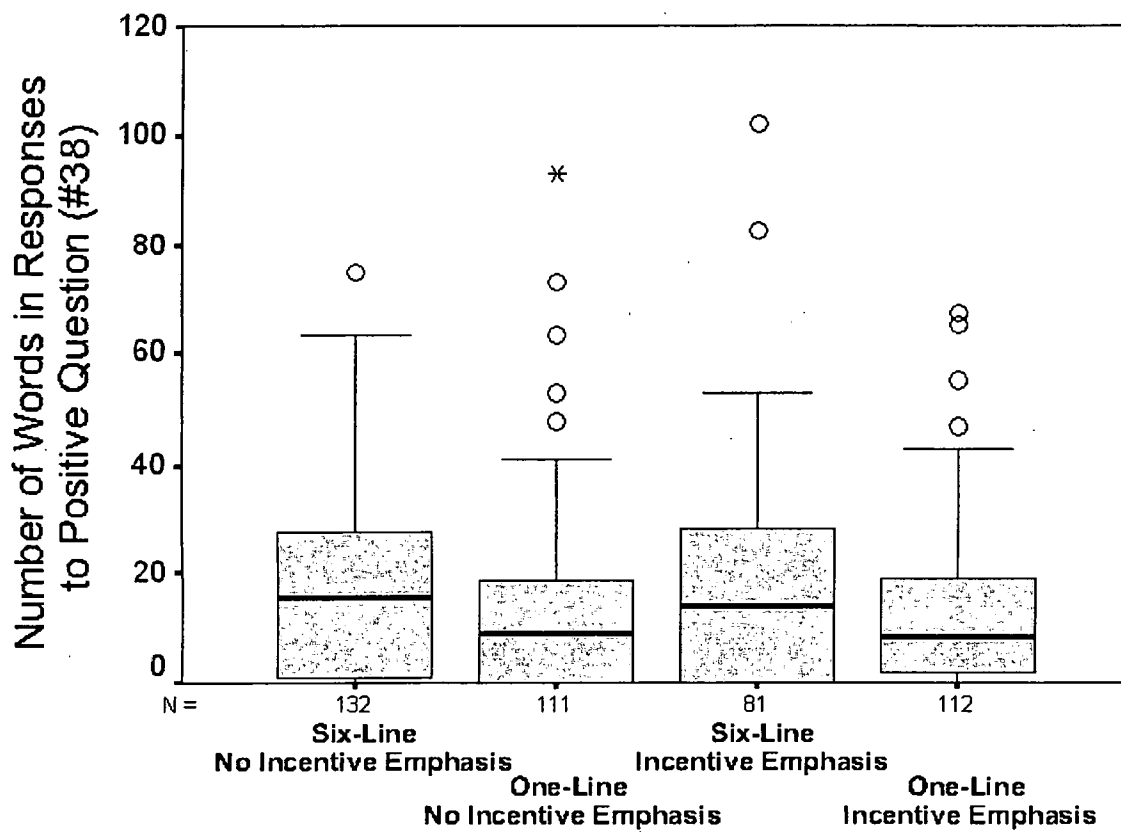


Figure 14. Boxplots of distributions for number of words in responses to positive open-ended questions, by email subject line and text box size groups.

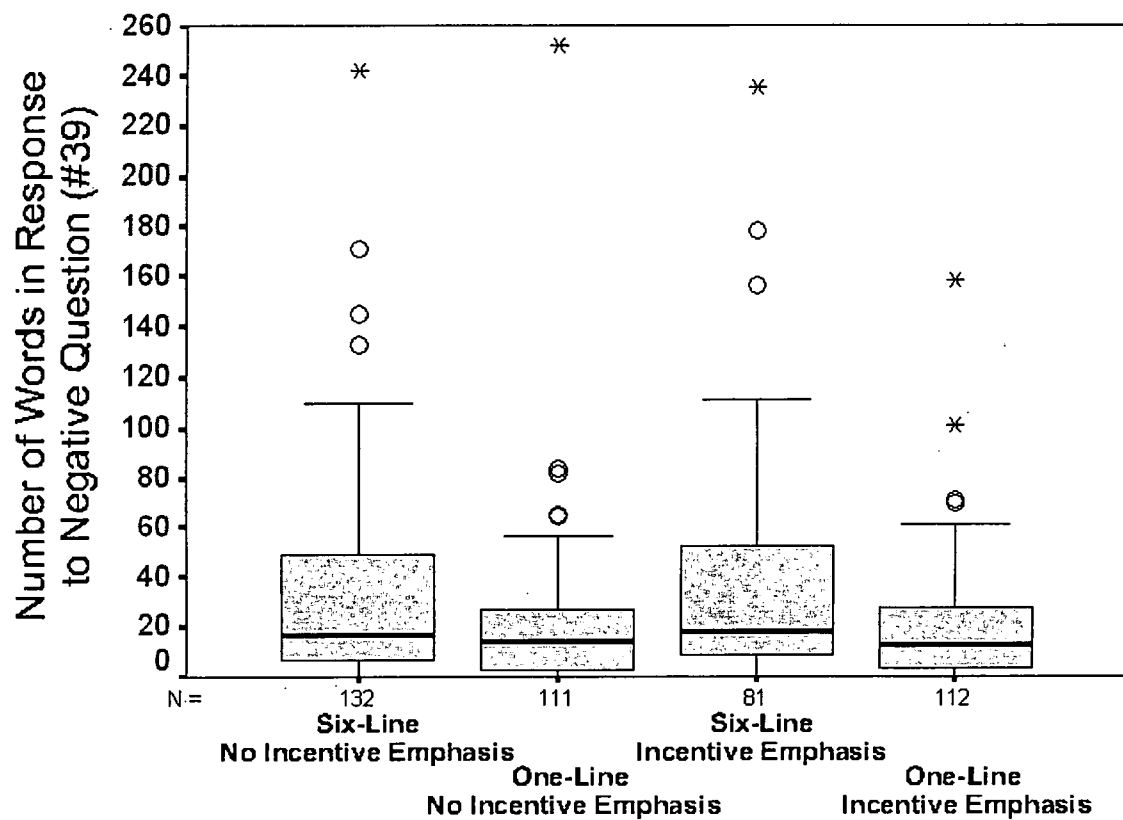


Figure 15. Boxplots for distributions of number of words in responses to negative open-ended questions, by email subject line and text box size groups.

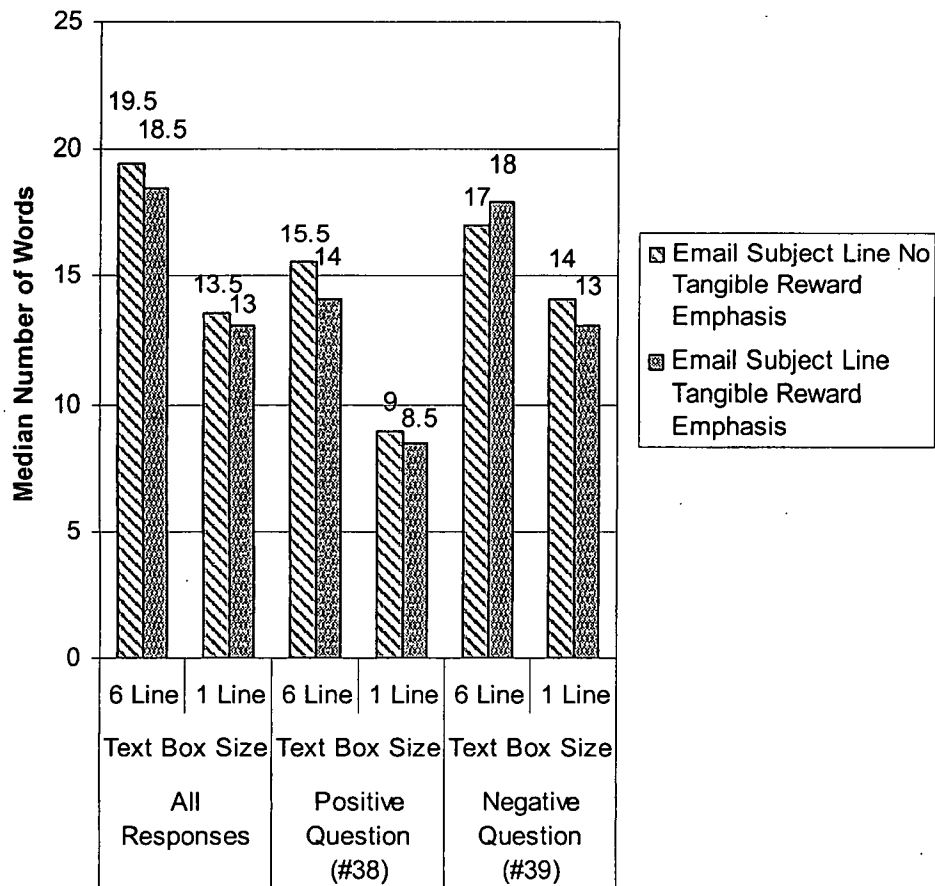


Figure 16. Median number of words in responses to open-ended questions, by email subject line and text box size groups.

APPENDIX B

ADDITIONAL TABLES

Table 19. Mean number of topics in responses to open-ended questions (38 and 39), with standard deviations provided in parenthesis.

Both Question Types (#38 + #39)		Email Subject Line		
		No Tangible Reward	Tangible Reward	Both Subject
		Emphasis	Emphasis	Line Groups
Text Box	6 Line	2.40 (1.52)	2.38 (1.37)	2.39 (1.46)
Size	1 Line	2.27 (1.54)	2.29 (1.48)	2.28 (1.51)
Both Text Box		2.34 (1.53)	2.33 (1.43)	2.33 (1.49)
Size Groups				

Positive Question (#38)		Email Subject Line		
		No Tangible Reward	Tangible Reward	Both Subject
		Emphasis	Emphasis	Line Groups
Text Box	6 Line	1.23 (1.05)	1.23 (0.94)	1.23 (1.00)
Size	1 Line	1.15 (0.97)	1.16 (0.93)	1.16 (0.94)
Both Text Box		1.19 (1.01)	1.19 (0.93)	1.19 (0.97)
Size Groups				

Negative Question (#39)		Email Subject Line		
		No Tangible Reward	Tangible Reward	Both Subject
		Emphasis	Emphasis	Line Groups
Text Box	6 Line	1.17 (0.97)	1.15 (0.78)	1.16 (0.90)
Size	1 Line	1.12 (0.99)	1.12 (0.97)	1.12 (0.98)
Both Text Box		1.15 (0.98)	1.13 (0.89)	1.14 (0.94)
Size Groups				

Table 20. Distribution of Value Ratings

	"No Value"	"Generic Value"	"Categorical"	"Explanatory"	"High Value"	All Value Ratings
Question 38	113	94	72	69	76	424
	26.7%	22.2%	17.0%	16.3%	17.9%	100%
Question 39	104	59	74	41	141	419
	24.8%	14.1%	17.7%	9.8%	33.7%	100%
Both Question Types	217	153	146	110	217	843
	25.7%	18.1%	17.3%	13.0%	25.7%	100%

Table 21. Distribution of collapsed value ratings.

	"Low Value"	"Moderate Value"	"High Value"	All Value Ratings
Question 38	207	141	76	424
	48.8%	33.3%	17.9%	100%
Question 39	163	115	141	419
	38.9%	27.4%	33.7%	100%
Both Question Types	370	256	217	843
	43.9%	30.4%	25.7%	100%

Table 22. Distribution of Collapsed Value Ratings by Text Box Size for Positive Question Type (#38)

	"Low Value"	"Moderate Value"	"High Value"	All Value Ratings
Question 38 Six Line	97	64	45	206
	47.1%	31.1%	21.8%	100%
One Line	110	77	31	218
	50.5%	35.3%	14.2%	100%
Both Text Box Size Groups	207	141	76	424
	48.8%	33.3%	17.9%	100%

Table 23. Distribution of Collapsed Value Ratings by Subject Line Group for Positive Question Type (#38)

Question 38	"Low Value"	"Moderate Value"	"High Value"	All Value Ratings
No Tangible Reward Emphasis	116 49.2%	70 29.7%	50 21.2%	236 100%
Tangible Reward Emphasis	91 48.4%	71 37.8%	26 13.8%	188 100%
Both Subject Line Groups	207 48.8%	141 33.3%	76 17.9%	424 100%

APPENDIX C

TEXT OF EMAIL PRENOTIFICATION

Group A – Pre-notification email

To: All UD First Year Students

Subject: UD Computer Survey, Coming soon

From: Computer.Survey@notes.udayton.edu

Next week, you will receive your invitation to complete the UD Computer Survey. Don't miss your chance to win free food and share your experience with your new computer. Look for the UD Computer Survey in your email next week!

Group B – Pre-notification email

To: All UD First Year Students

Subject: UD Computer Survey, Coming soon

From: Computer.Survey@notes.udayton.edu

Next week, you will receive your invitation to complete the UD Computer Survey. Don't miss your chance to win free food and share your experience with your new computer. Look for the UD Computer Survey in your email next week!

Group C – Pre-notification email

To: All UD First Year Students

Subject: FREE FOOD !!! UD Computer Survey, Coming soon

From: Computer.Survey@notes.udayton.edu

Next week, you will receive your invitation to complete the UD Computer Survey. Don't miss your chance

to win free food and share your experience with your new computer. Look for the UD Computer Survey in your email next week!

Group D – Pre-notification email

To: All UD First Year Students

Subject: FREE FOOD !!! UD Computer Survey, Coming soon

From: Computer.Survey@notes.udayton.edu

Next week, you will receive your invitation to complete the UD Computer Survey. Don't miss your chance to win free food and share your experience with your new computer. Look for the UD Computer Survey in your email next week!

APPENDIX D
TEXT OF EMAIL COVER LETTERS

Group A – Cover Letter email

To: All UD First Year Students

Subject: UD Computer Survey, Now Available

From: Computer.Survey@notes.udayton.edu

Today is the day! Don't miss your chance to win free food and share your experience with your new computer. To complete the survey, go to:

<http://facstaff01.udayton.edu/compsurvey/survey2000.nsf/A?OpenPage>

Surveys must be completed before November 21, 2000. If you have any questions please contact

Computer.Survey@notes.udayton.edu

This survey is for first year students at the University of Dayton only. If you have received this message in error, please disregard it.

Group B – Cover Letter email

To: All UD First Year Students

Subject: UD Computer Survey, Available Now

From: Computer.Survey@notes.udayton.edu

Today is the day! Don't miss your chance to win free food and share your experience with your new computer. To complete the survey, go to:

<http://facstaff01.udayton.edu/compsurvey/survey2000.nsf/B?OpenPage>

Surveys must be completed before November 21, 2000. If you have any questions please contact

Computer.Survey@notes.udayton.edu

This survey is for first year students at the University of Dayton only. If you have received this message in error, please disregard it.

Group C – Cover Letter email

To: All UD First Year Students

Subject: FREE FOOD !!! UD Computer Survey, Now Available

From: Computer.Survey@notes.udayton.edu

Today is the day! Don't miss your chance to win free food and share your experience with your new computer. To complete the survey, go to:

<http://facstaff01.udayton.edu/compsurvey/survey2000.nsf/C?OpenPage>

Surveys must be completed before November 21, 2000. If you have any questions please contact

Computer.Survey@notes.udayton.edu

This survey is for first year students at the University of Dayton only. If you have received this message in error, please disregard it.

Group D – Cover Letter email

To: All UD First Year Students

Subject: FREE FOOD !!! UD Computer Survey, Available Now

From: Computer.Survey@notes.udayton.edu

Today is the day! Don't miss your chance to win free food and share your experience with your new computer. To complete the survey, go to:

<http://facstaff01.udayton.edu/compsurvey/survey2000.nsf/D?OpenPage>

Surveys must be completed before November 21, 2000. If you have any questions please contact

Computer.Survey@notes.udayton.edu

This survey is for first year students at the University of Dayton only. If you have received this message in error, please disregard it.

APPENDIX E
TEXT OF REMINDER EMAILS

Group A – Reminder email

To: All UD First Year Students

Subject: UD Computer Survey, Now Available

From: Computer.Survey@notes.udayton.edu

Don't forget to complete the UD Computer Survey! Don't miss your chance to win free food and share your experience with your new computer. To complete the survey, go to:

<http://facstaff01.udayton.edu/compsurvey/survey2000.nsf/A?OpenPage>

Surveys must be completed before November 21, 2000. If you have any questions please contact

Computer.Survey@notes.udayton.edu

This survey is for first year students at the University of Dayton only. If you have received this message in error, please disregard it.

Group B – Reminder email

To: All UD First Year Students

Subject: UD Computer Survey, Available Now

From: Computer.Survey@notes.udayton.edu

Don't forget to complete the UD Computer Survey! Don't miss your chance to win free food and share your experience with your new computer. To complete the survey, go to:

<http://facstaff01.udayton.edu/compsurvey/survey2000.nsf/B?OpenPage>

Surveys must be completed before November 21, 2000. If you have any questions please contact

Computer.Survey@notes.udayton.edu

This survey is for first year students at the University of Dayton only. If you have received this message in error, please disregard it.

Group C – Reminder email

To: All UD First Year Students

Subject: FREE FOOD !!! UD Computer Survey, Now Available

From: Computer.Survey@notes.udayton.edu

Don't forget to complete the UD Computer Survey! Don't miss your chance to win free food and share your experience with your new computer. To complete the survey, go to:

<http://facstaff01.udayton.edu/compsurvey/survey2000.nsf/C?OpenPage>

Surveys must be completed before November 21, 2000. If you have any questions please contact

Computer.Survey@notes.udayton.edu

This survey is for first year students at the University of Dayton only. If you have received this message in error, please disregard it.

Group D – Reminder email

To: All UD First Year Students

Subject: FREE FOOD !!! UD Computer Survey, Available Now

From: Computer.Survey@notes.udayton.edu

Don't forget to complete the UD Computer Survey! Don't miss your chance to win free food and share your experience with your new computer. To complete the survey, go to:

<http://facstaff01.udayton.edu/compsurvey/survey2000.nsf/D?OpenPage>

Surveys must be completed before November 21, 2000. If you have any questions please contact

Computer.Survey@notes.udayton.edu

This survey is for first year students at the University of Dayton only. If you have received this message in error, please disregard it.

APPENDIX F

INSTRUCTIONS FOR CONTENT ANALYSIS

Instructions to Reviewers

Thank you for assisting me with this task. Your help is a big boost to my hopes of completing my thesis!

The task is to conduct a content analysis of free-text responses given on a questionnaire. Responses were collected for two questions:

Question 38: "Please describe your POSITIVE experiences with the computer you purchased through UD. Include comments regarding hardware, software, support services, and cost."

Question 39: "Please describe your NEGATIVE experiences with the computer you purchased through UD. Include comments regarding hardware, software, support services, and cost."

"Value of Response"

First, each response will be rated according to the value it provides to the researcher. The value is determined according to the amount of specific information provided by the respondent.

Raters should place the responses into four basic types of responses:

Type 0 – "No Value"; comments unrelated to the question; also includes "none" and "no opinion" type responses.

Type 1 – "Generic Statement"; general comments, non-specific categories, non-specific explanation. Statement is related to the question but does not provide any specific information
(e.g. "I like my computer" relates to the questions but provides no specific information.)

Type 2 – "Specific Category"; Statement identifies a specific piece of software, a specific hardware component, a specific activity that they engage in.

Specific Category: The statement answers a question: "Which one?" or "What topic?"

(e.g. "I liked the software" doesn't answer "which software?" and would be rated as Type 1, "I liked Lotus Notes" does answer that question and would be rated Type 2. Similarly, "I like the support services" doesn't answer "which support services?" and would be rated Type 1. "I like the help desk" does answer that question and would be rated Type 2.)

Type 3 – "Specific Explanation"; Statement gives specific reasoning for an opinion they state.

Specific Explanation: The statement answers a question, "What do you mean?" "Why?" (i.e. "I liked it"? does not tell why, but "I liked it because they had a rapid response time" does.

"It was fast" does not explain how they arrived at that conclusion whereas "it is faster than my other computer" does explain what they mean.)

4 – "Complete Comments"; specific explanations tied to specific categories

(e.g. "It is faster than my other computer" is a specific explanation, but not a specific category. However "the internet connection is faster than my other computer" provides a specific category for the specific explanation.

Vice versa, "the internet connection is fast" provides a specific category but no explanation, whereas "the internet connection is faster than my other computer" provides both the explanation and the category.)

Sample Ratings:

Rating = 4

"I liked Lotus Notes because it allowed me to keep in touch with my friends."

-answers both questions: Which software? Lotus Notes; Why? Allows communication.

Rating = 2

"The students at the help desk are terrible. I don't like the help desk."

- "What topic": The help desk support staff.. "Why?" no real explanation.

Rating = 3

"I've had a lot of difficulty installing software."

-gives an explanation why: difficulty with installation; but no specific topic: software but no specifics.

Rating = 2

"I think it costs too much."

-What topic: High cost; Why do you think that? No clear explanation.

Rating = 4

"I think it costs too much. The computer I have at home is better and it cost less."

-gives a clear topic: high cost; and a clear explanation: compared price to other computer

Rating = 1

"My computer freezes."

-No clear topic: the computer, but nothing specific; -no clear explanation: it freezes is pretty generic.

Rating = 2

"I think it's unfair that the university forces us to buy a computer."

-Clear topic: University policy; Unclear explanation: why is it unfair?

Rating = 0

"none"

-No real value.

Rating = 0

"my apartment is cool."

-Not related to the question.

Many responses will contain several different comments within a single block of text. In these instances, rate each of the unique comments separately; then record the highest of the individual ratings as the overall rating for the block of text, and note the other ratings next to the overall rating..

(e.g. "Sometimes the printer messes up. I can't stand it when I lose my internet connection. When I called the help desk to get some help installing a new program, it took them three days to respond to my message." This would be broken up into 3 parts:

Part 1 – "Sometimes the printer messes up." Rating = 2; Topic = printer; Explanation = not specific.

Part 2 – "I can't stand it when I lose my internet connection." Rating = 2, Topic = Lost internet connection; Explanation = not specific

Part 3 – "When I called the help desk to get some help installing a new program, it took them three days to respond to my message." Rating = 4, Topic = Program installation at help desk; Explanation = Three day response time.

Overall Rating = 4)

“Topics Being Addressed”

Second, each participant response should be categorized according to the topic being addressed. The rating should record 2 pieces of information: 1) the number of unique topics being addressed (e.g. 1 topic, 3 topics, no topic). 2) the category code for the topics being addressed (see below).

Topics addressed in these responses should be categorized according to the following scheme:

Code - Topic

Topic	Code	Topic	Code
Hardware (General topic)	A0	Software (General Topic)	B0
Hardware – Printer	A1	Software – Win 2000 Prob	B1
Hardware - CD ROM	A2	Software – Lotus Notes Prob	B2
Hardware – DVD	A3	Software – User Friendly	B3
Hardware - Hard Drive	A4	Software – Already Installed	B4
Hardware - Disk Drive	A5	Software – Other	B5
Hardware – Monitor	A6		
Hardware – Other	A7	Overall Quality of Computer (General Topic)	D0
		Quality – Crashes	D1
Network / Internet Connection (General Topic)	C0	Quality – Malfunctions / Freezes	D2
Network – Log on Problems	C1	Quality – Overheats	D3
Network – Server Down	C2	Quality – Slow	D4
Network – Connection Problem	C3	Quality – User Friendly	D5
	C4	Quality – Good Space on Hard Drive	D6
Network – Fast Connection		Quality – Fast	D7
Network – Other	C5	Quality – Already Installed	D8
		Quality – Other	D9
Help Staff (General Topic)	E0		
Help Staff – Slow Response Rate	E1		
Help Staff – Miss Appointments	E2	Cost (General Topic)	F0
Help Staff – Available	E3	Cost – Inexpensive	F1
Help Staff – Quick Responding	E4	Cost – Neutral	F2
Help Staff – Other	E5	Cost – Too Expensive	F3
		Cost – Other	F4
Convenience (General Topic)	G0		
Convenience – Good for Communication	G1	General Comments Regarding Purchasing Requirements	H0
Convenience – Generally Positive	G2	Purchase Req – Negative	H1
Convenience – Generally negative	G3	Purchase Req – Positive	H2
Convenience – Laptop Positive	G4		

Convenience – Laptop Negative	G5	Restricting Internet Access	I1
		Restrictions – Negative	I2
No Response	J0	Restrictions – Positive	I3

APPENDIX G
QUESTIONNAIRE

UD Computer Survey 2000

Who are you?

(Please mark the appropriate response)

1. I am:

- ☐ Male
- ☐ Female

2. I am in the:

- ☐ School of Education & Allied Professions
- ☐ College of Arts & Sciences
- ☐ School of Engineering
- ☐ School of Business Administration

3. I purchased a:

- ☐ Tower (\$1277)

- ☐ Power Tower (\$1839)
- ☐ Notebook (\$2297)

E-mail

4. I use e-mail:

- ☐ Once a month or less
- ☐ Once a week
- ☐ Once a day
- ☐ More than once a day
- ☐ Never (skip to Question #7)

5. I use e-mail to (Mark **all** that apply):

- ☐ Contact Friends
- ☐ Contact family
- ☐ Work related
- ☐ Submit homework
- ☐ Receive homework assignments
- ☐ Ask questions of other students

- ☐ Ask questions of the professor
- ☐ Do group work
- ☐ Send attachments

6. Since coming to UD my **primary** e-mail account is with:

- ☐ Notes
- ☐ Hotmail
- ☐ Yahoo
- ☐ AOL
- ☐ Juno
- ☐ MSN
- ☐ Other If you selected other, please describe:

Internet/Web

7. I have used the Internet/Web:

- ☐ Yes
- ☐ No (skip to Question #16)

8. I use the Internet/Web for (Check **all** that apply):

- ☐ Personal use
- ☐ Class Assignments
- ☐ Work related
- ☐ Other If you selected other, please describe:

9. I have used the bookmark/favorites feature to revisit an Internet/Web site.

- ☐ Yes
- ☐ No
- ☐ I do not know what the bookmark/favorites feature is

10. I access the Internet/Web via a (Check **all** that apply):

- ☐ Dial in National provider (e.g. AOL or MSN)
- ☐ UD Network dial-in or on campus
- ☐ Cable Modem (e.g. Roadrunner)
- ☐ DSL Connection (High speed phone line)
- ☐ I do not know

11. How many of your courses at UD have required you to use the

Internet/Web to complete assignments?

- ☐ None
- ☐ 1 Course
- ☐ 2 Courses
- ☐ 3 Courses
- ☐ 4 or more Courses

12. How many of your instructors at UD have required you to use the Internet/Web to complete an assignment?

- ☐ None
- ☐ 1 Course
- ☐ 2 Courses
- ☐ 3 Courses
- ☐ 4 or more Courses

13. Have you ever created your own web site?

- ☐ Yes
- ☐ No (skip to Question #15)

14. I have created an Internet/Web site for (Check **all** that apply):

- ☐ Personal Use
- ☐ Work related purposes
- ☐ Class assignment

15. I use the Internet/Web for (Check **all** that apply):

- ☐ WWW surfing
- ☐ Retrieving Information/researching
- ☐ Chat rooms
- ☐ E-mail
- ☐ Downloading files
- ☐ Games
- ☐ Instant messaging
- ☐ Downloading MP3 files

Computer Experience

16. Have you ever taken a computer class prior to entering UD?

- ☐ Yes

- ☐ No (Skip to Question # 20)

17. How many computer classes did you complete prior to entering UD?

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4 or more

18. The classes that I took prior to entering UD focused on (Check **all** that apply):

- ☐ Keyboarding
- ☐ Word Processing
- ☐ Programming
- ☐ Spread Sheets
- ☐ Internet/Web and Computer Applications
- ☐ General Overview of Computer Applications

19. Prior to or since arriving at UD I have worked with (Check **all** that apply):

- ☐ Spreadsheets (e.g. Excel)

- ☐ Word Processors (e.g. Word)
- ☐ Presentation Software (e.g. Power Point)
- ☐ Web Design Software (e.g. Frontpage)
- ☐ Database management (e.g. Access)
- ☐ Graphics (e.g. Photoshop)

20. Overall I consider my current computer abilities to be very proficient.

Please base your level of agreement/disagreement to the statement using the following scale:

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Neither agree nor disagree
- ☐ Somewhat disagree
- ☐ Strongly disagree

Service

21. I have used the University of Dayton computer Help Desk (x93888):

- ☐ Yes
- ☐ No (Skip to Question # 29)

22. I feel that I had adequate access to the Help Desk (x93888).

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Neither agree nor disagree
- ☐ Somewhat disagree
- ☐ Strongly disagree
- ☐ Not applicable

23. The Help Desk staff was friendly when I called.

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Neither agree nor disagree
- ☐ Somewhat disagree
- ☐ Strongly disagree

24. The Help Desk staff treated me respectfully when I called.

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Neither agree nor disagree
- ☐ Somewhat disagree
- ☐ Strongly disagree

25. The Help Desk staff was very knowledgeable.

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Neither agree nor disagree
- ☐ Somewhat disagree
- ☐ Strongly disagree

26. I received adequate feedback from the Help Desk on the status of my situation.

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Neither agree nor disagree
- ☐ Somewhat disagree

- ☐ Strongly disagree

27. The Help Desk responded to my call within a reasonable time.

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Neither agree nor disagree
- ☐ Somewhat disagree
- ☐ Strongly disagree

28. On average, how many on-site visits did it take for a Technician to solve each of your computer problems?

- ☐ 1 visit
- ☐ 2 visits
- ☐ 3 visits
- ☐ 4 visits
- ☐ 5 or more visits
- ☐ My computer has never required an on-site visit.

Training & Technology

29. The rationale for each first year student purchasing a University approved computer was

adequately explained to both me and my parents.

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Neither agree nor disagree
- ☐ Somewhat disagree
- ☐ Strongly disagree
- ☐ No opinion

30. If you had been required to purchase the Notebook computer would the additional cost have affected your decision to come to UD?

- ☐ Yes
- ☐ No

31. I think it is very important for students to have a computer when they go to college.

- ☐ Strongly agree

- ☐ Somewhat agree
- ☐ Neither agree nor disagree
- ☐ Somewhat disagree
- ☐ Strongly disagree

32. UD's technology-enhanced learning initiatives were an important reason in my decision to attend UD.

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Neither agree nor disagree
- ☐ Somewhat disagree
- ☐ Strongly disagree

33. It is very important for college students to develop excellent computer skills while in college.

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Neither agree nor disagree
- ☐ Somewhat disagree

- ☐ Strongly disagree

34. Computer skills are very important for all college graduates.

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Neither agree nor disagree
- ☐ Somewhat disagree
- ☐ Strongly disagree

35. Computer skills are critical for career-readiness in today's job market.

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Neither agree nor disagree
- ☐ Somewhat disagree
- ☐ Strongly disagree

36. If, in addition to your major, UD offered an optional program which would lead

to Certification in Information Technology how likely would you be to

participate?

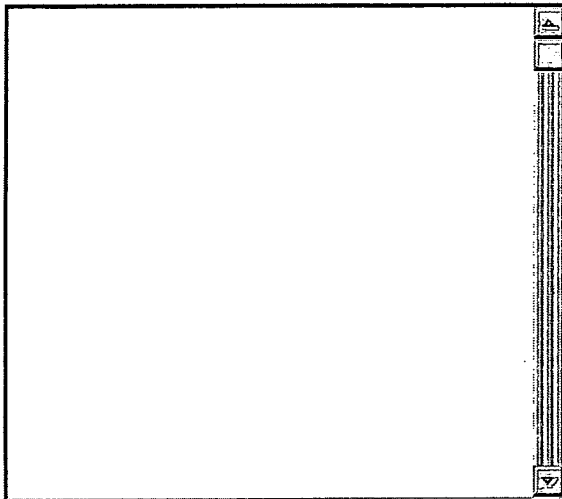
- ☐ Highly likely
- ☐ Mildly likely
- ☐ Mildly unlikely
- ☐ Highly unlikely

37. All things considered, I am satisfied with the computer I purchased.

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Neither agree nor disagree
- ☐ Somewhat disagree
- ☐ Strongly disagree

38. Please describe your POSITIVE experiences with the computer you purchased through UD. Include comments regarding hardware, software, support services, and cost.

REC 757253A



39. Please describe your **NEGATIVE** experiences with the computer you purchased through UD. Include comments regarding hardware, software, support services, and cost.

