From the User's Perspective:
Perceptions of Risk Relative to Benefit Associated with Using the Internet

Abstract

We departed from existing studies on Internet use by exploring users' perception of their own use of the Internet. Using a mixed-method explanatory sequential design approach, we first asked users to generate lists of actions they take on the Internet and then asked them why they engage in these 35 activities. Using the information gleaned from the interviews, we developed surveys that asked 261 users (ages 19-68) to rate the perceived risk (defined as situations that contain uncertainty regarding outcomes and/or possess the potential for negative consequences) associated with each action, benefits received from each action, frequency with which they engage in the action, and amount of information they are willing to share to engage in the action. We also assessed a number of individual difference characteristics. Our study results (1) provide an Internet Action list usable in future studies; (2) provide an initial understanding that users (to a degree) engage in Internet actions for the benefits they perceive they gain; (3) show that users share little personal information, if any, to get those benefits; and (4) users have little ability to accurately evaluate the true risk (i.e., due to Internet threats) associated with those actions.

Keywords:

Internet; risk-perception; perceived benefits; older versus younger users; risk-gain ratio

1.0 Introduction

As of 2014, 2.92 billion people use the Internet worldwide (Statista, 2015). Using an economical risk-return framework, researchers have suggested the increase in Internet usage is most likely due to the many benefits it provides (e.g., Horrigan, 2008). For example, the Internet facilitates work, social connections, and education. However, along with the many benefits of using the Internet come security and privacy risks.

Given the increasing complexity of computers and sophistication of Internet security threats, we suspect it has become progressively difficult for users to understand what risks they are taking when accessing and using the Internet. In support, despite their reported awareness of possible consequences and self-proclaimed competence as computer users, people still engage in risky online behavior (Aytes & Connolly, 2004). Users report concerns about supplying their personal information online (Cranor, Reagle, & Ackerman, 1999; Horrigan, 2008; Phelps, Nowak, & Ferrell, 2000); however, they continue to do so in exchange for convenience and potential marketing benefits (Horrigan, 2008; Phelps et al., 2000). It is apparent that given their concern yet continued exposure, users are mostly unaware of the risks (i.e., potential consequences; Bauer, 1960) posed by their repeated Internet use.

Furthermore, people become acclimated or insensitive to repeated exposure to risks (Fischhoff, Bostrom, & Quadrel, 1993; Shaklee & Fischhoff, 1990; Slovic, Fischhoff, & Lichtenstein, 1979; Zeckhauser & Viscusi, 1990), which tells us that they will continue to engage in risky Internet use, if not become more emboldened over time. Furthermore, even for those who claim they recognize that risks exist, they tend to believe those risks apply to others rather than to themselves (e.g., Brosius & Engel, 1996; Debatin, Lovejoy, Horn, & Hughes, 2009; Paul, Salwen, & Dupagne, 2000). Given this cumulative evidence, we should conclude that people are poor judges of their own ability to assess risk on the Internet. As of today, there is little empirical evidence to confirm or reject suspicions that users' lack awareness of Internet risks because few have studied users' perceptions of the risks inherent in the Internet.

The study of risk perceptions is broad, yet lacks depth in some areas. Defined in multiple ways across a number of domains, risk perceptions are studied in psychology, sociology, political science, and geology, to name a few (Slovic, 1987). In general, the aim of these studies is to stop people from engaging in risky behavior, such as unprotected sex or smoking (e.g., Arnett, 2000; Rolison & Scherman, 2003). Researchers have also examined general perceptions of risky behavior within a number of broad domains such as recreation, finance, and health or safety (e.g., Soane, Dewberry, & Narendran, 2010; Weber, Blais, & Betz, 2002). The intent of this research is to identify people's tendencies towards making risky choices that could be used to predict their subsequent behavior. For instance, within the consumer and marketing literature, perceived risk has been identified as a barrier to electronic commerce (e.g., Lieberman & Strashevsky, 2002) and adoption of technology that leads to more purchases (e.g., Featherman & Pavlou, 2003; Shen & Chiou, 2010). Within the Internet security literature, many have examined methods to encourage secure behavior on the Internet, including password protection, email usage, security notices, and backing up computer files (e.g., Aytes & Connolly, 2004; Davinson & Sillence, 2010; Vladlena, Saridakis, Tennakoon, & Ezingear, 2015). Researchers in this literature domain focus primarily on how to promote secure behaviors when using the Internet

(Davinson & Sillence, 2010; Furnell, Bryant, & Phippen, 2008), alleviate anxiety towards the Internet (Durnell & Haag, 2002), and resolve user ignorance that prevents use of the Internet, such as e-commerce (e.g., Grazioli, 2004).

Although much is understood about users' perceptions of risk when it comes to electronic commerce and securing the Internet, few studies to date provide general insight into what users do with the Internet, how they view the Internet as a medium, or whether they truly perceive the Internet itself as risky. For example, what specific actions do users report that they engage in? How does their view of the Internet shape their regular use of the Internet? Do they perceive those actions as inherently risky?

To explain why people engage in risky behavior on the Internet, some researchers have turned to the theory of planned behavior (Ajzen, 1991; Ajzen & Fishbein, 1973) as an alternative to the economics risk-return framework. The theory of planned behavior suggests that attitudes towards using the Internet (e.g., "is it risky?") determine whether an employee behaves in a manner that increases his or her vulnerability to Internet security threats. Although this theory provides a potentially useful lens through which to study Internet behaviors, and even though researchers have studied Internet use, such as consumer online purchasing (e.g., Harridge-March, 2006; Pires, Stanton, & Eckford, 2004), there is limited information on employees' perceptions of the riskiness of their Internet behavior. Even the consumer research has focused on trustworthiness of online vendors to understand their buying habits (e.g., Harridge-March, 2006), paying no attention to the perceived risk of the Internet itself.

Thus, although research efforts have advanced our understanding of specific uses of the Internet, their narrow focus on a single domain (e.g., shopping, banking, password protection) and reliance on pre-determined lists of general risky actions fail to provide a broad understanding or mechanism for evaluating users' perceptions of the Internet across a variety of domains. Consequently, we depart from existing studies by exploring users' perception of their own Internet use. Using a mixed methods explanatory sequential design approach (i.e., integrating qualitative and quantitative research; Creswell & Clark, 2007), we asked users to generate lists of actions they take on the Internet and then asked why they engaged in these activities. Using the information gleaned from the interviews, we developed surveys that asked users to rate the actions on the perceived risk (defined as situations that contain uncertainty regarding outcomes and/or possess the potential for negative consequences) associated with each action.

Therefore, the focus of our exploratory study was on the user and his or her general perceptions of the Internet. In contrast to extant literature, our focus was driven by how users view the Internet. Our approach is essential for advancing existing literature because knowing the user's perception of risk associated with a specific action is fundamental in applying theories such as the theory of planned behavior (Ajzen, 1991; Ajzen & Fishbein, 1973).

1.1 Psychological Risk Perception

The objective for studying user perceptions of risk on the Internet is ultimately to design solutions that prevent individuals from increasing their vulnerability to Internet security threats. To achieve this goal, researchers need to understand individuals' perceived level of risk, which

according to the theory of planned behavior, may predict Internet behavior (Ajzen, 1985; Ajzen & Fishbein, 1973). Social psychological research in the perception of health-related risky behaviors (e.g., engaging in sex without protection: Weinstein, 1993) and risk of texting while driving (Atchley, Atwood, & Boulton, 2011) indicates, however, that even when individuals hold negative attitudes towards specific behaviors, they engage in them anyway. These findings cast doubt on solely using the theory of planned behavior for explaining behavior resulting from risk perceptions. The key here, according to Weber et al. (2002), is that risk perceptions are not the same as *attitudes* towards risk. Weber et al. argued that attitudes towards risk are stable evaluations of the tradeoff between expected utility of an action and the potential for that action to result in an unfavorable outcome. Those who generally believe they can manage the outcome or are willing to take the chance that the payoff will be favorable hold positive attitudes towards risk; they see the glass as half full. Perceptions of risk, in contrast, are moment-to-moment assessments of the uncertainty and threat a situation or behavior holds at that time. Perceptions of risk are, therefore, dependent on the specific situation.

Findings on risk perception in specific situations, such as health and driving, have alternatively been explained using cognitive dissonance theory (Festinger, 1957). This theory suggests that individuals engaging in negative behaviors reduce their perceptions of the risk associated with those behaviors as a mechanism for resolving the dissonance experienced by knowing the risk, yet still engaging in the behavior. Such an explanation has been put forth for *known* risk perceptions – situations where the risk is known and the consequence has been quantified (e.g., Atchely et al., 2011), such as texting while driving and engaging in unprotected sex. However, even though the study of risk perception has become associated with and defined as a calculated, engineered, or psychometric analysis of an objective outcome, the perception of risk is subjective, where a calculation or probability analysis of consequences is actually not known (Brehmer, 1994). The risk, per se, may or may not actually exist – what is relevant is the *perception* that it exists. Internet threats present a scenario where neither the risk nor the consequence is known or quantifiable.

1.2 Rational Choices in Risk Perception

When studying risk perception, one cannot ignore the body of literature focused on rational decisions under situations of risk or uncertainty (e.g., Kahneman & Tversky, 1982; Slovic, Fischhoff, & Lichtenstein, 1977; Tversky & Kahneman, 1981). This literature focuses on *rational choices* rather than unknown and unquantifiable consequences such as with Internet threats. Specifically, this research, based in behavioral economics, focuses on how people make rational or logical decisions and evaluate probabilities, given variants of uncertain and/or risky choices and catastrophic situations (e.g., nuclear reactor accident, number of fatalities due to medical disaster: Slovic, Fischhoff, & Lichtenstein, 1984).

The findings are informative in understanding judgments of important economic and health implications, yet its applicability to studying perceptions of risk with Internet use is limited. Namely, rational choices, where people are presented with quantifiable and specified alternatives, are inherently different from perceptions of risk to Internet security threats where there are no quantifiable or specified alternatives. This risk-return framework is dependent on people making a calculated tradeoff between expected benefits and the risk associated with those

benefits. In particular, noted works by Tversky and Kahneman (1981) have revealed that when given a set of competing choices, people tend to be risk averse where gains are involved and risk seeking when choices involve losses, except when the probability of winning or losing in that situation is small. With the Internet, however, the consequence is unknown and unquantifiable, as is the probability of being exposed to a threat.

1.3 Summary

In summary, though much research has been conducted on Internet use, very little, if any, has focused on users' perceptions and their understanding of the Internet itself. Furthermore, existing studies examining risk perception and Internet use have focused on situations wherein different variables in the risk equation are known, as opposed to the reality of Internet threat where users know nothing about the potential threat, the tradeoffs, or the probability of an actual threat, which itself is unpredictable. Consequently, existing theoretical frameworks fail to provide an understanding or prediction of users' perceptions of the risk associated with the Internet. Thus, our study explores users' perceptions of the Internet and their use of the Internet.

2.0 Method

We used a mixed methods exploratory sequential design approach (Creswell & Clark, 2007) involving a qualitative study first, where we identified user actions and benefits. Second, we conducted a quantitative study to obtain ratings of perceptions of risk and benefit associated with the actions, as well as personality and demographic characteristics that might predict users' risk/benefit ratio.

2.1 Participants

For the qualitative part of our study, in October 2011 we recruited adults from a local senior center, 50-64 years of age, and a nearby university, 18-29 years of age. We chose adults between 50-64 years of age, first, because of the rapid growth in percentage of adults in this age group due to the population surge in the United States between 1946 and 1964 (Maples & Abney, 2006). By 2025, it is anticipated that over one billion people worldwide will be at least 60 years old (The World Health Organization, 2014); therefore, understanding the perceptions of this growing cohort is essential and timely. Second, although actively involved with social media on the Internet (e.g., Nauck & Suckow, 2006), their behavior with other aspects of the Internet is potentially unpredictable due to their high willingness to make risky decisions in situation of perceived potential loss but precautionary behavior when considering perceived potential gains (Mather et al., 2012). We chose young adults between the ages of 18-29 because research has shown that young adults between the ages of 16-24 report the highest level of Internet use and associated risks (Kandell, 1998; Öztürk, Odabasioglu, Eraslan, Genç, & Kalyoncu, 2007; Şaşmaz et al., 2014), and they prefer online communication as compared to face-to-face (Caplan, 2005; Ceyhan, Ceyhan, & Gürcan, 2007). This preference and comfort with online communication, however, ties into more risky online behavior (Raytheon, 2013). Having been identified as the most vulnerable populations for Internet threats (Fox, 2006; Horrigan, 2008; Lyons, 2004), these two age groups could provide the most relevant list of Internet activity for us to examine perceptions of risk associated with those actions using the larger sample in the quantitative study.

Interested participants responded to recruitment flyers by contacting the researchers using email, after which appointments for the interviews were established. The resulting sample included 18 total participants (61% Female), of which 16 identified as Caucasian, one as Hispanic/Latino, and one as multi-racial. The average age for younger participants ($n = 11$) was 26.27 years and 53.36 years for the older participants ($n = 7$). Participants worked in a variety of jobs including a retail store assistant manager, nurse, customer service representative, Director of human resources for a private law firm, public school teacher, analyst, project engineer for a medical device company, and a professional communications specialist.

For the quantitative portion of the study, in March 2013 we recruited from a nearby university, advertised at the local city chamber of commerce, and asked friends and family to recommend people and groups they know from whom we then recruited to voluntarily participate. Our recruitment efforts netted 261 participants, between 19 and 68 years of age (average age 31.25 years, $SD = 14.68$), 80 males and 181 females, 75% Caucasian, 3.1% Asian/Pacific Islander, 7.7% Latino/Hispanic, 7.7% multiracial, 2% African-American, and the rest declined to report. In terms of education, 71.3% reported currently working towards a bachelor's degree, whereas the rest indicated having no education (6.5%), taking college classes (3.4%), recently completed a bachelor's degree (within the last 5 years, 11.8%), and completed a graduate degree (6.1 %). The rest were unidentified in terms of education level. Less than half (106/261, 40.6%) were not working at the time of the study.

Of the 261 participants, 198 were younger adults (between 19 and 39 years of age, average 23.56 years; 134 females, 64 males; 72% Caucasian, 10% Latino/Hispanic, 4% Asian/Pacific-Islander, rest multiracial or declined), and 63 were older adults (between 41 and 68 years of age, average 55.41 years; 47 females, 16 males; 84% Caucasian, 8% multiracial, rest declined).

All participants were given informed consent and participated voluntarily. Participants recruited from the university were given research credit for participating, whereas adults recruited from non-university settings in both samples were given the opportunity to enter their contact information into a drawing for a \$50 gift card.

2.2 Procedures

In the qualitative phase of the study, participants were asked about their computer use at home and at work. Interviews were semi-structured to guide participants yet allow them maximum leeway in describing, using their own language, what they did using the Internet and why, providing rich detail and depth of individual experiences that may not be as readily obtained using closed-ended questions or rigid interview script. Interview questions asked of all participants include "What do you use your computer for?", "What's the biggest advantage/disadvantage for you in using the Internet?", and "What types of online activities do you find you do most often?" Interviewers on the research team probed with questions, such as "tell me why you did that," and to ask for clarification. All interviews lasted approximately 1-2 hours long, and were recorded and digitally transcribed verbatim for content analysis.

In the quantitative phase, participants were emailed a link to two surveys offered 1-2 weeks apart. Surveys were housed on a secure server. Each survey took roughly 25 minutes to complete. Responses on the two surveys were linked using the survey software itself to prevent the collection of identifying information. Studies relying on self-report instruments may be susceptible to common method bias, which occurs when variance in scores is attributed to the method of data collection as opposed to actual differences in the study variables. Based on recommendations for alleviating concerns of method bias (i.e., Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), we incorporated the two-phase data collection approach separating variables across surveys, protected respondent anonymity and confidentiality, and allowed participants to access the surveys from any computer, increasing privacy.

2.3 Measures

No measures were used for the interviews. Instead, analysis of the interviews produced a list of 35 Internet actions (see Table 1) used in the benefits, frequency, and perceived risk assessments. We describe the analysis of the interviews in the Results section.

Table 1
Internet Actions

Action #	Full Description of Internet Action
1	Open emails
2	Open attachments sent via email
3	Browse the web to look up specific information such as locations, names, or movie times
4	Purchase an item on a very well-known website such as Amazon.com, Walmart.com, or Target.com
5	Purchase an item on a website you have never heard of before, or have not purchased from before, or is simply less well-known
6	Browse the web on a variety of sites to find deals or consumer reviews on products you're interested in
7	Sell items on Craigslist, Ebay, Etsy, or other consumer self-sell sites
8	Use your bank's website to transfer money, pay bills online, and check account balances
9	Trade online stocks and/or bonds
10	Access online entertainment that is not interactive but has pictures, videos, and articles, such as Breakspot, Lamebook, College Humor, etc.
11	Online gambling (before it became illegal)
12	Access online audio and visual entertainment such as YouTube, Hulu videos, or other electronic media presented and viewed online (does not require downloading)

Continued...

Table 1 (continued)
Internet Actions

Action #	Full Description of Internet Action
13	Read news articles or weather reports online
14	Access online audio and visual entertainment that requires downloading such as iTunes, Amazon.com or Barnes-and-Noble.com
15	Access entertainment that is shared peer-to-peer, such as Napster, bit torrent, etc.
16	Receive news articles, weather alerts, or blog alerts
17	Download pictures from photo-sharing sites such as Photobucket, Snapfish, Winkflash, Facebook, etc.
18	Upload pictures to photo-sharing sites such as Photobucket, Snapfish, Winkflash, Facebook, etc.
19	Browse/view (but not uploading or downloading) pictures on photo-sharing sites such as Photobucket, Snapfish, Winkflash, Facebook, etc.
20	Communicate using Skype, aim, Gmail chat, windows messenger, or live
21	Use travel sites such as Expedia, Travelocity, etc.
22	Play individual games online
23	Play online games with other online players such as World of Warcraft
24	Download games to play on your computer
25	Download third-party electronic copies of texts or answer keys
26	Access medical websites such as WebMD, health diagnostic sites, or other commercial health sites
27	Keep in touch with others via Facebook, MySpace, or other social networking sites
28	Exchange files between the office computers and home computers via the Internet
29	Share your computer login passwords with others
30	Send an email with embedded links.
31	Attach files to email messages.
32	Download productivity tools or templates.
33	Web surf in search of articles on specific topics
34	Conduct Google searches and click on the links displayed to access the documents that are found
35	Upload and/or view YouTube videos.

Measures for the quantitative portion of the study are noted below. Specifically, we chose measures to provide supporting or refuting evidence for suppositions made in the literature about users' reasons for engaging in Internet actions and assumptions regarding users' lack of awareness about the risk associated with the Internet (e.g., Horrigan, 2008; Phelps et al., 2000).

To evaluate whether risk perceptions of the Internet could be determined by an economical perspective, a trade-off of benefits gained, we assessed perceived benefits of Internet actions. We also asked participants how often they engaged in the various Internet actions. To evaluate how much privacy people were willing to give up to obtain the benefits of the Internet, we asked participants how much information they were willing to share to get each benefit. Alpha coefficient reliability is estimated for each measure using this sample.

2.3.1 Benefits associated with each Internet action

In the first survey, participants were given the list of 35 Internet actions and asked to rate why they engage in the activity to ascertain the benefit they receive from engaging in each Internet action. Responses options included *N/A I don't do this*, *Time Saver/Fast*, *Easy*, *Access to lots of information*, *Removes time or travel/distance constraints*, *enjoyment or taking a break*, and *Share with others/keep in contact*. Response options were derived from the analysis of the interviews. Respondents could choose as many of the options as applied to them, with each option endorsed given a '1', except N/A, which was given a '0'. The total benefit value of each action was the sum of the endorsements (values could range between 0 and 6).

2.3.2 Frequency of engaging in each Internet action

Also on the first survey, participants were given the list of 35 Internet actions and asked to rate how frequently they engaged in the activity, if at all. Responses were reported on a 0 = *don't understand or never* to 6 = *several times a day or for a few hours a day* response scale.

2.3.3 Information willing to share to do Internet action

On the first survey, participants rated each of the 35 Internet actions based on how much personal information they were willing to share to be able to engage in or do the action. The response options included *no information*, *full name*, *email address*, *phone number: home, work or cell – whichever you use most*, *home address*, *personal descriptions: age race gender physique*, *credit card number*, *bank account number*, and *social security number*. Response options were extracted from the interviews. After participants rated the information they were willing to share to engage in the Internet actions, we recoded the response scale with numbers obtained from questions asked earlier in the survey. Specifically, the numerical value given to the response option was derived from a question asked earlier in the survey, which required participants to rank order a list of terms representing personal identifying information (see Table 2). On the first survey, participants rank-ordered the list from *least personal* to *most personal* by physically clicking and dragging on items, moving them into their ordered place. Table 2 shows the average rank order of personal information, from least personal to most personal obtained for the full sample of 261 participants.

Table 2

Rank Order of Personal Information, From Least to Most

1.	Your email address
2.	Your full name
3.	Personal descriptions of you (age, race, gender, physique)
4.	Your phone number (home, work, or cell)
5.	Your home street address
6.	Your credit card number
7.	Your bank account number
8.	Your social security number

2.3.2 Perceived risk associated with each Internet action

In the second survey, participants were given the list of 35 Internet actions and asked to rate how risky they perceived each situation. Participants were given the following instructions “People often see some risk in situations that contain uncertainty about what the outcome or consequences will be and for which there is the possibility of negative consequences. However, risk is a very personal and intuitive notion, and we are interested in your gut level feeling of how risky each situation or behavior below is to you. For each of the following statements, please indicate how risky you perceive each situation.” Response options ranged from 1 = *Not at all risky* to 5 = *extremely risky*. To evaluate whether users’ perceptions of risk with the Internet actions were related to the risk Internet experts would associate with each action, we invited an Internet expert to rate the average risk associated with the actions.

2.3.3 Domain specific risk-taking

To examine whether individual differences were related to Internet risk perceptions, on the second survey we asked participants to complete the 30-item domain specific risk-taking scale (DOSPRT) developed by Blais and Weber (2006). The DOSPERT assesses attitudes towards risk and willingness to engage in risky activity across five domains: ethical, financial, health/safety, social, and recreational. Accordingly, we created five scale scores for the DOSPERT domains, based on Blais and Weber. Reliability estimates based on this study sample were: ethical $\alpha = .75$, financial $\alpha = .83$, health $\alpha = .77$, social $\alpha = .77$, and recreational $\alpha = .78$.

The DOSPERT does not assess *perceptions* of risk, but rather relatively stable evaluations of preference for and willingness to engage in risky behavior. The measure, therefore, does not assess whether the participant thinks a specific Internet action is risky, but rather whether his or her attitude towards risk is generally favorable or not favorable. The underlying argument for the scale is that if people are predisposed to see risk favorably, they are more likely to engage in risky behavior. The authors provide the example of an entrepreneur who has a favorable attitude towards risk – the entrepreneur is more willing to take risks than others with less positive attitudes towards risk. Response options ranged from 1 = *Not at all risky* to 5 = *extremely risky*.

2.3.4 Delay of gratification

On the second survey, we assessed individuals' tendency to seek immediate or delayed gratification using Hoerger, Quirk, and Weed's (2011) delay of gratification 10-item measure (short form). Scored on a 1 = *Strongly Disagree* to 5 = *Strongly Agree* response scale, sample items include "I would have a hard time sticking with a special, healthy diet" (reverse scored), and "I have always felt like my hard work would pay off in the end." The reliability estimate for this sample was $\alpha = .68$, which is lower than desired.

2.3.5 Computer Knowledge

Given previous literature suggesting that the more computer knowledge users have the less their risky online behavior (LaRose, Rifon, & Enbody, 2008), on the second survey we asked participants about their general level of computer knowledge using 11 questions made up for this study ($\alpha = .82$). Scored on a 1 = *Strongly Disagree* to 5 = *Strongly Agree* response scale, sample items include "I know how to recover deleted or lost data on a computer," and "I know how to write computer programs."

2.3.6 Trait Affectivity

Researchers have suggested that inverse relationships between perceived risk and benefit found in the social sciences may be because people rely on their emotions when rating their judgments (Finucane, Alhakami, Slovic, & Johnson, 2000). Although no theory or empirical results in Internet studies suggested we would find the same results with risk perceptions of the Internet, we proactively assessed positive and negative trait affectivity using the PANAS by Watson, Clark, and Tellegen (1988). Watson et al. provided validity evidence for the use of the scale in assessing these stable personality traits. Scored on a 1 = *Very Slightly* to 5 = *Extremely* response scale, participants are asked to rate the extent to which they generally, on average and not at this particular moment, feel like the adjective. Ten adjectives are provided for positive affectivity ($\alpha = .91$), and ten for negative affectivity ($\alpha = .91$). Sample positive affectivity items include excited, alert, and determined, whereas negative affectivity items include distressed, scared, ashamed, and jittery.

3.0 Results

3.1 Developing the Internet Action List

To develop the Internet action list, we content analyzed (Miles & Huberman, 1994) the interview data and documented all actions users said they or their family members take on the Internet. For example, one interviewer noted that she uses Facebook, searches for information, mixes personal Internet use with work Internet use, listens to music, writes communications, reads/sends email, homeschools her son, he is a gamer and also uses Facebook, plans family vacations, checks her bills, keeps up with friends and family, and corresponds internationally using various programs like Skype.

From the interviews, 31 different actions were extracted. These actions were refined and extended based on existing literature and Internet expert feedback. For example, participants noted several types of entertainment derived from the Internet, which was refined to (1) Online entertainment that is not interactive but has pictures, videos, and articles, such as Breakspot, Lamebook, college humor, etc., (2) Online audio and visual entertainment such as YouTube, Hulu video, iTunes, or other electronic media presented and viewed online (does not require downloading), (3) Online audio and visual entertainment that requires downloading such as iTunes, amazon.com, and barnesandnoble.com, and (4) Entertainment that is shared peer-to-peer, such as Napster, bit torrent, etc. In total, 35 different Internet actions were developed (see Table 1). For remaining analyses, we ordered the Internet actions in terms of the rank-order participants gave them given the benefit they received from engaging in that Internet action (see Table 3). Therefore, the action with the most benefit associated with it was opening emails, and the least beneficial action was online gambling (most likely because it has been outlawed in the United States), followed by sharing passwords.

Table 3

Internet Actions Rank Ordered by Benefit Received

Benefit Rank	Shortened Internet Action	Action #
1	open emails	1
2	google & click	34
3	browse for info	3
4	social media	27
5	attach files	31
6	web surf	33
7	open attachments	2
8	read news articles	13
9	banking	8
10	browse photos	19
11	buy from known site	4
12	skype msgr	20
13	upload/view YouTube	35
14	browse for products	6
15	upload photos	18
16	travel sites	21
17	access online videos	12
18	download pictures	17
19	receive news blogs	16
20	exchange files ftp	28
21	medical sites	26
22	email with links	30
23	audio	14

Continued...

Table 3 (continued)

Internet Actions Rank Ordered by Benefit Received

Benefit Rank	Shortened Internet Action	Action #
24	noninteractive fun	10
25	buy from unknown site	5
26	shared entertain	15
27	sell craigslist	7
28	productivity templates	32
29	download texts	25
30	play games alone	22
31	download games	24
32	trade online	9
33	play online games with others	23
34	share passwords	29
35	online gambling	11

3.2 Benefits versus Frequency

We looked at the relationship between the benefits received from the Internet actions with how frequently users engaged in those actions, and their associated perceptions of risk. Figure 1 and 2 show that the actions users rated as giving them the most benefit are also, for the most part, the ones in which they engage most frequently and considered the least risky. We illustrate the ratings by age groups in addition to by the entire sample because, as noted previously, research has shown that Internet use is thought to vary between younger and older adults.

One can conclude from Figure 1 that all users engage in actions that are perceived as less beneficial less often, but those they do engage in are also the ones they considered (for the most part) the least risky, with some exceptions. For example, opening attachments in emails (#7 in Figure 1) provides a high level of benefit, but is also perceived as quite risky compared to other high benefit actions. Most likely, this risk association with the action of opening attachments is a direct result of decades of education about viruses embedded in email attachments. It is noteworthy that Figures 1 and 2 are remarkably similar, indicating that few differences appear to exist between younger and older users with regards to their frequency engaging in and risk perception associated with Internet actions relative to their perceived benefits.

Figure 1
Users' Rating of Frequency of Engaging in and Risk Perception of Internet Actions Rank Ordered by Benefits Received (n=261)

Note. Rank order is from 1 = highest to 35 = lowest in benefits received

Figure 2
Young and Older Users' Rating of Frequency in Engagement in and Risk Perceptions of Internet Actions Rank Ordered by Benefits Received (n=261)

Note. Rank order is from 1 = highest to 35 = lowest in benefits received

3.3 Perceptions of Risk

To evaluate users' accuracy of perceptions of risk, we compared their ratings of each action with the rating given by an Internet security expert associated with the project. Figure 3 shows how they compare with one another. In several cases, the expert rated the risk associated with the Internet action higher than what the user rated, but in many others, the users' ratings were higher than those of the Internet expert. For example, users rated browsing for information, buying from known websites, selling on Craigslist, banking, trading, and accessing online videos as higher in risk than did the expert. In contrast, the expert rated accessing entertainment that is shared peer-to-peer, downloading pictures, downloading texts, sharing passwords, and emailing with links much higher in risk than the 261 users. This comparison shows that people, in general, are unable to estimate accurately the level of risk for Internet threats associated with Internet actions.

3.4 Personal Information Sharing

To understand how much personal information users were willing to divulge in exchange for the perceived benefits of an Internet action, we mapped users' scores on information shared against the benefits associated with each Internet action. Figure 4 shows the results. Only a few Internet actions were considered worthy of sharing a substantial amount of personal information: online banking, buying from a known website, travel sites, and buying from an unknown website. The perceived level of risk that users reported associated with those actions, however, was about the same as nearly all other Internet actions, with the exception of buying from an unknown website.

Figure 3
Expert and User Ratings of Risk Perceptions of Internet Actions, Rank Ordered by Benefit (n=261)

Note. Actions are sorted in order of benefits gained from the action, from highest (left) to lowest (right) benefit gained.

Figure 4

Amount of Information User is Willing to Share to Get the Benefit Associated with each Internet Action and Perceived Risk Associated with each Action (n=261)

Note. The total score on information shared was divided by 100 to allow for both risk perception and information shared score to appear on the same chart.

3.5 Personality Dispositions

We examined whether domain specific risk taking or delay of gratification as personality dispositions could be used as predictors for users' frequency of Internet actions. Table 4 shows the correlations of domain specific risk taking and delay of gratification with each other, positive and negative affectivity, and with age and sex of participants.

We also examined correlations between factors of the DOSPERT (e.g., preference for and willingness to engage in *ethical, financial, health, social, or recreational* risks) with the 35 Internet actions (not shown here to save space) and found several significant correlations (all $p < .01$) of interest. Specifically, social was positively correlated with selling on Craigslist at .20; financial was negatively correlated with online purchases from a well-known site at -.19; health was negatively correlated with accessing online pictures non-interactive at -.20, and accessing fun that is peer-to-peer at -.26; and ethics was negatively related to accessing online pictures not interactive at -.23, accessing online audio and visual fun with no downloads at -.26, accessing fun that is peer-to-peer at -.32, and downloading copies of tests or answer keys at -.22. Though these correlations are interesting, they are small to moderate only and there is no discernable pattern to what the DOSPERT domains relate or do not relate with the Internet Actions.

Results from correlational analysis between positive and negative trait affectivity with risk and benefit perceptions of all 35 Internet actions showed a handful of significant correlations between negative affectivity and risk perceptions, only one between positive affectivity and perceived risk of sharing logins (.22), and no significant correlations for either positive or negative affectivity with perceived benefits. Significant correlations between negative affectivity and risk perceptions included looking up specific information (.16), reading news (.21), accessing fun that requires downloads (.17), accessing peer-to-peer fun (.13), online chat (.14), accessing travel sites (.19), accessing medical sites (.14), exchanging files (.13), attaching files in email (.16), searching for specific articles (.15), and conducting Google searches (.13). There was no discernible pattern amongst correlations with affect and other correlations.

Table 4

Means, Standard Deviations, Correlations, and Reliabilities of Study Variables for Sample 2 (n=261)

	<i>Mean</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11
1. Age	31.25	14.68	--										
2. Sex	1.69	0.46	.03	--									
3. Positive Affectivity	3.46	0.76	.07	.07	.91								
4. Negative Affectivity	1.76	0.69	-.22**	.03	.13*	.91							
5. Computer Knowledge	3.26	0.66	-.06	-.38**	.12	.05	.82						
6. Delay of Gratification	3.70	0.47	.20**	.27**	.29**	-.26**	-.05	.71					
7. DOSPERT Finance	22.16	4.37	.18**	.35**	.19**	-.02	-.22**	.31**	.83				
8. DOSPERT Health	22.68	4.10	.26**	.44**	.16**	-.07	-.23**	.41**	.52**	.77			
9. DOSPERT Recreational	19.63	4.43	.18**	.30**	.06	-.00	-.20**	.18**	.50**	.60**	.78		
10. DOSPERT Social	14.25	3.77	-.14*	.09	.07	.26**	-.09	-.08	.27**	.24**	.38**	.77	
11. DOSPERT Ethics	22.80	4.04	.31**	.40**	.25**	-.06	-.23**	.45**	.57**	.71**	.53**	.22**	.75

Note. Sex coded as 1 for Male, 2 for Female. Reliabilities in italics along the diagonal.

* $p < .05$, ** $p < .01$

Continued....

Table 4 (continued)

Means, Standard Deviations, Correlations, and Reliabilities of Study Variables for Sample 2 (n=261)

	<i>Mean</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11
12. Risk Information	1.76	.60	.09	-.10	.04	.14*	-.01	-.09	.13*	.14*	.28**	.41**	.17**
13. Risk Social	1.87	.70	.18**	-.06	.04	.09	-.06	-.03	.18**	.21**	.34**	.38**	.29**
14. Risk Finance	2.30	.66	-.07	.09	.02	.14*	-.15*	.02	.24**	.25**	.32**	.38**	.25**
15. Risk Miscellaneous	2.90	.86	.06	-.08	.10	.11	.12	.16*	.24**	.22**	.21**	.16**	.23**
16. Risk Tools	2.17	.79	.01	-.02	.03	.10	-.05	-.03	.23**	.22**	.27**	.34**	.25**
17. Risk Games	2.38	.80	.28**	.08	.08	-.00	-.12*	.13*	.34**	.37**	.41**	.30**	.38**
18. Risk Email	2.28	.80	.20**	-.06	.09	.07	.01	.03	.21**	.20**	.20**	.22**	.16*

Note. * $p < .05$, ** $p < .01$

	12	13	14	15	16	17	18
12. Risk Information	.91						
13. Risk Social	.85**	.91					
14. Risk Finance	.64**	.66**	.82				
15. Risk Miscellaneous	.34**	.43**	.39**	.77			
16. Risk Tools	.62**	.60**	.56**	.32**	.79		
17. Risk Games	.62**	.66**	.55**	.51**	.47**	.79	
18. Risk Email	.53**	.41**	.39**	.28**	.47**	.31**	.72

Note. * $p < .05$, ** $p < .01$

Correlations between the DOSPERT domains and the risk perception factors are shown in Table 4. The correlations show people's stable evaluations of preference for and willingness to engage in risky behavior related to their perceptions of the risk associated with various types of Internet actions.

There were far more positive relationships between the DOSPERT domains and risk perceptions of Internet actions than DOSPERT with frequency of actions, which would be expected since both are about risk perception. To reduce the likelihood of type I errors resulting from multiple statistical tests, we conducted an exploratory factor analysis on risk perceptions with the aim of extracting only a few clusters. Results supported seven main factors: information, social, financial, tools, games, email, and miscellaneous (see Table 5). Two items were not included due to their low inter-item correlations with all other items: exchanging files using ftp (Item #28), and sharing passwords (Item #29).

Table 5

Internet Actions Factor Analyzed by Risk Perceptions

Action #	Shortened Internet Action	Info	Social	Finance	Misc	Tools	Games	Email
13	read news articles	.71						
33	web surf	.65						
3	browse for info	.64						
26	medical sites	.60						
16	receive news blogs	.56	.47					
34	google & click	.55						
6	browse for products	.53						
12	access online videos	.45	.41					
17	download pictures		.74					
18	upload photos		.72					
19	browse photos	.45	.66					
20	skype msgr		.56					
35	upload/view YouTube		.48					
27	social media	.42	.45					
4	buy from known site			.69				
8	banking			.58				
9	trade online			.56				
5	buy from unknown site			.52				
7	sell craigslist			.47				
14	audio			.42				
21	travel sites			.40				

Continued....

Table 5 (continued)

Action #	Shortened Internet Action	Info	Social	Finance	Misc	Tools	Games	Email
25	download texts				.84			
24	download games				.70			
15	shared entertain				.52			
31	attach files					.70		
30	email with links					.55		
32	productivity templates					.47		
23	online games with others				.42		.58	
10	noninteractive fun		.42				.50	
11	online gambling						.48	
22	play games alone	.41			.40		.47	
2	open attachments							.62
1	open emails							.54

Turning to delay of gratification with Internet actions multivariate analysis of variance results, delay of gratification was significantly related only to risk information ($F = 1.72 (26), p < .05$) and risk miscellaneous ($F = 1.60 (26), p < .05$).

3.6 Computer Knowledge

In our data, the perceptions of risk related to computer knowledge were for only financial or game related actions; specifically, purchasing from a well-known site ($r = -.14, p < .05$), selling on Craigslist or other similar site ($r = -.22, p < .01$), trading stocks online ($r = -.14, p < .05$), accessing peer-to-peer fun ($r = .21, p < .01$), and playing games online with others ($r = -.16, p < .01$). Actions the Internet Security expert rated as having significant risk, such as opening email attachments, buying from unknown sites, downloading textbooks or games, and sharing passwords were not related to users' amount of computer knowledge. Moreover, users' frequency of engaging in computer actions was positively related to their level of knowledge for all actions except: opening emails, attaching files to emails, accessing online pictures not interactive, accessing travel sites, playing online games with others, downloading copies of texts or answer keys, using social networking sites, sharing login passwords, web searches for specific articles, google searches, and watching YouTube videos. Risky actions like sending emails with embedded links was positively related to computer knowledge ($r = .25, p < .01$), which suggests that the more the user knows, the more he or she engages in sending emails with links – even though this action was considered one of the riskiest actions on the list.

4.0 Discussion

Our primary goal for this exploratory study was to understand whether people perceive their own Internet actions as risky, and if so, why they might still engage in them despite the risk. Overall, our results suggest that people do perceive some Internet actions as more risky than they do

others, but continue to engage in them apparently for the benefits they perceive these actions provide. In general, Internet actions users engage in most frequently are also those they do not perceive as very risky. With a few exceptions in our data, we can conclude that people engage in Internet actions they find rewarding. The pattern of our findings, that benefits appear inversely related to perceived risk, is similar to that reported in studies of risk and benefit associated with broad, cross-domain social actions and items, such as drugs, guns, football, cars, and surgery (c.f., Alhakami & Slovic, 1994). Researchers in adolescent risk-taking also found that perceived benefits, rather than risks, were most predictive of actual behaviors (e.g., Parsons, Siegel, & Cousins, 1997).

After closely examining our results, however, the pattern of findings is not a clean inverse relationship as noted in other risk studies. Instead, our findings seem more consistent with recent developments in extensions to cognitive dissonance theory, namely Fletcher's (2011) revised theory of cognitive consistency. Fletcher proposed that small inconsistencies produce positive emotions rather than negative emotions as Festinger's (1957) theory proposes. Through a comprehensive review of the literature, Fletcher noted that when people experience large inconsistencies between actions and cognitions, they do behave according to the predictions of cognitive dissonance theory. However, when the inconsistencies are small, the theory is less reliable and people turn to the contextual environment to determine whether their actions will generate positive, amusing, or self-validating feelings. In looking at our results, in particular those in Figure 1, we see that those Internet actions providing only moderate gain are also rated more variably in terms of perceived risk and frequency of implementation. The Internet actions on the tail ends of the distribution, those providing the least and greatest gains, are those most consistently rated in terms of perception of risk relative to frequency of implementation. Without causal data or assessments of cognitive dissonance itself, we are unable to determine which decision is made first – to take the action, judge the risk, or evaluate the benefit, and whether small or large inconsistencies occur. However, we believe Fletcher's theory may be promising in future studies replicating our findings and examining risk perceptions of Internet use.

We examined the relationship between positive and negative trait affectivity, and perceptions of risk and benefit of the 35 Internet actions based on research showing that one's affect may serve as a heuristic for judging risks relative to gains regarding broad social actions such as those used by Alhakami and Slovic (1994). We did not find that trait affect served as a heuristic in ratings of Internet risk or benefit, suggesting that people rely on a different process to evaluate Internet risk and benefit than they do for most other social judgments. Although negative affect was related to a few perceptions of risk, we found no patterns of relationships to suggest that users rely on their emotions when rating risk or benefit perceptions of the Internet.

In addition, we found that users are, for the most part, not willing to share much personal information for the benefit gained, although they recognize that some actions, such as online banking, using travel web sites, and buying or selling online, require more personal information than other actions. These results suggest that users are not completely trusting of the Internet, which might somehow tie into their perceptions of risk. However, users' perception of Internet risk associated with each action tended not to be coordinated with what our Internet Security expert considered for that action, which indicates that although they recognize there is some risk in using the Internet, they may be unclear as to where exactly that risk lurks.

The main contributions of our study, therefore, are in providing: (1) a list of the top 35 Internet activities that people say they engage in the most; (2) users' perceptions of risk associated with each action; (3) users' ratings of how frequently they engage in the action; (4) the types of benefits users believe they get out of the action; and (5) how much personal information they are willing to share to get the noted benefit. Thus, our study provides insight into human perception and behavior associated with their use of the Internet – not just a select group of users and for a specific purpose such as banking or shopping. We also provide some results delineated by age groups (young users under 40 years old, older users over 40 years old) to respond to contrary suggestions that each group is more vulnerable than the other. We can conclude from our data that sex is not a predictor of risk perceptions, and that age may play a role in perceptions of risk related to social uses of the Internet, gaming, and email. In general, older participants view Internet actions as potentially more risky than do younger participants do. There are a few exceptions, such as selling on Craigslist, playing games, and reading news articles. Additionally, our results show that hunting for the personality trait that predicts users' behavior remains elusive – our assessment of users' domain specific risk taking and tendency towards delaying gratification did not reveal strong relationships.

By deviating from existing approaches to studying users' perceptions of the Internet, namely asking users to identify what actions they take and how often, and what benefits they say engaging in the Internet actions provides them, we exposed that existing theories and explanations about e-commerce or risk-perception of social actions seem lacking for understanding how users perceive the Internet itself. For example, as noted previously, users' emotions did not serve as a heuristic to guide risk perceptions of the Internet. Perceptions of risk associated with the Internet could not be explained by rational choice theories, did not fall into a strict inverse benefits to risk ratio or risk-return, or evaluation of what is at risk to determine perceptions of risk. Acquired knowledge of computers did not produce a reliable pattern in users' frequency of Internet actions or perceptions of risk, as previous studies suggest. The assumption is that the more you know or as your comfort level increases, the more risky you perceive the Internet and the less likely you are to engage. Our results did not support this assumption – knowledgeable users engaged in all Internet actions with higher frequencies, including the more risky actions. Lastly, dispositional tendencies of users failed to predict their perceptions of the Internet, where in studies of social behaviors such as using drugs, domain specific risk perceptions predicted actions. One could argue that because our study findings do not seem to fit into any existing models of risk-perception that our study is flawed. We propose instead that the reason our findings are unique is because we took a different approach. We asked users to tell us how they view the Internet and how they engage with it, rather than us assuming how the user views or engages with the Internet. Thus, our study results indicate that much more remains to be done to understand users' perceptions of the Internet as a medium, and efforts to develop new theoretical approaches that focus on users' perceptions and use of the Internet itself are needed.

Our departure from existing literature may be considered by some researchers as subtle and purely descriptive, yet the differences in our study versus the extant literature are quite extensive and have substantial impact on how we view Internet users. Specifically, researchers and practitioners are interested in what users think of the Internet, yet few, if any, appear to have asked them. For example, when comparing the list of actions our interviewees developed to those

provided in pre-determined risky-choice lists, our actions would not necessarily be considered risky or threatening. For example, people said they use the Internet to *browse for product information*, *Google and click*, and *download pictures*. Furthermore, we had an Internet security expert rate the actual risk associated with each action in terms of the potential for Internet threats, and then compared their ratings to those of our participants. Surprisingly, an action like *downloading pictures*, which users said they engaged in quite often, was rated as only somewhat risky by participants but was considered very risky by our Internet security expert. In contrast, users rated *Google and click* as not at all risky or somewhat risky, but our Internet expert rated this action as moderately risky. In studies of pre-determined lists, *Google and click* was not included, even though users reported engaging in this activity more than 95% of all other actions and at least once per day or more. Our study, therefore, provides a broader perspective than existing literature on Internet use.

4.1 Implications and Future Considerations

The results showed that, for the most part, users engage in Internet actions they perceive as beneficial; therefore, the implication is that the best way to protect users from engaging in risky behavior on the Internet is to reduce the perceived benefits associated with Internet actions. This may be easier said than done because creators of web sites are aggressively promoting their value and benefits to users, often by targeting users' vulnerabilities. Scams presented to older adults may be the most obvious success story of targeting vulnerabilities (Lee & Geistfeld, 1999). Organizations dedicated to Internet security can (1) create cheat-sheets with our Internet actions list, (2) categorize the actions to create an easier and simplified view, (3) color-code the risk level of actions (e.g., red for high risk, yellow for moderate risk, green for little or no risk), and (4) provide suggestions for what to do and what not to do associated with each action. These cheat-sheets can be made available to schools, universities, libraries, etc., to increase user awareness of their inability to assess the risk associated with various Internet actions accurately.

In addition, using our Internet action list researchers may examine additional factors, such as other personality traits or experience with Internet security threats that could be used to predict potential to interact with the Internet in a risky manner. Researchers might also consider group differences between Internet security experts and general users to determine to what extent even those with advanced knowledge of Internet risk are disciplined not to engage in high-risk activities without precautions. Along that line of study, researchers should invest in studies of precautionary activities to determine what, if anything, a user can do to prevent Internet threats, thereby clarifying in what way the user can change how the Internet behaves. It may be that the most effective solution requires sophisticated software that can detect the complex combination of circumstances necessary for activating an Internet threat or risk, and pop up a window asking the user to take a particular action to minimize the risk. The challenge with those interventions, of course, is getting users to use them (Mitchell, Gagné, Beaudry, & Dyer, 2012).

Because one solution only is not effective, researchers have suggested that a multipronged approach to helping users understand their vulnerability is necessary (Shillair et al., 2015); however, we suspect given the lack of predictability of user perceptions of the Internet, combined software, hardware, and people interventions may be necessary. Researchers should focus future efforts on understanding more clearly how users view the Internet and how their

behavior is subsequently shaped by the Internet itself; a research agenda that we hope to have advanced somewhat with the present exploratory study. In addition, grant agencies should fund more studies aimed at controlling or reducing Internet risk.

4.1.1 Limitations

Our data collection methodology, specifically ratings on 35 different Internet actions, limited our ability to use sophisticated predictive tools (e.g., regression, structural equation modeling). Although informative, correlational analyses cannot rule out interactions or offer comparisons that might rule out one factor over another. As an exploratory, first effort in understanding Internet risk from the user's perspective, our study provides a good starting point to launch future explorations into predicting user behavior.

Other limitations include the inability to draw causal inferences due to the cross-sectional design of our study, and single-source data collection that could be subject to common method bias effects. Common method bias occurs when the variability in scores is attributed to the data collection method rather than to differences in the constructs. We applied procedural remedies to common method bias (Podsakoff et al., 2003) such as a two-phase data collection, anonymity and confidentiality, and access to surveys from any computer, which provides some privacy during survey completion. Since our focus was on the users' perceptions and personal interpretations, the use of self-reports is deemed theoretically relevant (Chan, 2009; Judge, Bono, & Locke, 2000).

Additional limitations of our study relate to our samples. First, we did not obtain interview responses for Internet Actions from users between 30-50 years of age. We focused on developing a comprehensive list of Internet Actions taken by groups identified in the literature as being the most vulnerable to engaging in unsafe Internet practices. We included all ages in the larger quantitative study. Second, we relied on a sample of convenience and a snowball sampling method for the quantitative study, which reduces the representativeness of the sample and limits the generalizability of the findings to a broader population. Third, our samples were predominantly Caucasians living in the United States, which prevents us from generalizing our findings to other races or those living outside the United States. Third, in the quantitative sample we recruited and compensated university-recruited participants differently from non-university recruited participants, which may have influenced the type of respondent who volunteered and his or her motivation levels. Since we did not code for the different recruitment and compensation methods, we cannot assess whether or how these differences may or may not have affected the responses. Future studies should examine whether recruitment method and compensation cause a measurable difference in responses.

Lastly, we attempted to understand users' perceptions of risk associated with each Internet action, but also obtained an Internet Security expert's opinion. The expert cautioned that risks for each action may vary depending on the context and type of risk of interest. As provided by the expert "For example, if I am going to a (paid) health website and I am trying to determine how much risk I'm at for losing money, I would rate it as a 1. However, if I'm trying to determine how much risk I run that the website would create a personal profile of mine and potentially provide that to others, I would rate it as a 4." Therefore, researchers should replicate our study

with a focused examination just on risk perception to determine to what extent users recognize that risk per action varies. It may be that general users are not aware that risk may vary depending on context or type of risk/threat. These studies may benefit from incorporating and testing Fletcher's (2011) revised theory of cognitive consistency.

5.0 Conclusion

Our study marks an important step forward in examining several aspects of users' own perceptions of their Internet use. We deviated from existing studies on Internet use to explore users' perception of their own use of the Internet, and their perceptions of risk and benefit. Using a mixed method explanatory sequential design approach, we developed a comprehensive list of Internet actions with associated benefits. Users' perceived risk associated with each action further added to our understanding of how users see the Internet. Our focus, therefore, was on the user and his or her general perceptions of the Internet, a focus that heretofore has not been explored.

Our study results provide an Internet Action list usable in future studies, and an initial understanding that users engage in Internet actions for the benefits they perceive they gain, share little personal information, if any, to get those benefits, and have little ability to accurately evaluate the true risk (i.e., due to Internet threats) associated with those actions. We believe our results add to the literature by offering a unique perspective on users and a view from their eyes, not ours. We hope that our findings ignite additional examinations of user motivations and understanding of their interactions with the Internet relative to risk across broad domains of use, such as in our study, rather than remaining narrowly focused on e-commerce. As is evident from our Internet Action list developed by users themselves, purchasing on the Internet comprises a very small subset of behavior that people engage in on the Internet.

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From the User's Perspective:

Perceptions of Risk Relative to Benefit Associated with Using the Internet

Zinta S. Byrne^a

Kyla J. Dvorak^b

Janet M. Peters^c

Indrajit Ray^d

Adele Howe^d

Diana Sanchez^b

^a Department of Psychology
1876 Campus Delivery
Colorado State University
Fort Collins, CO 80523-1876
Ph: (970) 491-6982
Fax: (970) 491-1032
Email: Zinta.Byrne@colostate.edu

^b Department of Psychology
1876 Campus Delivery
Colorado State University
Fort Collins, CO 80523-1876

^c Department of Psychology
Colorado State University
Fort Collins, CO 80523-1876
Janet Peters is now at:
Department of Psychology
Washington State University (Tri-Cities)
Richland, WA 99534

^d Department of Computer Science
1873 Campus Delivery
Colorado State University
Fort Collins, CO 80524

Corresponding Author: Zinta Byrne

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