

Running head: SYMBOLS OF E-COMMERCE TRUST

Symbols of E-commerce Trust:

Do Third-party Seals of Approval Increase Reported Trust toward an E-commerce Website?

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Abstract

This study investigates the effect of third-party seals of approval on individuals' trust. Third-party seals of approval are symbols (a) placed on an e-commerce website, (b) provided by an independent business entity, (c) that provide security and validation services and (d) that are designed to reassure consumers that the security policies or practices of the business represented by that website meet set criteria. Sixty-four undergraduate participants were asked to evaluate eight homepages using two measures assessing trust. Homepages varied along four levels of third-party seals. Participants suggested third-party seals influenced their decisions, however, no significant effect of third-party seals on trust scores was found. Results also revealed that the two measures used to gauge participants' trust were commensurable and correlated.

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Symbols of E-commerce Trust: Do Third-party Seals of Approval Increase Reported Trust toward an E-commerce Website?

Electronic commerce (e-commerce) has been defined as, “the buying and selling of goods and services, and the transfer of funds, through digital communications” (Howe, 1995).

Research from psychology, business, and marketing perspectives has been conducted over the past several years to increase the viability of e-commerce as a method for businesses to sell their products. Among other things, this research has investigated properties of e-commerce websites believed to facilitate consumer trust (e.g., Cheskin Research, 2000; Cheskin Research & Studio Archetype/Sapient, 1999¹; Fogg, Soohoo, Danielsen, Marable, Stanford, & Tauber, 2002; Kim & Moon, 1998; McKnight, Choudhury, & Kacmar, 2002, Princeton Survey Research Associates, 2002; Stanford, Tauber, Fogg, & Marable, 2002). One property believed to facilitate consumers’ trust is the presence of third-party seals of approval. Third-party seals of approval are symbols (a) that are placed on an e-commerce website, (b) by an independent business entity (third-party), (c) that provide security and validation services and (d) are designed to reassure consumers that specific security or practices of the business represented by that e-commerce website meet set criteria.

The primary goal of this thesis was to investigate the efficacy of third-party seals of approval on individual trust. To this end, trust as it relates to e-commerce is first defined followed by a literature review of third-party seals of approval and their role in facilitating trust in e-commerce. A secondary goal was to compare two methods used to measure trust, which are presented in the third section of the introduction. Review of the research literature is followed by the methods and results of an experiment conducted to address these two goals. Finally,

¹ Hereafter referred to as the Cheskin study.

discussion of the results is provided, which includes a conclusion of how results from this thesis impact current understanding of the effectiveness of third-party seals on individual trust and measures used to evaluate e-commerce trust.

Defining Trust

Historically, trust has been a confusing and complicated concept in the research literature. Discussion and theories of trust vary depending on the author's perspective, leading to countless definitions of trust (Dunn, 2001; Golembiewski & McConkie, 1975; Hardin, 2001; Kramer, 1999; Lewicki, McAllister, & Bies, 1998; Marsh, 1994; Sheppard & Sherman, 1998; Yamagishi & Yamagishi, 1994). It follows that a universally accepted and generally agreed-upon definition of trust is not available. Even within psychology, discussion and theories of trust differ depending on the interpreter's perspective. For example, trust has been discussed as important for the development of a healthy personality (e.g., Bowlby, 1973; Erikson, 1968), as a stable and static personality trait (Rotter, 1967; 1971; 1980), a product of the relationship between two individuals (Johnson-George & Swap, 1982; Rempel, Holmes, & Zanna, 1985; Wieselquist, Rusbult, Foster, & Agnew, 1999), and as an observable behavioural outcome in a situational context (Deutsch, 1973). Also, trust has been philosophically discussed as a dynamic part of larger social contexts (Barber, 1983; Gambetta, 1988; Luhmann, 1979; Yamagishi & Matsuda, 2002). Moreover, trust has been split into cognitive/rational thought processes and affective/emotive processes (Kramer, 1999; McAllister, 1995).

Given these different perspectives, it would be a daunting, if not impossible, task to encapsulate them all into one comprehensive definition. In addition to the problem of defining trust, the ways in which the term is used can be confusing (Hardin, 2001). Addressing the source

of some of these confusions is an important first step toward defining trust for the present context.

One of the confusions in the research literature related to “what trust is,” exists between the terms *trust* and *trustworthiness* (Hardin, 2001). Specifically, *trust* is sometimes used to describe a relationship between two or more individuals or parties. While this appears to make sense, Hardin believes that this confusion eventually leads to simplistic and inaccurate definitions and descriptions of trust. He continues to state that the problem lies in the fact that *trust* is used to describe all sides of the relationship, and thus all parties within the relationship. In this thesis, *trust* describes the knowledge or willingness of an individual faced with the decision to trust another party. *Trustworthiness* refers to the party who is potentially to be trusted. *Trust* is thus a property of the trustor, while *trustworthiness* is a property of the trustee. With *trust* and *trustworthiness* conceptually distinguished, a definition of trust can now be proposed.

Several theorists, both outside and within e-commerce, have viewed trust as a cognitive decision process (e.g., the Cheskin study, 1999; Golembiewski & McConkie, 1975; Hardin, 2001; Luhmann, 1979; McKnight et al., 2002). Luhmann (1979) believes that trust is a heuristic, or a vaguely defined rule of thumb which is employed by an individual to make sense of his/her external environment and provide general cognitive rules for trusting in a variety of situations. Indeed, Luhmann’s philosophy is reflected in the Cheskin study’s (1999) brief explanation of how individuals may construct general cognitive rules to make decisions to trust or not to trust an e-commerce company based on the appearance and content of that business’ website. The Cheskin study suggests that consumers are often overwhelmed by the Internet. When faced with the choice of purchasing from an unknown website, individuals will often rely on familiar

properties or design features of the website to form an opinion about the e-commerce business behind the site. For the Cheskin study, these familiar properties include such things as a name brand, presentation styles that indicate quality and professionalism, and third-party seals of approval. A person may use these properties to make sense of the Internet and trust a given business or organization.

Trust theorists argue that trust cannot exist without an aspect of risk (Coleman, 1990; Hardin, 2001). For this reason, risk has been acknowledged by many previous discussions and definitions of trust (e.g., Deutsch, 1973; Golembiewski & McConkie, 1975; McKnight et al., 2002; Riegelsberger, Sasse, & McCarthy, 2003). Since risk is a key aspect of trust particularly relevant to situations in which one may consider spending money, it is important to acknowledge risk in the definition used in the current thesis. Thus, trust is defined here as the trustor's decision to depend on the expected actions of the trustee, and the trustor's belief that these actions will be beneficial to him/her (McKnight et al., 2002). The risk lies in the possibility that the trustee will not behave as the trustor expects after trust has been given, and that the trustee's actions will not benefit the trustor. In distinguishing between trust and trustworthiness, this definition suggests that trust is a cognitive decision made by the trustor and not the trustee.

The provided definition is concerned with how an individual trusts in a given situation, however, the individual also brings other factors to the situation that affects the likelihood to trust. Models explaining trust in e-commerce assert that the trustor brings two factors to a situation where he/she is faced with a decision to trust a given e-commerce business: his/her disposition to trust, and his/her past experience (e.g., Egger, 1999, 2000, 2001; Egger & de Groot, 2000; McKnight et al., 2002; Patrick, 2002). These factors have a strong foundation in previous trust research outside of e-commerce.

Research into trust as a dispositional trait was begun by Rotter (1967, 1971, 1980), who viewed trust as a personality trait that varies among individuals. To this end, Rotter (1967) developed a scale to measure an individual's idiosyncratic propensity to trust and confirmed that propensity to trust does vary among individuals. Rotter's later studies (1971, 1980) confirmed this. Rotter's (1967, 1971, 1980) findings suggest that *high-trusters* will be more inclined to trust new technologies, such as e-commerce, than *low-trusters*. While it is possible to measure an individual's predisposition to trust, the decision to trust was in a situational context for the present thesis. Thus it was decided that measurements of participants' disposition to trust was beyond the scope of the experiment and will not be discussed further.

The second factor believed to influence the trustor's decision is previous experience with the trustee. Experience between trustor and trustee is a central tenet in theories of trust within relationships (e.g., Doney & Cannon, 1997; Golembiewski & McConkie, 1975; Johnson-George & Swap, 1982; Rempel, Holmes, & Zanna, 1985; Wieselquist, Rusbult, Foster, & Agnew, 1999). Rempel et al. (1985) have suggested that three tenets of trust between partners in a close relationship are developed over time as partners grow familiar with each other. These are *predictability*, *dependability*, and *faith*. *Predictability* refers to each partner's expectation of consistent behaviour from the other partner in a given circumstance, based on each partner's previous behaviour in similar circumstances. As the relationship grows in time with experience, *predictability* fosters *dependability*, where each partner now attributes general characteristics and qualities to the other. Finally, *faith* is viewed as a forward-looking tenet of trust in close relationships, where *faith* is the belief that each partner will act in a responsive and caring manner toward the other when confronted with uncertain circumstances in the future. While it is evident that a consumer's trust towards a given e-commerce website may not reach the level of

faith, their evaluations of *predictability* and *dependability* of an e-commerce business develops through experience with the e-commerce website. Hence, when a consumer is presented with a decision to trust a given e-commerce business for the first time, that individual is unable to base his/her decision on any pre-existing trust with that business. Over time, however, the consumer's trust in that business will increase provided the e-commerce business fulfills all business agreements with the consumer. Models of trust in e-commerce postulate that experience with the e-commerce website and the internet in general are important factors in the consumer's decision to trust (Egger, 1999, 2000, 2001; McKnight et al., 2002). This thesis used websites that were assumed to be unfamiliar to participants to reduce the effect of previous experience.

Trust and Third-party Seals of Approval

An individual's trust in another person or party, based on the advice or recommendation from a third-party, is a common occurrence in everyday life. For instance, people often rely on the word of a friend or other trusted sources when deciding what movie to see or which restaurant to patronize. It follows then that some theorists have acknowledged this influence that others may have on an individual's decision to trust (e.g., Coleman, 1990; Tyler, 2001). Outside of e-commerce, consumers may refer to good housekeeping or consumer best buy reviews to be assured of the quality of a product before purchasing it. Consumers may also refer to the Better Business Bureau (BBB) or its trademarked symbol carried by member businesses as an indication of a business' quality of service and integrity. However, no specific studies evaluating these trust-building systems could be located. With these systems in place for consumers outside of e-commerce, one might expect that they would also exist within e-commerce.

Models of trust in e-commerce presented by Egger (1999) and McKnight et al. (2002) suggest that to win the trust of consumers so they will purchase online, e-commerce businesses must pay close attention to the design features of their website, such as aesthetics, ease of use, contact information, and third-party seals of approval. While these design features and others have been argued to be important for building consumer trust in e-commerce (Cheskin Research, 2000; the Cheskin Study, 1999; Egger, 1999, 2001; Fogg et al., 2002; McKnight et al., 2002; Princeton Survey Research Associates, 2002; Stanford et al., 2002) only third-party seals of approval were investigated in this thesis. Several authors have claimed that third-party seals are effective in facilitating consumer trust toward e-commerce businesses (e.g., Cheskin Research, 2000; the Cheskin Study, 1999; Egger, 1999, 2001, McKnight et al., 2002; Princeton Survey Research Associates, 2002). The Cheskin Study and Cheskin Research have backed these claims with their survey research conducted on consumer trust toward e-commerce websites. To date not a single study has been found in the research literature that experimentally tests the effectiveness of third-party seals of approval on individuals' trust toward e-commerce businesses, which was done in this thesis.

The Cheskin study (1999) investigated the influence that third-party seals of approval and other properties of an e-commerce website may have on a person's intention to trust in a four-phase experiment. The first three phases were used to formulate a model of trust for e-commerce and select websites to be used for the final phase. This was done by accumulating consumer opinions regarding trust in general and Internet trust, by site reviews and analyses of 60 current e-commerce websites, and by consultation with experts in website design, marketing, and product development. In the final phase, some 315 consumers were recruited via the Internet to evaluate eight different e-commerce websites selected based on the results of the first three

phases. As part of a survey analysis, participating consumers were asked questions regarding third-party seals of approval, such as the Verisign™ symbol, and the importance of these symbols in facilitating trust toward these eight e-commerce websites.

The study concluded that trust in e-commerce is primarily a function of experience over time. They argued that the consumer's experience with an e-commerce business over time allows them to develop perceived characteristics of the e-commerce business that facilitates their trust toward the e-commerce business and its website. Unknown e-commerce sites are generally less trusted than those that are well known to consumers, such as Amazon.com. As stated earlier, this thesis used unfamiliar websites to limit the effect of previous experience. In addition to trust as a function of experience over time, five website design features were identified as important for e-commerce sites to communicate trustworthiness: 1) easy navigation through the site to find a specific product, 2) clearly stated information and options should the consumer encounter problems after purchase order has been placed, 3) good aesthetic design, 4) inclusion of "state of the art" security and encryption technology even if this technology is difficult to use, and 5) use of third-party seals of approval such as Verisign™ and BBB Online™. Of these identified design features, only third-party seals were experimentally tested here. To limit the effect of the remaining design features, only homepages were shown.

A follow-up study completed by Cheskin Research (2000) emphasized cultural differences regarding trust and e-commerce. Specifically, a given seal's ability to communicate trustworthiness depended on the country surveyed. Credit card symbols, such as VISA™ and MasterCard™ had a much greater impact in Spanish-speaking Latin American countries and Brazil than other third-party seals, while Verisign™ and BBB Online™ increased consumer trust more in the United States compared to these credit card symbols. Thus, it is believed that

reported trust among the North American consumer population is best increased by providing these third-party seals of approval on a website versus credit card logos. As a result, the goal of this thesis was to experimentally test the effectiveness of the Verisign™ and BBB Online™ seals.

Social theories of trust provide some insight into how third-party seals of approval might facilitate trust toward websites that are unfamiliar to consumers. Typically, these theories indicate that trust is usually transferred from an individual acting as a third party to another (e.g., Coleman, 1990; Tyler, 2001), but it is possible that these third parties can be represented by symbols of professionalism (Barber, 1983). In his book, Barber discusses how societal trust toward professions and how the public expects technical competence and fiduciary responsibility from these professions. For example, an individual who is sick trusts that a medical doctor will know how to treat him/her and will feel responsible for the patient's well-being, even if this medical doctor was previously unknown to the individual. Furthermore, Barber explains that the patient will come to trust the doctor via the socially recognized accreditations and symbols. These symbols would begin with the doctor's medical diploma hanging on the wall, but include such things as the white lab coat, stethoscope, et cetera. In this sense, these symbols act as a third party for the individual whereby he/she can make an informed decision to trust the potential trustee or not, and in what circumstances. Thus, in this way, trust is transferred from the third party to the trustor via symbols, which are socially understood indicators of the trustee's trustworthiness.

Theories on how trust is transferred from a third party to the trustor are provided by Tyler (2001) and Coleman (1990). Firstly, Tyler presents his concept of *social trust* as a means of transferring trust through identification and generalizations amongst members of social groups. In his view, Tyler suggests that once an individual has identified with a social group, he/she

makes generalizations about other members within that group. Other members are more likely to be trusted by that individual, regardless of whether or not that person knew these other members already. Coleman provides similar descriptions of how trust might be transferred between individuals, which suggests that third parties act as intermediaries. These third parties are trusted by both trustor and trustee who are unknown to each other, but because the third party is trusted, trust is likely to occur between the trustor and the trustee.

One may speculate that third-party seals of approval work in a manner similar to the descriptions presented by Tyler and Coleman: once an individual decides that a third-party seal of approval can be trusted, then all e-commerce sites that provide this seal are included in a group of sites that the individual believes can be trusted. To the extent that this is correct, homepages displaying third-party seals that are known to subjects should be rated higher than homepages displaying no such seals or fictitious third-party seals. In the present thesis subjects saw some homepages with actual third-party seals, some with a fictitious seal, and some without such seals. In the post-experimental questionnaire they were asked to indicate which of a list of third-party seals they recognized from their previous experience. This list included seals that were and were not included in the experiment, as well as real and fictitious seals. These data provide a basis for testing the above assumption

The effect of third-party seals of approval on an individual's reported trust is mediated by three assumptions. Firstly, third-party seals should be strategically placed to ensure it is noticed. To satisfy this condition, this thesis presented third-party seals in the left-hand menu area and above the visible fold of the homepages. This is typically the location where these seals are placed on an e-commerce homepage. This placement also closely followed guidelines set by Horton (1991), which states that individuals tend to focus visually on six *hotspots* in a computer

interface. These *hotspots* are predominantly located on the left half of the screen and top 45% of the screen. Further anecdotal evidence suggests that individuals do not notice graphics placed on the right side of a webpage (Bronsther, personal communication, September 19, 2003).

Secondly, the seal must be recognized and trusted by a consumer. Findings from the Cheskin study (1999) suggest that third-party seals may facilitate trust by consumers who are unfamiliar with the seal, but trust is greater when the consumer is familiar with the seal. This is tested in this thesis by asking participants in the post-test questionnaire if they recognized a given third-party seal from previous Internet experience. In addition, a fictitious seal was designed and tested to see whether participants could distinguish between a real seal and a fictitious one.

Thirdly, recognition includes the e-commerce business and its website into a group of e-commerce sites that have this seal. Inclusion into this group helps increase the consumer's trust in the e-commerce business. This statement is supported by trust research outside of e-commerce suggesting that when first-hand experience with the trustee is unavailable or lacking, the trustor's decision to trust another party will be influenced by second-hand experience through trusted third parties, such as a recommendation by a friend, business partner, or financial advisor (Coleman, 1990; Doney & Cannon, 1997). To test this, homepages were chosen for this thesis that subjects were assumed not to know a priori. This assumption was verified by asking participants if they had ever visited any of the homepages as the homepages were viewed. If these three things occur, the consumer's trust is transferred from one party, namely the organization represented by the third-party seal, to another, the business represented by its website. Thus if these assumptions are considered satisfied, then trust scores should be higher

toward homepages with a third-party seal that is recognized by participants versus when it is not or when a fictitious seal is presented instead.

Measuring Trust

Typically, researchers measuring trust toward e-commerce businesses have asked individuals if they trust a given e-commerce website. McKnight et al (2002) developed a *trusting intentions questionnaire* to test participants' trust toward a given e-commerce website. They validated the questionnaire in the context of a comprehensive model of e-commerce that they developed. This model includes *disposition to trust*, *institution-based trust*, *trusting beliefs*, and *trusting intentions* plus a measure of general web experience and perceived site quality. In line with Rotter's (1967) theory of trust, *Disposition to trust* refers to trust as a personal characteristic. As stated earlier, disposition to trust was not assessed in this thesis. *Institution-based trust* indicates the individual's familiarity with, and trust toward, the internet environment and e-commerce in general, but does not refer to previous experience with a given e-commerce site or company. This thesis tests specific homepages and is not concerned with trust toward the Internet. For that reason, *institution-based trust* will not be pursued further here. *Trusting beliefs* allude to the consumer's perception of the e-commerce business' competence, honesty, and caring about the consumer's needs and interests, as represented by its website. None of these characteristics will be addressed in this thesis. Therefore, the notion of trusting beliefs was not tested here. Finally, *trusting intentions* refers to the trustor's reported willingness to depend on the actions of the trustee, and the extent to which they believe these actions will be beneficial to them. This specifically tested whether a consumer intended to trust a given website, and so was used for the purposes of this thesis.

McKnight et al.'s questionnaire had 68 items to test the various aspects developed in their model. They then constructed a hypothetical e-commerce site and tested it on 1403 undergraduate and graduate students. The questionnaire used only positively worded items because it is believed that negatively worded items would factor separately as distrust, which has been observed to be conceptually different from trust (Lewicki, McAllister, & Bies, 1998; McKnight & Chervany, 2001). Through their analysis, McKnight et al. were able to validate their scale as a robust measure of trust toward an e-commerce website. Results from McKnight et al.'s study indicated several complex linkages between *disposition to trust*, *institution-based trust*, *trusting beliefs*, *trusting intentions*, general web experience, and perceived site quality. Nonetheless, only *trusting intentions* was considered within the scope of this thesis because only *trusting intentions* specifically tested an individual's trust toward a given e-commerce website. Thus, only the portion of McKnight et al.'s questionnaire that deals specifically with *trusting intentions* will be used.

As stated earlier, risk is a key aspect of trust, and as such, it is important that any measure of trust acknowledges risk. While trust measures such as McKnight et al.'s and others (e.g., Bhattacharjee, 2002; Rotter, 1967) assess risk implicitly, some trust measures have incorporated risk explicitly into the trust measure (e.g., Deutsch, 1973; Foddy, Platow, & Yamagishi, 2002; Riegelsberger, Sasse, & McCarthy, 2003; Yamagishi & Matsuda, 2002). Measures that make risk explicit do so by providing participants with consequential alternatives that assume some amount of risk assessment by the participant. One such measure has recently been developed by Riegelsberger et al. (2003) to measure trust in e-commerce, which they called the *trust game*. It uses monetary risk to infer individuals' trust toward various e-commerce websites.

The *trust game* allowed participants to indicate the level of perceived risk via the amount of money they were willing to invest in a given website. Participants were given a fixed base amount and could invest 10 to 100 pence in increments of 10 pence on each website, which would potentially double their earnings in the experiment. Poor decisions had no impact on the base amount, but good decisions could increase it by up to another £12. The participant's decision was based on his/her perception of whether the e-commerce business would fulfill the purchase order and provide high customer service in case of post-sale problems. From the participants' perspective, the goal was to invest more in sites they believed to be trustworthy and less in untrustworthy sites. Correct judgments translated into higher earnings for the participant. Riegelsberger et al. argued that the *trust game* may be more externally valid since it more closely imitates actual purchasing behaviour than simply asking participants if they trust sites as was done by both McKnight et al. (2002) and the Cheskin study (1999).

To validate this new measure of trust Riegelsberger et al. asked 13 participants to rate two websites in a pre-experiment using Kammerer's (as cited in Riegelsberger et al., 2003) trust questionnaire and the *trust game*. Participants rated each website using each of the measures, one at a time. It is assumed that ordering of these measures was sufficiently counterbalanced, though this was not clearly expressed by Riegelsberger et al. What the websites were or how they were chosen was also not provided. From Riegelsberger et al.'s study, it appears that Kammerer's trust questionnaire measures trust similar to McKnight et al.'s (2002) *trusting intentions* questions. This cannot be confirmed, however, because Kammerer's questionnaire is provided in a foreign language and a translated copy could not be obtained. Riegelsberger et al. found that the *trust game* and Kammerer's trust questionnaire were correlated, sharing 50% of the variance in measuring trust, $r^2 = .50$, $t(23) = 4.8$, $p < .05$. Based on this finding,

Riegelsberger et al. used the *trust game* instead of a trust questionnaire to test a further 12 websites with 115 participants in their main study.

This thesis furthered Riegelsberger et al.'s work by providing a comparison between the *trust game* and McKnight et al.'s *trusting intentions* questions. In addition to determining the correlation of these two measures, this thesis looked at the commensurability of the two measures. That is, whether a score taken from one of these measures is proportionate to the same score taken from the other measure. To do this, both the *trust game* and the *trusting intentions* questions were measured on scales ranging from 0 to 100. The *trust game* asked participants to provide a verbal rating between 0 and \$1.00 for each homepage, while they responded to *trusting intentions* questions by notching a mark across an unmarked line anchored at both ends by "Strongly Disagree" to "Strongly Agree". Responses along these unmarked lines were then measured and translated into a rating between 0 and 100. This rating technique has been previously validated (Lockhead, 1992) and used in previous experiments evaluating e-commerce websites (e.g., Dudek, 2003, Fernandes, 2003). Using a within-groups design, four homepages were scored using one measure, while another four homepages used the alternate measure. This technique offered the unique opportunity to test the commensurability trust scores toward homepages collapsed across participants, while a correlation of participants' trust scores collapsed across homepages could be analysed. If these two types of trust measures are as interchangeable as Riegelsberger et al. suggest, then they should be commensurable in addition to being correlated.

Two hypotheses were tested in this thesis. The first was based on results from Riegelsberger et al. and proposed that the *trusting intentions* questions and the *trust game* would be commensurable and correlated. Based on findings from the Cheskin study (1999) and

Cheskin Research (2000), the second hypothesis proposed that an individual's trust would be increased when a familiar third-party seal of approval is presented on a homepage versus when it is not or when a fictitious third-party seal is presented.

Method

Participants

A total of 64 participants from various academic disciplines were recruited using a listing from an undergraduate recruitment pool that had been approved by the Department of Psychology Ethics Committee at Carleton University. Persons in this recruitment pool were contacted individually by phone. The announcement for recruiting provided in Appendix A was read to them. Participants were required to have at least two years of Internet experience and received between \$6 and \$10 for participation.

Materials

Homepages: Participants evaluated the trustworthiness of eight existing homepages on the Internet. Table 1 provides the names of these homepages. Screenshots are provided in Appendix C. Participants saw only the homepage of each website.² Participants were told in the debriefing session that the homepages had been modified for the purposes of this experiment and didn't reflect their Internet usage in any way.

² Since homepages and third-party seals were used for private study and research and not for public distribution for the benefit of the experimenter or other individual, there is no legislation preventing their use in this experiment (R. Mutton, personal communication, October 31, 2003).

Table 1

List of Sites

Site #	CD Retail Sales Sites	Online Bookstore Sites
1	www.hitmenow.com	www.alibris.com
2	www.jandr.com	www.biggerbooks.com
3	www.mymusic.com	www.cyber-bookstore.com
4	www.musicSPACE.com	www.ecampus.com

Third-party Seals of Approval: Four levels of third-party seals of approval were included on homepages: No seal of approval, Verisign[™], BBB Online[™], and Safe.com. The third-party seals for Verisign[™], BBB Online[™], and Safe.com were displayed on the left side of the homepages above the fold (i.e., visible without scrolling). As noted in the introduction, this placement was done to help ensure that it was noticed. No seal was displayed for the fourth level of this independent variable. The three third-party seals are provided in Appendix B. Two of these, Verisign[™] and BBB Online[™] are trademarked, while the third (Safe.com) is fictitious. Participants were notified in the debriefing that the symbols were modified for the experiment and did not reflect their usage in any way on the Internet.

Display: Images of homepages in Internet Explorer 6.0 were displayed on a 19-inch monitor with a 1024 x 768 screen resolution in 32-bit colour. All eight homepages were pre-loaded on a 1.8 GHz. computer, so displays were instantaneous.

Trusting Intentions Questions: The 4-item questionnaire, available in Appendix D, was modified from McKnight et al.'s scale (2002) to measure participants' trusting intentions toward the eight homepages used in the experiment. Responses were used to investigate the impact of third-party seals of approval on participants' *trusting intentions*.

Trust Game Scenario: The *trust game* scenario closely followed the *trust game* used in Riegelsberger et al.'s (2003) study mentioned earlier. A scenario involving monetary risk was provided for each homepage. The scenario, provided in the procedure section, was read to participants. Descriptive cards, provided in Appendix E, were also shown to participants to ensure that they understood how the payment scheme worked. Participants were asked to invest between 0 and \$1.00 on each of the four homepages. The investment represented the degree to which the participant believed the website would deliver the desired product and provide high post-sale service. Participants were informed that their investment might be lost or doubled depending on their ability to judge each website correctly on the investment criteria.

Post-test Questionnaire: A post-test questionnaire, provided in Appendix F, was separated into three sections. The first section asked whether or not the three third-party seals shown during the experiment were seen by participants, and whether these seals were familiar to them from previous web use. As indicated in Table 2 below, 5 of the 10 icons in this section were shown during the experiment, which included Verisign™, BBB Online™, and Safe.com. The remaining five icons were not shown. Three of the five icons not shown were authentic seals taken from the Internet, while two were fictitious. Fictitious items provided in Table 2 are in italics. The second section was designed to understand participants' reasons for trusting a given website. This section provided a list of 22 design features accumulated from previous research (e.g., Cheskin Research, 2000; the Cheskin study, 1999; Egger, 1999, 2000, 2001; Fogg et al., 2002; McKnight et al., 2002; Princeton Survey Research Associates, 2002; Stanford et al., 2002) and shown in Table 3 below, as well as an "other" category. This table also indicates some sources that have previously recognized the possible impact of these design features on consumer trust in e-commerce. The *Security icons* item provided in this section and shown in

Table 3 was provided to represent third-party seals of approval. A pilot test (N=10) was conducted to ensure that participants would understand the intended meaning of security icons during testing. Results from the pilot testing indicated that all participants understood *Security icons* to represent the various third-party seals during testing (see Appendix J). Finally, the third section looked at participants' accuracy at describing the function of Verisign™, BBB Online™, and Safe.com when these seals are presented on the homepage of an e-commerce website.

Table 2

Icons Provided in Section 1 of the Post-Test Questionnaire

Shown in the Experiment	Not Shown in the Experiment
credit card icons	<i>Blue Lock Security seal</i>
privacy policy icon	<i>Transaction Assured Homepage seal</i>
Verisign™ seal	TRUSTe™ seal
<i>Safe.com seal</i>	Verified by VISA™ seal
BBB Online™ seal	Bizrate.com™ seal

Note. Items shown in Italics are fictitious (non-authentic)

Table 3

Design Features Listed in Section 2 of the Post-test Questionnaire

Design Feature Item	Design Feature Item
Privacy policy ^{abf}	Clearly displayed prices ^{bf}
Use of animated graphics ^b	Contact information ^{abcef}
Security icons ^{abe}	Looks easy to use ^{abe}
Testimonials from other people ^b	Store policies (for returns, etc.) ^{abcefg}
Attractive design ^{abcde}	Use of pictures of merchandise ^{bd}
Clearly stated additional charges with purchase (e.g. delivery, taxes, etc.) ^{bf}	Statement indicating how long business/site has existed ^{bg}
Search engine available ^b	Numerous types of products available ^a
Liked the merchandise	Indication of product delivery timeframe ^{abg}
Cheaper prices	Credit card logos ^a
Date that site was last updated ^b	Company affiliations ^{bcg}
Commercial banners ^c	Large selection of merchandise ^a

^aThe Cheskin Study, 1999. ^bEgger, 1999, 2001. ^cFogg et al., 2002. ^dKim & Moon, 1998. ^eMcKnight et al., 2002.

^fPrinceton Survey Research Associates, 2002. ^gRiegelsberger & Sasse, 2001.

Experimental Design

A within-subject design was employed to test the four levels of third-party seals across eight homepages. There were two measures of trust: McKnight et al.'s (2002) four *trusting intentions* questions (Appendix D) and Riegelsberger et al.'s (2003) *trust game*, both measured on an interval scale ranging from 0 to 100. Participants were asked to evaluate four of the eight homepages using the four *trusting intentions* questions by notching a mark across an unmarked line anchored at both ends by "Strongly Disagree" to "Strongly Agree". Participants provided a verbal rating between 0 and \$1.00 for the remaining four homepages using Riegelsberger et al.'s (2003) *trust game*. An attempt was made to select relatively unknown homepages to minimize the chance that participants had seen a given homepage before. Other variables, such as disposition to trust, were treated as extraneous variables and controlled for by random

assignment to treatment conditions. To minimize the chance of confounding due to order effects, the following items were counterbalanced:

- site genre (CD retail & online bookstore)
- type of trust measures (*trusting intention* questions & *trust game*)
- third-party seal of approval conditions
- homepages within site genre

The orders used to counterbalance these items can be viewed in Appendix G. The first stage in determining the orders was to divide the 64 participants into four groups with 16 participants in each. This allowed (1) each type of trust measure to be used first and last equally often, (2) each site genre to be used first and last equally often, (3) each site genre to be measured by both types of trust measure. A Latin Square design was used to counterbalance third-party seals of approval and homepages within each group. This ensured that (a) all sites appeared in each serial position equally often, (b) all third-party seals appeared in each serial position equally often, (c) all sites appeared with all third-party seals equally often, and (d) all combinations of sites and third-party seals followed all combinations of sites and trust symbols equally often. Using this Latin Square design minimized any possible order effects and also made it possible to separate the effect of third-party seals from confounding variables that may have influenced participants' trust toward homepages.

Procedure

Participants were tested individually in sessions lasting approximately 45 minutes. When they first arrived, they were asked to complete an informed consent form, provided in Appendix H. After agreeing to take part in the experiment, the experimenter read the following instructions aloud:

“In a moment, you will be shown eight website homepages, one at a time. We are looking for your opinion toward these websites. These websites will be selling either music CDs or books. You will be able to see only the homepage of these websites. All hyperlinks will be inactive on these pages, but you may scroll each of these homepages as you please. You will be provided with a rating scale with instructions for the first four homepages. As you view the first homepage, you will be asked to rate this website using this rating scale. After you have rated the first website, you will proceed to the next and be asked to give a rating for this website. This exercise will be repeated until you have provided ratings for these first four websites. After you have completed this exercise, you will be provided new instructions for the final four websites. You will proceed through these final four homepages as you did with the first four homepages, except that you will be using a different rating scale, which will be provided. Do you have any questions?”

After these instructions were given, further instructions were provided depending on the trust measure the participant was asked to use. The experimenter provided the following instructions to participants for completing the trusting intention questionnaire:

“You will rate each of the following four websites on the scale that is provided. We are looking for your opinion and we expect different results from different people. So, anything you think or say is legitimate. A horizontal line is provided for each item on this scale. This line is a rating scale representing an opinion of strong disagreement at one end to strong agreement at the other. Please provide your response for each item by putting a mark across the horizontal line at a position that best reflects your opinion.”

The experimenter provided the following instructions to participants for completing the *trust game*:

“You will rate each of the following websites by “investing” separately for each homepage. We are looking for your opinion and we expect different results from different people. So, anything you think or say is legitimate. For each homepage, you will be asked to provide an investment rating between 0 and \$1.00. This “investment” rating is based on your ability to identify a good versus a bad website. This investment represents how much you believe that the website will deliver the desired product and provide high post-order service. That is, a good site would provide excellent service in the delivery of a desired product. A bad site would provide poor service and would not deliver the product should you actually purchase from that site.

This investment will affect how much money you receive for participating in this experiment. If you invest in a good site, the amount you invested will be doubled and returned to you. This amount would be added to the portion of the \$1.00 you did not invest in that site. For example, if you invested 60¢ of the \$1.00 into a good site, you would receive \$1.20 in return. This \$1.20 would be added to the remaining 40¢ you did not invest to leave you with \$1.60 for that site, which will be added to your final pay. If you invested in a bad site, the amount you invested would be lost from your final pay. For example, if you invested 60¢ of the \$1.00 into a bad site, 60¢ would be lost from your final pay. The remaining 40¢ would not be lost from your final pay. Some of these websites will be good sites; some of them will be bad. You are guaranteed a minimum \$6.00 for participating in this experiment, but you will earn more if you invest wisely. I will tell you the result of your investments after the experiment is finished. If you have no questions, I will proceed with the first site.”

Participants were also provided two cards that demonstrated the examples described in the instructions (see Appendix E). If the participant had any questions, portions of these instructions were repeated to answer the questions. For example, if a participant asked what a “good

website” refers to, the answer repeated the definition provided in the instructions. For the purposes of evaluating participants’ performance in this task, a ‘good’ website displayed either the Verisign™ or BBB Online™ symbols. Conversely, a ‘bad’ website displayed the Safe.com symbol or no symbol.

After instructions for either the trusting intentions questionnaire or the *trust game* scenario, participants were shown a website according to their randomly assigned experimental order. As each homepage was displayed, participants were asked if they had ever encountered that website before and then asked to complete either the trusting intention questionnaire or the *trust game* scenario. The trusting intention questionnaire was provided on paper. During the *trust game* scenario, the experimenter recorded the participant’s verbal responses. Once the participant had evaluated one homepage, he/she proceeded to the next homepage and repeated the process until the first four homepages had been evaluated. After the first four homepages had been evaluated, the participant was provided with further instructions for the next trust measure and the next four homepages. Again, each participant evaluated each homepage in succession as he/she did with the first four homepages. After all of the homepages had been evaluated, participants filled out the post-test questionnaire.

Upon completion of the post-test questionnaire, participants were thanked for participating in the experiment and debriefed. A debriefing form is provided in Appendix I. As part of the debriefing, participants were told that the websites used for this experiment were modified and did not represent the actual service quality of the websites. Participants received between \$6.00 and \$10.00 for the experiment, depending on their performance in the *trust game*.

Results

The results are presented in eight sections. An analysis of homepage familiarity is presented first followed by two sections analyzing results from the trust questionnaire and the trust game. Next, the effectiveness of the third-party seals of approval is investigated. An analysis of the post-test questionnaire is then presented. The last three sections are devoted to exploratory analyses of the CD retail sales and online bookstore homepages, and an analysis of the design features in each of these homepage genres. For clarity, results reporting the scores obtained from the trust questionnaire are referred to as trust ratings while scores obtained from the trust game are referred to as trust game scores. Scores referring to both trust measures are referred to as either scores or trust scores.

Homepage Familiarity

To ensure that participants were generally unfamiliar with the homepages, they were asked whether they had previously seen each homepage. Of the eight homepages shown to all 64 participants, there were nine (1.76%) instances in which a homepage was recognized: four were recognized once, one was recognized twice, one was recognized three times, and two were not recognized at all. Details are presented in Appendix K. One participant recognized three homepages, two participants recognized two, and two recognized one. Thus, since only 5 of the 64 participants had seen any of the homepages before, it is safe to conclude that participants were largely unfamiliar with them.

Trust Questionnaire Measures

In order to determine whether it would be appropriate to rely on the mean score of the four trust questions taken together in subsequent analyses, a Pearson product-moment correlation compared ratings on the trust questions with each other and the mean rating for each third-party

seal. All four questions were strongly correlated with each other ($p < .001$) and with the mean rating for all third-party seals ($p < .001$). Most importantly, correlations between the mean and all questions ranged from .82 to .93. Detailed results are provided in Appendix L. Hence, it was reasonable to use the mean trust rating in all subsequent analyses.

Commensurability of Trust Ratings and Trust Game Scores

Hypothesis 1 asserted that trust scores obtained in the trust game and the questionnaire were commensurable. If this were true, then they can be used as levels of a single independent variable in subsequent data analyses. It will be recalled that trusting intentions were scored on a scale from 0 to 100, while moneys invested in the trust game were scored in cents ranging from 0 to 100.

The data were analyzed in four ways. First, 16 frequency distributions were obtained that divided scores by trust measure (trust questionnaire or trust game), third-party seal (no seal, Verisign[™], BBB Online[™], or Safe.com), and homepage genre (CD retail sales or online bookstore). These frequency distributions are provided in Appendix M. A single-sample Kolmogorov-Smirnov test was conducted for each frequency distribution to test whether they were normally distributed. None were found to differ from normal, allowing these distributions to be considered normally distributed.

Second, each of the eight frequency distributions for the trust questionnaire was matched with the equivalent distribution for the trust game; these distributions were matched according to third-party seal conditions and homepage genre. For each pair, a two-sample Kolmogorov-Smirnov test was performed to test whether the matched frequency distributions differed, that is, testing the probability that scores from the two frequency distributions come from separate

populations. None of these tests were significant. Thus, there was no indication that the frequency distributions for trust ratings differed from the trust game scores.

The third analysis comprised of Student t-tests (two-tailed) to test for differences in skewness and kurtosis between the matched frequency distributions. No significant differences were found. Thus, there was no indication that these distributions differed in skewness or kurtosis.

In the fourth and final analysis, Levene's test for homogeneity of variance was used to test differences in the variance between the eight pairs of distributions. Only one of these was significant, namely that for the BBB Online™ seal and online bookstores. It revealed that the variance for trust game scores was significantly greater than the variance for trust ratings, $F(1,62) = 4.06, p < .05$. Seeing as none of the other results were significant, it was concluded that this result was due to chance fluctuation. Overall then, these results provide no indication that trust ratings varied more or less than trust game scores. All frequency distributions are provided in Appendix M, and details of data analyses in Appendix N.

Collectively, these tests indicate that the two trust measures are commensurable. Therefore, it is reasonable to compare them in subsequent statistical analyses.

Comparing trust ratings and trust game scores.

Two correlation analyses were conducted to investigate the relation between trust ratings and trust game scores. Both used the mean score from the two trust measures collapsed across all four third-party seals and across the eight homepages. The 64 participants were divided into two groups of 32. These groups separated those participants who rated the CD homepages with the trust game and bookstore homepages with the trust questionnaire, from those participants who rated the CD homepages with the trust questionnaire and the bookstore homepages with the

trust game. The first correlation comparing trust ratings for CD homepages with trust game scores for bookstore homepages was significant ($r = .36, p < .05$). Based on previous results by Riegelberger et al. (2003) and the fact that there is no logical basis for assuming a correlation between scores derived from CD homepages and bookstore homepages, it is reasonable to conclude that this significant correlation is due to the relation between the trust questionnaire ratings and trust game scores. The second correlation comparing trust ratings for bookstore homepages and trust game scores for CD homepages was not significant.

While these correlations do provide a meaningful comparison of trust ratings and trust game scores, the comparison is confounded with participants' ratings of homepages. For example, online bookstore homepage X with no third-party seal of approval may or may not be equivalent to CD retail sales homepage Y with no third-party seal. As a result, the correlations are affected by interactions between type of store, homepage, and third-party seal. The effects brought about by these interactions increase the error variance in the relations. In turn, this means that the relations will be underestimated and that the correlations may not be representative of the actual relations between the trust ratings and money investment ratings. Nonetheless, even with the relation underestimated, the evidence suggests that trust ratings and trust game scores are positively correlated.

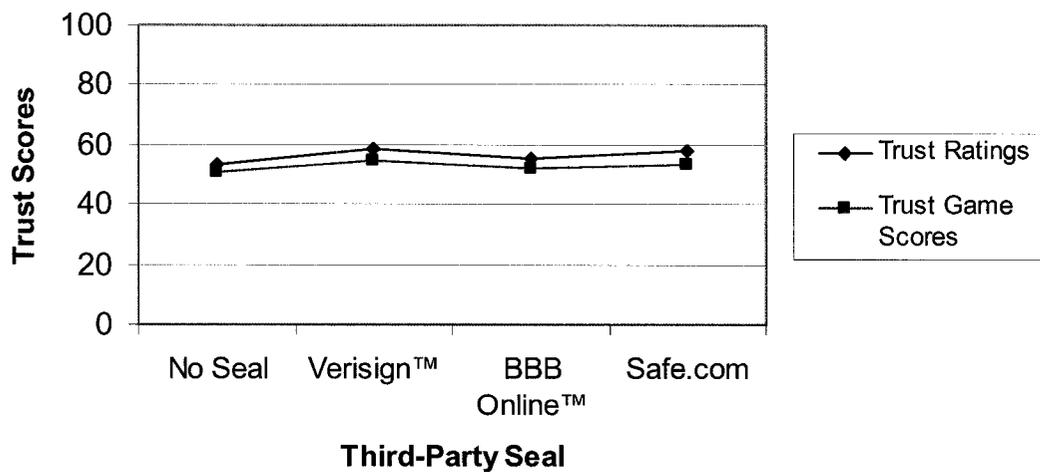
Effect of Third-Party Seals of Approval on Participants' Reported Trust

In order to test Hypothesis 2 stating that participants would trust homepages presenting a familiar third-party seal of approval more than one showing a fictitious seal or none at all, third-party seals were analyzed to investigate their effect on trust ratings and trust game scores. The means for each trust measure and third-party seal all fell between 50 and 60, as indicated in Figure 1 below. This suggests that participants were indifferent to the presence/absence and type

of a third-party seal. Deviations from these means could be the result of random fluctuation or other homepage design features that were not accounted for in this analysis, but were evenly distributed across both trust measures and all third-party seal conditions. Figure 1 also shows that participants consistently gave slightly lower ratings using the trust game than the trust questionnaire. A (2 X 4) ANOVA compared scores for both trust measures (trust questionnaire, trust game) and the four third-party seal conditions (Verisign™, BBB Online™, Safe.com, no seal) collapsed across homepage and homepage genre (CD, bookstore). A priori calculations of power for a medium effect size of F ($f^2 = .15$) showed a power (1-β) of .86 for trust measure and a power (1-β) of .73 for third-party seal. The ANOVA yielded no significant effects. Thus, these results provide no indication that the presence or absence of third-party seals influences participants' reported trust using either trust measure regardless of whether a given seal is real or fictitious. A full summary table is provided in Appendix O (Table O1).

Figure 1

Participants' Reported Trust toward Third-Party Seals



Analysis of the Post-Test Questionnaire

The post-test questionnaire was divided into three sections. The first section established whether participants had seen any of a list of 10 icons during the experiment and whether they recognized these from previous Internet experience. This list included the three third-party seals of approval used in the experiment. The second section explored the influence of some 22 homepage design features on participants' trust ratings. The final section asked participants to describe what they thought the three third-party seals of approval represented. All of these are shown in Appendix F. Responses were analyzed to help further explain results from the trust measures.

Section 1: Identification and recognition of icons and their impact on trust.

Data from Section 1 were analyzed in three ways. First, participants' ability to accurately judge which 5 of the 10 icons were shown during the experiment was assessed. Second, their recognition of the seven authentic icons was ascertained. Table 2 (see p. 19) shows the 10 icons, which of these were shown/not shown and which were authentic/fictitious. Third, recognition of Verisign[™], BBB Online[™], and Safe.com seal and its influence on trust scores was determined. Frequency data obtained from this section of the post-test questionnaire is available in Appendix P (Table P1).

Firstly, participants' ability to distinguish between icons that were and were not shown during the experiment was assessed. A binomial test was conducted for each of the five icons shown during the experiment to test the probability that participants reported having seen it. All were significant at the $p < .001$ level, indicating that a significant number of participants reported not seeing these icons. Binomial tests for the five icons not shown during the experiment were also all significant at the $p < .001$, indicating that a significant number of participants reported

seeing these icons. Thus, a significant number of participants were unable to distinguish between icons that had and had not been used in the experiment.

The second set of analyses determined if participants recognized these 10 icons from previous Internet experience and, in doing so, could accurately distinguish between authentic and fictitious icons. Binomial tests were used to determine this. With the exception of the credit card icons, all the binomial tests for the seven authentic icons were significant, $p < .001$, indicating that a significant number of participants did not recognize these icons. Binomial tests conducted for the three fictitious icons were all significant; Blue Lock Security seal at $p < .01$; the other two at $p < .001$. These results indicated that a significant number of participants believed they had seen these items before. Thus, a significant number of participants had difficulty distinguishing between real and fictitious icons.

The third set of analyses was conducted on Verisign[™], BBB Online[™], and Safe.com seals to test the link between trust scores and seal recognition. The Cheskin Study (1999) discussed earlier indicated recognition of a given third-party seal increases individuals' trust toward a website with that seal. Table 4 shows the means trust scores for both trust measures for participants who did and for those who did not recognize the third-party seal of approval. As was true in Figure 1 shown earlier, the mean trust scores ranged roughly between 50 and 60, again supporting the notion that participants were indifferent to the presence or absence of a third-party seal. Consistent with the data in Figure 1, Table 4 also shows that trust game scores were slightly lower than trust ratings. In addition, there was no apparent difference between scores for real and fictitious seals, nor any systematic relationship between recognition and non-recognition of the three seals of approval. Three 2 X (2) ANOVAs for seal recognition (yes, no) and trust measure (trust questionnaire, trust game) were performed for each of the three seals of

approval and collapsed across homepages and homepage genre. Due to the unequal sample sizes between groups, a Levene’s test for homogeneity of variance was conducted with each of these ANOVAs to ensure that this assumption was met. All three satisfied the assumption for homogeneity of variance, so analyses of ANOVA results proceeded. These analyses provided no significant main effects or interactions. Full ANOVA summary tables are provided in Appendix O (Tables O2 - O4). In conclusion, these analyses do not support the notion that familiar third-party seals help facilitate trust toward a given homepage.

Table 4

Mean Trust toward Recognized and Unrecognized Third-Party Seals

Third-Party Seal	Recognition	Trust Questionnaire	Trust Game
Verisign™	Recognized (n = 33)	56.09	54.91
	Not Recognized (n = 31)	60.90	54.19
BBB Online™	Recognized (n = 6)	58.00	53.33
	Not Recognized (n = 58)	55.29	51.93
Safe.com	Recognized (n = 17)	62.00	59.41
	Not Recognized (n = 47)	56.06	50.75

Section 2: Reported influence of homepage design features on trust scores.

The second section of the post-test questionnaire provided a list of 22 design features and an “other” category. These 22 design features are listed in Table 3 (see p. 20). Participants were asked to circle those that influenced their positive trust ratings and to add any design feature they thought was missing from the list. Only positively influencing features were observed because negatively influencing items may factor separately as distrust, which is conceptually separate from trust (Lewicki et al., 1998; McKnight & Chervany, 2001). The purpose of this section was

to learn what features participants felt were salient when gauging their trust toward a given homepage. Frequency data for all design features are given in Appendix P (Table P2). Eight of the 22 design features were circled by 50% or more of the participants. A chi-square analysis was performed on each of these eight design features. As can be seen in Table 5 below, four of these were significant, namely: privacy policy, security icons (third-party seals), attractive design, and contact information. This suggests that participants believed that these items positively influenced their decision to trust a given homepage.

Table 5

Chi-Square Results for Items Circled more often by Participants

Item	$\chi^2(1, N = 64)$
Privacy policy	***20.25
Security icons (third-party seals)	***22.56
Attractive design	*5.06
Clearly displayed prices	1.56
Contact information	***12.25
Looks easy to use	.06
Use of pictures of merchandise	.06
Credit card logos	.56

* $p < .05$, *** $p < .001$

Section 3: Participants' descriptions of third-party seals.

The third and final section of the post-test questionnaire asked participants to describe the meaning of Verisign™, BBB Online™, and Safe.com. Responses for were separated into four categories describing the participants' accuracy in describing the seal's actual purpose: highly accurate, reasonably accurate, vague, and incorrect. Table 6 provides the criteria and examples

for each category given by row and separated into columns for Verisign™ and BBB Online™.

Responses for Safe.com were divided into responses indicating strong scepticism toward the authenticity of the seal, mild scepticism, reported unfamiliarity, and no indication of

unfamiliarity or scepticism. Table 7 provides criteria and examples of categories for Safe.com.

Table 6

Response Criteria and Examples for Verisign™ and BBB Online™

	Verisign™	BBB Online™
Highly accurate	<p>a) Homepage is monitored (by Verisign™)</p> <p>b) Security encryption is used and helps ensure that private and confidential information is kept secure (from hackers)</p> <p>E.g., “The homepage has been deemed ‘secure’ for exchange of information.”</p>	<p>a) Seal represents the Better Business Bureau</p> <p>b) Homepage (business) has a good rating/history with BBB or will provide reliable post-order service</p> <p>E.g., “The homepage is affiliated with the Better Business Bureau and has a good history.”</p>
Reasonably accurate	<p>a) or b) only</p> <p>E.g., “Checked out and approved by Verisign™ indicates that it is safe to use.”</p>	<p>a) or b) only</p> <p>E.g., “Service will be reliable (product shipped safely), BBB is reliable and I would trust this homepage.”</p>
Vague	<p>Any of the following or similar statements:</p> <ul style="list-style-type: none"> • safe to use • trustworthy • heard of it <p>E.g., “Heard that Verisign™ has been around for a while and I trust them.”</p>	<p>Any of the following or similar statements:</p> <ul style="list-style-type: none"> • safe to use • homepage approved by BBB • member of BBB • homepage is reliable <p>E.g., “This indicates to me that the specific homepage is safe to use.”</p>
Inaccurate	<p>None of the above</p> <p>E.g., “Secure from viruses and can verify that they provide good service.”</p>	<p>None of the above</p> <p>E.g., “This reminds me of a tire company. Not clear about what it is.”</p>

Table 7

Response Criteria and Examples for Safe.com

Criteria and Example	
Strong scepticism	<p>Believe that the seal is a fake, or that they don't trust it</p> <p>E.g., "I don't trust this at all, never heard of it. Looks cheap & crappy."</p>
Mild scepticism	<p>Not confident in the seal or feel need to authenticate the seal</p> <p>E.g., "Same as first [Verisign™], but I don't feel as confident about the homepage's security."</p>
Reported unfamiliarity	<p>Reported unfamiliarity with Safe.com</p> <p>E.g., "Never seen this before."</p>
No unfamiliarity or scepticism	<p>Any of the following or similar statements:</p> <ul style="list-style-type: none"> • safe to use • trustworthy • secure site • site checked/approved by Safe.com <p>E.g., "Checked out and approved by Safe.com, safe to do transactions with credit card."</p>

Response data for Verisign™ and BBB Online™ are shown in Table 8. A chi-square test was conducted separately for each of these seals to ascertain how well participants understood what they represented. Expected values were equal in each of the four response categories for both chi-square tests (i.e., $E = 16$). Both tests were significant: for Verisign™ ($\chi^2(3, N = 64) = 15.13, p < .01$), and BBB Online™ ($\chi^2(3, N = 64) = 17.88, p < .001$). As Table 8 shows, very few participants had a highly accurate understanding of what either seal represented, but most had at least some idea. In addition, fewer participants were inaccurate about Verisign™ than expected,

whereas more were inaccurate about BBB Online™. In conclusion, most participants had a reasonably good understanding of both seals, but many had an inaccurate conception of BBB Online™.

Table 8

Accuracy of Participants' Descriptions of Verisign™ and BBB Online™

Accuracy	Verisign™	BBB Online™
Accurate and detailed description	7	2
Good Description, but a little vague	28	24
Vague description	17	17
Inaccurate description	12	21

Safe.com was analyzed next to find out if participants could accurately identify this seal as a fake. Response data shown in Table 9 were analyzed using a chi-square test. The expected frequencies were unequally distributed because this icon was fictitious; the expected frequency for no reported scepticism or unfamiliarity was set to zero and set equally for the three remaining categories (i.e., $E = 21.33$). Test results were significant, $\chi^2(3, N = 64) = 27, 035, 757, p < .001$, indicating that a significant number of participants reported having no scepticism or unfamiliarity toward the Safe.com seal. Thus, participants by and large did apparently believe in the authenticity of the Safe.com seal.

Table 9

Participants' Reported Believability in Safe.com

Belief in Safe.com	Frequency
Believed icon was a fake	1
Sceptical about icon authenticity	2
Unfamiliar with icon	9
Reported no scepticism or unfamiliarity	52

Due to the large number of participants who believed in the authenticity of Safe.com, analysis continued to determine whether participants who were not sceptical of this seal were more likely to trust homepages when it was present. To begin this analysis, frequency data from Table 9 was condensed into two groups: participants who were sceptical or unfamiliar with Safe.com ($n = 12$), and those who were not ($n = 52$). A Levene's test for homogeneity of variance revealed that the error variance between these two groups was heterogeneous for the trust game scores ($F(1, 62) = 9.03, p < .01$). For this reason, a Mann-Whitney U-test was conducted to test trust game scores between those participants who were sceptical of Safe.com and those who were not, but revealed no significant results. A one-way ANOVA for scepticism in Safe.com (yes, no) was performed for trust ratings also revealed no significant results. A correlation between participants' level of scepticism in Safe.com and trust game scores (money invested) also revealed no significant results. Table 10 provides the mean scores from both measures for all participants. Thus, there was no indication that belief in the authenticity of Safe.com affected trust scores when that seal was present.

Table 10

Mean Trust Scores toward Safe.com

Reported authenticity of Safe.com	Trust Questionnaire	Trust Game
Believed authenticity of Safe.com (<i>n</i> = 52)	57.42	52.02
Indicated scepticism unfamiliarity toward Safe.com (<i>n</i> = 12)	58.58	57.50

Exploratory Analysis of CD Homepages

Participants may have trusted some homepages more than others. Exploratory analyses were conducted to test this. Table 11 provides the mean trust rating and trust game score for each CD homepage. There is apparently quite a high level of agreement between both trust measures. It is reassuring that the rank ordering of homepages was the same on the two scores, again supporting the notion that the two trust measures are indeed commensurable. A one-way ANOVA performed for the CD homepages was significant for the trust ratings, $F(3, 93) = 20.63$, $p < .001$, and also for the trust game, $F(3, 93) = 16.36$, $p < .001$. Post-hoc analysis using Least Significant Difference revealed that all homepages differed significantly from each other on the trust ratings, and Hitmenow.com was significantly lower than the other three homepages for trust game scores. In addition, J & R received significantly higher trust game scores than MusicSpace.com ($p < .01$). ANOVA summary tables for these results are provided in Appendix Q. Thus, participants trusted the J & R homepage most, followed by My Music, MusicSpace.com, and least trusted was Hitmenow.com on both trust measures.

Table 11

Mean Trust Scores for CD Homepages

	Trust Ratings	Trust Game Scores
J & R	68.19	65.31
My Music	59.09	59.44
MusicSpace.com	49.16	50.94
Hitmenow.com	40.00	32.50

Exploratory Analysis of Bookstore Homepages

Data for the bookstore homepages were treated in exactly the same fashion as those for the CD homepages. Table 12 provides the mean trust scores for each bookstore homepage. Note that the CD scores are much closer together than for the Bookstore homepages and there is slightly less agreement in the rank ordering of the Bookstore homepages. The most and least trusted homepages (Alibris and Bigger Books, respectively) share the same rank, but the second and third ranks are juxtaposed across both trust measures for the remaining two homepages (Ecampus.com & CyberBookstore). The two one-way ANOVAs performed for each trust measure were both significant; for trust ratings, $F(3, 93) = 2.95, p < .05$, and for money investment ratings, $F(3, 93) = 25.73, p < .001$. Post-hoc analyses using Least Significant Difference revealed that Alibris received significantly higher trust ratings than any other homepage, and significantly higher trust game scores than either Bigger Books or CyberBookstore. In addition, Bigger Books had significantly lower trust game scores than the other three homepages. Finally, Ecampus received significantly higher trust game scores than CyberBookstore ($p < .01$). ANOVA summary tables for these results are provided in Appendix R. Overall, these results indicated that participants did trust some homepages more than others,

but that there was slightly less agreement across trust measures on rankings of bookstore homepages than on CD homepages. Nonetheless, scores obtained from both trust measures were fairly similar throughout analyses of CD and bookstore homepages.

Table 12

Mean Trust Scores for Bookstore Homepages

	Trust Questionnaire	Trust Game
Alibris	64.59	67.34
Ecampus.com	56.16	62.66
CyberBookstore	56.97	48.34
Bigger Books	55.38	33.91

Design Feature Analysis of Homepages

Analysis of the design features incorporated by each homepage was conducted to explore the link between design features and trust ratings/trust game scores. The design features used were based on the 22 listed items in Section 2 of the post-test questionnaire. These items are listed in Table 3 provided in the methods section.

Four of these were excluded from this analysis: three (attractive design, liked the merchandise, looks easy to use) because they required judgments that were not measured and one (security icons) because it was tested in the experiment as third-party seals. Two items (cheaper prices, clearly displayed prices) were amalgamated into one called “pricing” because they were indistinguishable when evaluating the homepages, and two (date site was last updated, indication of product delivery timeframe) were re-named (copyright dates, link to order tracking, respectively) because these labels facilitated comparisons of the homepages. Finally, a category was added for Canadian prices because two participants had mentioned in the post-test

questionnaire that Canadian pricing or indication of that the homepage was Canadian increased their trust. Thus, there were 18 items in the list of features analysed in this section. These are shown in Table 13 for CD homepages and in Table 14 for bookstore homepages. Cells in each of these tables show whether design features are provided on each homepage (yes or no). Features that are fulfilled are shaded to facilitate visual comparison. More detailed descriptions regarding how individual homepages satisfy these design features are provided in Appendix S.

Looking at these tables, it can be surmised that there is no apparent connection between trust scores and the number or the pattern of design features fulfilled by a given homepage. For example, Ecampus.com, which satisfied 12 design features, was consistently given higher trust scores by participants versus Bigger Books, which satisfied 8 design features. However, Ecampus.com received consistently lower trust scores versus Alibris, which also satisfied 8 design features. Similar results were found when the CD homepages were compared. Statistical analyses were conducted to see if any links existed between individual design features presented on homepages and participants' trust scores. There were some interesting results across both measures for CD homepages, but not for bookstore homepages. Participants consistently gave higher trust scores to CD homepages that fulfilled any of the following design features: link to a privacy policy, testimonials, pricing, pictures of merchandise, years business has existed, and large selection of CDs. Interestingly however, they also gave higher trust scores to CD homepages that *did not* contain animated graphics, search engine, or commercial banners. Clearly, more research is needed to ascertain the role of these and other design features for inspiring consumer trust toward e-commerce websites.

Ultimately, however, it was not possible to separate the effect of one design feature from another, and thus, could not logically attribute any given design feature to higher or lower trust

scores. For instance, the J & R homepage received significantly higher trust scores than any other homepage, so any design feature that was fulfilled (or not fulfilled) by J & R had a greater chance of achieving significance, whether or not any one of these design features solely influenced participants' scores. As a result, these analyses provided no systematic differences that were meaningful or interpretable in any way. Therefore, the data did not enable us to identify specific design features that reliably and systematically affected trust scores. For this reason, the statistical details of the feature analysis are all presented in Appendix S.

Table 13

Design Feature Analysis of CD Homepages

Design Feature	CD Retail Sales Homepage			
	Hitmenow.com	J & R	My Music	MusicSpace.com
1. Link to Privacy policy	No	Yes	Yes	Yes
2. Animated graphics	Yes	No	No	Yes
3. Testimonials	No	No	Yes	No
4. Additional charges (shipping fees)	Yes	Yes	No	No
5. Search engine	Yes	No	Yes	Yes
6. Pricing	No	Yes	Yes	Yes
7. Canadian prices	No	No	Yes	No
8. Copyright dates	Yes	Yes	Yes	Yes
9. Commercial banners	Yes	No	No	Yes
10. Contact information	Yes	Yes	Yes	Yes
11. Link to store policies	Yes	Yes	No	No
12. Pictures of merchandise	No	Yes	Yes	Yes
13. Years business has existed	No	Yes	No	No
14. Many different products	Yes	Yes	No	No
15. Link to order tracking	Yes	Yes	No	No
16. Credit card logos	No	No	No	No
17. Company affiliations	No	No	No	No
18. Large selection (of CDs)	No	Yes	Yes	No

Note. Shaded cells represent design features that have been fulfilled.

Table 14

Design Feature Analysis of Bookstore Homepages

Design Feature	Bookstore Homepage			
	Alibris	Bigger Books	CyberBookstore	Ecampus.com
1. Link to privacy policy	Yes	Yes	No	Yes
2. Animated graphics	No	No	No	No
3. Testimonials	No	No	No	No
4. Additional charges (shipping fees)	Yes	Yes	No	Yes
5. Search engine	Yes	Yes	Yes	Yes
6. Pricing	No	No	Yes	Yes
7. Canadian prices	No	No	No	No
8. Copyright dates	Yes	Yes	Yes	Yes
9. Commercial banners	No	No	No	No
10. Contact information	Yes	Yes	Yes	Yes
11. Link to store policies	No	No	No	Yes
12. Pictures of merchandise	Yes	No	Yes	Yes
13. Yrs. business has existed	No	No	No	No
14. Many different products	No	No	No	Yes
15. Link to order tracking	Yes	Yes	No	Yes
16. Credit card logos	No	Yes	No	Yes
17. Company affiliations	No	No	No	No
18. Large selection (of books)	Yes	Yes	Yes	Yes

Note. Shaded cells represent design features that have been fulfilled.

Discussion

The primary goal of this thesis was to investigate the effect that third-party seals may have on individuals' trust. Previous research has claimed that the presence of third-party seals of approval facilitates consumers' trust toward an e-commerce website (e.g., Cheskin Research, 2000; the Cheskin Study, 1999; Egger, 1999, 2001; McKnight et al., 2002; Princeton Survey Research Associates, 2002). However, all of these claims have relied on survey data. Therefore, this thesis set out to empirically test the effectiveness of third-party seals on participants' trust. Based on results from the Cheskin study (1999), Hypothesis 2 stated that familiar third-party seals would increase participants' measured trust relative to unfamiliar and fictitious seals. Results from this thesis provided no support for this claim whatsoever. Participants did not trust homepages with Verisign™ or BBB Online™ more than when these seals were absent, when compared with each other, or when compared to the fictitious seal (Safe.com). These findings were true regardless of participants' familiarity with a given third-party seal. Therefore, Hypothesis 2 was refuted.

As a secondary goal, this thesis compared participants' trust toward e-commerce homepages using one measure of trust that implicitly assumes risk (trust questionnaire) and one that does so explicitly (trust game). The trust questions were based on McKnight et al.'s (2002) trusting intentions questionnaire, which these authors tested for validity and reliability. Riegelsberger et al. (2003) used the trust game in their experiments on trust in e-commerce and contend that the trust game provides comparable results to other e-commerce trust measures. Nonetheless, the commensurability or the correlation between these two measures has never been tested before. That was done here: Hypothesis 1 asserted that the two measures are indeed commensurable and correlated. Results from this thesis support Riegelsberger et al.'s position,

which promotes the trust game as a legitimate and valid measure of trust toward e-commerce websites. Thus, Hypothesis 1 was supported.

The following discussion is presented in four sections. The first and second sections discuss the implications of findings from this thesis regarding trust toward third-party seals and comparisons between trust measures respectively. Discussion of the exploratory analysis is provided in the third section. Finally, the fourth section provides a conclusion regarding the contribution of this thesis and its implications to our current understanding of consumer trust in e-commerce.

Trust toward Third-party Seals of Approval

Although this thesis provided no evidence to suggest that third-party seals increased trust, they were among a handful of design features that participants indicated influenced their trust positively. This may explain the results from the Cheskin study that included a general question concerning the attitude toward various third-party seals of approval. Participants in the Cheskin study were provided a list of 27 different seals and asked to check those with which they were familiar, and then to select two seals that they believed increased their trust the most if presented on a website. The way the question was asked forced participants to say that they believed these seals affected their trust toward a given e-commerce website regardless of whether or not that may have been the case. Results from this thesis indicate that participants may say one thing, but behave in a different manner, which is a common finding in the psychology literature. In their literature review of studies investigating attitudes and behaviours, for example, Ajzen and Fishbein (1977) showed that individuals' attitudes were not correlated with behaviour when attitudes were generalized and behaviour was specific. So, in this thesis participants may have said that third-party seals generally increased their trust in e-commerce websites, but when it

came to trusting a specific website these seals had no impact on their behaviour. Similar differences between attitude and behaviour have also been found recently in a study where participants' estimated use of advanced telephony features bore little resemblance with their actual usage when monitored over several weeks (Lindgaard, 2004). Thus, Ajzen and Fishbein's conclusion concerning the discrepancy between generalized attitudes and specific behaviours underscores the discrepancy between findings in this thesis and in the Cheskin study.

Having provided a possible explanation for the discrepancy between what participants said and did, the question regarding why third-party seals failed to facilitate participants' trust remains. Three possibilities were proposed earlier for third-party seals to facilitate participants' trust toward unfamiliar homepages, namely: 1) that the third-party seal is strategically placed on the homepage to maximize the chance it will be perceived, 2) the individual recognizes and trusts the seal, 3) recognition includes the e-commerce website as part of a group of websites, which have this seal and are trusted by the individual. We can now speculate on six possible reasons why third-party seals failed to facilitate participants' trust.

First, following Horton's (1991) guidelines, which indicate visual focus points on a computer screen, all third-party seals were placed in a location claimed to be immediately visible on the homepage, namely the left-hand side. Despite this, however, participants apparently did not consistently detect when a third-party seal was present and when it was not, as evidenced by responses in the post-test questionnaire. As a consequence, homepages with seals received trust scores equivalent to homepages without them. The effect of strategic placement of third-party seals could be tested by placing them in different locations on the screen.

A second possible explanation is that participants may have relied on the holistic first impression of the homepage, rather than being influenced by one specific design feature such as

third-party seals. Zdralek (2003) concluded that the impression of an interface is likely holistic. He found no significant effects in his study in which participants completed various location- and visual-search tasks on a website while systematically varying the amount of white space. Zdralek noted that, “single components of a design can be inconsequential much as a single instrument can be inconsequential in an orchestra” (p. 51). In addition, several studies that tested the visual appeal of homepages, both Fernandes (2003) and Lindgaard, Fernandes, Dudek, and Brown (2004) found that participants reliably rated visual appeal of homepages after an exposure time of only 500 milliseconds or even in as little as 50 milliseconds. Thus, the first impression was formed very quickly indeed, and it was as robust within participants as it was between them in all the studies. Lindgaard and Dudek (2003) demonstrated the degree to which first impressions may be resistant to change in a study in which subjects browsed and rated websites on a number of dimensions before and after performing a usability test. Interestingly, ratings of visual appeal (aesthetics) remained very high despite a substantial drop in perceived usability after subjects were able to complete an average of only 3.83 of the eight tasks in one site. Thus, subjects knew that the site was unusable, but this did not affect their view on its appeal. Apparently, the first impression is immediate and it lasts over time despite contradictory information. Taken together, these studies support Norman’s (2004) model of emotional interface design suggesting that the first impression is immediate, holistic, and that it endures over time. If the initial decision to trust an e-commerce website is akin to the individual’s first impression of the homepage, then perhaps this decision is also immediate, holistic, and enduring over time. Indeed, if the first impression is holistic this would suggest that elements such as third-party seals should have no effect on the impression per se. It is possible that the decision to trust is correlated with, or even based on, that first impression. Again, this would mean that

strategic placement of third-party seals would make no difference. A future study may test this hypothesis by creating a hybrid of the experiments conducted by Lindgaard et al. and Lindgaard and Dudek, but measures participants' trust toward various websites instead of, or in addition to website appeal ratings. After obtaining participants' trust ratings from brief exposure to several websites, participants could then navigate and interact with these same websites before rating them a second time. A correlation could then be conducted between the two ratings.

Thirdly, it is also possible that participants didn't see the third-party seals because they may have been somewhat overwhelmed by all the design features on the homepages. As discussed earlier (p. 3), the Cheskin study (1999) suggests that consumers often feel overwhelmed with the Internet, which could be supported by the findings here. Participants' inability to discriminate between what was and was not presented may mean that they were uncertain about what is and is not important when making their decision to trust a given e-commerce website. Once again, this indicates that strategic placement of the third-party seals or indeed their very presence makes no difference to users. This also suggests that there is no prominent design feature that could become a decision heuristic. As Luhmann's (1979) theory of trust suggests, individuals will pick up on social cues or indicators that have a predictable pattern to reduce the complexity of their external environment and allow them to use these indicators as a decision heuristic in order to place trust in others. Thus, having no prominent design feature may mean that consumers have no predictable indicator of trustworthiness, and therefore, decide to rely on the overall impression instead.

The fourth possible reason for the third-party seals' inability to facilitate participants' trust may have been a lack of familiarity with third-party seals. Not only were participants unable to recognize the authentic third-party seals, but they also falsely recognized the three

fictitious seals presented in the post-test questionnaire. In addition, roughly only half the participants were able to correctly identify the function of the Verisign™ and BBB Online™ seals, and 52 of the 64 participants believed in the authenticity of the Safe.com seal. These results support the Cheskin study (1999), which also reported that participants were not familiar with all third-party seals. Nonetheless, it is surprising that so many participants believed in authenticity of Safe.com and believed they knew this seal from previous Internet experience. Thus, it is likely that consumers are generally not aware of all the third-party seals that are used in e-commerce or of what they are intended to convey. This further supports the notion that there are no recognized indicators of trustworthiness in the e-commerce environment, making it difficult for consumers to rely on these when deciding to trust unfamiliar e-commerce websites.

Even when participants were familiar with a given third-party seal, their scores were indistinguishable from those given by participants who were unfamiliar with that seal. This suggests a fifth possible reason why third-party seals failed to facilitate trust: even when third-party seals are recognized, they are not trusted to any significant extent. As stated earlier (p. 9), Tyler's (2001) concept of social trust suggests that once an individual has identified with a social group, then generalizations and trust are exhibited towards other members belonging to that group who were previously unknown. Using this concept, the present findings suggest that even when participants were familiar with a given seal, they did not identify with, or trust the seal to any significant extent. If a priori trust toward the third-party seal did not exist, then participants' trust could not be generalized to the homepage displaying that seal. Therefore, there is no evidence to suggest that third-party seals help facilitate consumer trust toward e-commerce websites.

Lastly, the sixth possible explanation is that participants who recognized a third-party seal may have trusted it, but that this trust failed to be transferred from the seal to the homepage. Barber's theory (1983) of trust suggests that elements such as these seals should indicate the technical competence and/or fiduciary obligations of the e-commerce business. Nonetheless, the lack of increased trust toward homepages with the third-party seals relative to those without these seals suggests that participants may not have been convinced that these seals were a sure indication of the website's security and/or the business' commitment to fulfill its purchase agreement with their customers. As Coleman has indicated (1990), the third party is typically independent of the trustee and may be similarly perceived in this way by the trustor. In this case, however, the individual (trustor) is unable to perceive the third-party seal as truly independent from the e-commerce business (trustee) because the seal is presented on the trustee's homepage. In the end, this means that the individual has to trust the e-commerce business whether there's a seal on the homepage or not. Thus, Coleman provides a possible reason why consumers' are reluctant to use third-party seals as a sure indication of the technical competence and/or fiduciary obligations of the e-commerce business.

It is believed that the results of this thesis are applicable to consumers' initial trust before interacting with unfamiliar websites in e-commerce, which may have a serious impact on further interaction with the website by the consumer. The homepage genres used here were specifically chosen to appeal to target participant population, and with a few exceptions, participants were unfamiliar with these homepages. A study could test the impact of individuals' initial trust on further interaction with a website by obtaining an initial rating of trust for several sites then observing their actions with these sites in an online shopping task. Furthermore, results pertaining to the BBB Online[™] may represent a cohort effect. Participants were generally in

their early twenties and were largely unfamiliar with the Better Business Bureau. It is possible that an older cohort would be more familiar with this institution and hence more likely to recognize that seal. Repeating the experiment with older participants may provide insight into this. Finally, while the above results may be indicative of consumer trust, it would be interesting to explore actual consumer behaviour. One way to do this would be to recruit actual consumers prior to them making a purchase decision. The logistics of such an experiment would be difficult, however, as it would be impossible to control for the presence or absence of the third-party seals if they were browsing actual websites. Furthermore, it may be difficult to obtain ethics approval, as questions about liability could arise if consumers were unhappy with the product they had bought during the experimental session. Another possible solution enabling a study of actual consumer behaviour would be to allow participants to shop online and navigate through various websites as they would normally, but to use a fictitious credit card number instead of their own, mimicking the e-commerce shopping experience.

Trust Measures

In addition to indicating that results from the trust questions are commensurable and correlated with the trust game, the above results also indicate that verbal ratings are interchangeable with ratings provided using an unmarked scale. This provides further support for Lockhead (1992), asserting that using an unmarked rating scale is a valid technique. Early research into subjective probabilities suggested that the requirement to translate one's opinion into a number yielded results that did not accurately reflect subjects' opinion (e.g., Edwards, 1982). Therefore, an unmarked line requiring subjects to mark it at the point that best reflected their opinion was used instead. In the above results in which no differences were found between participants' numeric responses and their marking of a line, both measures provided an interval

scale. It is possible that participants in this experiment were better at translating their opinion into a number than those in the original findings, perhaps because the judgement here was made in monetary terms that may have been more concrete than representing one's opinion as a subjective probability. It would be interesting to test further comparisons between numeric scores and an unmarked scale using different kinds of judgements.

Finding that the trust questions and trust game were commensurable and correlated does not mean that the trust game is a better predictor of actual consumer behaviour in e-commerce, as Riegelsberger et al. (2003) have suggested. While the trust game may move toward an actual consumer purchase on the Internet, it does not quite approximate reality. Firstly, participants were asked to "invest" a maximum of \$1.00 per homepage. While this was done to replicate the methodology used in Riegelberger et al.'s study, most Internet shopping involves purchases that are far greater than \$1.00. It is possible that the greater risks involved in these purchases inhibit consumers' trust toward e-commerce websites. Therefore, future studies that employ a version of the trust game as a technique to measure trust toward e-commerce websites should ideally increase the amount of money that can be invested to substantially test the relationship between amount invested and trust.

Secondly, participants had nothing to lose when investing, but instead, they would earn a little less at the end of the session if they invested "poorly" on a given homepage. In contrast, consumers stand to lose their own money whenever they purchase goods over the Internet. While it is impossible to ask participants to risk their own money due to the ethical issues involved, it may be possible to increase the potential reduction in the payout for experimental participants. Again, future studies may overcome this by increasing the stakes associated with the trust decision.

Thirdly, participants rated how much or how little they trusted a given homepage by providing an investment that ranged from 0 to \$1.00. This facilitated the comparisons made between the two measures used in this thesis. Nonetheless, consumer purchases over the Internet are typically all or none; they either pay the asking price for the product or service if they trust the site or they do not purchase at all. Thus, the notion of *investing* in each homepage individually is not very realistic. Future studies may want to simulate a more realistic situation by asking participants to survey several sites and then pick one that will be trusted by investing the full amount.

Finally, Internet purchases typically require the consumer to provide personal information that was not simulated by the trust game. Ultimately, this may be the single largest issue that stands in the way of calling the trust game a realistic approximation of consumer trust and behaviour in e-commerce because violation of privacy can be more detrimental, time-consuming, and emotionally hurtful to the consumer than the loss of money from the purchase. Thus, while it is unlikely that the trust game may be considered a realistic approximation of consumer trust in e-commerce, implementing the suggested modifications in future studies may move this measure closer to this goal.

Exploratory Analysis of Trust toward E-commerce Homepages

The exploratory analysis of the CD homepages yielded some interesting results with respect to the effect of design features on trust. These results support previous research in e-commerce, such as Egger (1999, 2001), who suggested that e-commerce websites need to provide testimonials, pictures of the merchandise, and a link to a privacy policy, as well as being transparent about pricing while taking advantage of such things as how long the business has existed. The results also suggest that participants disliked animated graphics, search engines,

and commercial banners placed on a website. However, because this was true only for the CD homepages more research is required to determine users' attitude toward these and other design features. The nature of the judgements did not enable us to discern the impact of each individual design feature. To test this, the presence/absence of different design features would need to be varied systematically. By conducting a factor analysis of all of these, we may have a better idea what impacts consumer trust and by how much. One way to do this would be to run several studies that would obtain scores associated with all these design features and antecedents related to trusting various e-commerce websites, along with a rating of trust as well. By implementing this factor analysis, the strength of the relation between participants' trust and a given design feature be determined.

Conclusion

This thesis contributes to current understanding of consumer trust in e-commerce in three important ways. Firstly, third-party seals did not significantly affect consumers' trust toward e-commerce websites as previously believed, at least not when participants were only viewing the homepage. Secondly, consumers' initial trust toward e-commerce websites appears to be determined holistically, with several design features likely to contribute to an overall impression of a given website. This may mean that e-commerce businesses should not be too concerned about providing various third-party seals to increase consumer trust toward their websites, but instead concentrate their efforts on providing a positive holistic impression of the website. This may include providing a privacy policy, an aesthetically pleasing website, and to ensure high levels of usability enabling e.g., navigating the website with ease. Thirdly, this thesis supports Riegelsberger et al.'s (2003) assertion that their trust game is a valid measure of

consumer trust in e-commerce and can be used interchangeably with direct measures of trust such as trust ratings used here.

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Appendix A

Announcement for Recruiting

Phone Dialogue

Hello, would this be “participant’s name?” My name is Greg Dunn, and I am conducting a psychology study involving e-commerce websites. Earlier in the Fall you indicated an interest in participating in psychology research. For this reason, I am phoning to request your participation in my study. Firstly, however, I must ask roughly how many years of Internet experience do you have?

- If < 2 years then, “I’m sorry, but I need people who are experienced Internet users for this study, but you may be asked to participate in another study at a later date. Thank you for your time and best of luck in your studies.”
- If > 2 years then, “Great, you meet the minimum requirements necessary for my study and may participate in this study if you wish to do so,” and continue with dialogue.

If you agree to participate, you will be asked to attend one sixty minute session where you will be asked to give your opinion regarding several e-commerce websites. The questions that you will be asked will involve your own appraisals of various websites along several dimensions. Your name and responses will remain anonymous and you may decline any further participation in the study at any time. You will receive at least \$6.00 for participation in this study, but may earn up to \$10 based on your participation. Are you interested in participating in this study?

- If no, “Okay, thank you for your time and best of luck in your studies.”
- If yes, “Great, when is a suitable time for you to come into our lab at room 210 in the Social Sciences Research Building?” (A time is decided upon and the subject was thanked for their participation.)

Appendix B

Third-party Seals of Approval

Verisign™:



BBB Online™:



Safe.com (fictional logo):



Appendix C

Homepage Screenshots

Figure C1

My Music Homepage

(www.mymusic.com)

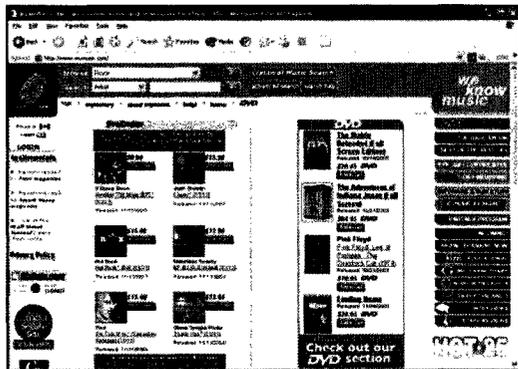


Figure C2

J & R Homepage

(www.jandr.com)



Figure C3

MusicSpace Homepage

(www.musicspace.com)



Figure C4

Hitmenow.com Homepage

(www.hitmenow.com)



Figure C5

Alibris Homepage

(www.alibris.com)

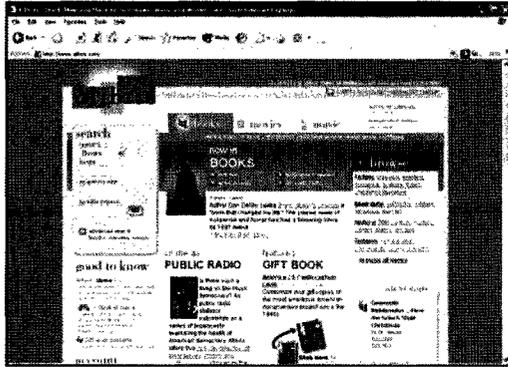


Figure C6

Bigger Books Homepage

(www.biggerbooks.com)

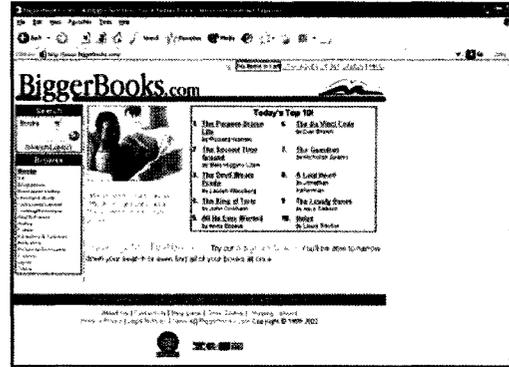


Figure C6

CyberBookstore Homepage

(www.cyber-bookstore.com)

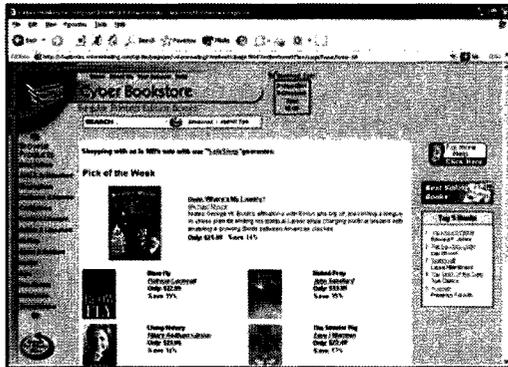


Figure C7

Ecampus.com Homepage

(www.ecampus.com)



Appendix D

Trusting Intentions Questions

Please provide your opinion of each website by indicating the extent to which you agree or disagree with the following statements.

Example:

I like this company.

Strongly Disagree
Strongly Agree

I think that I can rely on this company.

Strongly Disagree
Strongly Agree

I would feel comfortable purchasing products from this company.

Strongly Disagree
Strongly Agree

I would be willing to provide information like my name, address, and phone number to this company.

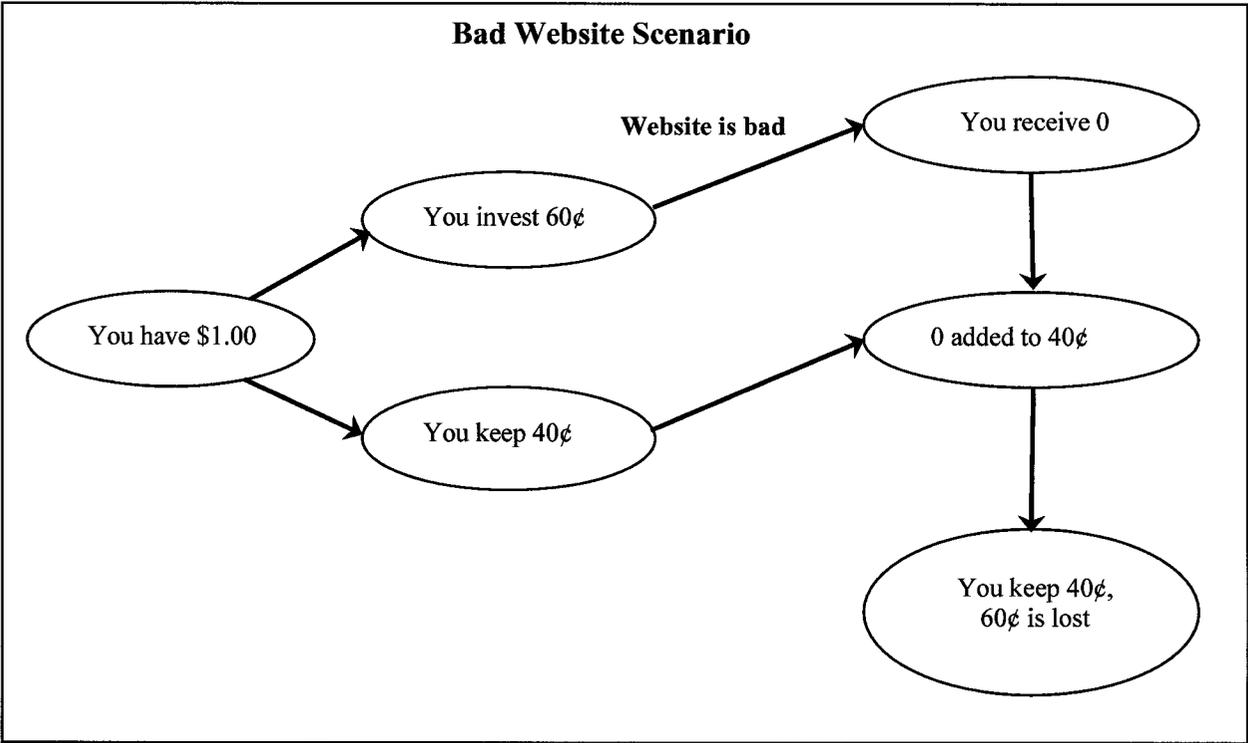
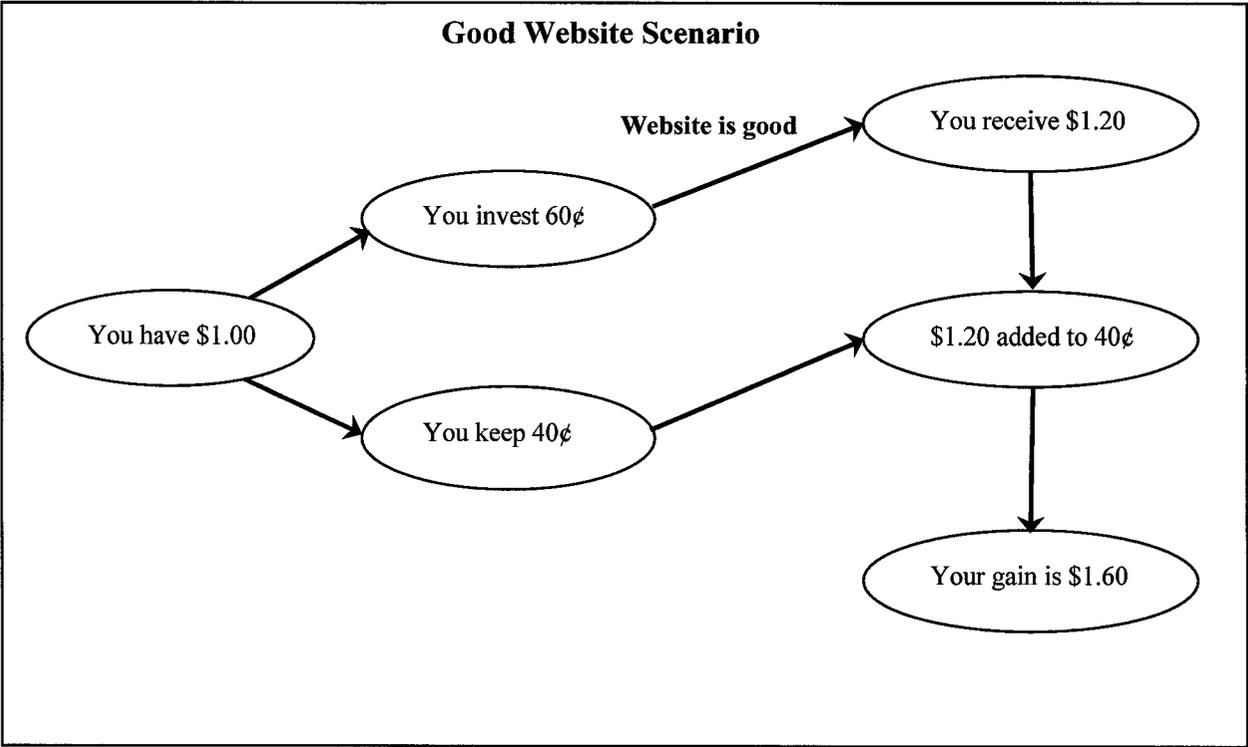
Strongly Disagree
Strongly Agree

I would be willing to provide credit card information to this company.

Strongly Disagree
Strongly Agree

Appendix E

Trust Game Scenario Example Cards



Appendix F

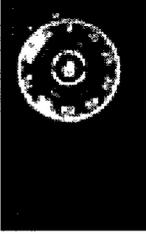
Post-test Questionnaire

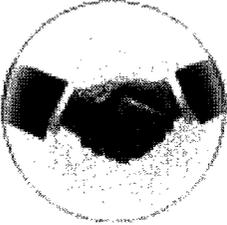
Please answer based on what you remember in the study. This is not a test and there are no right or wrong answers.

1. For the following items, please answer yes or no for:

a) If you saw this item **during** the experiment?

b) If you recognize this item from **previous experience** with the Internet?

<u>Item</u>	<u>Seen in the study</u>	<u>Seen before the study on the Internet</u>
Example: 	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No

<u>Item</u>	<u>Seen in the study</u>	<u>Seen before the study on the Internet</u>
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
<p>Privacy Policy,</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
 <p>Transaction Assured Site</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No

2. Throughout the experiment, you were asked to provide various ratings of the sites that were shown to you. We are looking for your opinion for this question. In the following list, please circle any items that made you give higher or more positive ratings on one website rather than another? I am interested in information that you actually considered in this study when you made your decisions. Don't circle an item unless you thought about that issue in this study.

Example: Business name

- | | |
|--|---|
| • Privacy policy | • Clearly displayed prices |
| • Use of animated graphics | • Contact information |
| • Security icons | • Looks easy to use |
| • Testimonials from other people | • Store policies (for returns, etc.) |
| • Attractive design | • Use of pictures of merchandise |
| • Clearly stated additional charges with purchase (e.g. delivery, taxes, etc.) | • Statement indicating how long business/site has existed |
| • Search engine available | • Numerous types of products available |
| • Liked the merchandise | • Indication of product delivery timeframe |
| • Cheaper prices | • Credit card logos |
| • Date that site was last updated | • Company affiliations |
| • Commercial banners | • Large selection of merchandise |
| • Other (please specify): | |

3. In your opinion, what do the following symbols mean or indicate to you when they are presented on a website?

Symbol	What it means
	
	
	

Appendix G

Counterbalancing of Experimental Materials

The experiment was separated into 4 groups of 16 subjects each. Table G1 shows the counterbalancing of trust measures and site genres (i.e., online CD stores or online bookstores).

Table G1

Counterbalancing of Trust Measure and Site Genre

Group	<i>N</i>	First measure-genre combination	Second measure-genre combination
1	16	Questionnaire-online CD stores	<i>Trust Game</i> -online bookstores
2	16	<i>Trust Game</i> -online bookstores	Questionnaire-online CD stores
3	16	<i>Trust Game</i> -online CD stores	Questionnaire-online bookstores
4	16	Questionnaire-online bookstores	<i>Trust Game</i> -online CD stores

Table G2 demonstrates how sites and third-party seals of approval were counterbalanced within each group.

Table G2

Counterbalancing of Site and Third-party Seals of Approval

Subject	First site-symbol combination	Second site-symbol combination	Third site-symbol combination	Fourth site-symbol combination
1	1-NO SYMBOL	2-VERISIGN™	4-SAFE.COM	3-BBB ONLINE™
2	2-VERISIGN™	3-BBB ONLINE™	1-NO SYMBOL	4-SAFE.COM
3	3-BBB ONLINE™	4-SAFE.COM	2-VERISIGN™	1-NO SYMBOL
4	4-SAFE.COM	1-NO SYMBOL	3-BBB ONLINE™	2-VERISIGN™
5	1-SAFE.COM	2-BBB ONLINE™	4-NO SYMBOL	3-VERISIGN™
6	2-BBB ONLINE™	3-VERISIGN™	1-SAFE.COM	4-NO SYMBOL
7	3-VERISIGN™	4-NO SYMBOL	2-BBB ONLINE™	1-SAFE.COM
8	4-NO SYMBOL	1-SAFE.COM	3-VERISIGN™	2-BBB ONLINE™
9	4-VERISIGN™	3-NO SYMBOL	1-BBB ONLINE™	2-SAFE.COM
10	1-BBB ONLINE™	4-VERISIGN™	2-SAFE.COM	3-NO SYMBOL
11	2-SAFE.COM	1-BBB ONLINE™	3-NO SYMBOL	4-VERISIGN™
12	3-NO SYMBOL	2-SAFE.COM	4-VERISIGN™	1-BBB ONLINE™
13	4-BBB ONLINE™	3-SAFE.COM	1-VERISIGN™	2-NO SYMBOL
14	1-VERISIGN™	4-BBB ONLINE™	2-NO SYMBOL	3-SAFE.COM
15	2-NO SYMBOL	1-VERISIGN™	3-SAFE.COM	4-BBB ONLINE™
16	3-SAFE.COM	2-NO SYMBOL	4-BBB ONLINE™	1-VERISIGN™

Note. 1 = Hitmenow (CD store) or Alibris (Bookstore)
 2 = J and R (CD store) or Bigger Books (Bookstore)
 3 = My Music (CD store) or CyberBookstore (Bookstore)
 4 = MusicSpace (CD store) or Ecampus (Bookstore)

Appendix H

Informed Consent Form

The purpose of this informed consent form is to insure that you understand the purpose of the study and the nature of your involvement. The informed consent must provide sufficient information such that you have the opportunity to determine whether you wish to participate in the study.

Research Personnel

The following people are involved in this research project and may be contacted at any time, Greg Dunn (Principal Investigator, 520-2600 ext. 6628), Dr. R. Dillon (Faculty Supervisor, 520-6629). Should you have any ethical concerns about this study please contact Dr. M. Gick (Chair, Department of Psychology Ethics Committee, 520-2600 ext. 2664) or Dr. J. Logan (Chair, Department of Psychology, 520-2600 ext. 2648).

Purpose of Study and Participation Requirements

The purpose of this study is to ascertain what properties on a website are going to make you purchase from it. During the experiment, you will be asked to view several websites and give your opinion regarding the e-commerce websites. The questions that you will be asked will involve your own appraisals of the websites along several dimensions. After you have viewed these websites there will be a brief post-test questionnaire. This questionnaire will ask you to provide further information regarding your opinion of these websites and several properties of these websites.

Risks and Discomforts

This study will not involve any discomforts or bring any risks to you. Should you feel any discomfort due to questions involved in this study you have the right to withdraw at any time.

Anonymity and Confidentiality

You will not be required to put your name on any of the questionnaires that are provided. You will be given a research number to define the data set which is being reported. Your data will be treated with confidentiality, such that only group results will be reported.

Right to Withdraw

You have the right to withhold any answer to a question that you do not feel comfortable answering. You may also withdraw from this study at any time and receive the minimum payment for participation in this study.

Name: _____

Date: _____

Signature: _____

Appendix I

Debriefing Form

The websites and symbols used for this study have been modified and do not represent the actual service quality provided by these various companies.

The purpose of this study was to find if various security brand logos facilitate a person's trust toward the website that it is displayed. Security brand logos such as Verisign™ or BBB Online™ are symbols that are provided by third-party companies and displayed on the homepage of an e-commerce website. This study is based on previous research that suggests that the presence of security brand logos on a website positively affects consumers' reported trust. Conversely, some studies report that these symbols do not affect consumers' reported trust. We would like to know how these symbols impacted your willingness to trust the websites used in this study. At the same time, this study compares two methods used to evaluate an individual's trust in a website. These methods have been used before to measure trust toward e-commerce websites, but have never been compared. We want to know if these measures provide comparable results.

This study will allow a better understanding regarding the impact of security brand logos on consumer trust. If security brand logos are an effective way to promote consumer trust, then it would be advisable for various e-commerce websites to use them on their homepage. Thus, this could possibly create a more trusting e-commerce environment for consumers. Conversely, if these logos do not impact consumer trust, then other ways must be focused on and researched to promote a trusting e-commerce environment. Also, by comparing two measures used to measure trust in e-commerce, we begin to understand how people evaluate trust toward e-commerce websites. This is one step toward learning more effective ways to measure trust in e-commerce.

Should you have any concerns about this study or wish to know more about it you can contact either me, Greg Dunn at 520-2600 ext. 6628 or my supervisor Dr. Richard Dillon at 520-6629. If you have any ethical concerns please contact Dr. Mary Gick (Chair, Department of Psychology Ethics Committee, 520-2600 ext. 2664) or Dr. John Logan (Chair, Department of Psychology, 520-2600 ext. 2648).

Appendix J

Pilot Study Results

Participants' familiarity with homepages

Most participants had not seen any homepage before the study. One participant indicated that he/she had previously visited the Alibris homepage (www.alibris.com). Two participants reported familiarity with the My Music homepage (www.mymusic.com).

Participants' Trust toward Homepages

This section provides participants' trust ratings and scores toward the eight homepages used in the pilot study. Table J1 and Table J2 provide descriptive statistics for trusting intentions ratings and money investment scores for all eight homepages, respectively.

Table J1

Trusting Intentions Ratings toward Homepages

Homepage	M (Mean Trust Rating)	Min.	Max.	SD
My Music ^a	57.82	0	9	17.99
J and R ^a	55.19	37	79	17.33
MusicSpace ^a	49.47	34	70	15.57
Hitmenow ^a	36.48	13	59	18.35
Ecampus ^b	72.82	56	83	11.85
CyberBookstore ^b	60.77	39	78	17.94
Alibris ^b	57.32	36	77	17.86
Bigger Books ^b	50.58	13	73	26.46

^an = 6. ^bn = 4.

Table J2

Money Investment Scores toward Homepages

Homepage	<i>M</i> (Trust Score)	Min.	Max.	<i>SD</i>
My Music ^a	66.25	40	85	20.57
J and R ^a	75	60	90	12.91
MusicSpace ^a	27.5	0	50	22.17
Hitmenow ^a	20.25	0	50	24.22
Ecampus ^b	53.33	20	90	29.44
CyberBookstore ^b	55.00	30	100	25.88
Alibris ^b	57.50	20	80	23.18
Bigger Books ^b	45.83	20	70	21.55

^a*n* = 4. ^b*n* = 6.

Participants' Trust toward Third-Party Seals of Approval

This section provides participants' trust ratings and scores toward the third-party seals of approval used in this study. Table J1 and Table J2 provide descriptive statistics for trusting intentions ratings and money investment scores, respectively.

Table J3

Trusting Intentions Ratings toward Third-Party Seals

Third-Party Seal	<i>M</i> (Mean Trust Rating)	Min.	Max.	<i>SD</i>
Verisign™	52.75	23	79	18.02
BBB Online™	44.86	13	72	21.72
Safe.com (fictitious)	63.80	40	83	16.36
No seal (Control)	54.56	30	76	17.70

Note. *N* = 10.

Table J4

Money Investment Scores toward Third-Party Seals

Third-Party Seal	<i>M</i> (Trust Score)	Min.	Max.	<i>SD</i>
Verisign™	58.00	20	100	23.00
BBB Online™	51.50	0	90	29.26
Safe.com (fictitious)	45.10	0	85	28.89
No seal (Control)	48.00	20	90	27.00

Note. *N* = 10.

Post-test Questionnaire Results and General Comments

This section provides a breakdown of the post-test questionnaire findings. Table J5 provides results from the first section comprising 10 items. Each item is presented by row. Columns separate whether each item was presented in the experiment (Seen in Study – Yes or no) and whether the item is authentic (Recognized – Yes) or fictional (Recognized – No). Cells present the number of participants claiming to have seen/not seen the specified item and/or recognized/not recognized it from previous Internet experience. Greyed cells indicate the correct

response for each item. For example, the Safe.com seal, which was a seal used in the experiment, but was fictional, was seen by 9 participants and recognized by 3 participants. Table J6 provides the frequency results from the second part of the post-test questionnaire which asked participants to circle those design features that influenced their ratings of either measure during the experiment. Finally, Table J7 provides a summary of observations taken from the third section of the post-test questionnaire.

During testing, two participants began filling out the Trusting Intentions Questions sheet improperly (e.g., circling a point on the lines for each item). The problem was quickly corrected and experiment continued. An example showing how to correctly place a response for each item was shown on each page to alleviate this problem for the main study. Also, there were two participants who had questions following the instructions to the trust game, but these were resolved by repeating some of the points provided in the instructions. Finally, following completion of the post-test questionnaire, participants were asked to indicate what they believed was meant by “security icons” in section 2. All 10 participants said that they believed this item referred to the various other “icons” provided in other parts of the post-test questionnaire and used the three third-party seals provided in section 3 of the questionnaire as examples of these icons.

Table J5

Frequency Table of whether Participants' had Seen and/or Recognized Indicated Item

Item	Seen in Study		Recognized from Previous Internet Experience	
	Yes	No	Yes	No
Credit Card Icons (VISA, Mastercard, & American Express)	7	3	9	1
Blue Lock Security	3	7	1	9
Safe.com	9	1	3	7
TRUSTe	4	6	2	8
Verified by VISA	0	10	1	9
Privacy Policy	5	5	6	4
Verisign™	8	2	5	5
Transaction Assured Site	1	9	2	8
BBB Online™	7	3	3	7
BizRate.com	2	8	1	9

Table J6

Frequency of Participants' Indications of Important Design Features

Design Item	Number of Participants who Circled Indicated Design Item
Privacy Policy	6
Use of animated graphics	3
Security icons	6
Testimonials from other people	0
Attractive design	8
Clearly stated additional charges with purchase (e.g., delivery, taxes, etc.)	3
Search engine available	3
Liked the merchandise	5
Cheaper prices	6
Date that site was last updated	1
Commercial banners	2
Clearly displayed prices	9
Contact information	6
Looks easy to use	7
Store policies (for returns, etc.)	4
Use of pictures of merchandise	6
Statement indicating how long business/site has existed	3
Numerous types of products available	4
Indication of product delivery timeframe	1
Credit card logos	4
Company affiliations	0
Large selection of merchandise	4
Other: Customer care/services section or information	1
Other: Use of space and colour	1

Table J7

Summary of Third-Party Seal Descriptions Provided by Participants

Third-Party Seal	Summary of Participants' Descriptions
Verisign™	<p>Two participants accurately identified that sites with this symbol had security encryption to prevent hacking. Seven additional participants still identified this symbol implies that this symbol implies that their personal information is secure, but expanded this to the honesty of the business, that they would keep the personal and private information of the customer confidential. One participant used words like legitimate, safe, and reassuring, but may not have a grasp of what it really means. One participant did not find this symbol terribly convincing, and was convinced more my “safe.com”</p>
BBB Online™	<p>One participant accurately identified this as Better Business Bureau Online, noting that the business conforms to BBB Online’s regulations. Eight other participants also said close to the same thing, but often used the terms “reliable” and “BBB Online”, indicating perhaps that they were using words seen in the icon, but have no firm grasp of what it means. One person was not attracted to the design, and one participant had no idea what it was.</p>
Safe.com	<p>All participants likened this icon to the first symbol (Verisign), suggesting that this symbol represented that the site would keep all their personal information “safe”. One person mentioned that they were most convinced by this icon.</p>

Appendix K

Participants' Reported Website Familiarity

Table K1

Frequency Table Showing Number of Participants Familiar or Unfamiliar with a Given Website

Homepage	Familiar –	
	Previous Experience ('Yes')	No Previous Experience ('No')
Hitmenow	0	64
J and R	1	63
My Music	3	61
MusicSpace	1	63
Alibris	0	64
Bigger Books	1	63
CyberBookstore	2	62
Ecampus	1	63

Appendix L

Correlations between McKnight et al.'s (2002) Trust Scale items

Table L1 provides the correlations between questions on McKnight et al.'s (2002) trusting intentions questionnaire and the mean score for each level of third-party seal of approval. This table presents separate correlations for each level of third-party seal of approval, indicated by the rows. Entries within each cell are specific to the indicated level of third-party seal. These entries provide the correlations between questions one to four, indicated by the rows, and question two to four and the mean trust rating, indicated by the columns. For example, the correlation between question 1 for the no seal condition and the mean trust rating for the no seal condition is .85. Of particular importance, the final column shows that the correlations between the means for all four questions and the individual questions and all items range from .82 to .93. The correlations for all cells presented in this table were significant at $\alpha = .001$.

Table L1

Correlations between individual items on McKnight et al.'s (2002) Trust Scale and their means

		Question 2	Question 3	Question 4	Mean trust rating
No seal	Question 1	.82	.66	.61	.85
	Question 2	-	.71	.70	.90
	Question 3	-	-	.78	.89
	Question 4	-	-	-	.89
Verisign™	Question 1	.78	.57	.58	.82
	Question 2	-	.67	.63	.87
	Question 3	-	-	.84	.90
	Question 4	-	-	-	.89
BBB Online™	Question 1	.84	.75	.68	.89
	Question 2	-	.75	.70	.90
	Question 3	-	-	.81	.92
	Question 4	-	-	-	.90
Safe.com	Question 1	.84	.68	.59	.85
	Question 2	-	.79	.73	.93
	Question 3	-	-	.85	.93
	Question 4	-	-	-	.90

Note. All correlation values are significant at $p < .001$

Appendix M

Trust Measures: Descriptive Statistics and Frequency Distributions

This appendix provides the descriptive statistics and frequency distributions of trust rating scores obtained from participants for both trust measures. It also provides test results determining whether the measures were commensurable. Table M1 provides the descriptive statistics taken from each trust measure at each level of third-party seal of approval. Measure and level of third-party seal are divided by row and the various descriptive statistics are divided by column. This table is followed by the frequency distributions obtained from each trust measure at each level of third-party seal and given either CD or bookstore homepages.

Table M1

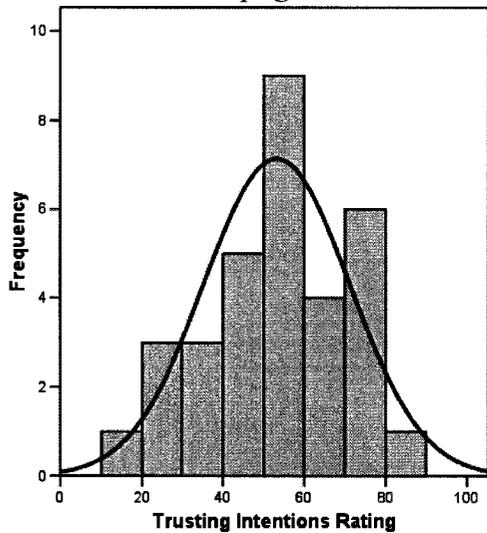
Descriptive Statistics from Trust Measures

Measure	Third-party Seal	<i>N</i>	<i>M</i>	<i>Mdn</i>	Mode	<i>SD</i>	<i>SD</i> ²	Range
Trust Ratings	No seal	64	53.16	55.0	54, 55, 68, 71	17.63	310.90	74.0
	Verisign™	64	58.42	62.0	62	19.06	363.42	93.0
	BBB Online™	64	55.55	59.5	61	20.33	413.36	79.0
	Safe.com	64	57.64	58.5	46, 52, 56, 67, 69, 77	21.16	447.57	87.0
	Collapsed Across Third-Party Seals	64	56.19	57.4	64	12.90	166.36	61.5
Money Investment Ratings	No seal	64	50.70	52.5	60	24.00	576.09	100.0
	Verisign™	64	54.56	50.0	40, 50	19.27	371.46	70.0
	BBB Online™	64	52.06	60.0	60	25.09	629.23	100.0
	Safe.com	64	53.05	50.0	40	25.72	661.60	100.0
	Collapsed Across Third-party Seals	64	52.59	53.8	45	11.99	143.82	57.5

Frequency Distributions for each Level of Third-Party Seal of Approval

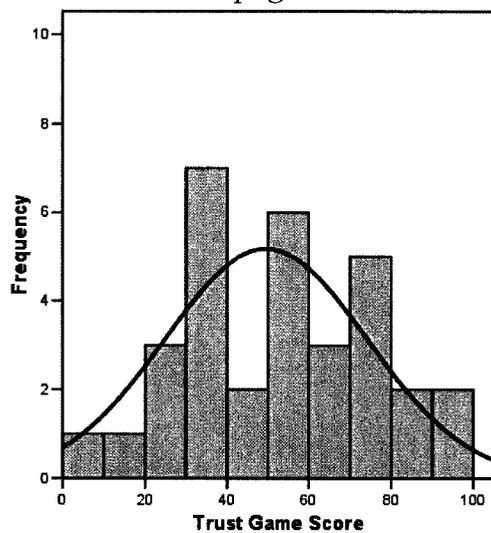
The following Figures provide histograms of the frequency distributions for each trust measure given each third-party seal of approval and each homepage genre (CD or bookstore homepages).

Figure M1
Mean Trust Ratings for No Icon with CD homepages



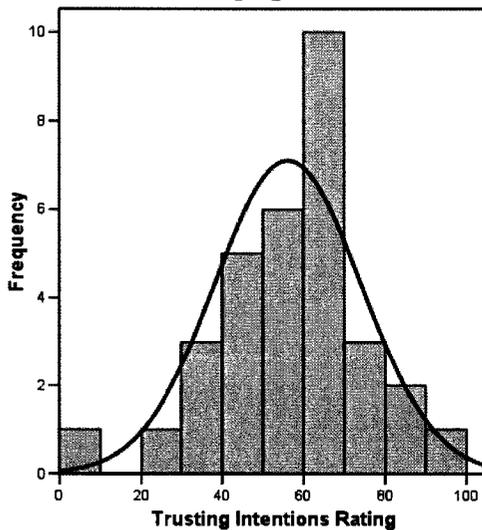
$M = 53.2$
 $SD = 17.9$
 $n = 32$

Figure M2
Trust Game Scores for No Icon with CD homepages



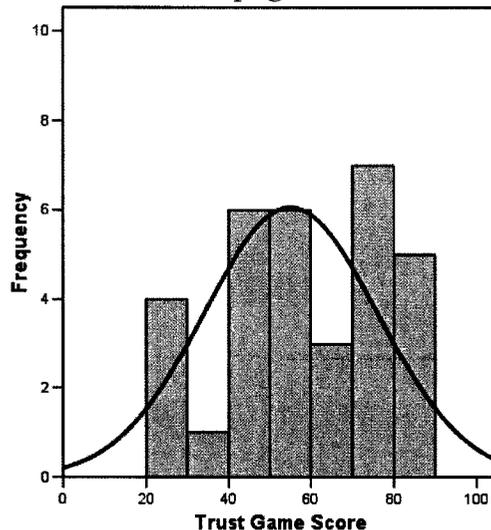
$M = 49.5$
 $SD = 24.7$
 $n = 32$

Figure M3
Mean Trust Ratings for Verisign™ with CD homepages



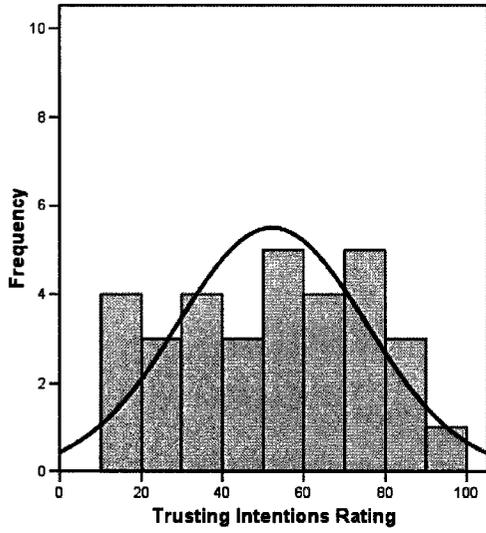
$M = 56.2$
 $SD = 18.0$
 $n = 32$

Figure M4
Trust Game Scores for Verisign™ with CD homepages



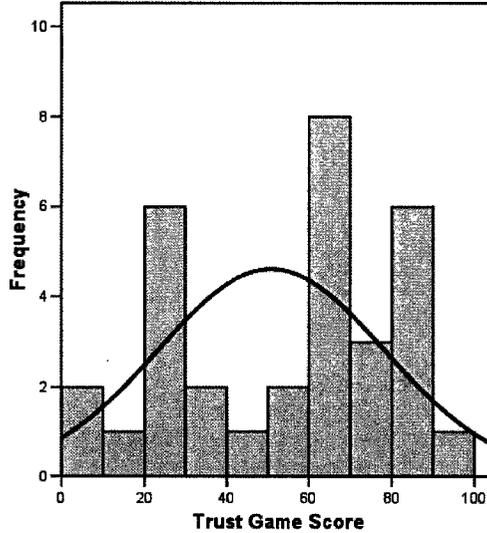
$M = 55.1$
 $SD = 21.1$
 $n = 32$

Figure M5
 Mean Trust Ratings for BBB Online™
 with CD homepages



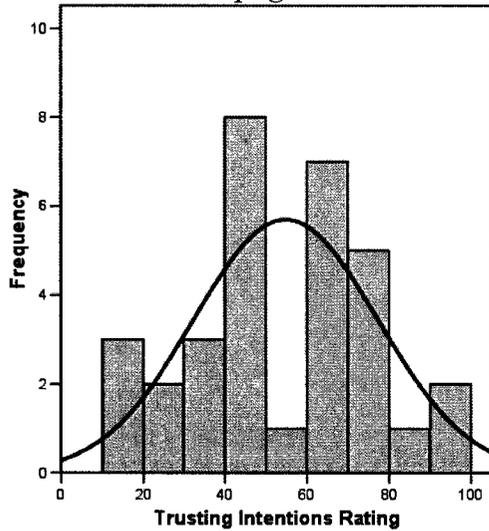
$M = 52.2$
 $SD = 23.2$
 $n = 32$

Figure M6
 Trust Game Scores for BBB Online™
 with CD homepages



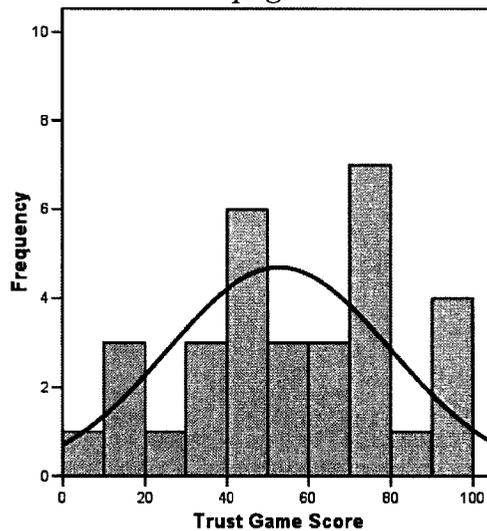
$M = 50.8$
 $SD = 27.7$
 $n = 32$

Figure M7
 Mean Trust Ratings for Safe.com
 with CD homepages



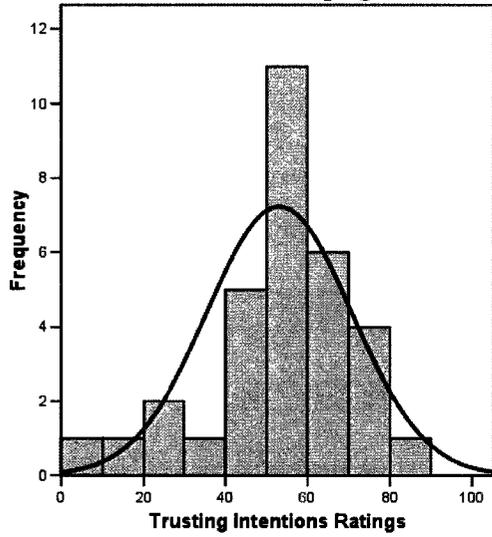
$M = 54.8$
 $SD = 22.4$
 $n = 32$

Figure M8
 Trust Game Scores for Safe.com
 with CD homepages



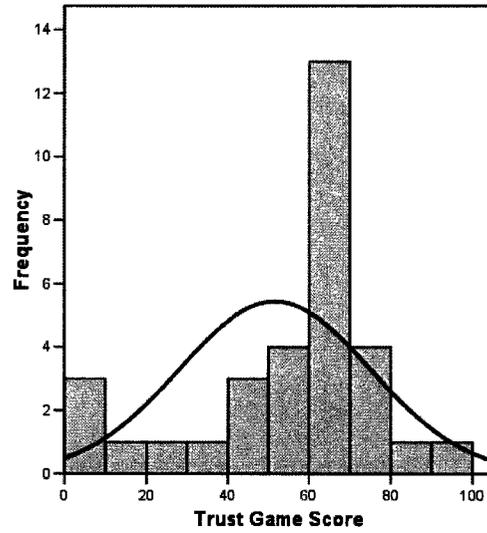
$M = 52.8$
 $SD = 27.2$
 $n = 32$

Figure M9
*Mean Trust Ratings for No Icon
 with Bookstore homepages*



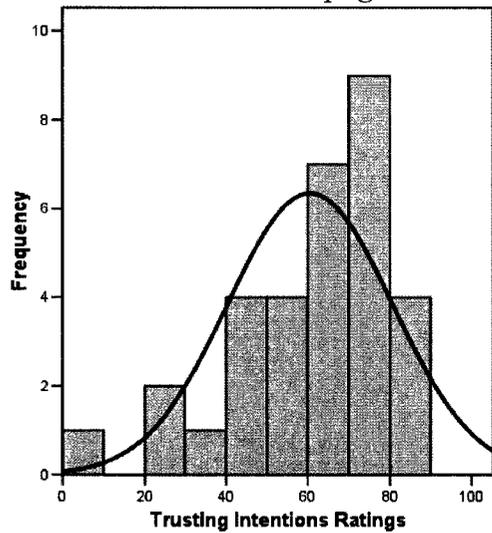
$M = 53.1$
 $SD = 17.7$
 $n = 32$

Figure M10
*Trust Game Scores for No Icon
 with Bookstore homepages*



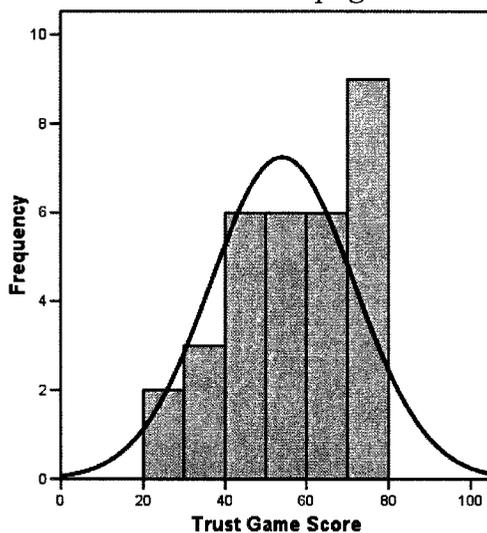
$M = 51.6$
 $SD = 23.5$
 $n = 32$

Figure M11
*Mean Trust Ratings for Verisign™
 with Bookstore homepages*



$M = 60.5$
 $SD = 20.1$
 $n = 32$

Figure M12
*Trust Game Scores for Verisign™
 with Bookstore homepages*



$M = 54.1$
 $SD = 17.6$
 $n = 32$

Figure M13
*Mean Trust Ratings for BBB Online™
 with Bookstore homepages*

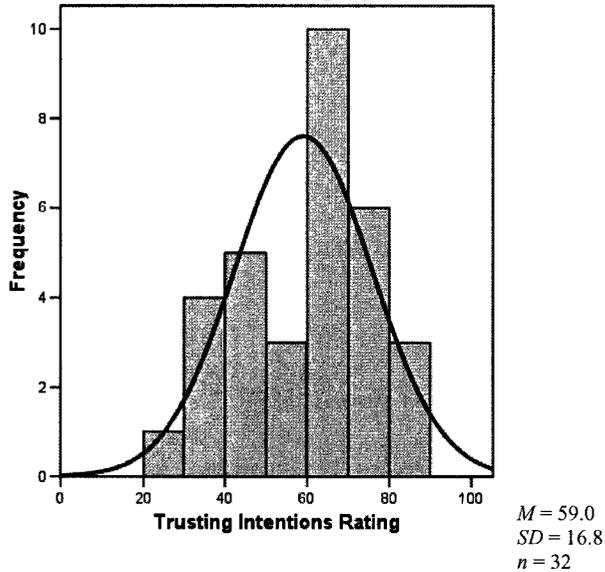


Figure M14
*Trust Game Scores for BBB Online™
 with Bookstore homepages*

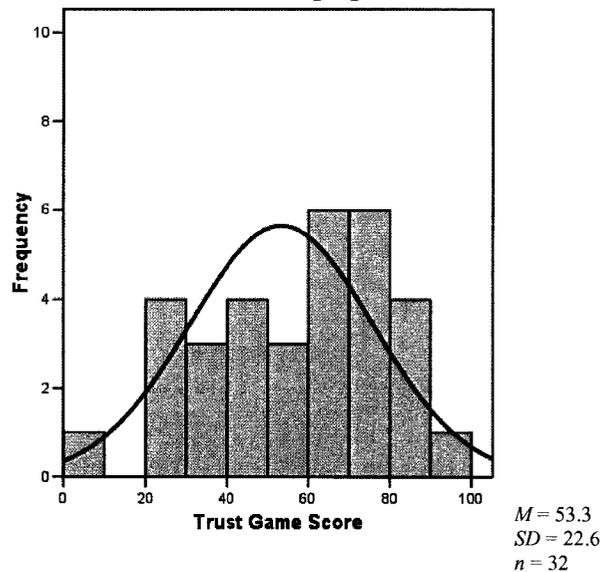


Figure M15
*Mean Trust Ratings for Safe.com
 with Bookstore homepages*

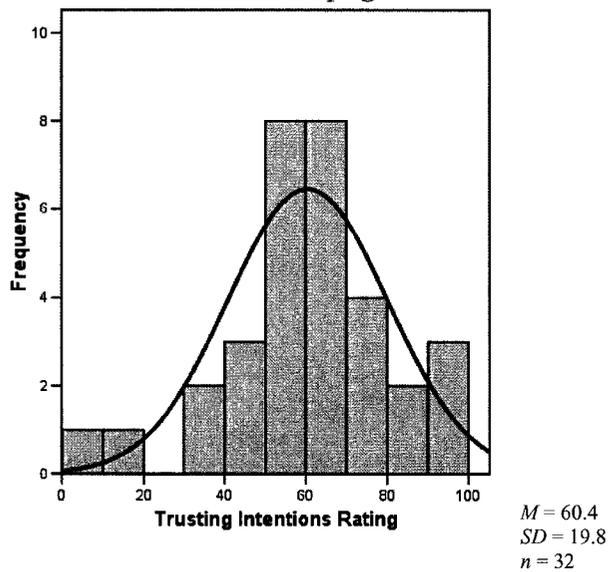
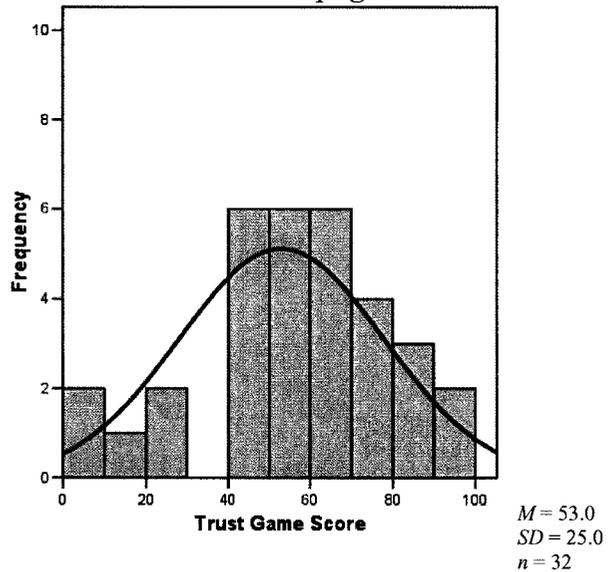


Figure M16
*Trust Game Scores for Safe.com
 with Bookstore homepages*



Appendix N

Trust Measures: Tests of Commensurability Statistics

The following tables provide test results for commensurability between the trust questionnaire and trust game measures. Table N1 provides results for homogeneity of variance. Site genre and level of third-party seal are separated by row, while the statistic and significance value for Levene's test for homogeneity of variance is provided in the columns. Table N2 provides the t-test values obtained between trust measures for skewness and kurtosis. Rows separate site genre and level of third-party seal, while columns separate test statistics for skewness and kurtosis. For example, the tests of skewness and kurtosis between the two frequency distributions for the trust questionnaire and the trust game at CD retail sales sites with no seal were .83 and .03, respectively. None of the values in this table were significant. Table N3 provides test results from the one-sample Kolmogorov-Smirnov tests for each trust measure and the two-sample Kolmogorov-Smirnov tests between measures. The one-sample Kolmogorov-Smirnov tests whether a given frequency distribution is normally distributed. The two-sample Kolmogorov-Smirnov tests the likelihood that two frequency distributions are obtained from different population of scores. Level of site genre and third-party seal of approval are separated by rows in this table. Columns identify the Kolmogorov-Smirnov test statistics for the trust questionnaire (trust ratings), trust game (money investment ratings), and between both measures. There were no significant results obtained from these tests.

Table N1

Tests of Homogeneity of Variance between Measures

Site Genre	Third-party Seal	Levene's test for Homogeneity of variance	<i>p</i>
CD retail sales	No seal	3.12	.082
	Verisign™	2.39	.127
	BBB Online™	1.59	.213
	Safe.com	1.20	.277
Online Bookstore	No seal	1.43	.236
	Verisign™	0.15	.698
	BBB Online™	4.06	.048*
	Safe.com	1.33	.254

* *p* < .05

Table N2

Tests of Skewness and Kurtosis between Measures

Site Genre	Third-party Seal	Skewness (<i>t</i> _(∞) , two-tailed)	Kurtosis (<i>t</i> _(∞) , two-tailed)
CD retail sales	No seal	0.83	0.03
	Verisign™	0.30	1.20
	BBB Online™	0.27	0.03
	Safe.com	0.04	0.08
Online Bookstore	No seal	0.22	0.27
	Verisign™	1.02	1.19
	BBB Online™	0.15	0.01
	Safe.com	0.15	0.32

Table N3

Kolmogorov-Smirnov tests within and between Measures

Site Genre	Third-party Seal	Trust Rating	Money Investment Rating	Between measures
CD retail sales	No seal	.77	.66	.88
	Verisign™	.54	.77	.88
	BBB Online™	.72	1.09	.63
	Safe.com	.58	.67	.63
Online Bookstore	No seal	.74	1.33	1.00
	Verisign™	.70	.57	1.13
	BBB Online™	.79	.83	.88
	Safe.com	.48	.82	1.00

Appendix O

ANOVA Summary Tables: Analyses of Third-party Seals of Approval

Table O1

(2X4) Within-Groups ANOVA Summary Table – Effect of Third-party Seals of Approval on Participants’ Reported Trust

Source	SS	df	MS	F	p
Third-party Seals of Approval	1 500.74	3	500.25	1.09	.355
Error (Third-party Seals)	86 743.39	189	458.96		
Trust Measure	1 656.72	1	1 656.72	3.52	.065
Error (Trust Measure)	29 619.15	63	470.15		
Third-party Seals * Trust Measure	76.27	3	25.42	0.07	.978
Error (Third-party Seals * Trust Measure)	72 831.35	189	385.35		
Total	192 427.62	448	3 496.85		

Table O2

2X(2) Mixed ANOVA Summary Table – Effect of Trust Measure and Recognition of Verisign™ on Participants’ Reported Trust

Source	SS	df	MS	F	p
Recognition of Verisign™	134.14	1	134.14	0.39	.537
Error (between-groups)	21 565.36	62	347.83		
Trust Measure	497.72	1	497.72	1.27	.265
Trust Measure * Recognition of Verisign™	244.22	1	244.22	0.62	.433
Error (within-groups)	24 353.65	62	392.80		
Total	46 795.09	127	1 616.71		

Table O3

2X(2) Mixed ANOVA Summary Table – Effect of Trust Measure and Recognition of BBB

Online™ on Participants' Reported Trust

Source	SS	df	MS	F	p
Recognition of BBB Online™	45.91	1	45.91	0.08	.776
Error (between-groups)	35 000.71	62	565.53		
Trust Measure	175.25	1	175.25	0.36	.554
Trust Measure * Recognition of BBB Online™	4.63	1	4.63	0.01	.923
Error (within-groups)	30 632.37	62	494.07		
Total	65 858.87	127	1 285.39		

Table O4

2X(2) Mixed ANOVA Summary Table – Effect of Trust Measure and Recognition of Safe.com on

Participants' Reported Trust

Source	SS	df	MS	F	p
Recognition of Safe.com	1 331.18	1	1 331.18	1.84	.180
Error (between-groups)	44 962.70	62	725.21		
Trust Measure	390.30	1	390.30	1.03	.315
Trust Measure * Recognition of Safe.com	46.55	1	46.55	0.12	.727
Error (within-groups)	23 537.17	62	379.63		
Total	70 267.90	127	2 872.87		

Appendix P

Results from Post-test Questionnaire

This Appendix provides a breakdown of the post-test questionnaire findings. Table P1 provides results from the first section comprising 10 items. Each item is presented by row. Columns separate whether each item was presented in the experiment (Seen in Study – Yes or no) and whether the item is authentic (Recognized – Yes) or fictional (Recognized – No). Cells present the number of participants claiming to have seen/not seen the specified item and/or recognized/not recognized it from previous Internet experience. Greyed cells indicate the correct response for each item. For example, the Safe.com seal, which was in the experiment, was seen by 53 participants and not seen by 11 participants. The Safe.com seal was also a fictional seal, but was recognized by 17 participants and not recognized by 47 participants.

Table P1

Frequency Table of whether Participants' had Seen and/or Recognized Indicated Item

Item	Seen in Study		Recognized from Previous Internet Experience	
	Yes	No	Yes	No
Credit Card Icons (VISA, Mastercard, & American Express)	56	8	63	1
Blue Lock Security	5	59	2	62
Safe.com	53	11	17	47
TRUSTe	10	54	14	50
Verified by VISA	9	55	15	49
Privacy Policy	48	16	47	17
Verisign™	51	13	33	31
Transaction Assured Site	6	58	11	53
BBB Online™	30	34	6	58
BizRate.com	10	54	9	55

Table P2 provides frequency results from the second part of the post-test questionnaire which asked participants to circle those design features that influenced their ratings of either measure during the experiment. The design features are shown in rows; the number of participants who circled/did not circle a given item is shown in columns. A two-column bulleted list containing the responses obtained when participants circled the *other* design item immediately follows Table P2.

Table P2

Frequency of Participants' Indications of Important Design Features

Design Item	Number of Participants who circled Indicated Design Item
Privacy policy	50
Use of animated graphics	7
Security icons	51
Testimonials from other people	8
Attractive design	41
Clearly stated additional charges	15
Search engine	16
Liked the merchandise	18
Cheaper prices	18
Date that site was last updated	13
Commercial banners	6
Clearly displayed prices	37
Contact information	46
Looks easy to use	33
Store policies	22
Use of pictures of merchandise	33
Statement indicating how long business/site has existed	18
Numerous types of products available	23
Indication of product delivery timeframe	4
Credit card logos	35
Company affiliations	22
Large selection of merchandise	30
Other	14

Participant responses when the *other* design item was circled were:

- Verify sign
- Lack of commercial banners
- Tabs to click on accessible to different genres (Horror, Romance, Comedy, etc.)
- I suppose Walmart has affected me, but I was honestly looking to see if they attempted to round the cents to a 99 or something
- The site layout
- "Current status" of order and order-tracking ability
- The copyright information of the site; how old the site was
- Canadian or US-based?
- Variety of Products
- looked more professional
- easy to use
- I also considered the names being sold, if they are up to date or CD's/Books which are somewhat old
- More elaborate design indicating a company that has put money into their company & is possibly more well known.
- Familiar and trusted names
- Popularity of site
- Very simple, not too much pictures
- I prefer Canadian sites with Canadian prices ...
- and sites that are either well-known or ones people I know have ordered from

Appendix Q

ANOVA Results for CD Homepages

Table Q1

One-way ANOVA Summary Table – Effect of CD Homepage on Trust Ratings

Source	SS	df	MS	F	p
CD homepage level	14 292.66	3	4 764.22	20.63	.001
Error	21 477.84	93	230.95		
Total	35 770.50	96	4 995.17		

Table Q2

One-way ANOVA Summary Table – Effect of CD Homepage on Trust Game Scores

Source	SS	df	MS	F	p
CD homepage level	19 645.09	3	6 548.37	16.36	.001
Error	37 217.91	93	400.19		
Total	56 863.00	96	6 948.56		

Appendix R

ANOVA Results for Bookstore Homepages

Table R1

One-way ANOVA Summary Table – Effect of Bookstore Homepage on Trust Ratings

Source	SS	df	MS	F	p
Bookstore homepage level	1 745.02	3	581.67	2.95	.037
Error	18 352.72	93	197.34		
Total	20 097.74	96	779.01		

Table R2

One-way ANOVA Summary Table – Effect of Bookstore Homepage on Trust Game Scores

Source	SS	df	MS	F	p
Bookstore homepage level	21 927.13	3	7 309.04	25.73	.001
Error	26 418.38	93	284.07		
Total	48 345.51	96	7 593.11		

Appendix S

Homepage Design Feature Analyses

Tables S1 and S2 provide a summary of the homepage design features incorporated by CD homepages and bookstore homepages, respectively. The information in these tables is more detailed than Tables 13 and 14 presented on pages 44 and 45, respectively.

Table S1

Design Feature Analysis of CD Homepages

Design Feature	CD Retail Sales Homepage			
	Hitmenow.com	J and R music	My Music	MusicSpace.com
1. Link to Privacy policy	Not clearly displayed – very small print below footer	Clearly displayed - Provided in footer	Clearly displayed - Available on left side of page	Clearly displayed - Provided in footer
2. Animated graphics	Yes	No	No	Yes
3. Testimonials	No	No	Available on left side of page	No
4. Additional charges (shipping fees)	Link to shipping rates provided	Free shipping displayed	No	No
5. Search engine	Yes	No	Yes	Yes
6. Pricing	Very cheap (Range: \$1.90 – \$10.85)	Reasonable (Range: \$9.99 – \$26.99)	Reasonable (Range \$12.98 – \$67.95)	Reasonable (Range \$19.98 - \$26.99)
7. Canadian prices	No	No	Yes (optional)	No

Note. Shaded cells represent design features that have been fulfilled.

Table S1 (cont.)

Design Feature	Hitmenow.com	J and R music	My Music	MusicSpace.com
8. Copyright dates	2001 to 2003	1997 to 2003	2002 to 2004	2003 to 2004
9. Commercial banners	Yes	No	No	Yes
10. Contact information	Yes – link available in footer	Yes – link available in header & footer, & 1-800 #	Yes – 1-800 # available	Yes – 1-800 # available
11. Link to store policies	Available in the footer	Available in the footer	No clear link available	No clear link available
12. Pictures of merchandise	No (for nearly all displayed of merchandise)	Yes (for all merchandise)	Yes (for all featured merchandise)	Yes (for all featured merchandise)
13. Years business has existed	None	Business has existed for 32 years	None	None
14. Many different products	Yes (movies, music, games, books, etc.)	Yes (audio, video, cameras, computers, etc.)	No (limited to music CDs & DVDs)	No (limited to music CDs & DVDs)
15. Link to order tracking	Yes – available in footer	Yes – available in header	No	No
16. Credit card logos	No	No	No	No
17. Company affiliations	No	No	No	No
18. Large selection (of CDs)	Limited ability to browse genres and titles	Large & varied category selection available	Large & varied category selection available	Limited ability to browse genres and titles

Note. Shaded cells represent design features that have been fulfilled.

Table S2

Design Feature Analysis of Bookstore Homepages

Design Feature	Online Bookstore Homepage			
	Alibris	Bigger Books	CyberBookstore	Ecampus.com
1. Link to Privacy policy	Clearly displayed – Provided in footer	Clearly displayed - Provided in footer	No link provided	Clearly displayed - Provided in footer
2. Animated graphics	No	No	No	No
3. Testimonials	No	No	No	No
4. Additional charges (shipping fees)	Yes – free shipping displayed	Yes – link provided in footer	No	Yes – link provided in footer
5. Search engine	Yes	Yes	Yes	Yes
6. Pricing	No prices displayed on the homepage	No prices displayed on the homepage	Reasonable (Range \$20.49 – \$33.95)	Reasonable (Range \$1.94 - \$28.50)
7. Canadian prices	No	No	No	No
8. Copyright dates	1998 to 2003	1999 to 2002	1998 - 2003	1999 - 2003
9. Commercial banners	No	No	No	No
10. Contact information	Yes – link available in footer	Yes – link available in footer	Yes – link available on right side of page	Yes – link available in footer
11. Link to store policies	No	No	No	Yes – link available in footer

Note. Shaded cells represent design features that have been fulfilled.

Table S2 (cont.)

Design Feature	Alibris	Bigger Books	CyberBookstore	Ecampus.com
12. Pictures of merchandise	Yes (for all featured merchandise)	No	Yes (for all featured merchandise)	Yes (for all featured merchandise)
13. Years business has existed	None	None	None	None
14. Many different products	No (limited to books, movies, & music)	No (limited solely to books)	No (limited solely to books)	Yes (books, apparel, DVDs, games, etc.)
15. Link to order tracking	Yes – available in footer	Yes – available in footer	No	Yes – available in footer
16. Credit card logos	No	Yes	No	Yes
17. Company affiliations	No	No	No	No
18. Large selection (of books)	Large & varied category selection available			

Note. Shaded cells represent design features that have been fulfilled.

Overall, homepages differed on many of the design features. Most of the design features were provided on one, two, or three of the four homepages within a genre, allowing for further analysis of that design feature. Nonetheless, some design features were not provided on any of the homepages or were provided on all the homepages within a genre. In these cases, no further analyses were conducted for those design features. Subsequent testing explored the link between individual design features and trust ratings/trust game scores. These tests also ascertained if participants who circled given design features in the post-test questionnaire provided higher

scores toward homepages that provided that design feature. Each site genre (CD homepages, bookstore homepages) and trust measure (trust questionnaire, trust game) was analyzed separately. Analyses conducted with the CD homepages are reported first, followed by analyses with the bookstore homepages.

Except for 'additional charges' and 'Canadian pricing', discussed later, all design features were analyzed using 2 X 2 ANOVAs for design feature (provided, not provided) and post-test questionnaire item (circled, not circled). These ANOVAs were conducted separately for each trust measure (trust questionnaire, trust game) using between-group variables for two reasons: 1) this allowed collapsing trust scores for sites depending on whether or not they shared a particular design feature, and 2) this provided a more conservative measure for these exploratory analyses.

Several design feature main effects were found. Table S3 provides the mean trust scores for design features taken with the trust questionnaire and the trust game. Rows denote design features; columns show mean trust scores toward homepages that did/did not fulfill a given feature. As can be seen, the same set of nine of the 12 design features were significant for trust measures. These effects were the same for both trust measures, but the direction of these effects differed for several individual design features. For six features, scores were higher when they were fulfilled than when they were not; the other three scores were higher when the design feature was not fulfilled. Apparently, people dislike animated graphics and commercial banners, and it is reasonable to assume that they have found local search engines useless in their past experience, thereby accounting for the lower scores when these are provided than when they are not. Apparently, people do not care much about seeing store policies, many different products, or linking to order tracking. Nonetheless, this apparent indifference may be due to the fact that

participants here only viewed the home pages; these design features may be seen to be more relevant when people want to buy, or have already ordered products from a given site.

Table S3

CD Homepage Design Feature Fulfillment for Both Trust Measures

Design Feature	Trust Questionnaire		Trust Game	
	Fulfilled (M)	Not fulfilled (M)	Fulfilled (M)	Not fulfilled (M)
1. Link to privacy policy	55.96 ^{***}	36.66	58.10 ^{***}	28.87
2. Animated graphics	41.85	59.54 ^{**}	39.38	70.46 ^{***}
3. Testimonials	68.62 ^{**}	49.91	69.44 [*]	52.33
5. Search engine	49.30	69.59 ^{***}	44.84	64.96 ^{***}
6. Pricing	59.15 ^{***}	43.42	56.43 ^{***}	32.77
9. Commercial banners	37.67	62.91 ^{***}	46.93	66.17 ^{**}
11. Link to store policies	54.87	54.37	48.48	53.44
12. Pictures of merchandise	58.95 ^{***}	40.13	58.48 ^{***}	33.41
13. Years business has existed	71.96 ^{***}	51.00	65.36 ^{**}	46.86
14. Many different products	54.18	54.48	48.25	54.19
15. Link to order tracking	57.43	56.63	43.58	45.77
18. Large selection (of CDs)	64.18 ^{***}	44.91	62.38 ^{***}	41.72

* $p < .05$, ** $p < .01$, *** $p < .001$

When considering the trust scores based on the design features participants had circled in the post-test questionnaire, only three main effects were found from the combined results of both trust measures as shown in Table S4. Non-italicized items indicate results obtained from trust questionnaire analyses; the italicized item was the result obtained from the trust game analysis. In all three cases, participants who circled a given item in the post-test questionnaire gave

significantly higher trust scores than participants who did not circle that item. Thus, scores toward all CD homepages were higher for participants had circled those items than for participants who did not circle them. There is no logical explanation for these results, which are probably due to chance.

Table S4

Participant Post-test Questionnaire Item Response for CD Homepages

Post-test Questionnaire Item	Circled (<i>M</i>)	Not circled (<i>M</i>)
Years business has existed*	66.83	56.13
Large selection (of CDs)*	58.00	51.08
<i>Testimonials</i> **	70.17	51.61

Note. Italicized item obtained from trust game analysis.

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

Finally, there was a significant interaction for testimonials using the trust questionnaire ($F(1, 124) = 4.50, p < .05$). Participants' trust ratings were highest when they had circled testimonials and these were provided on the homepage ($M = 80.33$), but were lowest when they had circled testimonials and these were not provided on the homepage ($M = 46.78$). There was also a significant interaction for animated graphics using the trust game ($F(1, 124) = 5.37, p < .05$). Trust ratings were higher when this design feature was circled and absent from the homepage ($M = 81.25$) than when it was circled and present on the homepage ($M = 32.25$). This reinforces the finding noted earlier that animated graphics are important because people dislike them and prefer not to see them. The same argument can be made from the observation that participants who had not circled use of animated graphics in the post-test questionnaire rated homepages with animated graphics ($M = 42.50$) lower than those without animated graphics ($M = 59.68$).

A 3 X 2 ANOVA was conducted for additional charges for CD homepages (free shipping, link to shipping rates, no link) and post-test questionnaire item (circled, not circled) separately for each trust measure (trust questionnaire, trust game). A significant main effect was found for design feature provided for both the trust questionnaire, $F(2, 122) = 20.10, p < .001$, and the trust game, $F(2, 122) = 8.85, p < .001$. Post-hoc analysis revealed that the homepage that indicated free shipping (trust questionnaire, $M = 69.36$; trust game, $M = 63.15$) received significantly higher trust ratings than the homepage that provided a shipping options link (trust questionnaire, $M = 37.67$; trust game, $M = 32.70$), comparisons with both measures were significant at $p < .001$. With respect to the trust questionnaire, the homepage that indicated free shipping also received significantly higher ratings of trust than the homepages that did not indicate any additional charges ($M = 54.30, p < .001$). Using the trust game, the homepages that did not indicate any additional charges ($M = 54.30$) were given significantly higher trust ratings versus the homepage that provided a shipping options link, $p < .01$. Thus, homepages that provide free shipping scored significantly higher than when no links to shipping options, or no shipping information, were provided.

Canadian pricing, which was not listed among the original 22 design features in the post-test questionnaire, was tested using two independent samples t-tests for the presence or absence of Canadian pricing on each trust measure (trust questionnaire, trust game). There were no significant findings. Thus, there is no indication that Canadian pricing influences participants' trust.

Exploratory design feature analyses were carried out in the same manner for the bookstore homepages. Each trust measure (trust questionnaire, trust game) was analyzed separately and design features from Table R2 that could not be reasonably or objectively

differentiated across homepages were not included. This resulted in eight design features that were analysed. All design features except 'additional charges', which is discussed later, were analyzed using 2 X 2 ANOVAs for design feature (provided, not provided) and post-test questionnaire item (circled, not circled) as in the CD homepages design feature analyses.

Several design feature main effects were found for the trust game, but none found for the trust questionnaire. Table S5 provides the mean trust ratings for design feature fulfillment with the trust game. Design features are indicated by row; columns show mean trust scores when a design feature was/was not provided. The Table indicates that there was far less agreement among participants regarding scores on both trust measures, and even that they did not agree in the direction of scores. In six instances, the trust game scores were significantly higher when the relevant design feature was fulfilled than when it was not, whereas there were only three such instances on the trust questionnaire. We have no explanation for these inconsistencies between the two trust scores and indeed between the two web site genres.

Table S5

Bookstore Homepage Design Feature Fulfillment for the Trust Game

Design Feature	Trust Questionnaire		Trust Game	
	Fulfilled (M)	Not fulfilled (M)	Fulfilled (M)	Not fulfilled (M)
1. Link to privacy policy	58.52	56.09	54.59	45.76
6. Pricing	56.02	60.28	55.41	50.60
11. Link to store policies	56.79	60.49	63.15**	49.89
12. Pictures of merchandise	60.11	56.01	59.56***	33.44
14. Many different products	55.75	59.04	62.38**	50.24
15. Link to order tracking	65.77	59.78	62.14	60.08
16. Credit card logos	54.40	60.95	48.59	57.78*

* $p < .05$, ** $p < .01$, *** $p < .001$

Table S6 shows the two main effects found for post-test questionnaire items, one with the trust questionnaire and one with the trust game. Non-italicized items indicate results obtained from trust questionnaire analyses, while the italicized item was the result obtained from the trust game analysis. As with results from the CD homepages, these results are likely due to chance because there is no logical reason for these results.

Table S6

Participant Post-test Questionnaire Item Response for Bookstore Homepages

Post-test Questionnaire Item	Circled (M)	Not circled (M)
Pictures of merchandise**	52.06	64.06
<i>Link to order tracking</i> *	72.17	50.06

Note. Italicized item obtained from trust game analysis, otherwise results from trust questionnaire analysis.

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

Finally, an interaction effect using the trust game was found for credit card logos, $F(1, 124) = 5.18, p < .05$. Participants' trust scores were highest when participants had not circled credit card logos and credit card logos were not provided on the homepages ($M = 58.88$), but were lowest when they had not circled this item and homepages did have credit card logos ($M = 41.18$). Participants who had circled credit card logos in the post-test questionnaire, rated the homepages with credit card logos ($M = 56.00$) relatively equivalent to the homepages without credit card logos ($M = 56.67$). Nonetheless, there is no logical basis for these results, which may mean that these results are brought about by chance, or more likely, may have happened because of another design feature(s) that were presented on these homepages.

Lastly, as with CD homepages, additional charges for bookstore homepages was tested using two 3 X 2 ANOVAs for design feature provided (free shipping, link to shipping rates, no link) and post-test questionnaire item (circled, not circled), separated by trust measure (trust questionnaire, trust game). Tests revealed a significant main effect of design feature provided for the trust game, $F(2, 122) = 7.87, p < .01$. The homepage that indicated free shipping ($M = 66.84$) received significantly higher trust ratings than the homepages that provided a shipping options link ($M = 48.43, p < .001$) and the homepage that did not indicate any additional charges ($M = 49.07, p < .01$). No other significant effects were found.

In conclusion, while it appears that these results may indicate the impact on trust of certain design features, they are inconclusive for several reasons: 1) the experimental design precluded trust scores to be attributed exclusively to a single design feature; 2) there was some inconsistency in the two sets of trust scores as noted by the interactions; 3) some of the significant results may be due to chance because of the number of tests conducted.