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INFORMATIONAL SOCIAL INFLUENCE AND THE INTERNET: MANIPULATION
IN A CONSUMPTIVE SOCIETY

by

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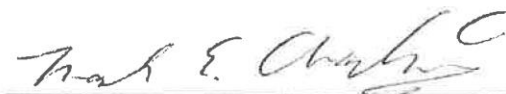
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THESIS APPROVAL PAGE

This is to certify that the thesis prepared by Christopher P. Golda entitled "Informational Social Influence and the Internet: Manipulation in a Consumptive Society" has been approved by the thesis committee as satisfactorily completing the thesis requirements for the degree Master of Arts.


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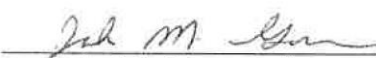
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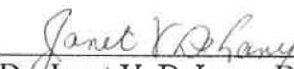
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Abstract

Information Social Influence and the Internet: Manipulation in a Consumptive Society

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Research on Informational Social Influence (ISI) has demonstrated that an individual's opinion can be shaped by others. Subsequent research has shown that an individual's sensory perceptions can be influenced in the same manner, with significant implications for consumer advertising. The present study extends the current body of literature on ISI by applying this premise to artwork evaluated over the Internet. In this study, 60 participants were randomly assigned to one of four groups wherein they were asked to evaluate a piece of artwork over the Internet while unsuspectingly utilizing confederate ratings that were manipulated by opinion and credibility. The results demonstrated that confederate ratings influenced a participant's evaluation of artwork; however, confederate expertise and the interaction were not significant. Ultimately, these data demonstrate that ISI can generalize to aesthetic qualities. That is, perceived beauty of a piece of artwork in an online context varies with external influence.

Keywords: Informational Social Influence, Internet, artwork, beauty, perception

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Introduction

Topical Significance

A highly exploitable characteristic of human nature is our susceptibility to social influence strategies. This is a phenomenon that covers a wide variety of situations ranging from influence on individual perception of movement to manipulation of one's acceptance of certain social and political viewpoints (Fein, Goethals, & Kugler, 2007; Reingen, 1982; Sherif, 1937). Somewhere in the middle of these two extremes, we find social influence as it relates to consumer products (Burnkrant & Cousineau, 1975; Cohen & Golden, 1972; Fein, Goethals, & Kugler, 2007; Pincus & Waters, 1977; Sherif, 1937).

The ability to influence an individual's attitude towards a particular consumer product can be a powerful and financially prosperous tool, especially for those who would strategically use it to take advantage of others (Burnkrant & Cousineau, 1975; Cohen & Golden, 1972; Pincus & Waters, 1977). For example, a department store using social influence strategies would likely be more successful in convincing a customer to buy a particular vase or furnishing than one that did not use such a ploy. Furthermore, high end boutiques could use the same strategies to convince a customer that a particular line of clothing was the most attractive and fashionable brand on the market, thus worth the extreme markup in price.

Indeed, research has demonstrated that subtle influence strategies are effective at swaying opinion in many different circumstances, including an individual's perception of the quality or craftsmanship of a particular product (Burnkrant & Cousineau, 1975; Cohen & Golden, 1972; Pincus & Waters, 1977). Moreover, the effectiveness of such psychological strategies can be further enhanced by presenting credible "expert" opinions

that solidify the evaluations presented for particular products (Lafferty, Goldsmith, & Flynn, 2005; Priilaid, Feinberg, Carter, & Ross, 2009). Certainly, experimental research does support the view that the expertise of the influencer can increase an individual's susceptibility to social influence in a variety of situations (Lafferty, Goldsmith, & Flynn, 2005; Priilaid, Feinberg, Carter, & Ross, 2009). Unfortunately, the bulk of the research in this area has primarily been accomplished in manufactured environments where the use of confederates was too contrived to be convincing, making the process of extrapolating from existing data to real life scenarios challenging (Lafferty, Goldsmith, & Flynn, 2005; Priilaid, Feinberg, Carter, & Ross, 2009). With the advent of the Internet, bridging this gap between experimentation and real-world application has become an easier task (Chen, 2008).

Researchers have not been remiss in recognizing the potential of the Internet as a venue where conformity as it relates to consumerism can thrive (Chen, 2008; Harmon, 2004; Huang & Min, 2007). Such effects are not limited to lab environments, however. It would be a simple feat for one to manipulate product information on a legitimate e-commerce website and would only be limited by the business' ethics and morals. Harmon (2004) has taken this idea from hypothetical supposition to proven application by revealing the rampant falsification of real-world product evaluations that became evident when Amazon's Canadian site malfunctioned.

Despite the relative ease with which businesses have employed social influence strategies over the Internet, it may come as a surprise to learn that very little research has been conducted regarding social influence over the Internet in relation to perception change (Chen, 2008; Harmon, 2004; Huang & Min, 2007). Generally, the focus has been

on determining how a new customer might be influenced to make a spontaneous purchase based on implicit trust in rater comments, but these studies do not address the financially lucrative “repeat customers.” That is to say, they have not addressed the condition of true perception change on some characteristic of the consumer product, which is more consequential because it has been internalized, thereby leading to a sustained customer base (Chen, 2008; Huang & Min, 2007).

Research Road Map

The present study addressed the issue of perception change over the Internet by looking at the effects of social influence as it relates to aesthetics of a product using the authority of confederate ratings as a moderator. Before delving into this research further, one must ground themselves in the current body of literature in order to fully understand and appreciate the evolution of social influence strategies from basic perception manipulations to a highly successful business tool that can mold a customer’s purchasing behaviors (Burnkrant & Cousineau, 1975; Cohen & Golden, 1972; Pincus & Waters, 1977; Sherif, 1937).

Literature Review

One of the earliest empirical examples of conformity, before the inception of the Internet, was an experiment devised by Sherif (1937). In his experiment, participants were placed in a dark room alone, and later with a group, and then asked to estimate the distance travelled by a dot of light shown on a wall. Although the dot remained stationary, there was the illusion that it had moved. The results gathered from a series of trials demonstrated participants’ estimations of how far the dot moved converged on a group norm (Sherif, 1937). Here, Sherif uncovered a phenomenon, later coined

Information Social Influence (ISI), wherein an individual will look to others to formulate an opinion when faced with contextual ambiguity (Deutsch & Gerard, 1955; Sherif, 1937). Further research in this area led to the discovery of another powerful phenomenon, called Normative Social Influence (NSI), which occurs as a consequence of peer pressure (Asch, 1955; Deutsch & Gerard, 1955).

In contrast to Sherif's (1937) research, Asch (1955) devised a social influence experiment deliberately designed to provide a clear, correct answer. In this study, participants were asked to compare two cards, one with a line of fixed length and one with three variable length line segments, to find the matching pair (Asch, 1955). Although the answer was apparent, Asch (1955) found that participants incorrectly responded in line with the majority opinion of the group comprised of confederates because of their inherent desire to fit in (Asch, 1955). This form of social influence, where peer pressure becomes the driving force, has become known as NSI in the literature (Asch, 1955; Deutsch & Gerard, 1955; Sherif, 1937).

Although these two types of social influence, ISI and NSI, can coexist under the right conditions, they are in fact two different phenomena that thrive in different social contexts (Asch, 1955; Deutsch & Gerard, 1955; Keasy, Walsh, & Moran, 1969; Sherif, 1937). For instance, ISI is most effective in vague or ambiguous situations where a clear answer is either subjective or otherwise unavailable. NSI, on the other hand, does not concern itself with achieving the right answer, but rather, the desire to fit in and or avoid rejection from a group because of a contrasting opinion (Asch, 1955; Deutsch & Gerard, 1955; Keasy, Walsh, & Moran, 1969; Sherif, 1937). Perhaps more important than the

mechanical differences between the two is their influential sustainability (Asch, 1955; Deutsch & Gerard, 1955; Sherif, 1937).

In regards to their long-term effects, NSI typically gains a foothold in situations where peer pressure or group identification is the primary catalyst and persists as long as that pressure is exerted, as demonstrated in Asch's experiment (Asch, 1955; Deutsch & Gerard, 1955; Keasy, Walsh, & Moran, 1969; Sherif, 1937). In contrast, ISI can lead to a perceptual change of opinion, and for that reason, can affect the individual's judgment indefinitely. Because ISI can be internalized, it may play a major role in shaping society's opinions and actions in seemingly endless ways (Asch, 1955; Deutsch & Gerard, 1955; Keasy, Walsh, & Moran, 1969; Sherif, 1937). As such, it has significant implications for consumerism and the ability to generate a sustained customer base. For this reason, ISI is the focus of this paper, and hereinafter, will be discussed in the various forms and contexts in which it operates (Deutsch & Gerard, 1955; Keasy, Walsh, & Moran, 1969; Reingen, 1982).

Conventional ISI. Following the discovery and distinction between ISI and NSI, efforts were made to untangle the two phenomena in subsequent studies (Deutsch & Gerard, 1955; Keasy, Walsh, & Moran, 1969). Indeed, researchers made attempts to isolate the effects of ISI in various contexts using a variety of creative constructs. For example, Keasy, Walsh and Moran (1969) developed an experiment where confederates' responses regarding the color of a specific wavelength presented on a color wheel were made available to participants. The results conformed to the ISI model in that participants, faced with ambiguity, perceived the color on the card to be closer to the confederates' answers. More importantly, the absence of physically present confederates

in this experiment decreased the likelihood that conformity results could be attributed to peer pressure (Keasy, Walsh, & Moran, 1969).

Subsequent experiments utilized a similar test methodology to demonstrate the generalizability of ISI. For example, Reingen (1982) demonstrated that people were more likely to be persuaded to donate money to a charity when shown a relatively large list of pseudo-donors. Additionally, Fein, Geothals, and Kugler (2007) demonstrated that participants were likely to rate a political candidate favorably, in line with confederates, even when their responses were gathered anonymously (Fein, Geothals, & Kugler, 2007). The impact ISI can have in social contexts is far reaching; however, these psychological strategies may have an even greater impact on behavior when strengthened with the credibility of the influencing individuals (Ross, 1973).

Expertise Moderating ISI. Research conducted by Ross (1973) provided a prime example of expertise as a moderator of ISI effects. In his experiment, Ross (1973) set out to determine if mothers were more likely to follow child rearing advice offered by an expert (i.e., child psychologist) compared to a referent group (i.e., another mother from the same demographic). To test his hypothesis, Ross (1973) developed an experiment wherein mothers, invited to bring their children in for an educational assessment, were given positive or neutral advice regarding the value of educational blocks to aid in their child's development. The study showed that participants were more likely to agree with the advice of the doctor over a referent individual. For example, when the doctor stated that the child would benefit positively from using the training blocks, 72% of participants decided to pick up an order card. In the neutral statement group, where the doctor made no comment on whether or not the child would benefit

from the blocks, only 13% picked up an order card. This is in contrast to the percentages calculated with a referent individual in the waiting room. Here, 61% of participants decided to pick up an order card when the referent comments were positive and 40% when neutral (Ross, 1973). The difference between these percentages indicates that an expert's opinion holds more influential weight than a referent individual's with regards to child rearing advice (Ross, 1973).

Likewise, Strong and Dixon's (1971) experiment on expertise and influence revealed that an individual with expertise still had the power to persuade someone even if they were discourteous or incapable of effective communication. Participants in the experiment were engaged by one of two types of counselors regarding self-motivation perceptions: a personable counselor or a socially ineffective one. The results showed both had a substantial influence provided they were experts; however, if the counselor was thought to be a first year student filling in for the lead counselor, they were only influential if they were friendly and relatable. In contrast, the inexperienced, unpleasant counselor was considered the least influential or liked according to the post assessments. As pointed out by Strong and Dixon (1971), these results indicate that expertise can compensate for other negative characteristics when it comes to influence.

With some minor caveats, the data from Strong and Dixon (1971) and Ross (1973) have demonstrated that the influential effects of ISI can be amplified by the perceived expertise of the advice giver. Although these studies are analogous to earlier conformity research performed in a general context, ISI has applications in the area of perception of certain consumer products as well (Cohen & Golden, 1972).

ISI and Consumer Products. In an attempt to determine ISI's applicability to consumer products, Cohen and Golden (1972) designed an experiment regarding coffee brand taste testing wherein the ratings of a fabricated reference group were manipulated to see the influential effect on a participant's rating of taste. In their experiment, participants were assigned to groups receiving one of three rating set-ups: a fabricated reference rating that was fairly uniform and skewed to the positive end of the rating scale, one with variable fabricated ratings calculated to the same mean as the previous group, or a control group in which no reference rating was provided. Additionally, groups varied on whether or not they were led to believe that their evaluations were going to be made public or kept confidential. The participants were then instructed to taste and rate the coffee product. The results demonstrated that the participant ratings were higher in the groups that received reference ratings than the control group in which no reference was provided. Additionally, their experiment detected differences between the group where the individual fabricated reference ratings were variable and the one where ratings converged on a similar point on the scale; however, these results were not statistically significant. Lastly, the data showed no significant differences between the low and high anonymity groups, indicating that potential confounds with NSI were minimal. The data from their experiment provided evidence that ISI can operate under conditions where an individual can use other opinions as a reference, but the efficacy of confederate rating unanimity is still debatable (Cohen & Golden, 1972).

A similar experiment was later conducted by Burnkrant and Cousineau (1975), again within the context of coffee brand taste testing preferences. The most notable inclusion in this study was the experimenter's focus on the effects of confederate rating

uniformity. In their study, Burnkrant and Cousineau (1975) randomly assigned participants to groups wherein confederate reference ratings were either available or unavailable for the participants to review (i.e., control group). Within the treatment group, there were three levels of confederate ratings that had a similar mean, but varied on uniformity in the following manner: one where reference scores centered on the scale between the ranges of 10 and 13, one where ratings were heavily dispersed (4 to 15), and one in which a unanimous rating of 12 was displayed, as well as a control group which had no reference rating. In addition to the rating distribution, the researchers were also interested in determining if results would vary under conditions where participant anonymity and source credibility were manipulated. With the anonymity variable, participants were led to believe that their ratings were either visible or hidden from others. The source credibility variable led participants to believe that confederate raters were either students like themselves or food expert critics. In this experiment, Burnkrant and Cousineau's (1975) sample consisted of 143 University of Illinois undergraduate students, who after being assigned to their respective groups, were instructed to rate the quality of coffee using the 1 to 15 point scale developed in earlier ISI studies (Burnkrant & Cousineau, 1975; Cohen & Golden, 1972). The results of the study supported prior findings that participant ratings of coffee positively correlated with reference ratings, but a significant difference between uniformity of references in the three different groups was not evident (Burnkrant & Cousineau, 1975; Cohen & Golden, 1972). The authors suggested that the distribution of ratings in their experiment may have helped solidify the participant's response but did not increase the magnitude of their rating (Burnkrant & Cousineau, 1975). Additionally, the source credibility variable had no significant effect

in this experiment, but this may be due to the fact that the title of “food expert,” as Burnkrant and Cousineau (1975) suggested, did not hold much weight in the eyes of the participants. Subsequent experiments on ISI and product evaluation have found similar main effects as previous studies, but more importantly, they have also started to look at how negative ratings affect an individual’s judgment (Burnkrant & Cousineau, 1975; Cohen & Golden, 1972; Pincus & Waters, 1977).

In an expansion of Cohen and Golden’s (1972) earlier work, Pincus and Waters (1977) devised an experiment to determine if ISI could be generalized to include other consumer products, such as paper plates. In addition to previous ISI research, they also included a negative reference rating to their design (Pincus & Waters, 1977). In their experiment, Pincus and Waters (1977) hypothesized that participant ratings of paper plate quality would converge with group opinion, whether in a negative or positive direction, while the ratings would correlate higher when the reference opinions tended to cluster together rather than when they were dispersed. In order to test their hypothesis, they devised a between groups experiment using 170 female college students as participants (Pincus & Waters, 1977). Participants were assigned to groups in which rating type (i.e., positive and negative) and rating uniformity (i.e., variable and uniform) was manipulated. Each group was required to rate the quality of the paper plate on a scale of 1 to 15 with 1 being the lowest of quality and 15 being the highest. The results of the experiment detected that participant ratings were significantly higher when they were shown a positive reference rating than when shown a negative one, particularly when the visible confederate responses were highly uniform. The work of Pincus and Waters (1977)

provided converging evidence supporting the hypothesis that ISI affects one's perception of product quality (Pincus & Waters, 1977).

ISI, Products, and Expertise. In addition to the successful extrapolation of ISI effects on consumer products, there has also been some evidence to demonstrate that expertise enhances the ISI effect on perception of consumer products in a similar fashion as shown in earlier experiments. More recently, Lafferty, Goldsmith, and Flynn (2005) conducted an experiment to determine if an endorser's perceived technical expertise would influence an individual's perception of the innovativeness of technological products. More specifically, they hypothesized that those less experienced, or non-innovative, product users would be more susceptible to influence than those considered innovators, which was operationally defined as an early adopter of new technological products. To test this hypothesis, the researchers first evaluated the participant's innovativeness using a series of questions on a 6 item assessment. Participants were then assigned to either a novice or expert endorser group where they were asked to evaluate a new cell phone advertised as the next generation mobile phone technology. In this 2 x 2 factorial experiment, both groups received the same advertisement; however, the written testimonials were identified as first time phone users for the novice group and experienced phone users for the expert group. After viewing the advertisement, the participants were asked to fill out a questionnaire which assessed their attitudes about the brand, purchasing intentions, and willingness to purchase the new phone (Lafferty, Goldsmith, & Flynn, 2005).

The data provided some insightful discoveries about how expert influence works with varying levels of participant expertise on the topic at hand (Lafferty, Goldsmith, &

Flynn, 2005). First, the expected result for brand attitude was not significant; however, there was a significant difference with regard to one's willingness to purchase the phone, with non-innovative participants being more significantly influenced to purchase the phone in the expert endorser group than the novice endorser group. Second, the amount that the non-innovative participant was likely to pay for the phone was significantly higher in the expert endorser group than the novice endorser group; this same result did not occur with the innovative participants. Rather, the innovative participants were nominally influenced by the expert endorser on the measured variables (Lafferty, Goldsmith, & Flynn, 2005).

The research by Lafferty, Goldsmith, and Flynn (2005) demonstrates that expert endorsers can enhance the effects of ISI when the individual does not have an in-depth knowledge of the product, but that this effect breaks down under conditions where the intended target of influence is an expert themselves. This finding converges with what is known about typical ISI situations. ISI strategies appear to operate more successfully when the individual is unsure of the correct answer or the stimulus to be judged is ambiguous, as evidenced in earlier studies and discussions conducted by Sherif (1937) and Deutsch and Gerard (1955). In the research performed by Lafferty, Goldsmith, and Flynn (2005), we find converging evidence to support this idea. When the participant is inexperienced with cell phone technology, there is a certain lack of confidence in their opinion; therefore, they look to someone with expertise to help them form an opinion (Deutsch & Gerard, 1955; Sherif, 1937). Further supporting this idea is the research conducted by Aqueveque (2006).

The interaction between ISI and expertise was further supported in Aqueveque's research (2006) wherein a 2 X 2 X 2 factorial experiment was conducted to investigate the effects of manipulating social setting, price, and expert opinion in relation to an individual's purchasing intentions for a particular type of wine. In the social settings manipulation, the participants were asked to imagine various settings where they might find themselves purchasing wine. For example, in one group, participants were asked to imagine that they were looking for wine that they could bring to a party. In the other group, they were asked to imagine that they were simply purchasing wine to drink by themselves at home. In the price manipulation, participants were asked to imagine that they went to the store and happened upon a cheap \$3 or \$9 dollar bottle of wine. Lastly, the expert manipulation consisted of having participants imagine that the particular wine was either poorly or highly recommended by wine experts. After the imaginative story, the participants were asked to fill out a questionnaire that gauged their purchasing intentions (Aqueveque, 2006).

The results of this study showed that the expert opinion was the most salient and influential factor when it came to the participant's inclination to purchase a particular wine (Aqueveque, 2006). Although this study demonstrates the efficacy of the expert influence in relation to other significant variables, the research was significantly limited in a couple of ways. First, the level of ecological validity was questionable because of the dissociative nature of the imaginative storylines. Simply put, there is too large of a difference between what actually happens and imagining what might happen in regards to consumer behavior. Second, while the expert influence is significant, it only touches on purchasing intentions and does not extend to perception change. Despite these

limitations, the research supports the body of literature regarding ISI and the enhancing effects of expert influence. However, it is prudent to look further into similar research experiments to determine if expert influence can truly manipulate an individual's perception of a product (Aqueveque, 2006).

In a related study, researchers set out to determine if a participant's taste of wine could be influenced by the ratings of wine experts using a similar but more realistic test methodology than the previous experiment. Here, Priilaid, Feinberg, Carter, and Ross (2009) conducted an experiment in which 32 participants were asked to taste test different wines that were provided in random order. In the first trial block, the participants were asked to rate the wines blindly without any cues given except for the type of wine, which was Merlot. In the second trial block, the participants were asked to taste the wines "sighted," meaning they were able to assess the value of the wine and were given an idea of its desirability using a wine expert's rating guide. The 224 paired data points of blind and sighted taste test results revealed that the strength of the rater's expertise resulted in a five-fold increase in influential strength. Additionally, demographic data collected prior to the experiment revealed that the influence of the expert became more pronounced with inexperienced wine drinkers. Conversely, there was a negative correlation between years of wine consumption and the influential effects of the expert. The results of this experiment clearly demonstrate that the effects of social influence can be amplified by expert credibility; however, the susceptibility to influence varies with wine drinking experience (Priilaid, Feinberg, Carter, & Ross, 2009).

Although evidence has aptly demonstrated that ISI, along with expert influence, affects an individual's perception of consumer products, research pertaining to the

efficacy of these types of strategies over the Internet has only just begun, with most studies focusing on one-time purchasing behaviors instead of true perception change (Aqueveque, 2006; Chen, 2008; Huang & Min, 2007; Lafferty, Goldsmith, & Flynn, 2005; Senecal & Nantel, 2004). Despite this trend, there have been several experiments that have taken a serious look at ISI in the context of the Internet, hinting that it is an equally viable venue for such a psychological phenomenon to thrive (Chen, 2008; Huang & Min, 2007; Senecal & Nantel, 2004).

ISI and Online Products. A prime example of ISI as it relates to online products was seen in Senecal and Nantel's (2004) experiment wherein 487 participants were requested to evaluate three categories of online products to select the best buy in each category. In order to conceal the true nature of the research, the participants were told that a company named Maximo was doing product research to increase business sales. As an incentive for participation in the study, participants were informed they would have a chance to win one of the products they chose as a best buy. In order to test the hypothesis that participants could be influenced to favor preferred products over comparable ones through the influential effects of online recommendations, participants were assigned to groups where product ratings were manipulated. More specifically, groups were varied so that participants received ratings from one of the following sources: an expert rater, an online shopping application, another consumer, or a control group where no reference was provided. Participants were then exposed to different product descriptions for four different computer mice, types of calculators, and brands of wine, and then selected the one that they thought was the best in the latter two categories. Although the control group received no information pertaining to item popularity, the

experimental groups were designed to present one item in each category (i.e., calculators and wine) as highly recommended by others. Based on this study, the researchers were able to show a strong link between ISI and product purchasing intentions. Specifically, the computer-based recommender system was shown to be the most efficacious of all the reference groups. More importantly, however, it was demonstrated that participants do prefer products that are recommended over ones that are not (Senecal & Nantel, 2004). Huang and Min (2007) would later produce similar findings using a sample of 480 students from a Taiwanese University. In their study, they manipulated the frequency and ratings of confederate bidders for two products (i.e., cell phones and t-shirts) and found that social influence was a considerable factor. Although this study did not address actual perception change, it does suggest that ISI influences one's decisions with regard to spur of the moment purchases (Huang & Min, 2007).

A more comprehensive study on ISI and the Internet was conducted by Chen (2008), who predicted that the star ratings for books sold online would significantly influence a consumer's purchasing behavior. In order to test Chen's (2008) hypothesis, 180 undergraduate students from a Taiwanese University were randomly assigned to one of three groups in which the star ratings were manipulated. Group one was asked to read brief descriptions for two books, one that received a rating of 5 stars and one that received a rating of 1 star from previous viewers. Group two received a similar scenario, but with ratings closer together at 4 and 2 stars for the first and second book, respectively. Lastly, Chen (2008) used a control group where both books received a rating of 3. When participants were asked to choose the book they were more likely to purchase, the higher rated book was chosen more often than the lower rated one (Chen, 2008). The results of

Chen's (2008) study lend credence to the effects of ISI; however, it should be noted that this result may be partially due to inherent differences in collectivist cultures.

As research demonstrates, the effects of ISI generalize fairly well, reaching across conventional shopping experiences to e-commerce transactions (Burnkrant & Cousineau, 1975; Chen, 2008; Cohen & Golden, 1972; Senecal & Nantel, 2004). With an ISI behavior paradigm established, one might predict that rater expertise would further enhance the effect of ISI in a virtual setting much like it has convincingly done so in physical contexts (Lafferty, Goldsmith, & Flynn, 2005). Surprisingly, the current research does not support the effectiveness of the expert rater over the Internet as strongly as has been demonstrated in traditional settings, as discussed in subsequent research by Chen (2008).

In a follow up study to their previous book rating experiment, Chen (2008) investigated how adding an expert influence might affect the herding behavior seen in their previous studies as compared to peer ratings. Here, Chen (2008) used only one book but modified the website content such that one group was told the rating system was based on ratings from other shoppers while the other group was told that the rating was provided by an expert. A third group served as a control and was not given any reference rating to assist in making a judgment. After reviewing the website, participants were asked questions pertaining to their purchasing intentions and the perceived trustworthiness of the ratings provided. The results indicated that peer ratings from other shoppers were significantly more influential than those of the expert or the control group. Additionally, the perceived level of trustworthiness of the ratings was significantly higher in the peer rating group than the expert group (Chen, 2008). Earlier studies have shown

the efficacy of the expert variable in ISI experiments; however, Chen's work (2008) clearly did not (Lafferty, Goldsmith, & Flynn, 2005). Although it is not clear why studies have shown divergent results on the expert variable, it is quite possible that Chen's (2008) findings are due to differing environments. For example, earlier studies were performed in conventional settings while Chen's (2008) was performed over the Internet in a collectivist culture (Chen, 2008; Lafferty, Goldsmith, & Flynn, 2005; Priilaid, Feinberg, Carter, & Ross, 2009). Additionally, it is possible that the stimuli, books in this case, do not invoke the same response as other stimuli, and so they are not equally as amenable to expert influence (Chen, 2008).

Thus far, the existing body of knowledge shows that ISI affects not only decisions regarding impartial issues like color test experiments, but also an individual's perception of the quality of consumer products (Cohen & Golden, 1972; Keasy, Walsh, & Moran, 1969; Pincus & Waters, 1977; Reingen, 1982). Many of the studies on ISI, and how it relates to consumer products, demonstrated that individuals are likely to be persuaded that something is better simply because the majority agrees (Burnkrant & Cousineau, 1975; Cohen & Golden, 1972; Pincus & Waters, 1977). Here, the implications for a heavily consumptive society are extensive. New communication tools like Internet rating sites and blogs increase the prevalence of ISI and raise new issues such as the falsification of ratings in order to increase sales (Dellarocas, 2006; Harmon, 2004). One prime example was the discovery by Harmon (2004) wherein he found that the Canadian version of Amazon's website had a glitch that revealed the identities of many of the reviewers of books being sold on the website (as cited in Dellarocas, 2006; Harmon, 2004). The investigation uncovered that many of the reviews came from the book

publishers themselves. It was also discovered that the authors were reviewing the very material they created. Other examples included paying others to write good reviews and searching out and recruiting influential Internet bloggers to profess the value of a product (Dellarocas, 2006; Harmon, 2004). From what we have learned from Dellarocas (2006) and Harmon (2004), it is evident that many online retailers have already started to take notice of the ISI effect and have manipulated ratings to increase sales.

Due to the fact that ISI is rampant on the Internet, which is sometimes the result of the natural process of online communications and other times an intentional strategic ploy to increase sales, it is wise for researchers to delve into every facet of this phenomenon to enable consumers to think more critically and overcome the power of outside influence. Unfortunately, research addressing ISI in the context of the Internet thus far has mostly been limited to purchasing behavior and seldom addresses conformity in regards to actual opinion or preference change like some of the earlier non-Internet experiments (Chen, 2008; Cohen & Golden, 1972; Huang & Min, 2007; Senecal & Nantel, 2004). These studies have touched on the issue but do not definitively demonstrate perception change in many of the cases (Chen, 2008; Huang & Min, 2007; Senecal & Nantel, 2004). Additionally, the level of rater expertise does appear to significantly increase the effects of ISI strategies when targeted toward consumer products in conventional settings, but due to sparse coverage and methodological limitations of the existing studies, the effectiveness of this variable is still debatable in an online context (Aqueveque, 2006; Chen, 2008; Lafferty, Goldsmith, & Flynn, 2005; Priilaid, Feinberg, Carter, & Ross, 2009).

The present study was designed to address the increasing importance of the issue of ISI over the Internet specifically in regards to perception change. It overcame the previously mentioned research limitations by employing a unique methodology that focused on the elements of a visual product, abstract art work, which was expected to be more amenable to subjective opinion and subsequent perception change in a 2-dimensional digital world.

Present Study

The present study investigated ISI in relation to an individual's perception of how beautiful an abstract painting appears over the Internet. The decision to focus on beauty in this experiment derived from the fact that the perceived value of most products on the Internet are simply too elusive and thus cannot be used in ISI manipulation research. This may, in fact, be part of the reason why so little research on true ISI perception change has been conducted in this context (Chen, 2008). For example, the Internet is rendered useless when it comes to utilizing ISI strategies to manipulate an individual's perception of taste or texture like in more conventional studies (Burnkrant & Cousineau, 1975; Chen, 2008; Cohen & Golden, 1972; Duan, Gu, & Whinston, 2008; Pincus & Waters, 1977). However, it should gain a considerable advantage when it comes to visual presentations of a product because ISI strategies can be focused solely on how something looks with little competition from other variables. The present study also addressed the contradictory findings of previous research regarding the effects of expertise in conventional and Internet contexts by including a more salient variable in the form of the confederate "art expert" (Chen, 2008; Lafferty, Goldsmith, & Flynn, 2005). More specifically, the lack of an expert effect in previous Internet-based studies was

more likely a result of the stimuli under scrutiny than the digital context. By using a variable that would be more amenable to ISI, it was likely that we would see a significant influential effect from the expert rater. Further amplifying these effects was the ambiguous nature of the present study's stimulus, an abstract painting, which was intended to generate a sense of uncertainty in the participant in hopes of creating an atmosphere for ISI to thrive (Chen, 2008; Lafferty, Goldsmith, & Flynn, 2005).

More specifically, the present study was designed using a between groups experiment in which confederates' ratings of an abstract painting were varied on two levels (i.e., negative and positive) along with the credibility of the raters (i.e., novice and expert art raters) to determine if they would influence a participant's subsequent rating (i.e., the dependent variable). Because prior research on ISI has been unable to identify uniformity of reference ratings as a reliable variable of interest, it was only given minor consideration in this experiment, and was controlled instead of included as a main independent variable (Burnkrant & Cousineau, 1975; Cohen & Golden, 1972; Pincus & Waters, 1977). This route was ultimately chosen because, as Cohen & Golden (1972) have alluded to, inclusion of uniformity becomes very complex and can yield misleading results.

Additionally, since there is strong research supporting the idea that negative ratings can induce conformity, both directions of reference were used as levels of the main independent variable (Pincus & Waters, 1977). The hypothesis for this study was that undergraduate psychology students' ratings of an abstract painting displayed online would be higher when it is considered to be a good choice by confederates rather than when rated poorly by confederates. A second hypothesis was that there would be an

interaction between rating and credibility, such that the effect of ISI would be amplified when the confederates were experts rather than novices.

Method

Design

This experiment employed a 2 x 2 between subjects factorial design where confederate ratings (i.e., negative and positive) and the credibility (i.e., novice and expert) of the confederate raters were manipulated to determine their influence over a participant's evaluation of abstract artwork.

Participants

After receiving IRB approval, precisely 60 (13 male and 47 female) Towson University undergraduate students, ranging in age from 18 to 30, were recruited for this experiment. Exactly 45 participants were selected through Towson University's Research Pool website by posting a request for volunteers for an art evaluation assignment. An additional 15 were recruited by approaching students on the Towson campus and providing them with the same scenario via a laptop computer (see Appendix A for IRB Approval Letters).

Apparatus

The primary apparatus for this experiment consisted of four Internet-based art evaluation forms that were used to determine if a participant's rating of an art piece was influenced by reference ratings and the expertise of those raters. The Web forms were constructed in a simple and consistent manner in order to keep from introducing confounding variables. All attempts were made to ensure similarity between the art evaluation forms and the Towson University website in order to give the appearance of

an official University questionnaire. For instance, each Web form had a banner displaying the Towson University logo at the top, the background of the pages contained a combination of the school colors, and the footer was a shade of gray consistent with the color of the official University webpage.

The actual painting on digital display was an art piece (1984-C) from a famous abstract artist named Clifford Stills. Although Clifford Stills is well renowned within certain circles, he is relatively unknown outside of the artistic community, thus making one of his paintings the perfect stimulus for this experiment. The picture of the painting was sized to 340 x 400 pixels and located in the body of the webpage for participants to view. A statement just above the picture informed participants that the evaluation was part of a larger effort to actively involve students in the Towson University Beautification Initiative through the selection of artwork that will be displayed in the Liberal Arts building. A subsequent statement informed participants that, “while many pictures are up for evaluation, you will only be evaluating one painting randomly selected from the pool of candidates.” In actuality, only one painting was used for this experiment. Although the decision to use only one abstract painting reduced the total available data points from which to generate the statistics, forcing students to concentrate on one stimulus allowed them more time to review confederate ratings, increasing the chance of influencing their evaluation of the artwork.

An instructional paragraph was displayed just below the informative statement. It explained to the participants that abstract artwork requires an investment in time to invoke a proper response; therefore, they were required to view the artwork for two minutes before being permitted to provide a final evaluation. The imposed two minute

viewing was intended to provide sufficient time for participants to recognize and cognitively process the confederate ratings. This decision was largely based on data from the pilot study, which revealed that many of the participants glossed over the confederate rating data, thereby decreasing the efficacy of the ISI phenomenon.

A table of confederate ratings and their corresponding comments regarding the abstract artwork was placed flush with the left edge of the Web-based form and just off to the side of the abstract art picture to provide ease of viewing during the experiment. A brief explanation stating, “Here is what others are saying...” was located at the top of the table, which was followed by 10 fabricated ratings and comments. The fabricated ratings were designed to mimic the Amazon and Walmart website systems in order to increase familiarity and prime participants on how to process the displayed information. As such, each confederate rating consisted of a block with three elements; a rating of 1 to 5 stars, a field that describes the rater’s status (i.e., student, art major, art critic), and a comment box allowing up to approximately 120 characters in length. The rater’s name was not requested like in Amazon’s feedback format; instead, it was substituted by the previously discussed rater’s status. This divergence from the format of the Amazon website was chosen in order to avoid potential privacy issues. This also introduced the second independent variable of rater expertise, wherein confederates were identified as art critics and art majors (i.e., expert) or students (i.e., non-expert). It is important to note that the Walmart consumer webpage uses an occupational description analogous to the rater’s status employed in this experiment; therefore, external validity still remained intact.

Located at the bottom of the page was a small participant evaluation subsection where participants submitted their evaluation. At the top of this participant evaluation

section was a brief statement reading, “Please enter your rating” to direct the participant to provide a rating. A series of radio buttons followed corresponding to the 1 to 5 stars ranking system. A text box stating “low to high” was placed atop of the stars to show the direction of the evaluation, which was lacking in the pilot study causing some confusion. Following the rating submission, participants were directed to a secondary form where additional questions were asked in order to gauge the participant’s understanding regarding the elements of the page and the true nature of the experiment.

As previously mentioned, all four forms were nearly identical in structure and format, the only exception being the manipulation of the two independent variables of interest (i.e., confederate raters and their credentials). This means the difference in Web form design was strictly limited to the confederate rating section located adjacent to the abstract art picture. More specifically, in the expert negative rater (ENR) condition, the “other raters” section listed 10 confederate Towson University art majors and art critics who had given negative ratings and posted distasteful comments to the picture. The overall mean score of the ENR rating was 1.7 out of 5 stars, but varied in such a manner as to appear more realistic. Conversely, the expert positive rater (EPR) condition had the exact same arrangement, but used ratings and comments skewed to the positive end of the scale, resulting in an overall mean of 4.3. Since previous research regarding rating variability as a significant factor was tentative, this experiment controlled rather than included this element by utilizing a mirror image of rating distribution to represent the differences between the positive and negative groups (Cohen & Golden, 1972). In other words, the distance that each negative rating in the ENR group was from the lowest possible score was counter balanced by a positive rating of the same distance from the

highest possible score in the EPR group. In the remaining two groups of this experiment, the amateur negative rater (ANR) and amateur positive rater (APR) conditions, the same rating scheme was used as previously described except here the rater information indicated that the rater was a student (see Appendix B for Web Form Samples).

The secondary apparatus consisted of a Python programming script to randomize participant assignment. Randomization was achieved by reading the required sample size of participants into an array, and using a shuffle function to randomly assign equal numbers of participants to the four treatment groups of the experiment (see Appendix C for Randomized Participant Assignment Generator Script).

Procedures

Participants in this study were recruited via a post on the research pool website requesting volunteers for a critique of artwork and by approaching students on campus. To conceal the true nature of the conformity experiment, the study description employed a cover story stating that the purpose was to get student involvement in the upcoming Towson University Beautification Initiative by having them participate in the selection of artwork that would be on display at the campus in upcoming semesters. A brief paragraph followed informing participants they could sign up to meet in room LA2110 of the Towson Liberal Arts building during one of the pre-designated times from March 1 to May 15th between 3:00 pm and 7:00 pm.

Upon arrival at their designated times, the experimenter used a randomized list of the four treatment conditions to assign the participant a unique number. This list was generated from a Python programming script which took a sample size number, divided it by the total number of groups in the study, and then randomly shuffled all of the numbers

together to create one large list. The participants were simply assigned the next number in the list as they showed up for the experiment. Once assigned a number, the experimenter handed each participant one of four corresponding art evaluation packages, which consisted of a consent form, a brief description reiterating the purpose of the beautification initiative, instructions on how to proceed with the study, and a website URL corresponding to the assigned treatment condition.

Once all participants were seated with their evaluation package, the experimenter asked the participants to fill out the consent form provided on the first page. Upon completion, participants were asked to pass the consent forms to the end of the row for collection. Next, the experimenter asked the participants to read the instructions provided on the second paper, which provided a brief reiteration of the purpose of the art evaluation, an explanation of how to logon to the system, and instructions on how to properly fill out the questionnaire.

Once the participants acknowledged they understood the directions, the experimenter verbally reiterated the following, “As part of the Towson Art Beautification Initiative, we are asking students, art critics, and various other people within the community for their assistance in determining which paintings will be displayed at Towson University in the upcoming semesters. Many pictures are up for evaluation, but we are asking each person to rate only one which has been randomly chosen. At the end of this initiative, the 10 highest rated pictures will be chosen by the Program Director.”

The experimenter then stated, “In previous evaluations, we have found that it takes individuals time to form a quality opinion on something as ambiguous as abstract artwork. As such, we are asking that you wait two minutes before you submit your

evaluation. It is important to note that we are not asking you to stare at the painting for the full time; rather, you should take casual glances and sit with the painting so that you can form a true assessment. Feel free to navigate the rest of the page during this time. As soon as everyone logs in, we will begin, and I will start the two minute timer. Once the timer expires, you will then need to provide your demographic information and your rating assessment. For your rating, please check the radio button that correlates to your evaluation and hit the submit button. Here, it is important to note that 1 star is the worst rating and 5 stars is the highest possible rating you can give. Once you hit the submit button, you will be redirected to a second page which will ask you a few questions about your experience. After completing your evaluation, please close out your Web browser and wait patiently for everyone else to finish. If you have any questions, please refer to the procedural information on the Web form first. If you still have questions, feel free to ask for assistance.”

After all participants were logged into the website, the experimenter said, “The evaluation is ready to begin; the timer is now being started.” At this point, the timer was started, and participants began their observations of the painting via the webpage on the computer terminal. Once the two minute timer expired, the experimenter stated, “Okay, the timer is up. At this time, please fill out your demographic information, provide your rating of the randomly selected painting, and complete the post questionnaire.”

Once all participants completed the study, a mass debriefing was performed. First, the participants were told, “I know that this was advertised as an art evaluation, but it was actually a study on conformity. As you hopefully noticed, the Web form displayed a list of ratings from other people, much like you might find on popular consumer

websites such as Amazon and Walmart. The real goal of the study was to determine if these types of rating systems, when combined with expert ratings, could influence an individual's perception of beauty. In this case, we were specifically trying to determine if the confederate ratings would influence your perception of how attractive an abstract painting appears.” After this quick unveiling of the true nature of the experiment, a formal debriefing was handed out to the participants, which provided contact information for the results of the study and grief counseling points of contact for anyone who felt anxiety or discomfort from the subtle deception used to conceal the true nature of the experiment.

Following the experiment, the data participants provided via the Web submission form was transferred to a Web server in a comma separated value (CSV) format. The data was parsed and imported into a Microsoft Excel spreadsheet for preliminary analysis. Because each record of a participant's data was hard-coded with a tag to identify which group they belonged to, the data remained completely confidential and anonymous. Subsequent descriptive statistics were performed to calculate the mean, variance, and standard deviation. Lastly, the data was imported into the SPSS program, where a two-way ANOVA was used to analyze the data derived from this 2 x 2 between subjects factorial experiment.

Results

Post questionnaire data was analyzed to establish confidence in the efficacy of the experiment. The data revealed that 56 out of 60 participants stated that they noticed the confederate ratings or could recall some of the information in the confederate discussion. Additionally, those participants that noticed the confederate ratings spent an average of

1.18 minutes consulting and assessing the available information. Only 26 of the 60 participants stated that they felt influenced by confederate opinion. Regarding the hypotheses in this experiment, a 2 x 2 factorial ANOVA was conducted to compare the manipulative effects of confederate ratings (i.e., negative or positive) and rater credibility (i.e., low or high expertise) in relation to a participant's evaluation of abstract artwork. The main effect of confederate rating was found to be significant with results of $F(1, 59) = 17.920$ $p < .05$, partial eta squared = .24, power = .986. On the 5 point scale used in this experiment, there was over a 1 point difference in ratings, with the mean rating of the negative group at 2.3 and the positive group at 3.36. The main effect of credibility was not found to be significant $F(1, 59) = .280$ $p > .05$. The interaction between confederate ratings and their expertise was not significant $F(1, 59) = 1.750$ $p > .05$ either. Figure 1 below demonstrates the means and confidence intervals for the main effect of confederate ratings.

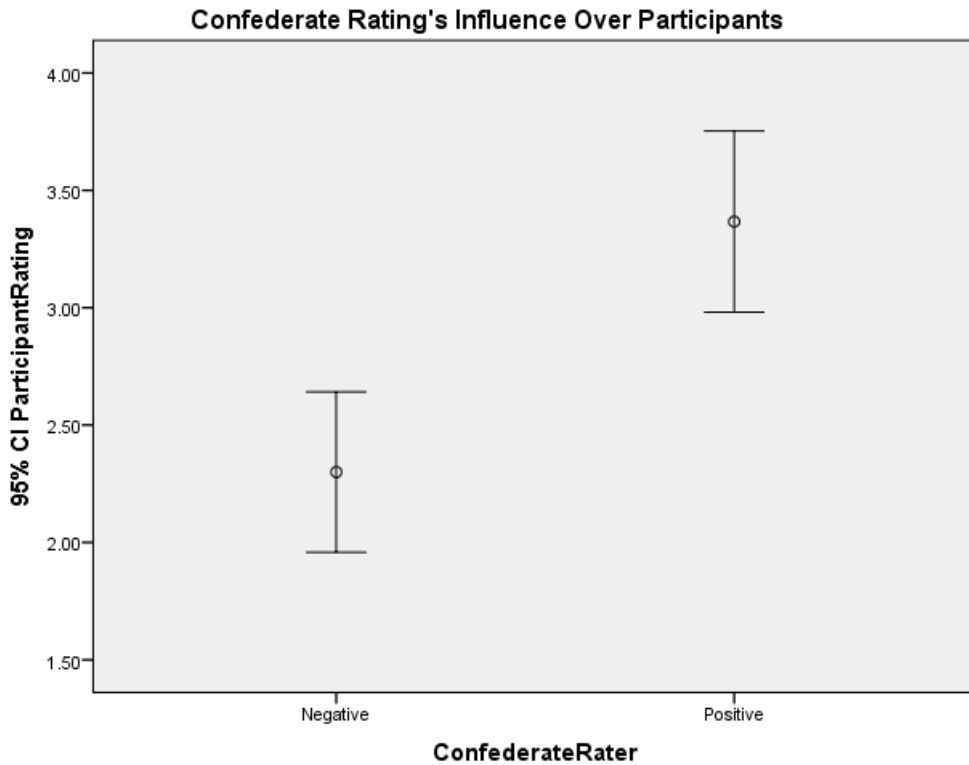
Figure 1

Table 1 below describes the means and standard deviations of each of the groups.

Table 1
Summary of Group Means and Standard Deviations

Type of Rating	Non-expert			Expert		
	<i>n</i>	M	SD	<i>n</i>	M	SD
Negative Rating	15	2.4	.91	15	2.2	.94
Positive Rating	15	3.1	1.2	15	3.6	.83

Discussion

The primary purpose of this study was to demonstrate that confederate ratings influence a participant's perception of beauty when viewing abstract artwork over the Internet. The results show that confederate ratings did have a significant effect on participants. When confederate ratings were positive, the participants tended to perceive the artwork in a more positive light, as evidenced by their mean rating of 3.36, in

comparison to the negative group which had a mean score of 2.3 for the same stimulus. Given that the scale's range was narrowly set at 1 to 5, a difference of over 1 full point was fairly substantial. These results support prior research which showed that negative and positive information provided by a group of confederates influenced a participant's perception and judgment (Pincus & Waters, 1977).

An interesting side-note that lends further credence to these findings was revealed in the participants' subsequent comments. After providing their initial rating and hitting the submit button, participants were redirected to a second page where they were asked to provide "free flow" statements about the particular piece of artwork that they had viewed. Although purely qualitative, some of the information provided by the participants corroborated their individual ratings and justifiably explained how they made their assessment of the abstract artwork. More surprisingly, some of the participants' comments reflected what confederate statements had expressed, such as the discussion of color variation and substance in a similar fashion. At first glance, this might seem to have been a lazy regurgitation of the information on the page, but if that was the case, one would expect the comments to have been copied verbatim. Instead, some of the participants' comments consisted of a unique combination of their own words with a mixture of borrowed ideas from the confederate descriptions, much like one would expect if true persuasion was occurring. Unfortunately, the information from the participant comment field was an optional block in this study and was not heavily emphasized by the experimenter. As a result, only 25% of the comments were substantive enough to be useful. Although more research would need to be conducted in

this area, one might argue that the participant comments shed invaluable light on the “behind the scenes” workings of ISI related phenomena.

Unfortunately, the credibility of the confederate raters, the second independent variable, did not affect ISI as much as expected. The interaction did move in the expected direction, but it did not reach the $p < .05$ level of significance. There are several possible reasons for this result. For one, the literature suggests that the efficacy of the “expert” variable is somewhat dependent on the context of the study. For example, there are studies demonstrating the effectiveness of the credibility variable in technical situations with complex types of subjects, but then there are some that do not show an effect because the topic at hand is one in which expertise is perceived as irrelevant (Burnkrant & Cousineau, 1975; Lafferty, Goldsmith, & Flynn, 2005). When it comes to artwork, it was anticipated that an expert’s opinion would be well respected, and so it was expected that art critics and art majors would have had heavy influence on a participant’s viewpoint. Unfortunately, this simply was not the case in this experiment. It is possible that our topic of study was one that was not responsive to expert credibility. It is also possible that the presentation of “expert” confederates in the study was not consistent or strong enough to be convincing to the participants. For example, the information on the evaluation form listed confederates as art majors from various schools, art teachers, and generically as local art critics. In retrospect, this may have confounded the efficacy of the expert variable in several ways. For one, it introduced too much variability in the type of experts used, thereby complicating the interpretation of the data. It is also possible that the titles of art major and teacher were not perceived as weightier experts, and so the influencing effect was attenuated. In retrospect, a stronger effect would most

likely be found if experts were presented as well-renowned and respected professionals that were widely known by the individuals within the sampled community. Another interpretation of the results is that the opinions of others are not given much weight in art evaluation because the experience is more personal; therefore, participants are more likely to have strong convictions in favor of their own preferences.

A more plausible explanation is that the study simply lacked sufficient power to recognize the interaction at the appropriate significance level. Although .80 is an acceptable level of power for this type of study, the interaction was nowhere near this cut off, only reaching .25. Considering the power limitations and the fact that the analysis did show that the interaction was moving in the right direction, it is very possible that a significant result would be found in a subsequent study using a larger set of participants.

Notwithstanding the strong evidence for a main effect, there were several broad limitations to this study that may have influenced the results. One limitation had to do with the venue in which the experiment took place. Participants completed their evaluation under the purview of the experimenter on the University Campus. Though every effort was made to restrain verbal and non-verbal inconsistencies during each treatment session, it is possible that some experimenter bias was injected into the study.

Another potential limitation concerned the ecological validity of the study. For example, the statistics bore the expected results for the main influence effect, but it cannot be definitively stated that true perception change had taken place because it is also possible that participant scores were derived more out of a sense of civic duty than personal preference. More specifically, some participants may have responded with the majority because they knew that the highest rated paintings would be ones that would be

displayed on campus. Here, if it was perceived that the majority of students favored a particular painting, then it could be argued that participants may have responded in kind in order to appease their peers.

The inherent limitations of designing a social influence test of this nature have implications regarding the confounding of several influence type variables as well. Specifically, the intention was to measure ISI by creating an anonymous situation in which participants were required to evaluate an ambiguous stimulus with the only type of assistance coming in the form of “other raters.” Here, the logic was that other types of influence, namely normative dealing with peer pressure, should be reduced because there is no need to succumb to external influences since anonymity was established. This is the same type of reasoning used in prior experiments, such as Burnkrant and Cousineau (1975), so the logic was considered sound. With this in mind, however, it still cannot be stated definitively that NSI forces did not contribute to some portion of the result. Since the non-expert confederate raters were simply listed as students, it is quite possible that some of the participants in this group desired to identify with other students and so answered accordingly, thereby increasing NSI in this experiment. Conversely, it could also be argued that individuals wanted to identify with experts, and as a result, responded in kind. In either case, we are left with the realization that it is difficult to untangle the two phenomena, ISI and NSI, in any given experiment. At best, we can really only state that we have made all attempts to suppress one while amplifying the other. In this experiment, there is strong evidence that ISI was the predominant phenomenon working because all individual ratings were known to be anonymous by the participants in the study; however, it is undeniable that some NSI may have been at play.

Though there were limitations, subsequent research could address many of the previously discussed issues in fairly straight forward ways. For one, a simple resolution to the insignificant interaction is to pool a sufficiently large sample of participants such that power of .80 or greater is achieved. In regards to the experimenter bias, a subsequent study could be conducted completely online by sending the URL to a participant's e-mail address and then having them login to the evaluation page from the comfort of their own home. Such a strategy would require some overhauling of the existing test apparatus; however, it may be worth this additional time to reduce experimenter bias and increase ecological validity. Lastly, confidence in attributing the result to ISI can be solidified by increasing the participant's vested interest. One way to do this would be to modify the methodology in such a manner that afforded participants a chance to acquire the stimulus they rate the highest. Such a strategy has been tried in past ISI related studies and appears to be a sound way to motivate participants to respond in a more genuine fashion (Senecal & Nantel, 2004).

With consideration for the limitations, this study ultimately extended prior research on ISI in a substantial way by showing that this phenomenon can generalize to visual stimuli such as abstract artwork. This becomes increasingly important when considering that the study demonstrated this in an online context because very little ISI related research has been conducted in this area thus far (Chen, 2008; Senecal & Nantel, 2004).

To date, it has been shown that ISI's influence broadly impacts a variety of situations and sensations in conventional settings. For example, ISI appears to influence an individual's decisions ranging from political and social issues all the way to the

perception of consumer products (Burnkrant & Cousineau, 1975; Cohen & Golden, 1972; Fein, Goethals, & Kugler, 2007; Pincus & Waters, 1977). Unfortunately, this has not been well established over the Internet. In an online context, researchers have only been able to demonstrate that customers will utilize available rating information online and perhaps take a chance on purchasing a product, but these types of studies do not address any permanent change in the individual's beliefs, judgments, or perceptions about the issue at hand (Chen, 2008; Senecal & Nantel, 2014). For example, Chen (2008) found that books were more likely to be selected if others had rated them highly, and Senecal and Nantel (2004) demonstrated that recommended products were more likely to be preferred by participants. These are interesting findings in relation to social influence, but there is a fundamental difference between these types of studies and classical ISI where actual perception or judgment was influenced by the mere suggestion of confederates (Chen, 2008; Cohen & Golden, 1972; Pincus & Waters, 1977; Senecal & Nantel, 2014). The present study was able to get back to the classical ISI types of research, much like earlier studies performed by Cohen and Golden (1972) and Pincus and Waters (1977), but also demonstrated that such a phenomenon can be relevant in current society using a highly prevalent tool such as the Internet.

In addition, the present study's use of abstract art work as the main stimulus increased ecological validity, as this is arguably the one sensation that is most amenable to manipulation over the Internet. Conventional ISI experiments are afforded the opportunity to focus on influencing more of the senses that we have as individuals. Over the Internet, however, the range of ISI is limited because the potential to manipulate touch, smell, or taste, among other things, is simply not possible. While this might look

like a limitation at first glance, it is possible that ISI strategies over the Internet are strengthened by primarily focusing on visual aspects because there are fewer competing variables.

On the surface level, the present study might appear to be just another social science experiment with little to no real life applicability; however, the implications of manipulating an individual's perception over the Internet are extremely profound when considering how heavily used the Internet is around the world. In today's society, it is not uncommon to spend a good amount of our daily life connected to the Internet. Whether it is on social media sites like Facebook, purchasing a product on Amazon, or reading news on Yahoo or Google, going online almost certainly ensures that one is going to be inundated with information from various different sources. In some cases, as Harmon (2004) pointed out, this information may be coming from less than credible sources.

That fact that ISI can work in such a highly trafficked venue, as shown in the present study, means that the more time the public continues to spend online, the more certain it will be that ISI strategies will be used over the Internet to persuade individuals, especially where it involves visual stimuli. As such, this may soon become the primary strategy used by advertisers. More concerning is the likelihood that the Internet will become the predominant venue for social and political groups to employ ISI strategies to push their agendas (Chen, 2008; Senecal & Nantel, 2004). Socio-political manipulation has already been demonstrated in earlier ISI studies like Fein, Goethals, and Kugler (2007). Now that the present study has shown that perception change over the Internet is

feasible, it is not a very far stretch to imagine a paradigm where ISI efficacy transcends informational, product evaluation, and socio-political lines.

As this study has shown, influencing and manipulating the masses is a fairly easy task in the cyber arena. Further compounding the problem, the Internet provides near complete anonymity and offers an easy vehicle through which to falsify data (Harmon, 2004). For these reasons, it is important for researchers to continue to study ISI's effect via experiments such as this in order to be equipped to educate the general public on how they can prevail against increasingly deceptive and manipulative tactics likely to be encountered as they live out more of their daily lives over the Internet.

Appendix A

IRB Approval Letters



APPROVAL NUMBER: 14-A070

To: Christopher Golda
8000 York Road
Towson MD 21252

From: Institutional Review Board for the Protection of Human
Subjects Patricia Alt, Member

Date: Tuesday, February 25, 2014

RE: Application for Approval of Research Involving the Use of
Human Participants



Office of Sponsored Programs
& Research

Towson University
8000 York Road
Towson, MD 21252-0001

t. 410 704-2236
f. 410 704-4494
www.towson.edu/ospr

Thank you for submitting an Application for Approval of Research
Involving the Use of Human Participants to the Institutional Review
Board for the Protection of Human Participants (IRB) at Towson
University. The IRB hereby approves your proposal titled:

*Informational Social Influence and the Internet: Manipulation in a
Consumptive Society*

If you should encounter any new risks, reactions, or injuries while
conducting your research, please notify the IRB. Should your research
extend beyond one year in duration, or should there be substantive
changes in your research protocol, you will need to submit another
application for approval at that time.

We wish you every success in your research project. If you have any
questions, please call me at (410) 704-2236.

CC: J. Govern
File



Date: Tuesday, February 25, 2014

NOTICE OF APPROVAL

TO: Christopher Golda DEPT: PSYC

PROJECT TITLE: *Informational Social Influence and the Internet:
Manipulation in a Consumptive Society*

SPONSORING AGENCY:

APPROVAL NUMBER: 14-A070

The Institutional Review Board for the Protection of Human Participants has approved the project described above. Approval was based on the descriptive material and procedures you submitted for review. Should any changes be made in your procedures, or if you should encounter any new risks, reactions, injuries, or deaths of persons as participants, you must notify the Board.

A consent form: ☒ is ☐ is not required of each participant

Assent: ☐ is ☒ is not required of each participant

This protocol was first approved on: 2014-02-25

This research will be reviewed every year from the date of first approval.


Patricia Alt, Member
Towson University Institutional Review Board



April 24, 2014

To: Chris Golda
Dept. of Psychology
Modifications to TU IRB project 14-A070

Office of Sponsored Programs
& Research

Towson University
8000 York Road
Towson, MD 21252-0001

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www.towson.edu/ospr

Dear Mr. Golda:

Thank you for informing the Towson IRB of your modifications to project 14-A070 "Informational Social Influence and the Internet: Manipulation in a Consumptive Society".

The Towson University Institutional Review Board for the Protection of Human Participants has reviewed and approved your modification for this project. However, this modification approval does not change the expiration date of the original approval, which will need to be renewed one year from the date of approval if the research is ongoing.

If any other modifications are made to this project, or if any new risks are discovered, please inform the Board immediately.

Should you have any questions, please do not hesitate to contact me at 410-704-2236.

Sincerely,

A handwritten signature in black ink, appearing to read "V. Denise Spears".


V. Denise Spears, MPA
Compliance Administrator, On Behalf of Towson University Institutional Review Board for the Protection of Human Participants

CC:
J. Govern
File

Appendix B

Web Form Samples

Amateur Negative Rating Form


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Introduction:

Thank you for your participation in this art evaluation. While many pictures will be evaluated by students, art critics, and various other members of the Towson community during this effort to beautify the Towson campus, only 10 will be chosen based on the highest scores received. Of the many pictures up for evaluation, the one that you have been chosen to rate has been randomly selected and displayed below.

Our research has shown that it generally takes a few minutes to form a solid impression of abstract art such as the kind that will be evaluated. With this in mind, we are asking each individual to wait 5 minutes before providing their evaluation. By taking causal glances and "sitting" with the image for a few minutes, you will be able to overcome preconceived impressions and provide a more accurate assessment. After 5 minutes, please make sure to provide your information in the fields below.

Viewing and Evaluation:

Here's what other people are saying...

★☆☆☆☆ Evaluator 1: (Student)

"...an over thought attempt at surrealism, which does not present well in this type of art work"

★☆☆☆☆ Evaluator 2: (Student)

"I appreciate the effort, but this strikes me as too contrived"

★☆☆☆☆ Evaluator 3: (Student)

"I generally like minimalism, but this is just too much of the same color"

★☆☆☆☆ Evaluator 4: (Student)

"I didn't really like this painting so much."

★☆☆☆☆ Evaluator 5: (Student)

"This painting lacks depth and substance."

★☆☆☆☆ Evaluator 6: (Student)


"This painting would benefit from more variation in color and dimension."

★☆☆☆☆ Evaluator 7: (Student)

"...just a bit too monochromatic"

★☆☆☆☆ Evaluator 8: (Student)

"The contrast between the redish and yellow tones did not pop"



Entering Information:

Occupation: (For example, Student, Teacher, Art Critic, Administrator, etc.)

Group Assigned: (A,B,C or D as specified on the attached instructions)

☐ Male ☐ Female

Please enter your rating (1 low to 5 high):

★☆☆☆☆ ☐ 1


★★★★☆ ☐ 2

★★★★★ ☐ 3

★★★★★ ☐ 4


★★★★★ ☐ 5

Additional comments optional:


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Amateur Positive Rating Form


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Viewing and Evaluation:

Here's what other people are saying...

★★★★★ Evaluator 1: (Student)

"...a well thought out display of surrealism, which presents well in this type of art work"

★★★★☆ Evaluator 2: (Student)

"I appreciate the effort, and this strikes me as beautiful"

★★★★★ Evaluator 3: (Student)

"I generally don't like minimalism, but this was a really good example"

★★★★☆ Evaluator 4: (Student)

"I really like this painting so much."

★★★★★ Evaluator 5: (Student)

"This painting has depth and substance."

★★★★☆ Evaluator 6: (Student)


"This painting has nice variation in color and dimension."

★★★★★ Evaluator 7: (Student)

"...I find this monochromatic style nice"

★★★★☆ Evaluator 8: (Student)

"The contrast between the redish and yellow tones popped"



Entering Information:

Occupation: (For example, Student, Teacher, Art Critic, Administrator, etc.)
 Group Assigned: (A,B,C or D as specified on the attached instructions)

☐ Male ☐ Female

Please enter your rating (1 low to 5 high):

★★★★★ ☐ 1

★★★★☆ ☐ 2


★★★★★ ☐ 3

★★★★★ ☐ 4

★★★★★ ☐ 5


Additional comments optional:

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Expert Negative Rating Form


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Viewing and Evaluation:

Here's what other people are saying...

★☆☆☆☆ Evaluator 1: (Maryland Art Critic)

"...an over thought attempt at surrealism, which does not present well in this type of art work"

★☆☆☆☆ Evaluator 2: (Towson Art Major)

"I appreciate the effort, but this strikes me as too contrived"

★☆☆☆☆ Evaluator 3: (Art Major at Towson)

"I generally like minimalism, but this is just too much of the same color"

★☆☆☆☆ Evaluator 4: (Art Major at Towson University)

"I didn't really like this painting so much."

★☆☆☆☆ Evaluator 5: (Art Major)

"This painting lacks depth and substance."

★☆☆☆☆ Evaluator 6: (Art Major)


"This painting would benefit from more variation in color and dimension."

★☆☆☆☆ Evaluator 7: (UMUC Art Teacher)

"...just a bit too monochromatic"

★☆☆☆☆ Evaluator 8: (Art Critic)

"The contrast between the redish and yellow tones did not pon"



Entering Information:

Occupation: (For example, Student, Teacher, Art Critic, Administrator, etc.)
 Group Assigned: (A,B,C or D as specified on the attached instructions)

☐ Male ☐ Female

Please enter your rating (1 low to 5 high):

★☆☆☆☆ ☐ 1

★★★★☆ ☐ 2


★★★★★ ☐ 3

★★★★★ ☐ 4

★★★★★ ☐ 5


Additional comments optional:

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Expert Positive Rating Form



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Viewing and Evaluation:

Here's what other people are saying...

★★★★★ Evaluator 1: *(Maryland Art Critic)*

"...a well thought out display of surrealism, which presents well in this type of art work"

★★★★☆ Evaluator 2: *(Towson Art Major)*

"I appreciate the effort, and this strikes me as beautiful"

★★★★★ Evaluator 3: *(Art Major at Towson)*

"I generally don't like minimalism, but this was a really good example"

★★★★☆ Evaluator 4: *(Art Major at Towson University)*

"I really like this painting so much."

★★★★★ Evaluator 5: *(Art Major)*

"This painting has depth and substance."

★★★★☆ Evaluator 6: *(Art Major)*


"This painting has nice variation in color and dimension."

★★★★☆ Evaluator 7: *(UMUC Art Teacher)*

"...I find this monochromatic style nice"

★★★★☆ Evaluator 8: *(Art Critic)*

"The contrast between the redish and yellow tones popped appropriately and left a nice resonance."



Entering Information:

Occupation: *(For example, Student, Teacher, Art Critic, Administrator, etc.)*
Group Assigned: *(A, B, C or D as specified on the attached instructions)*

☐ Male ☐ Female

Please enter your rating (1 low to 5 high):

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★★★★☆ ☐ 2

★★★★☆ ☐ 3

★★★★☆ ☐ 4

★★★★★ ☐ 5

Additional comments optional:



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Appendix C

Randomized Participant Assignment Generator Script

```

1  #Simple script to create equal numbers of treatment groups
2  #and then randomize their order and output them to a csv
3  #file. This will be opened in Excel and then used to
4  #determine the participant's group as they participate
5  #in the ISI experiment.
6
7  import random
8
9  #Create 25 indexes for each group
10 groups = []
11 for n in range(25):
12     groups.append("GRP-ANR11")
13     groups.append("GRP-ENR12")
14     groups.append("GRP-APR21")
15     groups.append("GRP-EPR22")
16
17 #Randomize the groups array and print out the results
18 file = open("groups.csv", "w+")
19 random.shuffle(groups)
20 for x in groups:
21     file.write(x)
22     file.write("\n")
23
24 file.close()
25 print (groups)
26
27 # random.shuffle(groups)
28 # for group in groups:
29 #     print (group + "\n")
30

```

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CURRICULUM VITA

NAME:

Christopher P. Golda

████████████████████
 ████████████████████
 ████████████████████

PROGRAM OF STUDY:

Experimental Psychology

DEGREE AND DATE TO BE CONFERRED:

2014 Master of Arts

EDUCATION:

2014 M.A. Experimental Psychology, Towson University, Towson, MD
 2008 B.S. Psychology, University of Maryland University College, Adelphi, MD
 2005 A.A.S. Communications Applications Technology, Community College of the Air Force, Maxwell Air Force Base, AL
 2002 Non-Commissioned Officer Development Course, Ft. George G. Meade, MD
 2001 Airman Leadership School, Bolling Air Force Base, Washington, D.C.
 1997 Communication Collection and Procedure Course, Pensacola, FL
 1996 Morse Systems Operator Course, Ft. Huachuca, AZ

PROFESSIONAL:

2014 – Present	Software Engineer/Research Analyst	MITRE	Bedford, MA
2013 – 2014	Software Engineer/Requirements Analyst	GDAIS	Columbia, MD
2010 – 2013	Systems Engineer/Research Analyst	KAB Labs	Ft. Meade, MD
2007 – 2010	Systems Engineer/Technical Consultant	Raytheon	Ft. Meade, MD
2005 – 2006	Perl Programmer/Asset Manager	RBIS	Ft. Meade, MD
1996– 2005	Collection Management Authority	USAF	Ft. Meade, MD

AWARDS:

2005 Defense Meritorious Service Medal
 2003 Signals Intelligence Directorate Performer of the Quarter
 2002 Joint Service Achievement Medal
 2000 Joint Service Commendation Medal
 1999 Joint Service Achievement Medal
 1999 301st Intelligence Squadron Jr. Technician of the Quarter
 1999 301st Intelligence Squadron Jr. Technician of the year
 1999 692nd Intelligence Group Jr. Technician of the year

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