When Honesty Isn't the Best Policy:
The Positive Effects of Uncertainty on Romantic Attraction

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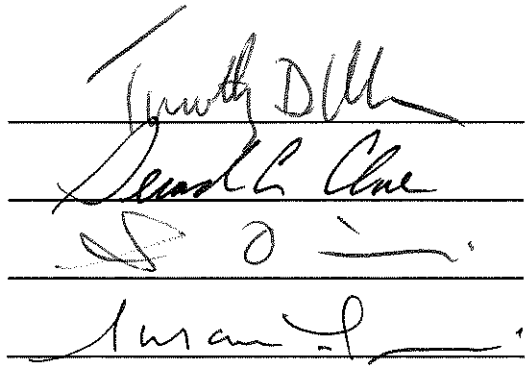

ABSTRACT

Many adages advise avoiding uncertainty; however work on emotional adaptation suggests that, at times, uncertainty is beneficial. The present research extends these findings to the attraction domain. I hypothesize that uncertainty about another's romantic interest increases liking for that person more than certainty. Specifically, I test a model which proposes that uncertainty increases thoughts about a target which triggers self-perception change and subsequently increases attraction. In three studies, participants felt certain or uncertain about a target's interest in them and then reported their attraction for and thoughts about the targets. As predicted, uncertain participants reported more attraction to targets than certain participants, attraction was partially mediated by thoughts about the targets, and, when given an alternative explanation for their thoughts, uncertain participants no longer report greater romantic attraction. This research offers a new way to look at attraction and suggests an additional determinant of attraction, namely uncertainty.

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According to the African proverb “it takes a village to raise a child”. In line with this spirit of community, I wholeheartedly believe it takes a team to earn a doctorate degree.

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CHAPTER 1: GENERAL INTRODUCTION

A host of adages advise people to avoid uncertainty; for example "A bird in the hand is worth two in the bush". But while these sayings persist, research suggests that, under the right conditions, uncertainty can be beneficial, at least to mood (Wilson, Centerbar, Kermer, & Gilbert, 2005). Given these new findings, might uncertainty also play a role in interpersonal attraction? Below, I will review how uncertainty can affect positive mood and will offer a new model extending research explaining mood to attraction. This new model poses that uncertainty increases attraction toward a potential romantic partner by increasing thoughts about that person, which people interpret as a sign that they are attracted to that person. Three experiments will establish the general effect, demonstrate that the relationship between uncertainty and attraction is partially mediated by thoughts about the target, and show that, when given an alternative explanation for these thoughts, uncertainty ceases to increase attraction. Thus, these findings may help to explain *why* two birds or the other side seem more attractive. I will begin by reviewing previous research on the effects of uncertainty on mood.

The Positive Effects of Uncertainty

Research shows that, under the right circumstances, uncertainty has a positive effect on mood (Wilson et al., 2005; Wilson & Gilbert, 2008). For example, in one study exploring this phenomenon participants learned that they had won either one prize, two prizes, or one of the two prizes, but were not told which prize they had won (Kurtz, Wilson, & Gilbert, 2007). Despite the fact that actually winning two prizes is objectively better than winning only one prize, uncertain participants reported feeling significantly more positive than participants in either of the other two conditions. In another study, participants studying in a library received a dollar coin with a card attached that read "Hi! This is for you. Have a nice day" (Wilson et al., p.

8). In the certain condition the card included the questions “Who are we” and “Why do we do this” with the respective answers, “The Smile Society- A student community secular alliance” and “We like to promote random acts of kindness”. In the uncertain condition, the card only included the answers to the questions and not the questions themselves. Presumably having answers without questions would serve to create a sense of uncertainty surrounding the situation. As predicted, participants in the uncertain condition maintained their positive mood significantly longer than those in the combined certain/control conditions.

Finally, in another study exploring the pleasures of uncertainty, participants in a group of six interacted with two same-sex and three-opposite sex participants via an instant messaging program on a computer (in reality, the other “participants” were fictitious; Wilson et al., 2005). Participants wrote descriptions of themselves then read the descriptions written by the opposite sex group members. Based on the descriptions they read, participants chose the one opposite sex participant with whom they felt the most compatible and who would most likely be a good friend. Participants then wrote a few sentences to each of the opposite sex group members explaining their choice. Participants learned that all three opposite sex group members had chosen them as the best potential friend and read the explanations these people had given. Uncertain participants read the reasons without knowing which opposite sex participant had written each explanation, whereas certain participants knew which participant had written each explanation. As predicted, certain and uncertain participants were equally happy initially, but over time uncertain participants maintained their positive mood while certain participants’ moods declined.

The AREA Model

Although counterintuitive, these findings are explained by Wilson and Gilbert's (2008) AREA model which describes the automatic and nonconscious process of affective adaptation. The model suggests a four phase process in which people first *attend* to self-relevant, but unexplained events more than self-irrelevant or explained events. The second phase, *react*, describes emotional reactions to events. Once an event occurs, people react; however, the AREA model contends that unexplained, self-relevant events elicit stronger emotional reactions than explained or unimportant events. Next people attempt to *explain* or understand the event. If the event is easily explained then people can move to the fourth and final stage in which they emotionally *adapt* to the new information. If the event is not easily explained however, then uncertainty motivates the sense making process whereby thoughts about the uncertain event increase as people continually replay and reanalyze it in an attempt to understand. As a result, the sense making process keeps the event "alive" thus prolonging the mood associated with it until one finally reaches a plausible explanation

Whether uncertainty prolongs a positive or negative mood depends on the valence of the event; simply put, uncertainty makes bad situations worse and good situations better. For instance, in one study exploring the relationship between medical uncertainty and well being, Wiggins and colleagues (1992) tested participants who had a parent with Huntington's disease (HD) for the HD gene. HD is a fatal adult-onset disorder that has a 50% chance of being inherited if a parent is a carrier. Participants learned either that it was highly likely that they had the HD gene, that it was highly unlikely they had the gene, or that the test results were inconclusive. Initially, participants who learned they had not inherited the gene showed a boost in well-being whereas those who learned that they had inherited the gene showed a decline, but one year later both groups returned to their initial baseline level of well-being and did not differ

from each other. The inconclusive participants, who remained uncertain about whether they had the HD gene, showed significantly higher stress and depression one year later, and lower overall well being than both groups who were certain of their test results.

From the perspective of the *AREA* model (Wilson & Gilbert, 2008), when participants learned the devastating news that they are HD gene carriers, they felt intense negative emotions because the event is self-relevant and difficult to understand (e.g., "why me?"). Eventually, however, their schemas of themselves and the world changed to accommodate the event; perhaps they used religious views to understand it, or perhaps they came to view their lives as ones that would be short but be full of meaning and adventure. Once they achieved an understanding of their fate, they probably thought less about the disease and no longer had intense emotional reactions when they did. Thus, one year after receiving the test results, participants who learned they carried the gene were no less happy than participants who learned they did not. Those whose test results were inconclusive however, could not begin the process of understanding the event because they did not know the outcome. Thoughts about the possibility of dying young were probably much more accessible which in turn triggered negative emotions. Thus, one year after getting the test results, participants uncertain of whether they carried the gene exhibited more stress and depression than participants who knew they did nor did not have the gene.

According to the *AREA* model (Wilson & Gilbert, 2008), a similar process occurs when people encounter positive outcomes. For example, in the previously described study (Wilson et al., 2005) in which participants wrote descriptions of themselves then read the descriptions written by the opposite sex group members , both certain and uncertain participants felt intense positive emotions initially. Over the period of the experiment however, certain participants were able to make sense of why each person had chosen them as the person who would most likely be

a good friend (e.g., “Joe and I both like baseball”). Once participants could make sense of the reasons each person reported for their choice, the less they thought about being chosen and, when they did, it elicited less intense emotional reactions. Uncertain participants, on the other hand, could not begin the process of emotional adaptation because they remained uncertain about who had chosen them for what reasons (e.g., “I know Joe chose me, but was it because we both like baseball or because we both like the same obscure bands?”). In this case thoughts about being chosen were much more accessible as the event was continually replayed which prolonged positive emotions.

In each of these examples, uncertainty about the nature of an event increased the affect elicited by the event presumably because it heightened the accessibility of positive (e.g., “I wonder which participant likes my sense of humor”) or negative thoughts (e.g., “what if I have the Huntington’s gene?”). Thus, the valence of mood is determined by the relevant event; uncertainty simply serves to amplify existing emotions (Bar-Anan, Wilson, & Gilbert, 2009). This complements emotion research which has shown that when participants are unaware of the exact cause of their affect they have “unconstrained” moods, which have broad and long-lasting effects (be they positive or negative), as compared to the affect of people who are certain about the source of their mood (for a review see Clore & Colcombe, 2003).

Uncertainty and Attraction

Not yet considered under the AREA model (Wilson & Gilbert, 2008) is whether there are similar benefits to uncertainty in an interpersonal context, or more specifically, whether in addition to prolonging positive mood, uncertainty may also increase attraction toward another person. I propose that uncertainty increases attraction in a somewhat different manner than suggested by research on uncertainty and mood. Before detailing these hypotheses, I will review

previous research on interpersonal attraction, some of which has examined the effects of various kinds of uncertainty on interpersonal attraction, with mixed results.

In one study male participants called to ask a female confederate on a date. The female always accepted; however in one condition she responded immediately, and in the other she responded after a 3 second pause. Contrary to the prediction that uncertainty as a result of the pause should increase attraction, researchers found no difference in the participants' reported liking for the woman (Walster, Walster & Lambert, 1971 as cited Lyons, Walster, and Walster, 1971).

Other studies, however, have suggested that uncertainty can influence attractiveness (Bem, 1965; Eastwick & Finkel, in press; Walster et al., 1973; Williams, Radefeld, Binning, & Sudak, 1993). "Playing hard to get," for example, could be considered a form of uncertainty, in which one person keeps another uncertain about his or her desires and intentions in a romantic relationship. Researchers exploring the idea of "playing hard to get" in a dating domain speculated that in addition to how hard or easy a woman was to get for a *specific* man, attraction was also based on how hard or easy a woman was to get for *any* man (Walster et al., 1973). Thus, researchers predicted that men would prefer "selectively hard to get" women; that is, those who were hard to get in general, and as a result, were seen as selective and desirable, but easy for them to get. To test this idea, male participants reported their liking for three types of women: those who supposedly reported being uninterested in dating any man, including the participant (hard to get), those who were supposedly interested in dating any man, including the participant (easy to get), and those who were only interested in dating the participant and uninterested in anyone else (selectively hard to get). In line with this new prediction, the men both liked and preferred to date the selectively hard to get woman over the easy and hard to get women.

The explanation of these findings, according to the researchers, is that the selectively hard to get woman possesses the positive aspects of both the hard and easy to get women (selective and popular, friendly and easy going, respectively). However, these findings can also be interpreted from an uncertainty perspective. For both the hard and easy to get women, the men could be relatively certain that they either had high or low chances of getting a date with each woman. However, although men knew they could get a date with the selectively hard to get woman, there was uncertainty surrounding the explanation of the outcome (e.g., why did she choose me and not the other men?). This uncertainty might have increased thoughts about the event as the participants tried to understand why they were chosen and these thoughts might have been interpreted as attraction towards the woman. Thus, I suggest that it was not necessarily the qualities of the women that increased the attractiveness of the selectively hard to get woman, but the fact that she created the most uncertainty.

Recent work has shown that attachment anxiety, which exhibits some of the characteristics of uncertainty, is a predictor of attraction (Eastwick & Finkel, 2008). This state-like experience of attachment is found in desired and underdeveloped relationships and includes a "need for reassurance, fear of abandonment, and intense preoccupation regarding romantic partners" (Eastwick & Finkel, 2008, p. 4). In a study exploring attachment anxiety in potentially new relationships, participants took part in a "speed dating" session during which they had a 4 minute "date" with several opposite-sex participants. Researchers found that attachment anxiety exists in even the earliest stages of potential relationships and that this anxiety predicted characteristics of attachment including proximity seeking and even passionate love.

While attachment anxiety is predominantly viewed as an individual difference characteristic, research from applied settings suggests that situational uncertainty can increase

the attractiveness of job candidates in the hiring processes (Williams et al., 1993). In a study comparing easy versus hard to get candidates, professional employment recruiters read a cover letter that either explained that since their initial discussion, the two other jobs that candidate had applied for had been filled and the candidate would now certainly accept a position with the company (easy to get) or that since their initial discussion the candidate had been offered two other positions, but would still consider a position with the company (hard to get). As predicted, recruiters reported being more likely to both interview and hire the hard to get candidates and saw the hard to get candidates as more desirable and more qualified than the easy to get candidates. Similarly to the argument made by Walster et al. (1973), the researchers argue that the hard to get candidates are particularly attractive to employers because of the fact that they have other job offers serves as an indication that they possess the skills necessary for successful job performance. However, it may also be the case that the hard to get candidate creates more of a sense of uncertainty than the easy to get candidate and that this drives attraction. Indeed, the easy to get candidates make it clear they have no other options and will certainty accept a position whereas the hard to get candidates report still being interested in a position, but still entertaining other possibilities thus creating a sense of uncertainty.

The exotic becomes erotic model of sexual orientation (Bem, 1966) also incorporates uncertainty during critical developmental periods as a partial explanation for attraction. The model suggests that as people develop, sexual orientation is partially determined by arousal to the gender that is unfamiliar and thus, exotic. Infants are born with innate temperaments which, as they age, predispose them to prefer certain activities and children who like those activities more than others. Children who conform to gender stereotypes and interact with same sex peers will see the opposite sex as dissimilar, unfamiliar, and exotic whereas this is how non-

conformists who tend to interact with opposite sex peers will see their same sex peers. These feelings of dissimilarity and unfamiliarity produce heightened autonomic arousal around those peers with whom children feel different which develops into erotic/romantic attraction in later years. Thus, Bem's model explains how what children find exotic, or uncertain becomes that which they are attracted to later in life.

Finally, research from the field of narratology speaks to the relationship between uncertainty and suspense, another construct that may influence attraction. Although my model does not incorporate suspense directly, it is worth noting that creating uncertainty can elicit feelings of suspense. For example, directly related to the relationship with attraction, participants felt more suspense the more they liked the protagonist in the story and the greater the likelihood of a negative event occurring (Knobloch-Westerwick & Keplinger, 2007). Although these findings appear to suggest that certain participants felt more suspense than uncertain participants, it should be noted that participants were never certain a negative event would occur. The likelihood of the event occurring was either described as very likely or very unlikely so that participants remained uncertain, but to varying degrees. Thus, in addition to showing a relationship between uncertainty, suspense, and attraction, these results also suggest that there might be a maximum level of uncertainty above which this relationship no longer exists.

Studies from several literatures, then, suggest that uncertainty is likely involved in the process of attraction. These studies are open to alternative explanations, however, and indeed, these alternatives are typically favored by the authors of the studies. The "playing hard to get" phenomenon, for example, has been attributed to people making different assumptions about a potential date's intentions and characteristics, not to the role of uncertainty. Studies are thus needed that clearly distinguish the role of uncertainty from these alternative explanations.

A Model of Uncertainty, Self-Perception, and Attraction

I offer a new model of attraction that extends the AREA model (Wilson & Gilbert, 2008) and suggests that uncertainty increases attraction via a self perception process. In line with the first two phases of the AREA model, this model of attraction contends that people attend to and experience greater emotional reactions from unexplained, self-relevant events. It is the third phase of the model, *explain*, that has the crux of the action; it is at this point where I propose attraction increases. I agree that uncertainty triggers a sense making process and, as a result this increases thoughts about an uncertain person (Wilson et al., 2005). In addition, however, I suggest that these thoughts increase attraction towards that person via self perception change (Bem, 1965; Ickes, Wicklund, & Ferris, 1973; Sadler & Tesser, 1973; Tesser, 1976).

Uncertainty Increases Thought

The first phase of the attraction model suggests that uncertainty increases thought as people seek to understand uncertain events. Previous research offers both direct and indirect evidence for this claim. In a study exploring the effects of uncertainty on mood (Wilson et al., 2005), participants reported the degree to which they thought about a movie character after being certain or uncertain of his real-life outcome. If uncertainty engages the sense making process then uncertain participants should think more about the movie than certain participants. In line with this prediction, uncertain participants reported thinking more about the character's outcome than certain participants.

In addition to direct reports of increased thoughts, there is also indirect evidence of these thoughts on mood and cognitive resource depletion measures. Participants in an experiment exploring mood after actual versus possible events took part in a ficticious medical study and were "tested" for a highly beneficial, though rare hormone (Whitchurch & Wilson, 2007). They

learned they either definitely had the hormone (certain condition), that there was a 70% chance they had the hormone (uncertain condition), or they received no feedback (control condition). In line with previous research, uncertain participants reported the most positive mood followed by certain and control participants. In addition to self reported mood, immediately after the experimental session, experimenters rated participants' level of happiness at six time points, two of which coincided with the self reported mood measures. The experimenters, who were blind to condition, perceived the uncertain participants to be significantly happier than certain participants.

If these mood results suggest that uncertainty causes increased thought, there should also be evidence of cognitive resource depletion. The resource depletion literature shows that the mind becomes tired after a mental workout thus decreasing performance on subsequent tasks (Muraven & Baumeister, 2000). To test this idea, after receiving their feedback in the previously described medical study, participants listened to two book on tape segments from a purposely boring book on tape at two time points then took a surprise recall test on the segments. As predicted there were no differences in the number of answers participants answered correctly at Time 1, but by Time 2 uncertain participants answered significantly fewer questions correctly than the average of the certain and control participants supporting the hypothesis that sense making occurred.

Increased Thought Increases Attraction

Although most would agree that falling in love increases thoughts about a person (Tennov, 1979), the second phase of the attraction model posits a second equally plausible route to attraction: thinking about a person increases attraction for that person. The most direct evidence demonstrating that thought increases attraction comes from the attitude polarization

literature which suggests that thinking more about a target amplifies existing feelings towards that target (Ickes, Wicklund, & Ferris, 1973; Tesser, 1976). Thus, thinking about a liked person increases positive feelings for that person and thinking about a disliked person increases negative feelings. Sadler and Tesser (1973) demonstrated this effect in a study in which participants first heard their "partner" describe themselves in either a likable or unlikeable way and then either spent time thinking about their partner or completed a distracting task so they could not think about their partner. As predicted by attitude polarization, participants who thought about their partners showed more extreme feelings towards them than did those who were distracted from thinking about their partners. Although it is counterintuitive, this suggests that as long as one has even a slightly positive feeling for another, thinking more about that person will result in greater attraction.

There is also an increase in attraction even when increased thought is motivated indirectly. Wegner and colleagues' (Wegner, Lane, & Dimitri, 1994) work on secret romances demonstrated that keeping a relationship secret resulted in intense thinking about the relationship and subsequent attraction for the clandestine partner. In two surveys, results showed that the relationships and crushes from the past which participants continued to think most about tended to be those that they kept secret. The only variable that predicted whether participants still thought of a past love was the degree to which the relationship had been kept secret.

In order to test if it is the express act of keeping a secret that increased thoughts and, as a result, attraction, Wegner et al. (1994) designed an experimenter in which participants kept a relationship secret. Mixed sex pairs played a card game and were instructed to either communicate via physical contact or non-verbally and to either keep their communication secret or not. After approximately 10 minutes of maintaining their communication, participants rated

their partner on: degree of attraction they felt towards their partner (e.g., "I could see myself going out socially with …"), evaluative traits (e.g., trustworthy, friendly), and obsessive preoccupation (e.g. "I thought about my partner a lot during the game", "Even now, thoughts of my partner keep popping into my head"). As predicted, participants who maintained secret contact with their partners were significantly more attracted to each other than those who maintained contact, but did not keep it secret and those who made no contact (secret or not). There were not significant differences in the degree of obsessive preoccupation between conditions; however, Wegner et al. (1994) notes that obsessive preoccupation was positively correlated with attraction and that when it is included in the model, attraction becomes nonsignificant.

Interpretation of Increased Thoughts

In addition to having increased thoughts about another, the final stage of this model suggests that these thoughts must be interpreted in a way that increases attraction. In a study exploring the effect of attitude accessibility on attitude strength, participants who expressed their attitude six times were not only quicker to express their attitudes, but also reported being less likely to change them than those who reported their attitudes only two times (Holland, Verplanken, & van Knippenberg, 2003). When considered with the research demonstrating that uncertainty increases thoughts, these results suggest that the increased thoughts are given credence.

It is at this point that a shift in self-perception might occur in such a way that attraction increases. According to self-perception theory (Bem, 1965, 1972), when people have uncertain attitudes or feelings they determine these states by observing their own behavior, just as an outsider would. For example, participants made to believe they had either supported or opposed

a position in the past reported continuing to support or oppose the position at the time of the experiment (Albarracin & Wyer, 2000) presumably because they noted their past behavior and considered themselves as the kind of person who supports/opposes a particular cause. The well known foot-in-the door effect (Freedman & Fraser, 1966) in which people who first agree to a small request will then agree to a larger request operates in a similar manner; by agreeing to the first request people come to see themselves as someone to whom this is acceptable and, as such, are more willing to accept more extreme requests.

Taken together these areas of research suggest that people first note and give credence to their increased thoughts and then observe themselves having these thoughts and derive meaning from this observation. In this last stage of the model, I propose that increased thought increases attraction as people note the thoughts and experience a shift in self perception from one who never thought about the target to one who cannot seem to stop thinking about the target and thus must be attracted to the target.

Overview of Studies

Three studies described below extend the findings of the pleasures of uncertainty (Wilson et al., 2005) to the domain of attraction. Specifically, I test a model which proposes that uncertainty increases attraction by increasing thoughts about a target which in turn triggers self-perception change and subsequently increases attraction. Thus, I address these questions: (1) does the introduction of uncertainty elicit greater attraction than certainty? (2) Is an increase in attraction mediated by thoughts about the target person? (3) If these are each true, will attraction decrease when given an alternative explanation for these increased thoughts?

CHAPTER 2. STUDY 1: EXPLORING THE RELATIONSHIP BETWEEN UNCERTAINTY AND GENERAL LIKING

Overview

By chance, I had the opportunity to perform a preliminary test of my hypothesis as part of another program of research. In Experiment 1 a sample of college students interacted with a friendly female experimenter and were primed with words and concepts related to either certainty or uncertainty. In addition to measuring race related attitudes, participants reported their general liking for the experimenter. I hypothesized that those primed with uncertainty would report greater general liking for the experimenter than those primed with certainty. This research investigated platonic liking, but may indicate whether the effect exists when relationships are broadly defined and not focused on romantic attraction.

Method

Participants

Sixty-eight University of Virginia undergraduates (31 female, 37 male) participated in return for partial course credit.

Procedure

Participants came to the lab individually and were greeted by one of four White female experimenters who explained that the lab had just started offering candy to participants and that they should help themselves to some. The experimenters offered candy so participants had a positive opinion of her. After consenting, the experimenter told participants that for this session they would complete a series of judgment tasks on the computer; however, she asked if before beginning the computer tasks they would mind completing a sentence unscrambling task that the lab was pre-testing. In reality, this sentence completion pre-test was the uncertainty

manipulation.[1] Participants were presented with 23 scrambled sentences and were instructed to make a grammatically correct sentence for each set of words by leaving out one of the words (See Appendix A). Participants were randomly assigned to one of the two versions of the sentence completion task. Those primed with uncertainty constructed sentences with words or phrases that were related to uncertainty (e.g., *uncertain, question, curious,* etc.) whereas those primed with certainty did the same task, but with words or phrases related to certainty (e.g., *certain, confident, sure*, etc.). Previous research established that the uncertain target words or phrases were more related to uncertainty than certain words (Lun, Sinclair, Whitchurch, & Glenn, 2007).

Next, the experimenter told participants that before starting the computer tasks, they would need to perform a visual acuity test. The experimenter held up a string of nonsense letters (e.g., MJEQRP) and asked participants to read the letters aloud from three distances, each a little farther away from the participant than the last. When the visual test was over, participants were brought to the computers to begin the series of judgment tasks. Participants completed a subliminal priming task and a series of explicit racial prejudice questionnaires (see Lun et al., 2007 for a more detailed description of this portion of the procedure).

Finally, participants completed a post experiment questionnaire which included the dependent measures (See Appendix B). To measure attraction, participants reported their overall impressions of the experimenter and the interaction, answered questions about the extent to which they would socialize with the experimenter, and answered questions about their own and the experimenter's knowledge of race related issues. All questions were rated on a 7-point Likert scale (1 = *not at all*, 7 = *very much*).

[1] After participants completed the sentence completion task, the remainder of the tasks until completing the dependent measures were part of an unrelated study and were considered filler for the purposes of this study.

To measure mood, participants reported the degree to which six adjectives described how they felt at the moment. Two assessed the valence of their mood (*negative/positive, sad/happy*), two assessed arousal (*tired/energetic, anxious/calm*), and one assessed certainty (*uncertain/certain*). The adjectives were rated on 10-point Likert scale in which lower numbers indicated feeling less positive, aroused, and certain and higher numbers indicated feeling more positive, aroused, and certain.

In order to encourage participants to answer honestly the experimenter explicitly instructed participants not to include any identifying information on the questionnaire and to seal it in an envelope upon completion. Further, the experimenter explained that the questions about the experimenter would have no impact on her grade or overall evaluation by the researchers so to be honest. Upon completion participants were thoroughly debriefed and thanked for their time.

Results

Of the 68 participants, 3 (two in the uncertain condition, one in the certain condition) were excluded because they were extreme outliers on at least one measure of liking and remained outliers on the composite attraction measure (greater than two standard deviations above the mean). When these participants are included in the analyses the pattern of results remains the same, but are weaker.

Attraction

Initial analyses revealed that participants' ratings of eight of the attraction measures were highly correlated, thus I computed a composite liking score ($\alpha = .89$; see Appendix B for the variables that comprise the composite). Higher numbers indicate greater liking of the experimenter.

To test whether uncertain participants reported greater liking for the experimenter than certain participants, I ran a univariate analysis with the composite liking score as the dependent measure and uncertainty condition (uncertain, certain), participant gender, and experimenter as fixed factors. Because four experimenters conducted the study, experimenter was included in the model to account for any individual differences in friendliness. Because all of the experimenters were female and participants were both male and female, participant gender was included to account for the different experience of rating a same-sex versus opposite-sex target. As predicted, uncertain participants reported liking the experimenter significantly more than certain participants, $F(1, 53) = 4.50$, $p < .04$. Neither the main effect of experimenter, $F(3, 53) = 2.12$, $p = .11$, nor participant gender, $F(1, 65) = 2.16$, $p = .15$ was significant. There were no significant interactions, ps > .23. See Table 1 for means and standard deviations.

Mood

Initial analyses revealed that participants' ratings of the two questions assessing valence of mood were highly correlated, thus I computed a composite mood score ($\alpha = .82$). Higher numbers indicate a more positive mood. Neither the two arousal questions nor the certainty question correlated highly with the mood items.

To test whether uncertain participants reported a more positive mood than certain participants I ran a univariate analysis with the composite mood score as the dependent measure and uncertainty condition (uncertain, certain), participant gender, and experimenter as fixed factors. Contrary to predictions, there was no significant difference in positive mood between uncertain and certain participants, $F(1, 53) < 1$, *ns*. Additionally, the Uncertainty Condition x Participant Gender interaction, $F(1, 53) = 2.44$, $p = .12$, was not significant, nor were the other main effects or interactions, ps > .50. See Table 2 for means and standard deviations.

Finally, I ran the same univariate analysis on the single item assessing feelings of certainty. As expected, uncertain participants (M = 5.84, SD = 1.82) reported significantly more uncertainty than certain participants did (M = 6.84, SD = 1.65), $F(1, 53) = 6.69$, $p = .01$. There were no other significant main effects or interactions, ps > .36, and this feeling of certainty did not mediate the attraction or mood results.

Discussion

As predicted, when participants interacted with a nice experimenter, they reported liking her more when they were primed with uncertainty versus certainty. The effects of uncertainty on mood were not significant, though there was a trend for women to show the predicted effect (better mood in the uncertain condition) and men to show the opposite effect (worse mood in the uncertain condition). The reason for this gender difference is not entirely clear.

One reason for the lack of condition differences on mood might be that the manipulation was too general. Previous research manipulated uncertainty directly through a specific stimulus or person (e.g., I know Joe likes me, but I do not know why; Wilson et al., 2005). In this study, participants were primed with the general sense of uncertainty rather than specific uncertainty about the situation or about the experimenter. It may be that the feelings of uncertainty became "attached" to the experimenter, but not to the situation in general. Thus, this might explain why uncertain participants liked the experimenter more than certain participants, but were no happier (for a review see Clore & Colcombe, 2003).

CHAPTER 3. STUDY 2: PLATONIC AND ROMANTIC ATTRACTION

Overview

Experiment 2 focused on romantic attraction, but broadened the definition of attraction by also including measures of platonic attraction (as in Experiment 1). Second, it sought to replicate the attraction results in Experiment 1 using a less abstract form of uncertainty. In Experiment 1 participants were primed with the general concept of uncertainty, yet there was no way to ensure that this feeling was "attached" to the experimenter. Experiment 2 manipulated uncertainty about the targets more directly. Third, this study tested the mediating role of thought via a self-report measure. Fourth, because this research question focuses on attraction, I designed an experiment with a romantic context by creating a cover story that centers on online dating and perceptions of the opposite sex. Finally, I only used female participants for reasons of convenience.

Method

Participants

Participants were 49 female undergraduates at the University of Virginia who participated in return for partial course credit.

Procedure

Participants were run in groups of up to three in a study supposedly exploring the effectiveness of Facebook as an online dating website. They were told that the researchers were particularly interested in the types of impressions undergraduates form of the opposite sex based on Facebook profiles. Participants were required to sign up at least 48 hours in advance and were told that their Facebook profiles would be used at two other universities in order to increase the believability of the cover story.

After giving consent, the experimenter explained that male participants from two other collaborating universities had seen approximately 15-20 female Facebook profiles, including the participants', and rated the degree to which they thought they would get along with each person if they got to know them better. Participants learned that they would see the Facebook profiles of four male students who had already seen and rated their profiles and report their impressions of these individuals. More specifically, the experimenter explained that participants would be randomly assigned to rate the profiles of four males who had rated them either highly or average on the question of how well they thought they would get along.

Once the experimenter ensured that everyone understood the cover story, participants were brought into individual lab rooms to begin the study. To increase believability, prior to the experiment the experimenter accessed each participant's profile. When participants entered the experiment room they were asked to verify that the Facebook profile the experimenter had displayed on the computer screen was their own.[2] Once the experimenter left the room, participants entered their gender, age, and email identification into the computer program to give the impression that the computer was "searching" for the correct set of Facebook profiles for participants to view.

Uncertainty Manipulation

To ensure all participants understood the manipulation, the two possible conditions were summarized on the computer before participants received their assignment. Participants learned that depending on the condition they had been assigned to, the profiles they saw would either be:

[2] By signing into their own Facebook accounts research assistants were able to access those participants who did not have privacy restrictions set on their profiles using the UVA network. For those with privacy restrictions, research assistants showed participants the limited information screen to which they had access and asked participants to verify this was their profile.

> The four University of Michigan and UCLA students who gave you the highest rating on how much they thought they would like you. That is, of all the people who saw your profile, these are the four who thought they would like you the best.

Or,

> Four University of Michigan and UCLA students who gave you an average rating on how much they thought they would like you. That is, of all the people who saw your profile, these four did not rate you as the highest or the lowest. They are people who liked you about average.

After indicating they understood the two possible conditions, participants were randomly assigned to condition. In the best condition they learned that they would see the profiles of the four men who had given them the highest ratings. In the average condition they learned that they would see the profiles of the men who had given them average ratings. In the uncertain condition participants read:

> For reasons of experimental control neither you nor the experimenter knows the condition you have been randomly assigned to. The profiles you will see might be the participants who saw your profile and liked you the most. Or, the profiles you see might be the participants who saw your profile and gave you an average rating.

Facebook Profiles

After participants were randomly assigned to condition they viewed the profiles of the four males. Participants were instructed to look at each profile for as long as they wanted during the first viewing, but told that once they had advanced to the next profile that they could not return to any of the previous profiles.

The group of profiles included two Caucasian, one African-American, and one Asian male all of whom were first or second year students at the University of Michigan or the University of California, Los Angeles (UCLA). Participants were randomly assigned to view the profiles in one of two orders to control for any order effects.

The fictitious profiles were designed to be attractive to the average undergraduate both physically and in terms of personality. To this end, entries for each category (i.e., activities, interests, favorite music, favorite television shows, favorite movies, favorite books, and quotes) were compiled from existing Facebook profiles and were ranked by eight University of Virginia undergraduates. Entries were included in the profiles such that profiles included both top and bottom ranked entries for all of the categories in order to make the four men as equally appealing as possible. Each profile also included a picture of the target. These pictures were pretested by a different group of 24 undergraduates and the most attractive photo from each race (or two photos for the White images) was chosen. Finally, to increase believability, the profiles also had varying numbers of pictures and wall messages (on par with the range for typical undergraduates), included Facebook applications, and varied in the number of status messages, favorite quotes, and the type of relationship they were interested in pursuing (see Appendix C1-C4). The profiles did not include information about friends under the guise that this information was hidden in order to ensure confidentiality of those not involved in the study.

Dependent Measures

After receiving the manipulation and privately viewing the Facebook profiles, participants were told that for the next part of the study they would complete a series of questionnaires and tasks, some related to the question of online impression formation and some part of a different study. Participants received a packet which included the initial impression

measure (filler), the first mood measure, and a filler questionnaire. Upon completion participants completed a lexical decision task (LDT). Next participants completed a picture writing task in which they had four minutes to write about a picture given to them by the experimenter. Then, participants received the second packet containing the main attraction dependent measure and the second mood measure. Finally, participants completed a questionnaire of manipulation checks before being thoroughly debriefed and thanked for their time.

Initial impressions. Participants were told the purpose of the first questionnaire was to assess their initial impressions of the four men. This questionnaire was designed as a filler item; it was included to make participants believe this was a study on impression formation, but because the misattribution processes were assumed to occur over time, the questions were designed to be purposely vague to ensure that participants did not anchor on any initial impressions they might report. Participants rated how well each of the people in the profiles would fit in academically and socially at the University of Virginia and the degree to which each person fit their impression of a typical UCLA/University of Michigan student. All questions were rated on an 8 point Likert scale (1=*not at all,* 8=*extremely*).

Mood. Participants completed the first mood measure immediately following the initial impression questionnaire. Participants rated the degree that six adjectives described how they felt at that moment. Four were designed to assess the valence of their mood (*positive, pleased, disappointed, sad*) and two were designed to assess arousal (*energized, alert).* All were rated on 21-point dot scales (1= *not at all*, 21= *extremely*).

Lexical decision task. I included two exploratory measures, an LDT task and a picture writing task to indirectly test the hypothesis that uncertainty surrounding a person increases thoughts about that person. Participants completed an LDT task in which they were presented

with a series of letters and were instructed to determine as quickly and as accurately as possible whether or not the letters formed an English word. There was a 5 second delay between each decision and subsequent target presentation. The LDT was adapted from Förster, Liberman, and Higgins (2005) and included four randomly ordered blocks with the following stimuli: 7-8 target words, 17-18 unrelated words, and 15 nonwords which were obtained by altering the letters in neutral words not used in the study. The first five words in each block were always unrelated and used as practice. Target words came from three categories: feelings/characteristics (e.g., love, uncertainty), specific relationships (e.g., girl/boyfriend, friendship, dating), and procedure related words (e.g., picture, university). For a complete list of target words see Appendix D. Eight undergraduate research assistants generated as many words as possible related to the three categories. A separate set of 24 undergraduates then rated the most common words on the degree to which they fit in one or more of the three categories.

Picture writing task. Next participants completed a writing task in order to explore the content of their thoughts. All participants were given a picture of a man and woman sitting side-by-side having a drink in a bar (see Appendix E for a copy of the picture). The picture was chosen in particular because, although the pair look happy, the nature of their relationship is ambiguous. It is just as plausible that they are two classmates who ran into each other as it is that they are romantic partners. Participants were given four minutes to write a dramatic a story about the pair which included what has led up to the event shown in the picture, what is happening at the moment, what the characters are feeling and thinking, and the outcome.

Attraction. Participant's second packet included the main attraction questionnaire. As shown in Appendix F, the first section of the questionnaire participants reported how much they liked each person, how much they would want to work on a class project together, and how

similar they were to each person (1=*not at all,* 8=*extremely*). In the second section of the questionnaire participants reported the degree to which they would want to be acquaintances, friends, "hookup with", and date each person if they attended the same school. All questions were rated on a 10 point Likert scale (1=*not at all,* 10=*extremely*). As a reminder, prior to completing the second set of questionnaires participants saw the profiles a second time for five seconds each.

Mood. The second mood measure was identical to the first and immediately followed the attraction questionnaire.

Final questionnaire. In the final questionnaire participants were asked to recall the Facebook profile condition they were randomly assigned to and, if in the uncertain condition, report which of the two conditions was more likely (1=*best condition*, 5=*not sure*, 9=*average condition*). To directly test the mediating effects of thought on uncertainty and attraction, participants answered an explicit thought question in which they reported the degree to which they had thought about the profiles within the previous 15 minutes (i.e., before answering the second attraction questionnaire; 1 = *not at all*, 9 = *extremely often*). Participants also reported whether or not they were currently in a dating relationship/had a "crush". Lastly, participants were asked to write their impressions of the study as well as any suspicions they had. These responses were coded to assess the degree of participants' suspicion by a research assistant blind to condition (1= *not at all suspicious, 5 = completely suspicious*). Finally, participants completed a demographic questionnaire before being thoroughly debriefed and thanked by the experimenter. See Appendix G for the full questionnaire.

Results

Manipulation Checks

Of 49 participants, two were excluded because of procedural errors. Because it was important to ensure that uncertain participants were actually uncertain of their condition they reported the likelihood that the targets either choose them as best or average. Results confirmed that participants did not assume that they were in either the best or average conditions (M = 5.38, SD = 2.22). There were also no significant differences in levels of suspicion between conditions, $F(2, 44) = .92$, *ns* ($M_{uncertain} = 1.86$, $SD_{uncertain} = 1.12$; $M_{best} = 2.06$, $SD_{best} = 1.43$; $M_{average} = 1.50$, $SD_{average} = 0.81$).

Attraction

In order to look at platonic and romantic attraction separately, I created two composite variables. I averaged participants' rating of the degree to which they liked, would work in a group with, felt similar to, and would be friends with each profile to create an index of platonic attraction ($\alpha = .78$) and averaged ratings of the degree to which participants reported that they would hookup with and date the profiles to create an index of romantic attraction ($\alpha = .85$). Higher numbers indicate greater attraction towards the four men.

A one-way analysis of variance (ANOVA) on the romantic attraction score was significant, $F(2, 44) = 6.73$, $p = .003$. As predicted, participants in the uncertain condition reported the greatest attraction to the men (M = 4.94, SD = 1.66) followed by participants in the best condition (M = 3.44, SD = 1.38) and participants in the average condition (M = 2.76, SD = 1.90) participants. I also conducted two planned comparisons. The first, that assigned the weights of -1 to the best and 1 to the uncertain conditions, revealed that the uncertain and best conditions differed significantly in reported attraction, $t(44) = -2.51$, $p = .02$. The second, that assigned the weights of -1 to the average and 1 to the best conditions, revealed that the best and average conditions did not differ significantly in reported attraction, $t(44) = 1.19$, *ns*.

A one-way ANOVA on the platonic attraction score was also significant, $F(2, 42) = 16.65$, $p < .001$ and means for each condition mirrored the direction of the means for the romantic attraction variable ($M_{uncertain} = 6.78$, $SD_{uncertain} = 0.60$; $M_{best} = 6.36$, $SD_{best} = 0.89$; $M_{average} = 5.10$, $SD_{average} = 0.97$). The same contrasts revealed that uncertain and best participants did not significantly differ in their platonic attraction for the profiles, $t(44) = -1.39$, $p = .17$, but that best participants were significantly higher than average participants, $t(44) = 4.30$, $p < .001$.

Increased Thought

Explicit thought question. I predicted that because uncertainty surrounding one's romantic interest would increase thoughts about that person, uncertain participants would report having more thoughts about the profiles compared to the best and average participants. Although there were no significant differences, results trended in this direction, $F(2, 43) = 2.14$, $p = .13$. Uncertain participants reported having the most thoughts ($M = 5.07$, $SD = 2.17$) followed by participants in the average ($M = 4.62$, $SD = 2.34$) then best ($M = 3.56$, $SD = 1.67$) conditions. A planned comparison revealed that uncertain participants reported significantly more thoughts than best participants, $t(43) = 1.99$, $p = .05$.

Lexical decision task. To reduce the data, reaction times to all words were first log transformed then all incorrect responses or responses that were three standard deviations above or below the mean were excluded from analysis. Following this procedure, 11.6% responses were excluded from the analyses (incorrect responses = 2%, standard deviation error = 9.6%). Additionally, data from two participants' were not included due to a computer malfunction. Initial analyses revealed that reaction times for each of the aforementioned categories were highly correlated (Target words $\alpha = .88$, Relationships words $\alpha = .81$, Procedure words $\alpha = .85$,

Feeling words $\alpha = .79$, Unrelated words $\alpha = .90$) thus, I computed composite scores for each category by averaging the reaction times for the relevant words (see Appendix D).

I hypothesized that uncertain participants would be thinking more about concepts related to attraction than either best or average participants and therefore would be quicker to identify words from each category. To test this I ran four separate one-way ANOVAs with condition as the factor and the target, relationship, procedure, and feeling reaction time composites as the dependent variable. I also conducted planned comparisons between the three conditions.

Results did not fully support this hypothesis. Despite highly significant overall results, $F_{target\ words}(2, 42) = 6.71$, $p = .003$, $F_{relationship\ words}(2, 42) = 6.92$, $p = .003$, $F_{procedure\ words}(2, 42) = 5.30$, $p = .009$, $F_{feeling\ words}(2, 42) = 6.08$, $p = .005$, the planned contrasts revealed that uncertain and best participants responded significantly faster than average participants, $t_{target\ words}(42) = 3.65$, $p = .001$, $t_{relationship\ words}(42) = 3.70$, $p = .001$, $t_{procedure\ words}(42) = 3.25$, $p = .002$, $t_{feeling\ words}(42) = 6.08$, $p = .001$, but that uncertain and best participants response times were not significantly different from one another, ps > .49. See Table 3 for means and standard deviations.

Picture Writing Task

Four undergraduate research assistants who were blind to condition coded participants' stories for content focusing on romantic relationships and friendship and the tone of the story. Coders' ratings were respectably correlated for each category (romantic content $\alpha = .73$, friendship content $\alpha = .68$, story tone $\alpha = .83$), thus I computed three composite measures by averaging coders' responses for each category. For respective categories, higher numbers indicate greater romantic and friendship content and a more positive tone. Five participants' stories were not coded due to missing data.

As with the LDT, I hypothesized that uncertain participants would be thinking more about concepts related to attraction than either best or average participants and as a result the content of their stories would center on romantic relationships and friendship and would be more positive than either of the two other conditions. To test this I ran three separate one-way ANOVAs with condition as the factor and romantic content, friendship content, and positive tone as the dependent variable. Although the means were in the anticipated direction for each category (see Table 4 for means and standard deviations), there were no differences in the degree to which stories centered around romantic relationships, F (2, 39) < 1, *ns*, friendships, F (2, 39) < 1, *ns*, or in positive tone, F (2, 39) = 2.14, p = .13. Planned comparison revealed that differences between the uncertain and best participants were not significant for any of the categories (ps = .12 - .82).

Mood

Initial analyses revealed that participants' ratings of the four emotion words assessing valence of mood were highly correlated, thus I computed a composite mood score for both time points by reverse scoring the negative emotion words and averaging these items with the positive emotion words (Time 1 α = .86, Time 2 α = .84). Higher numbers indicate a more positive mood. The two arousal words did not correlate highly with the mood items. As suspected, there were no significant effects of the manipulations on the two arousal items.

In line with Wilson and colleagues (2005) findings, I predicted that uncertainty would increase participants' moods more so than certainty. As predicted, a 3 (Condition) x 2 (Time) between-within ANOVA on the positive mood composite revealed a main effect of condition, F(2, 44) = 3.86, p = .03. As Table 5 shows, uncertain participants reported the most positive mood at both time points followed by best then average participants. A planned comparison

revealed that the difference between the uncertain and best conditions was not significant $F(1, 44) = 1.25$, *ns*, however the difference between the uncertain and average conditions as well as the difference between the uncertain condition and the average of the best and average conditions were both highly significant, $F(1, 44) = 3.72$, $p < .001$ and $F(1, 44) = 2.87$, $p = .006$, respectively.

Relationship Between Thought, Mood, and Attraction

I argue that uncertainty increases thoughts which in turn increase attraction. An alternative explanation is that rather than increasing thoughts, uncertainty increases positive mood (Wilson et al, 2005) and this is mediating the increase in attraction. I tested both hypotheses directly using a mediational analysis that compared the uncertain and best conditions and excluded the average condition. In line with my predictions, when testing the mediational effect of thought on the composite attraction variable, the beta of .42 ($p = .02$) between condition and attraction dropped to a beta of .31 ($p = .1$) when thought was included in the model. This drop was marginally significant using the Sobel test, $z = 1. 65$, $p = .10$. When testing the mediational effect of positive mood on attraction, the beta of .42 ($p = .02$) between condition and attraction dropped to a beta of .34 ($p = .04$) when mood was included in the model. This drop was not significant using the Sobel test, $z = .99$, *ns*.

Discussion

The results of this experiment offer support for the hypothesis that uncertainty increases attraction by demonstrating that uncertainty about one's romantic intentions leads to greater attraction than certainty. Although the overall effect is evident for both platonic and romantic attraction, in both cases these results are driven by the average participants who rated the profiles significantly lower than did the combined best and uncertain participants, $t(44) = 5.67$, $p < .001$;

$t(44) = 2.81$, $p = .007$, respectively. Looking at the contrasts, the difference between uncertain and best participants was only significant for romantic attraction and not for platonic attraction.

Although the results for the direct and indirect thought measures were not as straightforward as I had predicted, I did find evidence that uncertain participants thought more about the Facebook profiles than best participants and that uncertain participants were faster to respond to concepts related to attraction than average participants. One reason that average participants may have explicitly reported having more thoughts than best participants is because being told one is only liked an average amount is not part of most social interactions. People have best friends, but most people do not openly discuss their average friends. Thus, while being told one is liked the best may make a person happy, it may motivate less thought because it is an accepted part of everyday interaction.

Despite this however, a mediational analysis suggested at least partial mediation for thought, but no mediation for positive mood supporting the hypothesis that it is increased thought that increases attraction rather than increased attraction being a byproduct of positive mood.

CHAPTER 4. STUDY 3: MISATTRIBUTION IN ATTRACTION

Overview

Experiment 3 extends the current findings to address the role of self-perception change in the attraction model by including a misattribution manipulation. In Experiment 2, female participants viewed and rated the Facebook profiles of four males in addition to completing a series of tasks designed to measure their thoughts. Experiment 3 used a nearly identical methodology; however, some participants were told that certain tasks might increase their thoughts about the Facebook profiles. If it is the case that uncertainty triggers additional thought about the Facebook profiles, and people interpret these thoughts as a sign of attraction, then providing people with an alternative explanation for these thoughts should short-circuit this process and attraction should not increase.

Participants

Participants were 102 female undergraduate at the University of Virginia who participated in return for partial course credit.

Procedure

The procedure for this study is identical to that of Study 2 except for the four main changes described below. In addition to these changes, the Facebook profiles were updated to reflect current television shows, movies, and music as well as to conform to the new Facebook format (see Appendix H1-H4 for the updated profiles). Also, due to the increasing number of students with private Facebook profiles, the experimenters added participants as friends to a "UVA psychology" profile made specifically for this study no less than 24 hours before the study. This was for the sole purpose of making the cover story that students from other schools could see the profiles believable.

Uncertainty Conditions. As in Experiment 2, participants read that they would either see the profiles of students who had rated them as the best or average; however this study did not include an average condition. Thus, although participants learned about the best and average conditions as part of the cover story and uncertainty manipulation, they were only randomly assigned to either the best or uncertain conditions.

Misattribution Manipulation. Misattribution was manipulated via the name and description of the LDT and the Picture Writing Task. As in Experiment 2, after making their initial ratings of the Facebook profiles, all participants learned that they would be completing a computer task in which they categorized words (the LDT). For misattribution participants, an instruction screen read "FACEBOOK WORD TASK" followed by the description:

> The following task involves category judgment of neutral words and words related to Facebook and romantic relationships. Because some of the words are related to Facebook and romantic relationships, this will likely trigger thoughts about the people whose profiles you just saw. This is fine. Just do your best in responding quickly, but accurately.

For control participants the same instruction screen read "WORD TASK" followed by the description, "The following task involves category judgment." As in Experiment 2, a follow-up screen gave participants specific instructions for how to complete the task.

Immediately after completing the LDT, participants completed the Picture Writing Task. Similarly to the LDT, for misattribution participants an instruction screen read "RELATIONSHIP WRITING TASK" followed by the description:

> For your next task, the experimenter will give you a picture of a man and woman and your job is to write as dramatic a story as you can about the couple. Similarly to the word categorization task you just completed, because of the nature of this task, this will likely

trigger thoughts about the people whose profiles you saw earlier. This is fine. Just do your best in writing a story.

For control participants the same instruction screen read "WRITING TASK" followed by the description:

For your next task, the experimenter will give you a picture and your job is to write as dramatic a story as you can about the people in the picture.

Profile Memory Questionnaire. After completing the same liking and mood measures as used in Study 2, participants were asked to recall key information about the four profiles they viewed. Participants received 1 point for correctly identifying each profile's school, year in school and race (4 points total per category). Additionally, participants received 1 point for correctly recalling first names (4 points total), 1 point for correctly recalling last names, and 1 point for correctly recalling the profiles' full first and last names (4 points total).

Final questionnaire.

Participants reported the degree to which they found themselves thinking about the profiles throughout the study (1 = *not at all*, 9 = *extremely often*); however, in addition to being phrased differently than Experiment 2, it was also moved so as to come directly after the second mood questionnaire. This was done in order to reduce concerns that the Profile Memory Questionnaire might artificially increase perceived thoughts.

In addition to the manipulation check questions asked in Study 2, participants were asked to recall the misattribution condition they were randomly assigned to and whether or not they were told that the (Facebook) Word Task and/or the (Relationship) Writing Task would make them think more about the Facebook profiles (1 = *not at all*, 9 = *a great deal*). Participants also

reported the extent to which they believed these tasks made them think more about the people in the profiles (1 = *not at all*, 9 = *a great deal*).

One possible alternative explanation to the attraction findings is that uncertain participants have greater intentions of contacting the profiles upon completion of the study and that the excitement of this potential communication as well as resolving the uncertainty increase attraction for the profiles. To determine whether systematic differences existed between conditions, participants reported the likelihood that they would friend at least one of the Facebook profiles after the experimental session (1 = *not at all likely*, 9 = *very likely*).

Finally, I did not feel that it would be appropriate to ask people directly about their sexual preference, but I did ask participants whether or not there was any reason their data should not be used and, if yes, why (optional). See Appendix I for the full questionnaire.

Results

Manipulation Checks

Of 102 participants, two incorrectly recalled the Facebook profile condition to which they were randomly assigned (one in the uncertain condition, one in the best condition) and were excluded from the analyses. Additionally, five participants were excluded from the analyses due to procedural errors, two because they reported having heard about the study prior to participating, and two because they informed the researchers that there were reasons their data should not be used. Thus, 91 participants were included in the final analyses. When analyzing with all the participants the results are similar, but weaker.

Initial analyses showed that when uncertain participants reported the likelihood that the targets either choose them as best or average, they did not assume they were in either condition (M = 4.06, SD = 2.11) suggesting that the uncertainty manipulation worked to make participants

uncertain. Additional analyses showed a significant main effect of uncertainty condition on the experimenters' ratings of how suspicious participants were, such that best participants were rated as significantly more suspicious than uncertain participants, $F(1, 87) = 9.94$, $p = .002$ (see Table 6 for means and standard deviations). This finding will be revisited in the discussion.

Attraction

As in Study 2, initial analyses revealed that participants' ratings of the same platonic attraction measures (like, work, similar, friend) and the two romantic attraction measures (date, hookup) were highly correlated, thus I averaged these to create an index of attraction ($\alpha_{platonic} = .87$; $\alpha_{romantic} = .85$). Higher numbers indicate greater attraction towards the four men.

I predicted that giving uncertain participants an explanation for their thoughts about the profiles would decrease romantic attraction for the men in the profiles, but that without this explanation the results would replicate those from Experiment 2. Consistent with this prediction a, 2 (Uncertainty Condition) x 2 (Misattribution vs. Control Manipulation) ANOVA on the romantic attraction variable revealed a significant main effect of misattribution condition $F(1, 87) = 6.10$, $p = .02$, which was qualified by a significant Uncertainty Condition x Misattribution Condition interaction, $F(1, 87) = 3.96$, $p = .05$. As seen in Table 7, control participants reported greater attraction towards the men in the profiles when they were in the uncertain versus best condition, replicating Experiment 2. However, these differences were reversed when participants were in the misattribution condition: Those in the misattribution condition reported greater attraction toward the men in the profiles when they were in the best versus uncertain condition. The simple effect of the best vs. uncertain manipulation was not significant in either the misattribution or control condition , $F(1,88) = 1.77$, $p = .19$, and $F(1,88) = 1.31$, $p = .26$, respectively.

I predicted that the manipulations of uncertainty and misattribution would influence romantic attraction more than platonic attraction. Consistent with this prediction, there were no significant effects of a 2 (Uncertainty Condition) x 2 (Misattribution vs. Control Manipulation) ANOVA on the platonic attraction variable, $Fs(1, 87) < 1.11$, *ns*. See Table 8 for means and standard deviations.

Increased Thought

Explicit thought question. As in Experiment 2, I predicted that because uncertainty surrounding one's romantic interest would increase thoughts about that person there would be a main effect of uncertainty condition. Although the misattribution was designed to change the interpretation of participants' thoughts, I did not predict that it would affect the frequency of thought and therefore did not predict a main effect of misattribution condition or an Uncertainty Condition x Misattribution Condition interaction. Contrary to my prediction, a 2 (Uncertainty Condition) x 2 (Misattribution vs. Control Manipulation) ANOVA on self reported thoughts did not yield a significant main effect of uncertainty condition, $F(1, 87) = 0.63$, *ns.* As expected, neither the main effect for misattribution condition, $F(1, 87) = 0.15$, *ns*, nor the Uncertainty Condition x Misattribution Condition interaction, $F(1, 87) = 0.30$, *ns,* was significant. See Table 9 for means and standard deviations.

Lexical Decision Task

Although the description for the LDT was part of the misattribution manipulation, the LDT task remained the same for all participants, and therefore might show an effect of the uncertainty manipulation. That is, if uncertain participants were thinking more about concepts related to attraction, as hypothesized, then they should be quicker to respond to words from each category than best participants. As with the explicit thought question, I did not predict a main

effect of misattribution condition or an Uncertainty Condition x Misattribution Condition interaction.

The data were processed following the same procedure as described in Experiment 2. Following this procedure, 10.9% of responses were excluded for the analyses (incorrect responses = 1.8%, standard deviation error = 9.1%).

Initial analyses revealed that reaction times for target words (α = .91) were highly correlated thus, I computed composite scores by averaging the reaction times for the relevant words (see Appendix D). Analyses revealed that reaction times for relationship words, procedure words, feeling words, and unrelated words were also highly correlated; however, although the results for these variables were similar to the target words variables, the results were weaker and not significant. As such, I will only report the results for the target words variable.

Contrary to the hypothesis, a 2 (Uncertainty Condition) x 2 (Misattribution vs. Control Manipulation) ANOVA on the target words variable showed a marginally significant main effect for uncertainty condition such that best participants had faster reaction times than uncertain participants, $F(1, 86) = 3.45$, $p = .07$. There was also a marginally significant main effect of misattribution condition such that control participants had faster reaction times than misattribution participants, $F(1, 86) = 3.06$, $p = .08$. As expected, the Uncertainty Condition x Misattribution Condition interaction was not significant. See Table 10 for means and standard deviations.

Picture Writing Task

Four undergraduate research assistants who were blind to condition coded participants' stories for content focusing on romantic relationships and friendship and the tone of the story. Coders' ratings were highly correlated for each category (romantic content α = .98, friendship

content α = .93, story tone α = .86), thus I computed three composite measures by averaging coders' responses for each category. For respective categories, higher numbers indicate greater romantic and friendship content and a more positive tone. Five participants' stories were not coded due to missing data.

I predicted that both the uncertainty and misattribution manipulations would change the content of participants' thoughts; uncertainty should focus participants' thoughts on attraction, but having an explanation for these thoughts should make participants less likely to consider attraction the cause. Thus, I hypothesized an Uncertainty Condition x Misattribution Condition such that, in the control condition uncertain participants would focus more on romantic attraction than best participants, but that in the misattribution condition, the opposite would be true, that best participants' stories would focus more on romantic attraction than uncertain participants. Contrary to the hypothesis, a 2 (Uncertainty Condition) x 2 (Misattribution vs. Control Manipulation) ANOVA on romantic content variable did not yield a significant interaction, $F(1, 87) < 1$, *ns*. See Table 11 for means and standard deviations.

Interestingly, the predicted pattern of results was found on the measure of friendship content of the stories, contrary to my prediction that the manipulations would influence romantic more than platonic attraction. A 2 (Uncertainty Condition) x 2 (Misattribution vs. Control Manipulation) ANOVA on the friendship content variable revealed a significant Uncertainty Condition x Misattribution Condition interaction, $F(1, 87) = 7.72$, $p = .007$. As seen in Table 12, control participants' stories focused more on friendship when they were in the uncertain versus best condition, replicating Experiment 2. However, these differences were reversed when participants were in the misattribution condition: Participants in the misattribution condition wrote stories focused more on friendship when they were in the best versus uncertain condition.

Finally, I predicted that when uncertain participants had an explanation for their thoughts they would not engage in sense making and therefore would write less positive stories than best participants, but that without this explanation uncertain participants would write more positive stories than best participants. As seen in Table 13, the means were in the predicted direction, but a 2 (Uncertainty Condition) x 2 (Misattribution vs. Control Manipulation) ANOVA on the story tone variable did not reveal a significant Uncertainty Condition x Misattribution Condition interaction, $F(1, 87) = 1.98$, $p = .16$.

Mood

As in Experiment 2, initial analyses revealed that participants' ratings of the four emotion words assessing valence of mood were highly correlated, thus I computed a composite mood score for both time points by reverse scoring the negative emotion words and averaging these items with the positive emotion words (Time 1 $\alpha = .84$; Time 2 $\alpha = .89$). Higher numbers indicate a more positive mood. The two arousal words did not correlate highly with the mood items. As suspected, there were no significant effects of the manipulations on the two arousal items.

As described for the tone of the story writing task, I predicted that uncertain participants who had an explanation for their thoughts would have a less positive mood than best participants, but that without this explanation uncertain participants would report a more positive mood than best participants. A 2 (Uncertainty Condition) x 2 (Misattribution vs. Control Manipulation) x 2 (Time: Mood 1 vs. Mood 2 rating) between-within ANOVA with the last factor treated as a repeated measure revealed a significant main effect of time such that all participants reported feeling significantly more positive at Time 1 than at Time 2, $F(1, 87) = 4.04$, $p = .048$ (see Table 14 for means and standard deviations). Contrary to the hypothesis, there was a marginally

significant Uncertainty Condition x Time interaction such that best participants reported feeling more positive than uncertain participants at both time points, $F(1, 87) = 3.27$, $p = .074$. There was neither a significant main effect of uncertainty condition, or misattribution condition, nor a significant Uncertainty Condition x Misattribution Condition interaction, Misattribution Condition x Time interaction, or Uncertainty Condition x Misattribution Condition x Time interaction (all *p*s > .33).

Because the misattribution manipulation came between the first and second mood measures, the effect may only be evident at Time 2. To test this I ran a 2 (Uncertainty Condition) x 2 (Misattribution vs. Control Manipulation) ANOVA on only the Time 2 mood ratings. There were no significant main effects or interactions (all *p*s > .16).

Exploratory Measures

Facebook profile memory. A single memory score was created by adding participants' scores from each of the profile questions. I predicted that because uncertain participants would be more attracted to and think more about the profiles they would have a better memory for basic details about the people in the profiles than best participants. Although the main effect of uncertainty condition was significant, it was opposite of the predicted direction; best participants had significantly more correct answers than uncertain participants, $F(1, 87) = 15.87$, $p < .001$. There was also an unexpected significant main effect of misattribution condition such that misattribution participants had significantly more correct answers than control participants, $F(1, 87) = 4.07$, $p = .05$. See Table 15 for means and standard deviations.

Facebook friend question. If the attraction results can be explained by uncertain participants' intentions to contact the Facebook profiles, then there should be a significant difference between conditions in the likelihood that participants would friend at least one of the

Facebook profiles after the experimental session. Results showed no significant main effects for uncertainty condition, $F(1, 87) = 0.83$, *ns*, misattribution condition, $F(1, 87) = 0.43$, *ns*, or an Uncertainty condition x Misattribution condition interaction, $F(1, 87) = 0.13$, *ns*. See Table 16 for means and standard deviations.

Discussion

The results of this experiment provide some support for the final step of the uncertainty based attraction model that poses that attraction increases via self perception change. There was a significant Uncertainty Condition x Misattribution Condition interaction such that uncertain participants reported more romantic attraction for the men in the Facebook profiles than best participants when they did not receive the misattribution manipulation (as expected from Experiment 2). However, when participants did receive the misattribution manipulation this difference was eliminated. In fact, in the misattribution condition best participants reported *greater* romantic attraction for the profiles than uncertain participants, although the simple effect was not significant. Moreover, this effect was only evident for romantic, but not platonic attraction. While I did not replicate the uncertainty findings from Experiment 2 in the control condition, the difference between uncertain and best participants was significant when averaged across studies, $z = 2.26$, $p = .02$.

One alternative explanation of the attraction results of Experiment 3 is that because best participants were significantly more suspicious than uncertain participants they reported being less attracted to the Facebook profiles. However, it should be recalled that best participants reported less attraction only in the control condition; they reported more attraction than did uncertain participants in the misattribution condition. Further, there was no evidence that the ratings of participants' suspicion mediated the results. When suspicion ratings were entered as a

covariate in the Uncertainty Condition x Misattribution Condition ANOVA on the romantic attraction variable, the Uncertainty x Misattribution interaction remained marginally significant, $F(1, 86) = 3.43$, $p = .07$.

Contrary to my predictions, when participants were explicitly asked to report the degree to which they had thought about the Facebook profiles there were no differences across conditions. Moreover, while the LDT results showed evidence for differences in accessibility across conditions, target words were more accessible to best and control participants, not uncertain and misattribution participants, as I had predicted. Although there was evidence that the manipulations altered the content of participants' thoughts, they seemed to have only increased the degree to which participants thought about friendship, and not romantic attraction.

Although the mood findings did not reveal significant results beyond the main effect for time this was not entirely surprising considering the results from Experiment 2 were primarily driven by the difference between the uncertain and average conditions, and Experiment 3 included only the uncertain and best conditions. It is worth noting however, that while the main effect for uncertainty condition was far from significant (p =.33), the means trended in the opposite direction of Experiment 2; that is, best participants tended to feel more positive than uncertain participants. Although this is difficult to explain given the evidence that uncertainty improves mood for positive events (Wilson et al., 2005), this does confirm that increased attraction is not simply a downstream consequence of increased positive mood.

Finally, contrary to predictions, an exploratory measure demonstrated that best and misattribution participants could more accurately recall personal details from the Facebook profiles than uncertain and control participants. This may be because both the uncertain and control conditions were cognitively loaded with other thoughts. As described by the current

model and the AREA model (Wilson & Gilbert, 2008), when people lack an explanation for an uncertain event they engage in sense making in order to come to an understanding. Thus, uncertain participants may have been too engaged in sense making in an attempt to determine whether the profiles they saw were of men who liked them best or average to attend to specific details of the profiles. Similarly, self perception theory (Bem, 1965, 1972) describes how people determine their attitudes and feelings by observing their own behavior, just as an outsider would. Without an explanation for their thoughts, control participants may have been too busy evaluating their observations and assigning meaning to their thoughts to attend to specific details of the profiles.

GENERAL DISCUSSION

Overview of the Evidence

The present studies were conducted in order to test an uncertainty based model of attraction which states that uncertainty increases attraction by increasing thoughts about a target which in turn triggers self perception change and subsequently increases attraction. Although each step has been independently demonstrated in the literature (Bem, 1965; Bem, 1972; Ickes, Wicklund, & Ferris, 1973; Tesser, 1976; Wilson et al., 2005), I conducted three experiments to test the model in its entirety. The present studies found that uncertain participants reported more attraction to targets than certain participants (Experiments 1-3), that this increase in attraction is partially mediated by thoughts about the targets (Experiment 2), and that, when given an alternative explanation for these increased thoughts, participants in the uncertain condition no longer report greater romantic attraction (Experiment 3).

One caveat of this model is that in order for attraction to increase, one cannot have negative feelings towards the target. As the model lays out, when attempting to understand an

uncertain event and thus thinking more about the target, the thoughts are attributed to the target. As this set of studies has demonstrated, when feelings towards the target are generally positive, attraction increases. However, while not tested, it is logical to assume that when feelings towards the target are negative, attraction would decrease.

Attraction. Although not entirely consistent across studies, there was some evidence that these findings were specific to romantic attraction, as opposed to platonic attraction (the exception was Experiment 1 which did not include romantically focused items). One reason for this may be the nature of platonic versus romantic relationships. People generally have only one romantic partner at a time, whereas there are no societal limitations on the number of friends one may have. Because there is very little opportunity cost associated with gaining a friend, learning that someone is uncertain about whether or not to pursue a friendship may be perceived as a neutral or even negative event. If so, increased thoughts about this event should decrease attraction (Wiggins et al., 1992; Wilson et al., 2005). Indeed, although not significant, the means for the platonic attraction results in Experiment 3 (see Table 8) suggest that uncertain participants liked the men in the profiles less than certain participants. However, because people only have one romantic partner, the opportunity cost of dating a single person is much higher than gaining a friend. Thus, not only is some level of uncertainty normal in dating and therefore typically does not elicit negative feelings, being considered a person whom someone might want to date exclusively is generally flattering. As a result, any increased thoughts about the event are usually positive and, through a process of increased thought and misattribution, increase attraction.

While these findings hint to a difference between platonic and romantic attraction, they may also be explained by the nature of the experiments: In Experiment 1 male and female

participants rated a female experimenter whereas in Experiments 2 and 3 female participants rated men they had learned about in Facebook profiles. Thus, everyone except women in Experiment 1 were rating opposite-sex targets. It may be that when people are asked to rate opposite-sex targets, they have an easier time imagining the target as a romantic partner than as a friend and as a result have stronger romantic ratings than platonic ratings.

Given the distinction between romantic and platonic attraction, these findings are also thought provoking because they run counter to the stereotype that men prefer novelty in their romantic partners whereas women prefer stability. In fact, if anything the direction of means from Experiment 1 suggests just the opposite, that women liked the female experimenter more when primed with uncertainty, but men liked her more when primed with certainty. Self-help books like The Rules (Fein & Schneider, 1995) are targeted toward women and advise playing coy by not seeing a man more than twice a week, not calling a man, and rarely returning his phone calls. While one obvious limitation of this set of studies is that only females participated in Experiments 2 and 3, the fact that uncertainty, rather than stability, enhanced romantic attraction for women contradicts the stereotypes of The Rules and suggests that these rules might actually be more beneficial for men.

Increased thought. I proposed that uncertainty increases attraction toward a potential romantic partner by increasing thoughts about that person, which people interpret as a sign that they are attracted to that person. Increased thoughts therefore, play a central role in this process. The evidence for increased thought however, either asked explicitly or measured via accessibility, was mixed. In Experiment 2, uncertain participants reported thinking significantly more about the men in the profiles than best participants; however, while they were quicker to identify words and concepts related to attraction than average participants, their responses were

no quicker than best participants. Moreover, there were no differences in the content of thoughts expressed on the story writing task across conditions. Experiment 3 did not replicate the explicit thought findings from Experiment 2. That is, there was no difference in the degree to which uncertain or best participants reported thinking about the men in the profiles. Surprisingly, best participants were quicker to identify words and concepts related to attraction than uncertain participants, a finding opposite of that in Experiment 2. Equally unexpected, misattribution participants were quicker to respond to target words than control participants. Finally, while there was some evidence for differences in the content of thoughts expressed in the story writing task across conditions, it was only on the friendship variable and not evident for romantic attraction or positive thoughts in general.

That the explicit thought results were not consistent between Experiments 2 and 3 may be due to the difference in the question's wording between the two experiments. In Experiment 2 participants were asked, "In the last 15 minutes or so (before you answered the previous questions about the profiles), how often did thoughts about the people in the profiles pop into your head?" Thus, not only were participants given a specific time frame on which to focus, but this time frame was near the end of the study at a point when the amount of thinking about the men may have been maximally different between conditions (because best and average participants had by that time made sense of their feedback, while uncertain participants continued to think about it). In Experiment 3 participants were asked, "Throughout the study, how often did you find yourself thinking about the people whose Facebook profiles you saw?" Because participants had a larger time frame to consider (approximately 35 minutes versus 15 minutes), they likely had more thoughts about the profiles. Indeed, reported thought scores for control participants in Experiment 3 was nearly 1 point higher than the average of uncertain and

best participants in Experiment 2. Admittedly, comparing means between two experiments is problematic for a number of reasons, but it is worthwhile to consider that this variation in wording could account for the different results across studies.

I argued that uncertain participants should respond more quickly to related words than certain participants (because uncertainty increases the accessibility of attraction-related thoughts). However, the LDT data showed the opposite pattern of results in Experiment 3. This may be due to a combination of two factors. First, it may be that uncertain participants were simply too engaged in sense making to be fully engaged in the task. While arguably this process of sense making should make these concepts more accessible and decrease reaction times, the second factor may be that the words were simply too abstract and loosely related to the concept of attraction for the cognitively loaded uncertain participants to draw the necessary connections. Indeed, in Experiment 3 uncertain participants responded more slowly to *all* words, related and unrelated, than certain participants, $F(1, 86) = 2.94$, $p = .07$, (there was no difference between best and uncertain participants in Experiment 2, $t(42) < 1$, *ns*). That misattribution participants also had significantly slower to response times than control participants is consistent with this distraction argument. Rather than being distracted by the sense making process however, misattribution participants may have been busy reconsidering and reevaluating their thoughts and attributing them to the tasks rather than the target. As with uncertain participants, misattribution participants also tended to be slower to respond to all words than control participants, $F(1, 86) = 2.94$, $p = .09$

Even in light of these alternative explanations of the thought frequency results, it is not entirely clear why the only significant effect on the measure of thought content appeared on the friendship variable and only in Experiment 3. That participants in the misattribution condition

wrote stories focused more on friendship when they were in the best versus uncertain condition and that these results were reversed for control participants is consistent with my hypothesis that misattribution participants would not interpret their thoughts as a sign of attraction after being given an alternative explanation for their increase. However, contrary to my predictions, I expected this result more on the measure of thoughts about romance than friendship. Although the picture that participants wrote their stories about was intended to be ambiguous, perhaps the couple appeared to be friends rather than dating partners.

Mood. Surprisingly, despite research showing that uncertainty surrounding a positive event can increase positive mood (Wilson et al., 2005; Whitchurch & Wilson, 2007), there was minimal evidence for this effect in the current studies. Uncertain participants reported feeling more positive than certain participants in Experiment 1; however this trend was not significant. Similarly, although the overall mood results were significant in Experiment 2, the simple difference between uncertain and best participants was not significant. In Experiment 3, the direction of the results changed such that best participants reported feeling more positive than uncertain participants, although not significantly so.

One reason for these disparate results may be a difference in the type of uncertainty across sets of studies. Both Wilson and colleague's (2005) original pleasures of uncertainty studies and Experiments 2 and 3 of this set of studies manipulated uncertainty directly through a specific stimulus or person (versus creating general uncertainty as in Experiment 1); however, the *source* of uncertainty was different between the two. In Wilson and colleague's (2005) original work exploring the pleasures of uncertainty, an unambiguously positive event always occurred, however to create uncertainty, participants did not learn all the details of the event making it difficult to understand. In Experiments 2 and 3, participants learned the details of an

event; however they were uncertain about which of two possibilities, whether they were viewing profiles of the men who rated them as the best or average, actually occurred. It may be that because Experiments 2 and 3 gave participants the details of the events they then could focus on the interpersonal nature of the uncertainty and, as a result, thought more about the targets in an interpersonal context. It would be worthwhile to test this hypothesis and could be done so simply by adding an attraction measure to Wilson and colleagues study in which participants learned they had been chosen as the top rated opposite-sex friend, but were uncertain of the author of each reason. If it is the case that general uncertainty increases thoughts about the event rather than the targets then there should be evidence of an increase in mood, but not attraction.

Relevance to Attraction Research

Despite some unanticipated results, these studies are interesting when considered alongside the previous work exploring uncertainty and attraction. Walster and colleagues (1971) concluded that "playing hard to get is not an effective strategy for increasing one's status" (p. 73) and that "people simply like people who like people" (p. 77), yet in three studies I found different results: whereas participants did like people who liked them, they liked people who *might* like them more.

There are a few potential explanations for these discrepant results. First, the experiments may not have allowed enough time between the uncertainty manipulation and the attraction measures for the sense making process to engage and for misattribution to occur. For example, in the previously described study in which participants evaluated hard to get, easy to get, and selectively hard to get women, participants seemed to have no more than 7-8 minutes between reading about the women and making their initial attraction ratings (Walster et al., 1973). While there is no empirical work that speaks to the time it takes for sense making to affect thoughts, the

current studies as well as Wilson and colleagues (2005; Whitchurch & Wilson, 2007) studies typically had at least 15 minutes between the manipulation and the ratings. Secondly, if the uncertainty was resolved before participants made their attraction ratings then these ratings reflect attraction towards a certain and not uncertain target. For example, participants in the previously described study who learned either immediately or after a 3 second pause that a confederate would accept a date, rated their attraction for the confederate *after* the uncertainty was resolved (Walster, Walster & Lambert, 1971 as cited Lyons, Walster, and Walster, 1971). Researchers may not have found any differences between the two conditions because at the time of the rating, the degree of uncertainty between conditions was the same. Finally, it is essential that one has a positive attitude towards the target in order for uncertainty to increase attraction. Because uncertainty increases thoughts and these thoughts are interpreted as feelings towards the target, a negative attitude will likely decrease attraction. In one study in which researchers compared the popularity of a (fictitious) easy and hard to get target, the hard to get target was described as telling his partner that he "did not particularly like her and that he would not want to spend time with her in the future" (Walster et al., 1971, p. 75). Not surprisingly the target was rated as less socially desirable than the easy to get target who was described as saying he "liked her extremely much and that he would enjoy spending a great deal of time with her in the future" (p.75).

Future Directions

In addition to addressing the alternative hypotheses, future research should also explore the boundaries of the effects of uncertainty on attraction. For example, the present research examined uncertainty within a 40 minute window. Presumably the sense making process occurs over time, thus there is a minimum amount of time necessary in order to see the effects of

uncertainty on attraction; however, the optimal time one remains uncertain to yield the greatest degree of attraction is unclear. I suspect that after a certain amount of time thoughts about the target become distracting (Tennov, 1979) and make engaging in other cognitive tasks difficult (Whitchurch & Wilson, 2007), but whether that decreases attraction remains an empirical question.

In addition to determining an optimal amount of time, it would be useful to investigate the optimal level of uncertainty. In Experiments 2 and 3, uncertain participants believed that there was an equal chance that the men had rated them as the best or as average. If participants learned that the likelihood was 75% or 25% would this affect the attraction results? The model suggests that uncertainty must be sufficient to activate increased thinking about the target that would then be interpreted as attraction, but the minimum level of uncertainty necessary to activate such thinking is not clear.

Conclusion

The uncertainty and attraction model has brought together existing work and linked it in a way so as to explain a phenomenon previously considered nonexistent—that under some circumstances, we like people whom we are not certain like us more than those who we know like us. Previous research on attraction suggested that if two people see each other often (proximity), are similar to each other (similarity), or one has expressed positive feelings towards the other (reciprocity) then they should have positive feelings for each other (for a review see Berscheid & Reis, 1998). The present research suggests an additional determinant of attraction, namely uncertainty. For example, the thought that comes from catching someone's eye across the room and wondering if the attraction is mutual might lead to more attraction than the case in which we are certain that it is mutual. In addition to offering a new way to look at attraction, the

greatest implication of this work is that it suggests that there is room for growth and greater understanding in the attraction literature.

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Appendix A

Experiment 1: Sentence Unscrambling Items

Uncertainty primes

1. know I want to heavy more
2. sky the seamless red is
3. believe they look don't her
4. a smile what parrot great
5. about Jane the it felt uncertain
6. saw hammer the train he
7. Bob outcome is the unsure of seems
8. the push wash frequently clothes
9. questions news Todd the throws
10. unstable market admirable the is very
11. been I have there seen never.
12. Katie doubts drives promise his
13. have wing a butterfly I
14. what Amy eat can't to decide seek
15. the are results mountain inconclusive
16. she line leads the tracks
17. not people confident valid are
18. answer Steve flies guesses the
19. salad She make green tasty
20. felt unprepared possessed Helen

21. helpless it hides there over
22. is the punctual ambiguous instruction
23. curious I am it about look

Certainty primes

1. want I more know don't to heavy
2. sky the seamless red is
3. with some they agree her
4. a smile what parrot great
5. certain felt Jane it the about
6. saw hammer the train he
7. Bob outcome is the sure of seems
8. the push wash frequently clothes
9. knew Todd news about threw the
10. stable market admirable the is very
11. been I seen have there
12. Katie trusts drives promise his
13. have wing a butterfly I
14. eat decided Amy yet to
15. the are results mountain predictable
16. she line leads the tracks
17. people confident valid are
18. answer Steve flies offers the

19. salad She make green tasty
20. felt prepared possessed Helen
21. helpless it hides there over
22. is the punctual clear instruction
23. lot know a look about it I

Appendix B

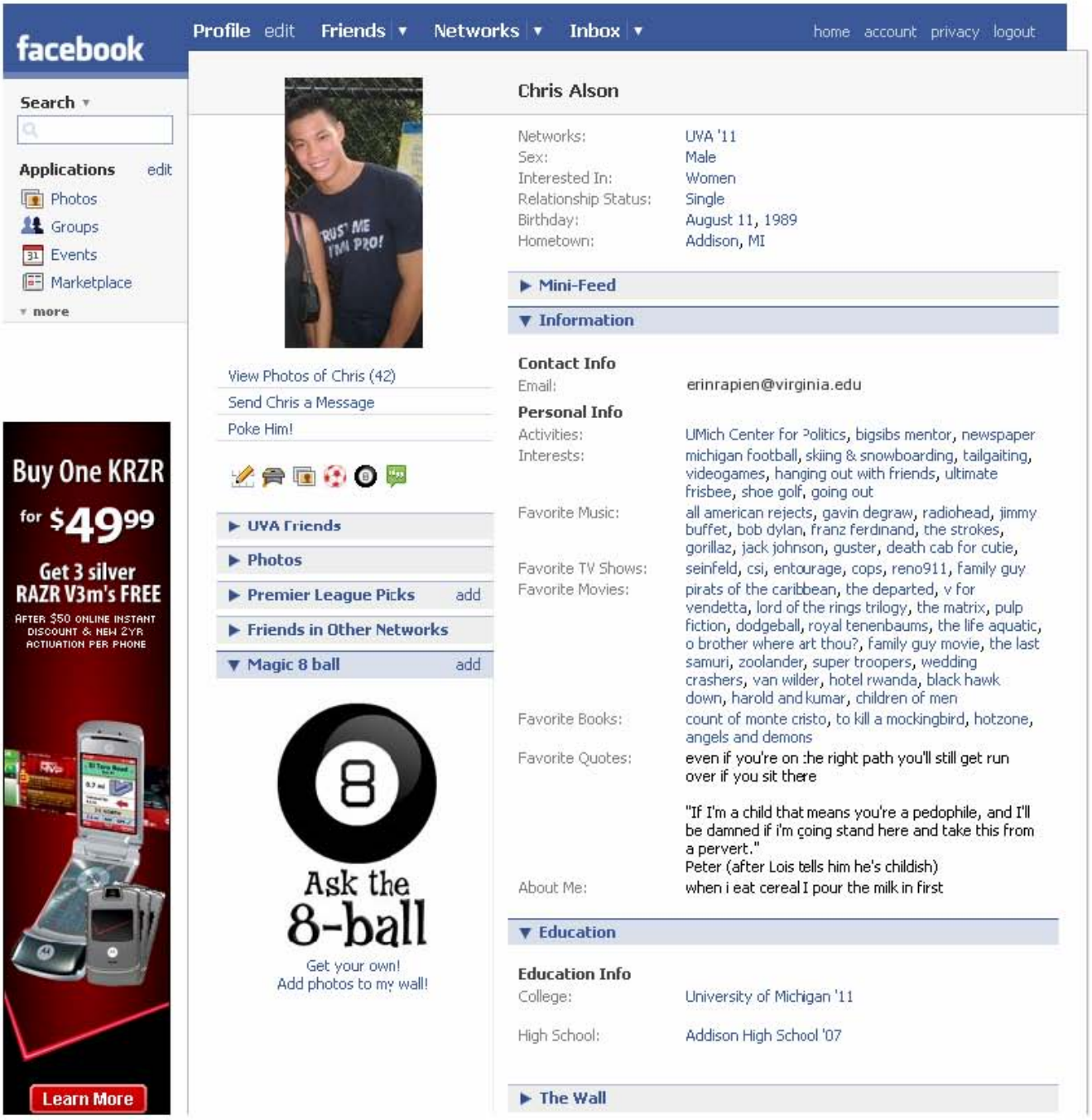
Experiment 1: Post Experiment Questionnaire (Dependent Measures)

1. How likable was the experimenter during the experiment? *
2. How much do you want to get along with the experimenter? *
3. How smooth was the interaction with the experimenter? *
4. How pleasant was the interaction with the experimenter? *
5. How friendly was the experimenter during the experiment? *
6. How much do you want to be friends with the experimenter? *
7. How nice was the experimenter during the experiment? *
8. How much would you want to work with the experimenter? *
9. To what extent do you think the experimenter values treating all ethnic groups equally?
10. How knowledgeable would you consider yourself to be about racial issues?
11. How important do you think not being racist is to the experimenter?
12. How important are racial issues to you?
13. How often do you think about racial issues?

* Included in the composite attraction variable.

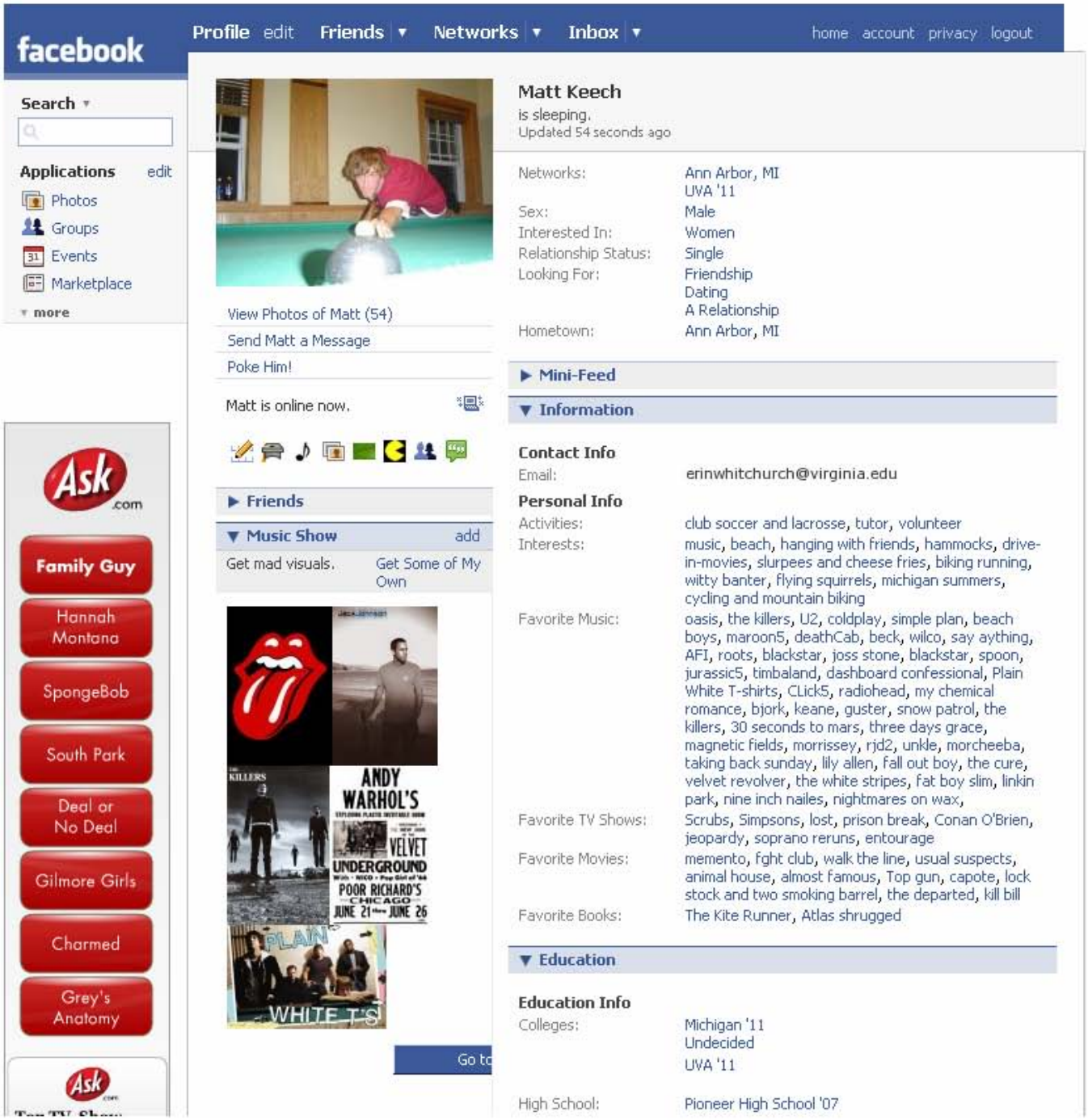
Appendix C-1

Experiment 2: Facebook Profile (Asian Male)



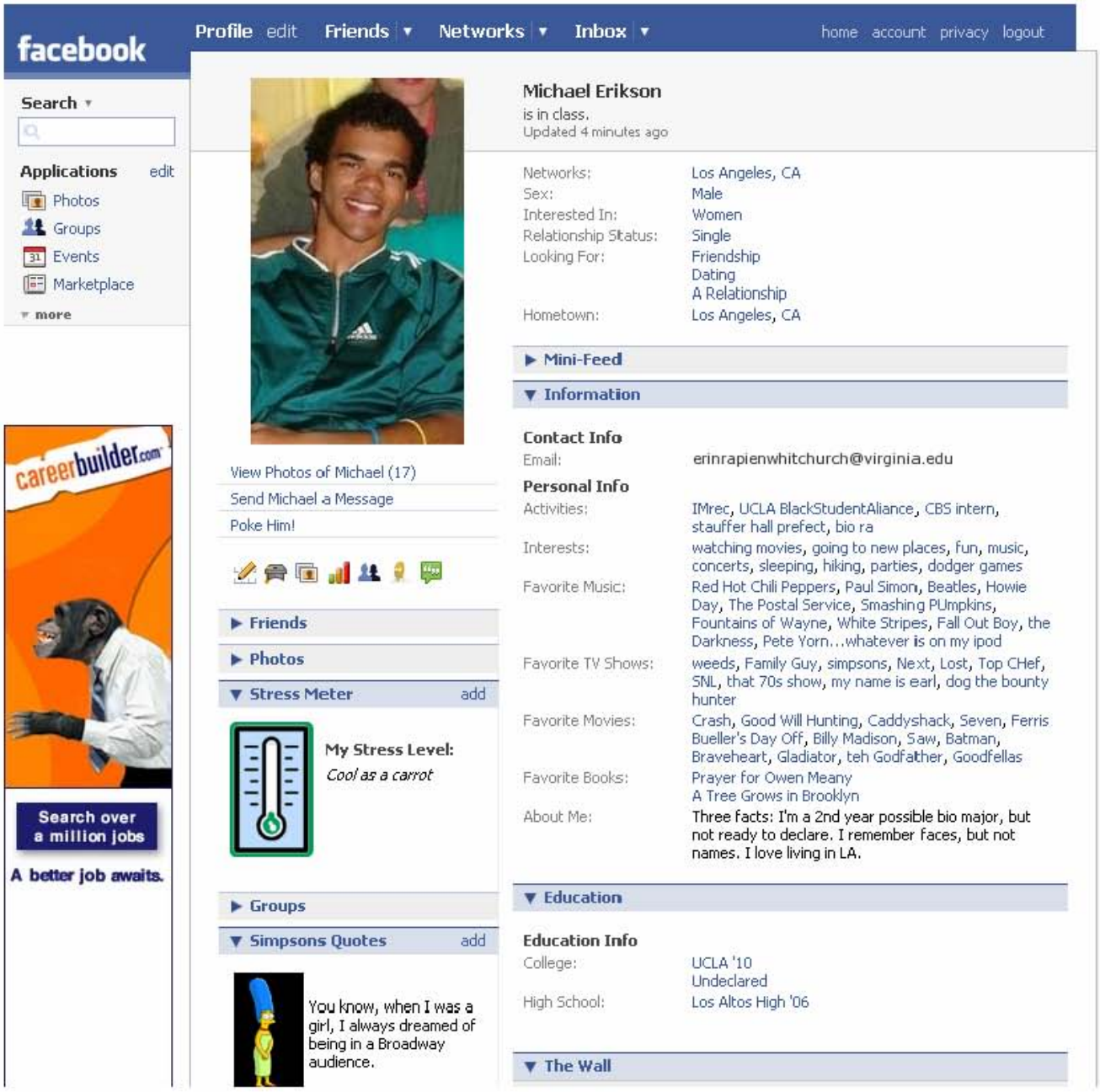
Appendix C-2

Experiment 2: Facebook Profile (Caucasian Male)



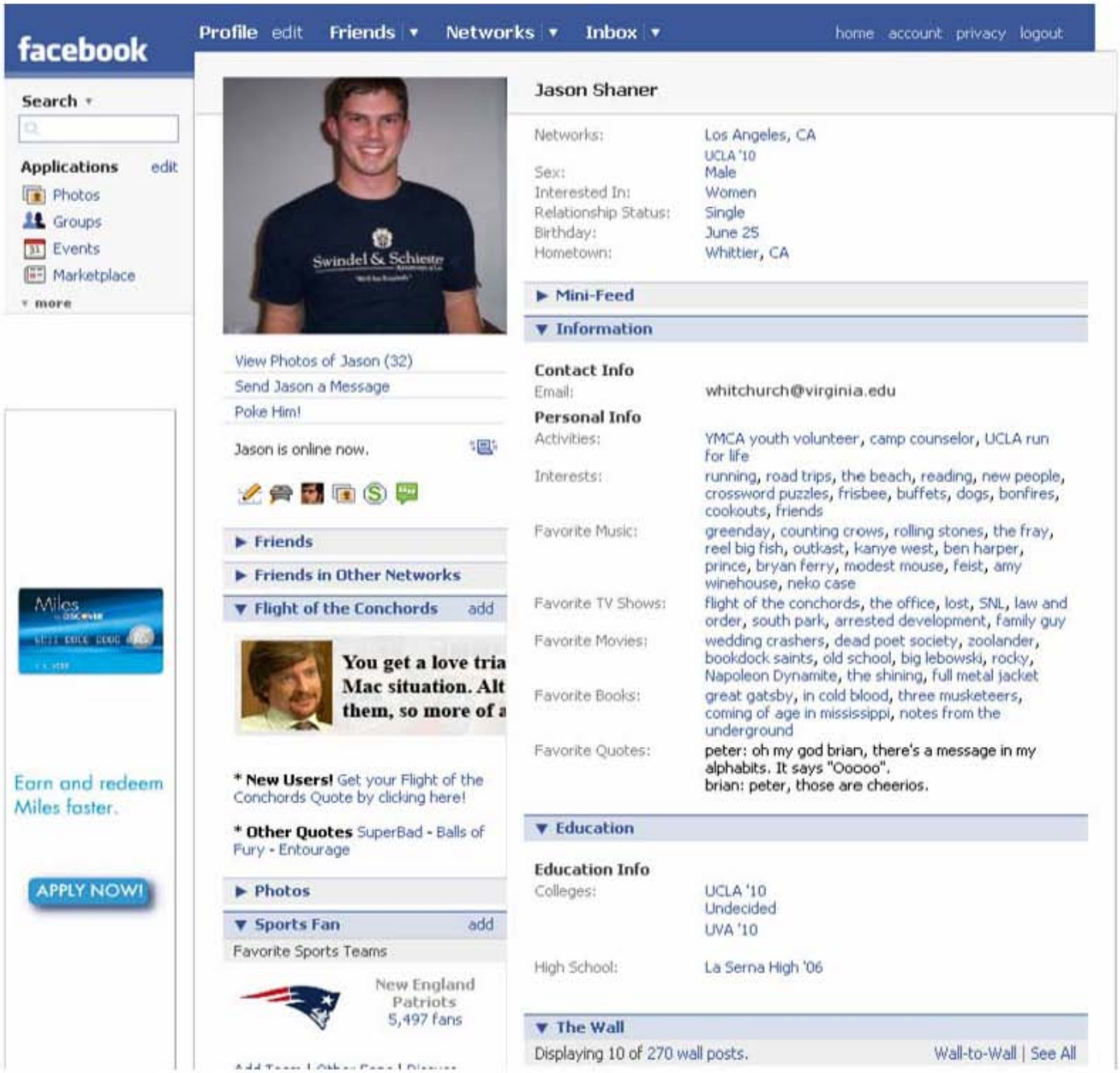
Appendix C-3

Experiment 2: Facebook Profile (African-American Male)



Appendix C-4

Experiment 2: Facebook Profiles (Caucasian Male)



Appendix D

Experiment 2: Lexical Decision Task Words Target Words

Words are sorted in descending order by study relatedness as determined through pretesting.

Picture [2]	Cute [1]	Flatter [1]
Impression [2]	Unexpected [3]	Interpret [2]
Email [2]	Friend [1, 3]	Seeing [1]
School [2]	Similar [1, 3]	Wonder [3]
Questions [2, 3]	Appealing [1]	Unsure [3]
Judgment [2, 3]	Personal [1]	Acquaintance [1]
University [2]	Flirt [1]	Uncertain [3]
Curious [3]	Attraction [1, 3]	Ambiguous [3]
Likeable [1]	Fun [1, 3]	First [2]
Friendly [1]	Communication [1, 2]	Vague [3]

1= relationship related words

2= procedure related words

3= feeling/state related words

Appendix E

Experiments 2 and 3: Picture Writing Task Image

Appendix F

Experiments 2 and 3: Attraction Questionnaire

Profile Follow-Up

Directions: Using the scales below, please answer the following questions for the stated profile.

1	2	3	4	5	6	7	8	9	10
Not at all									Very much

PERSON 1:

_____ 1. How much do you like this person?
_____ 2. How much would you like to work with this person on a class project?
_____ 3. How similar are you to this person?

PERSON 2:

_____ 1. How much do you like this person?
_____ 2. How much would you like to work with this person on a class project?
_____ 3. How similar are you to this person?

PERSON 3:

_____ 1. How much do you like this person?
_____ 2. How much would you like to work with this person on a class project?
_____ 3. How similar are you to this person?

PERSON 4

_____ 1. How much do you like this person?
_____ 2. How much would you like to work with this person on a class project?
_____ 3. How similar are you to this person?

Using the scale below, please fill in each box to indicate the extent you agree with the following statements:

If this person and I attended the same school, I might be interested in him/her as:

1	2	3	4	5	6	7	8	9	10
Not at all									Very Much

	Person 1	**Person 2**	**Person 3**	**Person 4**
…a casual acquaintance				
…a friend				
…someone I would hook-up with				
…a potential boyfriend/girlfriend				

Appendix G

Experiment 2: Final Questionnaire

Final Questionnaire

1. Please rate yourself on the qualities using the scale below:

1	2	3	4	5	6	7	8	9	10
Not at all									Extremely

_____ Outgoing	_____ Shy	_____ Calm
_____ Friendly	_____ Lucky	_____ Attractive
_____ Confident	_____ Interesting	_____ Certain
_____ Funny	_____ Creative	

2. In the last 15 minutes or so (before you answered the previous questions about the profiles), how often did thoughts about the people in the profiles pop into your head?

1	2	3	4	5	6	7	8	9
Not at All								*Extremely Often*

3. Overall, how much did you like seeing profiles of participants from other schools?

1	2	3	4	5	6	7	8	9
Not at All								*A Great Deal*

4. Please describe in your own words what you think the purpose of today's study was?

5. It is not unusual for people in psychology studies to have some suspicions about what they were told or what the purpose of the study really was. It is extremely helpful for us to hear about any such thoughts you might have had during the study. Please be specific. Use the back of this sheet if necessary.

6. At the beginning of the study, before seeing the Facebook profiles, you learned that there were two different conditions. Some participants were randomly assigned to Condition A, some to Condition B, and some learned it would not be possible to find out which condition they were in.

> Please read the conditions below and check the one that you were assigned to. That is, what were you told about the profiles you would be seeing?

___ I was told I was in Condition A and would see the profiles of people who had seen my profile and rated me highly
___ I was told I was in Condition B and would see the profiles of people who had seen my profile and rated me as average
___ I was told that I was either in Condition A or Condition B, but that I couldn't be told which

B. If you checked the third line (i.e were given two possible explanations), which of the two is more likely?

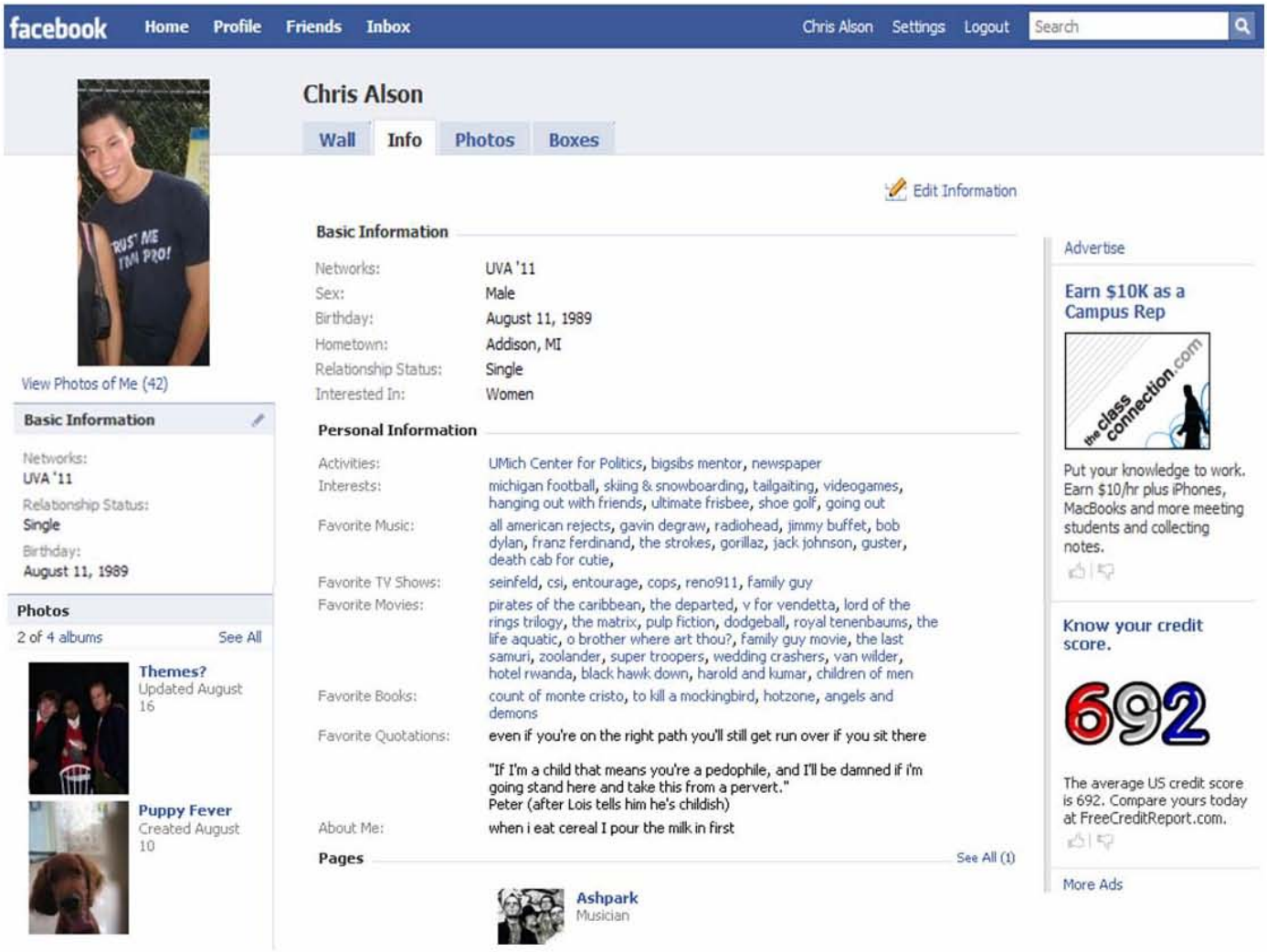
1	2	3	4	5	6	7	8	9
The other participants saw my profile and rated me as average				*Not Sure*				*The other participants saw my profile and rated me highly*

7. Are you currently in a dating relationship? (*please circle one*) **Yes** **No**

B. If no, do you currently have a "crush" that would make you unlikely to date/want to date anyone else? (*please circle one*) **Yes No**

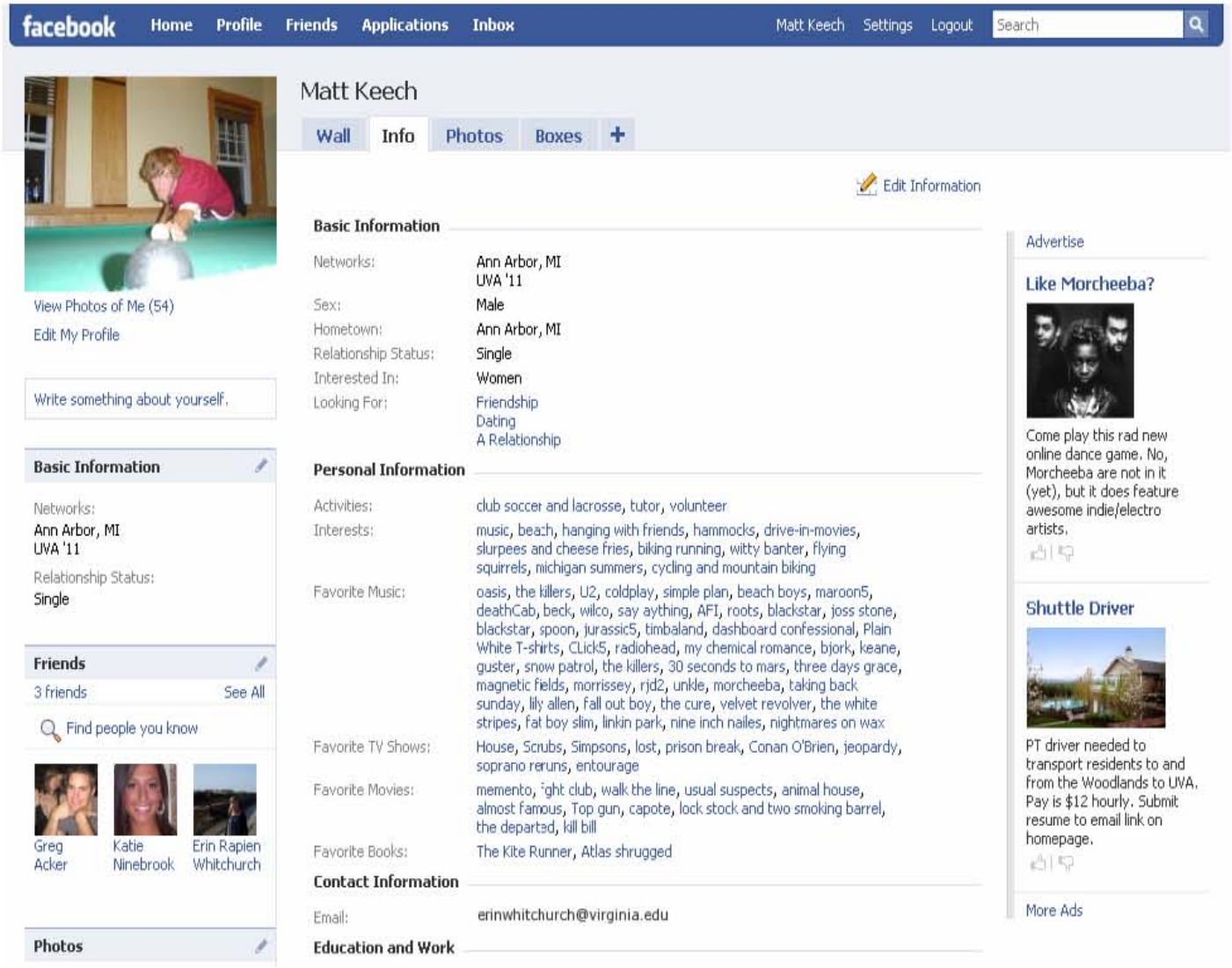
Appendix H-1

Experiment 3: Facebook Profile (Caucasian Male)



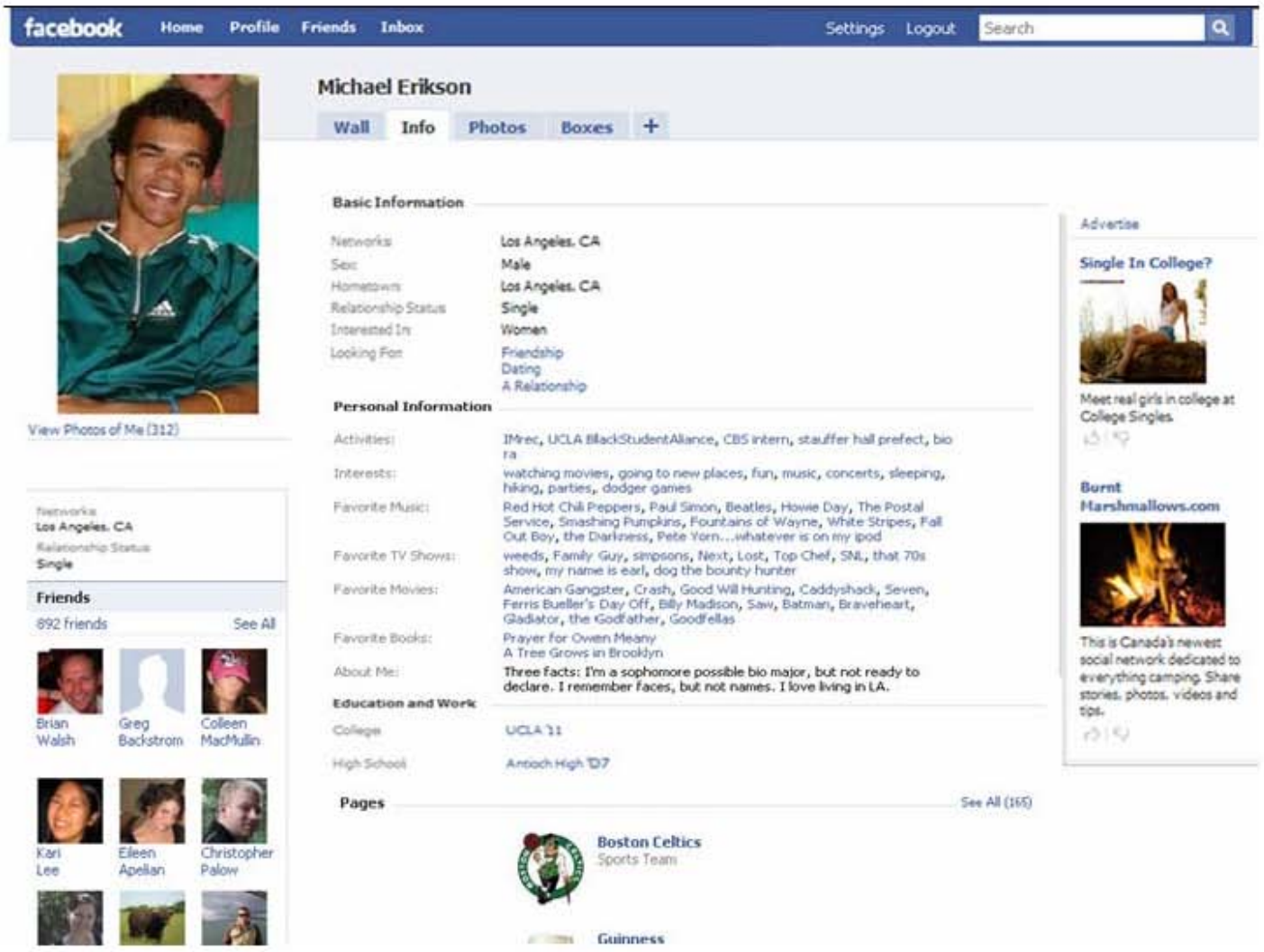
Appendix H-2

Experiment 3: Facebook Profile (Caucasian Male)



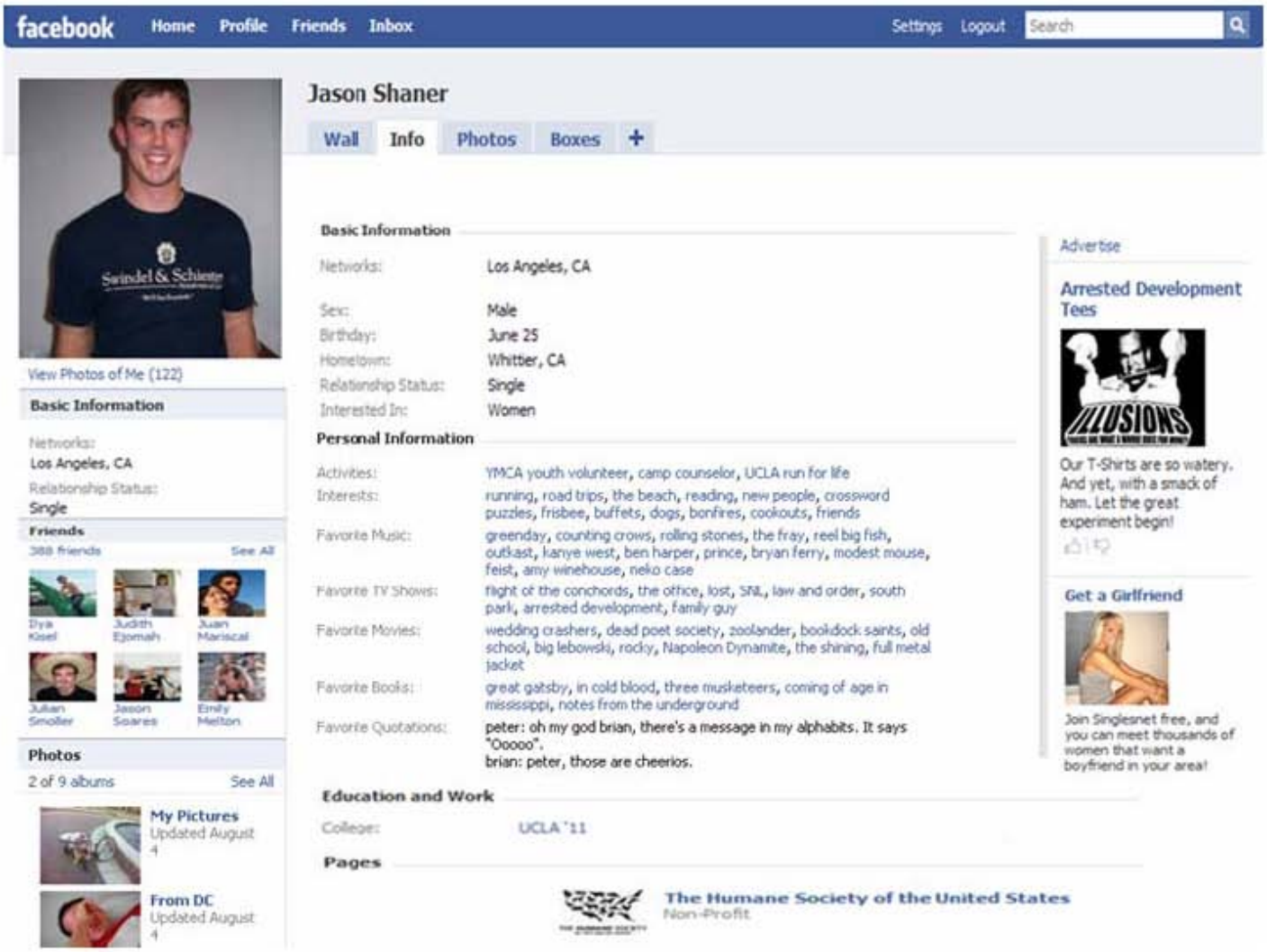
Appendix H-3

Experiment 3: Facebook Profile (African-American Male)



Appendix H-4

Experiment 3: Facebook Profile (Caucasian Male)



Appendix I

Experiment 3: Final Questionnaire

Final Questionnaire

1. Overall, how much did you like seeing profiles of participants from other schools?

1	2	3	4	5	6	7	8	9
Not at all								*A great deal*

2. To what extent do you think completing the word task and picture writing task made you think more about the people in the profiles?

1	2	3	4	5	6	7	8	9
Not at all								*A great deal*

3. How likely is it that you will friend at least one of the people whose Facebook profiles you saw today?

1	2	3	4	5	6	7	8	9
Not at all likely								*Very likely*

4. Please describe in your own words what you think the purpose of today's study was?

5. It is not unusual for people in psychology studies to have some suspicions about what they were told or what the purpose of the study really was. It is extremely helpful for us to hear about any such thoughts you might have had during the study. Please be specific. Use the back of this sheet if necessary.

6. At the beginning of the study, before seeing the Facebook profiles, you learned that there were two different conditions. Some participants were randomly assigned to Condition A, some to Condition B, and some learned it would not be possible to find out which condition they were in.

Please read the conditions below and check the one that you were assigned to. That is, what were you told about the profiles you would be seeing?

___ I was told I was in Condition A and would see the profiles of people who had seen my profile and rated me highly
___ I was told I was in Condition B and would see the profiles of people who had seen my profile and rated me as average
___ I was told that I was either in Condition A or Condition B, but that I couldn't be told which

C. If you checked the third line (i.e were given two possible explanations), which of the two is more likely?

1	2	3	4	5	6	7	8	9
The other participants rated me as average				*Not Sure*				*The other participants rated me highly*

7. Which of these tasks did you complete: (*please check only one*)

_____ Facebook Word Task & Relationship Picture Writing Task
_____ Word Task & Picture Writing Task

9. Were you told that the (Facebook) Word Task and/or (Relationship) Picture Writing Task might
make you think more about the Facebook profiles? (*please circle one*) **Yes No**

10. Are you currently in a dating relationship? (*please circle one*) **Yes No**

B. If no, do you currently have a "crush" that would make you unlikely to date/want to date anyone else? (*please circle one*) **Yes No**

11. Is there any reason that the researchers should not use your data? (*please circle one*) **Yes No**
If yes, why?

Demographic Information

Directions: Please answer the following questions about yourself.

1. Age: _____

2. Gender: Male Female

3. Year in School: 1st 2nd 3rd 4th 5th Graduate Student

4. What is your race/ethnicity (please check all that apply):

____ Caucasian/ White

____ African American/ Black

____ Native American

____ Hispanic or Latino

____ East Asian (e.g., Chinese, Japanese, Korean)

____ South Asian (e.g., Indian)

____ Middle Eastern

____ Native Hawaiian/ Other Pacific Islander

Table 1

Experiment 1: General attraction means and standard deviations by condition, experimenter, and participant gender.

		Uncertainty Condition	
		Uncertain	Certain
Participant Gender			
Male	Experimenter 1	6.32 (0.48)	6.17 (0.69)
	Experimenter 2	6.41 (0.52)	6.41 (0.42)
	Experimenter 3	-- [a]	7.00 (--) [b]
	Experimenter 4	6.13 (0.70)	5.38 (--)[b]
	Total (Males)	6.31 (0.54)	6.28 (0.59)
Female	Experimenter 1	6.46 (0.33)	6.13 (0.68)
	Experimenter 2	6.81 (0.40)	6.25 (0.66)
	Experimenter 3	-- [a]	-- [a]
	Experimenter 4	-- [a]	6.13 (0.63)
	Total (Females)	6.64 (0.40)	6.18 (.062)
Total (by condition)		6.43 (0.51)	6.23 (0.60)

[a] Experimenter did not run any participants in this condition.

[b] Experimenter only ran one participant in this condition.

Table 2

Experiment 1: Positive mood means and standard deviations by condition, experimenter, and participant gender.

		Uncertainty Condition	
		Uncertain	Certain
Participant Gender			
Male	Experimenter 1	7.36 (1.11)	8.00 (1.14)
	Experimenter 2	7.37 (1.22)	7.71 (1.11)
	Experimenter 3	-- [a]	9.00 (--) [b]
	Experimenter 4	8.10 (0.65)	7.00 (--) [b]
	Total (Males)	7.55 (1.06)	7.87 (1.08)
Female	Experimenter 1	8.08 (0.92)	7.50 (1.12)
	Experimenter 2	7.58 (1.36)	7.13 (1.27)
	Experimenter 3	-- [a]	-- [a]
	Experimenter 4	-- [a]	7.30 (1.48)
	Total (Females)	7.83 (1.13)	7.55 (1.18)
Total (by condition)		7.66 (1.08)	7.55 (1.18)

[a] Experimenter did not run any participants in this condition.

[b] Experimenter only ran one participant in this condition.

Table 3

Experiment 2: Lexical decision task composite reaction times by condition.

	Uncertainty Condition		
Category	Uncertain	Best	Average
Target Words	2.91 (0.06)	2.95 (0.09)	3.19 (0.37)
Relationship Words	2.90 (0.06)	2.96 (0.11)	3.2 (0.37)
Procedure Words	2.95 (0.07)	2.95 (0.09)	3.19 (0.39)
Feeling/Emotion Words	2.92 (0.07)	2.97 (0.10)	3.19 (0.36)

Table 4

Experiment 2: Story writing task category means and standard deviations by condition..

	Uncertainty Condition		
Category	Uncertain	Best	Average
Romantic Relationship Content	5.77 (2.71)	5.51 (3.58)	5.55 (2.89)
Friendship Content	3.75 (2.07)	3.41 (3.38)	2.64 (2.21)
Story Tone	6.56 (2.89)	4.73 (3.19)	4.26 (3.03)

Table 5

Experiment 2: Positive mood across conditions.

	Uncertainty Condition		
Positive Mood	Uncertain	Best	Average
Time 1	16.64 (3.62)	16.09 (2.04)	13.55 (4.25)
Time 2	16.89 (2.97)	15.24 (3.11)	13.40 (4.41)

Table 6

Experiment 3: Suspicion across uncertainty and misattribution conditions.

	Uncertainty Condition		
Suspicion	Uncertain	Best	Total (by Misattribution Condition)
Misattribution Condition	1.50 (0.93)	1.95 (1.17)	1.71 (1.07)
Control Condition	1.16 (0.55)	2.10 (1.45)	1.58 (1.14)
Total (by Uncertainty Condition)	1.33 (0.77)	2.02 (1.30)	

Table 7

Experiment 3: Romantic attraction across uncertainty and misattribution conditions.

	Uncertainty Condition		
Romantic Attraction	Uncertain	Best	Total (by Misattribution Condition)
Misattribution Condition	4.34 (2.18)	5.14 (1.86)	4.72 (2.05)
Control Condition	4.16 (1.82)	3.39 (1.48)	3.81 (1.70)
Total (by Uncertainty Condition)	4.25 (1.99)	4.31 (1.89)	

Table 8

Experiment 3: Platonic attraction across uncertainty and misattribution conditions.

	Uncertainty Condition		
Platonic Attraction	Uncertain	Best	Total (by Misattribution Condition)
Misattribution Condition	6.43 (1.30)	6.86 (1.01)	6.63 (1.18)
Control Condition	6.43 (1.16)	6.48 (0.77)	6.45 (1.00)
Total (by Uncertainty Condition)	6.43 (1.22)	6.68 (0.92)	

Table 9

Experiment 3: Explicit thought across uncertainty and misattribution conditions.

	Uncertainty Condition		
Explicit Thought	Uncertain	Best	Total (by Misattribution Condition)
Misattribution Condition	5.17 (2.18)	5.77 (2.18)	5.46 (2.18)
Control Condition	5.24 (1.94)	5.35 (2.28)	5.29 (2.07)
Total (by Uncertainty Condition)	5.20 (2.04)	5.57 (2.21)	

Table 10

Experiment 3: Lexical decision task reaction times to target words across uncertainty and misattribution conditions.

	Uncertainty Condition		
Target Words Reaction Times	Uncertain	Best	Total (by Misattribution Condition)
Misattribution Condition	2.96 (0.12)	2.92 (0.10)	2.94 (0.11)
Control Condition	2.92 (0.08)	2.89 (0.06)	2.91 (0.08)
Total (by Uncertainty Condition)	2.94 (0.10)	2.91 (0.09)	

Table 11

Experiment 3: Romantic content of writing task story across uncertainty and misattribution conditions.

	Uncertainty Condition		
Story Content: Romantic Attraction	Uncertain	Best	Total (by Misattribution Condition)
Misattribution Condition	7.22 (1.88)	7.48 (2.17)	7.35 (2.00)
Control Condition	6.39 (3.10)	7.13 (2.25)	6.72 (2.75)
Total (by Uncertainty Condition)	6.80 (2.59)	7.31 (2.19)	

Table 12

Experiment 3: Friendship content of writing task story across uncertainty and misattribution conditions.

	Uncertainty Condition		
Story Content: Friendship	Uncertain	Best	Total (by Misattribution Condition)
Misattribution Condition	3.02 (1.67)	4.40 (2.39)	3.68 (2.14)
Control Condition	4.82 (2.97)	3.35 (2.49)	4.16 (2.83)
Total (by Uncertainty Condition)	3.94 (2.57)	3.90 (2.47)	

Table 13

Experiment 3: Positive tone of writing task story across uncertainty and misattribution conditions.

	Uncertainty Condition		
Story Content: Positive Tone	Uncertain	Best	Total (by Misattribution Condition)
Misattribution Condition	6.87 (1.97)	7.33 (1.78)	7.09 (1.88)
Control Condition	7.59 (1.32)	7.00 (2.03)	7.32 (1.68)
Total (by Uncertainty Condition)	7.23 (1.69)	7.17 (1.90)	

Table 14

Experiment 3: Positive mood across conditions.

	Uncertainty Condition	
Positive Mood	Uncertain	Best
Misattribution Condition		
Time 1	14.68 (3.59)	15.03 (3.94)
Time 2	13.72 (4.56)	15.14 (3.23)
Control Condition		
Time 1	15.14 (3.29)	15.41 (3.03)
Time 2	14.47 (3.29)	15.23 (3.12)
Total (by Uncertainty Condition)	14.50 (3.68)	15.20 (3.33)

Table 15

Experiment 3: Facebook memory task scores.

	Uncertainty Condition		
Correct Answer Totals	Uncertain	Best	Total (by Misattribution Condition)
Misattribution Condition	2.42 (2.10)	5.77 (3.82)	4.02 (3.45)
Control Condition	2.16 (2.17)	3.60 (3.17)	2.80 (2.73)
Total (by Uncertainty Condition)	2.29 (2.12)	4.74 (3.65)	

Table 16

Experiment 3: Likelihood of making at least one Facebook friend request.

	Uncertainty Condition		
Friendship Request	Uncertain	Best	Total (by Misattribution Condition)
Misattribution Condition	2.83 (2.39)	3.09 (2.49)	2.96 (2.41)
Control Condition	2.36 (1.73)	2.95 (2.34)	2.62 (1.97)
Total (by Uncertainty Condition)	2.59 (2.07)	3.02 (2.34)	