

# PLAYING HARD TO GET: ATTRACTION, UNCERTAINTY, AND TINDER

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## TABLE OF CONTENTS

ABSTRACT .....	iv
CHAPTER ONE: INTRODUCTION.....	1
CHAPTER TWO: LITERATURE REVIEW .....	4
Attraction.....	4
Uncertainty .....	5
Relational Uncertainty and Attraction.....	7
Sexual Concordance.....	9
An Environment for Measuring Attraction.....	10
Tinder .....	13
Overview and Predictions .....	14
CHAPTER 3: METHOD.....	15
Participants and Procedure .....	15
Measures .....	16
<i>Demographics</i> .....	16
<i>Intolerance of Uncertainty Scale</i> .....	16
<i>Attractiveness Ratings</i> .....	17
<i>Stimuli</i> .....	17
<i>Pupil Dilation</i> .....	17
<i>Experimental Manipulation</i> .....	17
CHAPTER 4: RESULTS .....	18
Preliminary analyses.....	18
Main Analyses.....	18
<i>Self-reported attractiveness</i> .....	18
<i>Pupil dilation</i> .....	18
Exploratory Gender Analyses.....	19
<i>Self-reported attractiveness</i> .....	19
<i>Pupil dilation</i> .....	20
CHAPTER 5: DISCUSSION .....	21
Limitations .....	21
Future Directions .....	22
Conclusion.....	23
References .....	24
APPENDICES.....	28
APPENDIX A.....	28
APPENDIX B.....	29
APPENDIX C .....	31
APPENDIX D .....	33
APPENDIX E.....	34

## LIST OF TABLES

Table 1. Means for self-report attractiveness.....	24
Table 2. Means for pupil dilation ranges.....	24

## ABSTRACT

### PLAYING HARD TO GET: ATTRACTION, UNCERTAINTY, AND TINDER

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Does 'playing hard to get' really work in our favor in encounters with potential romantic partners? Research on uncertainty in social interactions may support this adage and help explain why it works. Whitchurch, Wilson, and Gilbert (2011) showed that women were more attracted to a male target when they were uncertain about feelings of the male stimulus towards them than when they knew the male stimulus was attracted to them. The current research intends to replicate the Whitchurch et al (2011) findings to an extent but to also tease out any gender differences and potential sexual concordance implications. Using a platform similar to the popular match making application Tinder, along with the Tobii eye tracker to measure pupil dilation as an indicator of physiological arousal, male and female subjects ( $N = 63$ ) were asked to rate attractiveness of a target with either already known attraction (certainty) or with unknown target opinion (uncertainty). Based on previous research (ie Whitchurch et al, 2011; Wilson et al, 2005), we predict that those in the uncertainty condition will self-report the stimuli as more attractive than those in the certainty condition. Also, given previous research on sexual concordance (Suschinsky & Lalumiere, 2011), we predict

that subjects will show more physiological arousal (greater pupil dilation) in the uncertainty condition than in the certainty condition. Various analyses of variance (ANOVA) on self-report attraction and pupil dilation revealed no significant effect of uncertainty on attraction, physiologically or psychologically as well as an absence of any gender differences on these dimensions.

## CHAPTER ONE: INTRODUCTION

Uncertainty has previously been a highly debated topic within the realm of social psychology and particularly with regard to romantic attraction. In 1975, Berger and Calabrese published their Uncertainty Reduction Theory. Similar to Festinger's (1957) Cognitive Dissonance Theory, uncertainty reduction's main premise was that we dislike uncertainty, it makes us uncomfortable, and we constantly seek to reduce it. According to Berger and Calabrese, we have a compulsion to know what is happening around us and resolve any uncertainty we may have. This idea was well supported by evolutionary theorists who claimed that uncertainty reduction is an "ever-present necessity of survival" (Inglis, 2000). Evolutionarily, this makes sense because we would want to be certain about where the resources and predators are. However, Wilson, Centerbar, Kremer, and Gilbert (2005) showed that there are some circumstances where we would prefer uncertainty over certainty. For example, if you have a chronically ill child, you may want to prolong uncertainty about the diagnosis for fear that it may be a fatal disease. Wilson et al (2005) focused particularly on pleasurable events though concluding that uncertainty about future pleasurable events prolongs the pleasure associated with those events. This line of theory leads into the possibility that uncertainty may be preferred in the initial attraction phase of a friendship or romantic relationship in order to prolong this pleasurable experience.

When beginning a romantic relationship, it seems that we have all received advice at some point to 'play hard to get', but why? Logically, it would make sense to reveal feelings of attraction if you hope to receive those feelings in return. Is playing hard to get merely to protect ourselves from possible rejection? Or does it really make

the object of your affection more attracted to you? Whitchurch et al (2011) would argue that indeed, uncertainty about how another person feels about you does increase your attraction for that person. This finding calls into question existing theories such as Uncertainty Reduction Theory (Berger & Calabrese, 1975) because we would want to increase another's uncertainty in this situation. Perhaps this finding does not discount uncertainty reduction entirely but just suggest some modifications. Afifi (2010) approaches this issue in the Theory of Motivated Information Management (TMIM) suggesting that there is a discrepancy between our own actual and desired levels of uncertainty. TMIM acknowledges that we do like to be uncertain about some things but not others and Afifi (2010) argues that if we were motivated to reduce all uncertainty, this would lead to acceptance of inevitable death and what would be the point of life at all. This perspective suggests that it is actually adaptive to increase uncertainty in some situations and, taking previous attraction and uncertainty research into account, mate selection could potentially be one of those situations where uncertainty is preferred.

Previous research in attraction and uncertainty has relied heavily on self-reported attraction which is potentially problematic given the illustrated discrepancy between self-reported attraction and physiological arousal as well as sex differences in response to visual sexual stimuli (i.e., Petit & Ford, 2015; Suschinsky & Lalumiere, 2011; Rupp & Wallen, 2008). Sexual concordance is not a new conundrum in psychological research but with regard to uncertainty and self-report attraction, it begs the question, would we see the uncertainty effects on physiological arousal? The current research aims to shed light on this issue by extending past research on self-reported attraction to include a physiological measure of attraction (i.e., pupil dilation as measured by an eye-tracker).

In order to obtain self-reports and physiological measures of attraction, participants will engage in a task using a popular dating application (i.e., Tinder). We propose that both self-reported and physiological attraction will be higher when the subject is uncertain about how another feels about them.



## CHAPTER TWO: LITERATURE REVIEW

### **Attraction**

A huge body of literature on interpersonal attraction began emerging in the 1970's, and researchers have defined three main areas of influence on attraction: the situation, the other person, and the self. Proximity is a well-documented example of a situational influence in attraction such that people who live closer to each other are more attracted to each other (i.e. Nahemow & Lawton, 1975; Segal, 1974). Festinger, Schachter, and Back (1950) studied close friendships in a dormitory environment and found that the closest friends were the closest neighbors. The influence of the other person is most strongly and immediately their physical attractiveness, and we treat attractive people differently than others (i.e. Hatfield & Sprecher, 1986). Dion and Dion (1975) even showed that we are less likely to assign negative attributes to attractive people even when exhibited behaviors are the same across attractive and unattractive people. Physical attractiveness of the other person is also particularly influential in online dating research as the largest predictor of attraction (Glasser, Robnett, & Feliciano, 2009). Homophily, similarity in the match between two people, has also been empirically shown as a predictor of attraction and relationship success (McCroskey, McCroskey, & Richmond, 2006). The self has great influence on attraction physiologically (i.e. Kerber & Coles, 1978; Dutton & Aron, 1974) and cognitively. Gouaux and Summers (1973) showed that the better our mood is when interacting with another person, the more liking we have for them.

Measurement of attraction has been historically difficult as it has mostly relied on self-report measures initially. McCroskey and McCain (1974) developed their self-report measure of interpersonal attraction which asked the subject to reflect on attraction including the physical aspects, the social environment, and the social task. Though, this was only one of many instruments of self-report measurement in attraction that emerged in the 1970's (Berscheid & Walster, 1978). Later, the physiological evidence of attraction became apparent to researchers who began to evaluate visual behavior (Walsh, Meister, & Kleinke, 1977; Janisse, 1974; Hess, 1955) as well as heart rate feedback (Kerber, 1981; Kerber & Coles, 1978). Today, we have access to more advanced technology, and researchers can evaluate attraction and arousal more closely and involve many physiological measures. Haas (2015) proposes that we each have net electromagnetic charges that, quite literally, 'spark' when we experience attraction to another person, our states are 'complimentarily charged', and he currently uses neuroimaging to support his argument. Haas incorporates theory from physics and biochemistry in an attempt to explain what attracts us to some but not to others. His theory assumes that bioelectric charges are associated with our cognitions that lead to our behaviors and these behaviors have "net positive" or "net negative" electrochemistry (Haas, 2015). Though this is a newly developing direction in attraction research, Haas illustrates the effect of modern technology in the development of theory and application of research in this field.

### **Uncertainty**

Attraction, and measuring attraction, in interpersonal communication may be a difficult situation to navigate and it is made more difficult by the element of uncertainty.

There are many complexities that may arise from social interactions during our daily lives and we have all experienced social uncertainty in some form or another and uncertainty can come from external and internal sources. This uncertainty can stem from the self, the other person, or the relationship itself. Uncertainty within the self refers to personal uncertainty about our own feelings and thoughts related to the other person and relationship uncertainty can develop after a relationship forms and we try to classify the relationship. Berger and Calabrese (1975) explore uncertainty related to the other person and differentiate between cognitive uncertainty (i.e. - uncertainty about the target person's attitudes and beliefs) and behavioral uncertainty (i.e. - uncertainty about how the other person will behave to the extent of societal norms). Uncertainty about the other person's thoughts and attitudes is very apparent during initial interactions. Uncertainty Reduction Theory (URT) claims that uncertainty in initial social interactions with new people is unpleasant and we actively seek to reduce it through information seeking and communication (Berger & Calabrese, 1975). However, Wilson et al (2005) show that we have a "pleasure paradox" with uncertainty because sometimes we prefer uncertainty to certainty. Uncertainty can prolong the anticipation of pleasurable events, extend pleasurable moods for longer periods of time, as well as help us avoid acceptance of unpleasant circumstances (Wilson, Centerbar, Kermer, & Gilbert, 2005). Thus, the 'pleasure paradox', we are motivated to reduce our uncertainty about certain situations because uncertainty is unpleasant (Berger & Calabrese, 1975) but there are some situations where uncertainty is preferred (Wilson, Centerbar, Kermer, & Gilbert, 2005).

Sorrentino and Short (1986) suggest that there are some individual differences in uncertainty processing that may influence our “uncertainty orientation”. Uncertainty-oriented individuals are motivated by resolving uncertainty leading them to be drawn to unknown environments where uncertainty is aplenty. These individuals are prone to behaviors that put them in situations of uncertainty and are more likely to be the world travelers and skydivers among us. Others are certainty-oriented and are not motivated by uncertainty and prefer known environments. Certainty-oriented individuals avoid uncertain situations and environments in order to remain certain about their surroundings. They are more likely to be the homebodies or restaurant “regulars” of their social groups. Sorrentino and Short (1986) further suggest that when an individual is in a situation that is incongruent with their uncertainty orientation, their information processing is interrupted and they are most likely to reduce or increase uncertainty to return balance. Rosen, Ivanova, and Knauper (2014) expound on possible individual differences with regard to how we approach uncertainty and discuss intolerance of uncertainty as an individual trait. They differentiate intolerance of uncertainty from similar constructs such as intolerance of ambiguity, uncertainty orientation, and the need for cognitive closure. Intolerance of uncertainty is observed when individuals perceive ambiguous situations as threatening which leads to feelings of uncertainty about the self and/or other(s) involved and we may be motivated to reduce it (Krohne, 1993).

### **Relational Uncertainty and Attraction**

Uncertainty in social situations can come from different sources and produce individual differences in reaction. Relational uncertainty is no different and, with the

addition of attraction in the interaction, arguably makes uncertainty more difficult to pin down. Knobloch and Solomon (1999) expand on URT and focus in on uncertainty related to the partner and less on uncertainty related to self and situation. They bring up an important measurement issue: uncertainty has historically been measured with self-report measures which is problematic alone without additional measures to mediate. They measured the content of relational uncertainty for undergraduate couples in order to classify the content of uncertainty for romantic relationships and found that, in first encounters, concerns or uncertainty about the self or the relationship take a backseat to concerns and uncertainty about the partner.

Following this focus on partner relational uncertainty, Whitchurch et al (2011), put the reciprocity principal to the test with regard to attraction. Based on the reciprocity principal, people should be more attracted to others who show liking towards them. Whitchurch et al (2011) had 47 college-aged female subjects view Facebook profiles of men who either liked them a lot, liked them an average amount, or liked them either a lot or an average amount (uncertainty condition). Participants were told that the researchers were assessing Facebook as a potential dating site and that they had men from other institutions view profiles for women and rate their interest. While the certainty conditions showed support for the reciprocity principle, the uncertainty condition in this experiment showed support for the pleasure of uncertainty. Women were more attracted to men when they did not know if the man liked them a lot or an average amount even though women in the other two conditions viewed the same profiles of men and were certain about the man's attraction toward them. This uncertainty about the other person, lead to an increase in attraction toward the target person. In this sense, playing 'hard to

get' works. Whitchurch et al (2011) propose that uncertainty leads to more rumination about the target person which leads to higher attraction: "if I am thinking about him so much, I must like him".

### **Sexual Concordance**

We tend to justify our own actions and feelings but we do not always have a complete understanding of our own reactions to certain social situations. As Knobloch and Solomon (1999) highlighted, reliance on self-report with regard to uncertainty measures is problematic because there are other influences in various uncertain situations, that could influence uncertainty particularly with a focus on uncertainty in attraction. These influences could also be implicit and unconscious such as physiological arousal. Kerber and Coles (1978) found that when subjects were shown nude pictures accompanied by false heart rate information for themselves, target pictures were rated as more attractive with increased heart rate information than with neutral heart rate information. This physiological measure influenced their perception of attraction to a target. Though physiological arousal is automatic and uncontrolled, it can inform our attitudes and opinions.

The extent to which physiological arousal is the same as self-report arousal, sexual concordance, varies in situations and depends on the sex of the person. For this reason, self-report measures of attraction and arousal may not tell the whole truth. Petit and Ford (2015) found that coupled subjects rated attractive stimuli as less attractive with self-report measures while their physiological attraction (pupil dilation) showed higher arousal. Suschinsky and Lalumiere (2011) found that women show physiological arousal (genital arousal in this case) to various stimuli, even sexually non-explicit

stimuli, while their self-report arousal sticks to their specified sexual orientation targets. Women have a low sexual concordance while men, who show physiological and self-report arousal generally only for their intended sexual targets, have a high sexual concordance. Though this sex difference in sexual concordance has been shown as a difference in cognitive processing stages (Rupp & Wallen, 2008), cultural influences and gender roles arguably play a role here as well. Whatever the root of this gender difference in sexual concordance is, physiological arousal may tell a different story than self-report arousal which is extended, in the current research, to attraction.

There are many measures of physiological arousal that have been implemented in sexuality research, by many researchers, across many disciplines. Hess (1965) did not have access to vaginal photoplethysmographs and penile phlethysmographs to measure physiological arousal, so he settled for a measurement of pupil dilation to indicate such arousal to various stimuli. He concluded that pupil dilation indicated positive affect while pupil constriction indicated negative affect and the more the pupil size fluctuated, the more intense the arousal (Hess, 1965). Later, Janisse (1975) confirmed much of what Hess hypothesized: affect laden stimuli produced measures of increased pupil dilation, though this effect was regardless of type of affect and pupil constriction findings have not been replicated. Given these findings, employing eye tracker software in order to obtain pupil dilation information will give us a physiological measure of arousal.

### **An Environment for Measuring Attraction**

Not only is obtaining an accurate measure of attraction difficult, but attraction and dating are difficult to study altogether. Researchers must rely on self-report measures,

observations, artificial settings and various other methods of unreliable, validity minimizing techniques in order to get a remotely realistic picture of dating and initial attraction interactions.

Finkel and Eastwick (2008) proposed a methodological solution to this problem: speed dating. Speed dating events are a relatively modern trend where singles go on about ten to fifteen four or so minute dates during one event. After a four minute date, each participant privately records whether they would like to go out again with this person and will be matched with others who showed interest once the event is completed. This way, participants have (1) assurance that others involved are also interested in making romantic connections, (2) the ability to give indirect feedback about a potential date, and (3) the freedom to limit bad dates to four minutes. Finkel and Eastwick (2008) argue that this setting is ideal for social psychological research on dating and attraction. They cite social psychological support for their argument including research on impression formation and attributional assignments. Ambady et al (2000 and 1992) showed that we base personal judgements on only 'thin slices' of information or 'zero acquaintance' as Kenny (1994) theorized. Given this research, four minutes should be plenty of time for two people to decide whether or not they are attracted to one another.

Speed dating also allows for many data points over multiple short dates with several people rather than measuring the traditional date (Finkel & Eastwick, 2008). Thirty men and thirty women at an event becomes 900 different interactions to measure and observe. This environment also allows researchers to view dyadic process rather than only observing one side of an interaction or social assessment, Finkel and



Eastwick (2008) argue, which permits additional analysis of interactions and attraction. Speed dating is also, arguably, better for external validity of research because of the natural setting and large participant samples according to Finkel and Eastwick (2008). Also, this type of event is appealing across sociodemographic populations so it facilitates examining race and ethnicity related moderators of attraction.

Although speed dating as an environment for attraction research is appealing, Finkel and Eastwick (2008) also point out some limitations that researchers may encounter including behavioral influences on subjects because of setting or personality and that it may fail to foster romantic attraction. Additional potential issues with speed dating are in the measurement which involves mostly qualitative data that take resources not always available to researchers and does not represent the predominant paradigm in psychological research today. Also, as noted earlier, relying on self-report attraction does not always paint a clear picture.

Speed dating offers some great advantages to researchers exploring sexuality and attraction, however, with current technological trends, it has become a bit outdated. Many modern singles forego the potentially awkward experience of speed dating for a much more handy form of online dating. Dating websites have been around for several years and have sparked some research interest but even these sites have been recently replaced with smartphone cellular applications. Modern singles do not want to be bothered with taking the time to go on bad dates, even four minute ones. They like to be able to 'shop' for dates while they take their coffee break or while waiting on the subway. There's an app for that, it's called Tinder.

## **Tinder**

Tinder has a similar setup to speed dating in many ways. Users view local singles, it is a geographically based app, and limited information about those people then swipe left if they would not want to date that person and right if they would. Once users 'swipe right' on each other, they are matched and connected to exchange contact information much like speed dating. Tinder has the same advantages outlined by Finkel and Eastwick (2008) for speed dating with some additional advantages as well. Users do not even have to leave their home or interrupt their day to find dates and Tinder is much more efficient in that users do not even have to waste four minutes on someone they are not interested in. Tinder also allows users to have in app messaging conversations which can further eliminate the possibility of a bad date. In addition, researchers using Tinder as an environment to analyze dating behaviors have even more interactions, data points, and a higher probability of romantic attraction as a result.

There are, of course, disadvantages of using Tinder compared to using a speed dating environment for attraction and dating research as well. Tinder proposes an interesting 'reality conundrum' for attraction research with regard to the external validity argument. Since Tinder is an app and website, users are at their computers or with their smartphones while using it, so it is easy to bring that into a laboratory setting while still maintaining some degree of 'reality'. However, participants are still in a laboratory and may know that stimuli are not necessarily real Tinder users while participating. Tinder also does not allow for the analysis of dyadic relationships as easily as a speed dating environment would. Furthermore, Tinder has a reputation as a site for people to find "hookups" or purely physical relationships. Because of this reputation, any potential

subjects may have disfavoring opinions about the application itself which could influence results. The current research incorporates a Tinder-like platform to measure differences in uncertainty as related to attraction as well as sexual concordance in uncertainty attraction across genders.

### **Overview and Predictions**

The goal of the present study was to replicate the Witchurch et al (2011) findings on uncertainty increasing initial attraction as well as assess whether these uncertainty effects are seen in physiological arousal as measured by pupil dilation and to identify potential gender differences in the effect of uncertainty on attraction. Based on previous findings (Witchurch et al, 2011; Petit & Ford, 2015; Knobloch & Solomon, 1999) we expect to see that those in the uncertainty condition find the stimuli more attractive than those who have attractional certainty and that physiological arousal will be greater when uncertainty is present than when it is not.

## CHAPTER 3: METHOD

### **Participants and Procedure**

Participants were 63 undergraduate college students, 31 men and 32 women, at Western Carolina University who participated as part of their research participation requirement for their introductory psychology course. Participants had a mean age of 19 (SD = 2.04) and were 97% Heterosexual.

Participants were told that the current research is a collaborative project with multiple system schools to assess the aesthetic of a new dating application in development that would be strictly for NC system school students, meetU (Appendix B). Participants were asked to allow a picture to be taken to create their own temporary fake profile for this activity and that the lead researcher would create their profile with a fake name, age, and location while their session was being completed to allow other participants across the state to review their profile. No picture was actually taken of any subjects.

Once demographic information was collected, participants completed the short, 12 item, version of the Intolerance of Uncertainty Scale (Carleton, Norton, & Asmundson, 2007) but were advised that they would be completing an unrelated questionnaire for a colleague conducting another project to allow time for their meetU profile to be reviewed by other participants.

After completing the uncertainty tolerance scale, participants then viewed 10 fictitious profiles with pictures (Appendix A), each for 30 seconds, in the meetU template under the impression that the people in the profiles were other participants at other

institutions. They were randomly assigned a condition and told that either (1) other participants had viewed and rated their profile and that these 10 people indicated that they would “smile” at them (certainty condition) or (2) that there were no other participants available to view their profile at the time so these 10 people have not viewed their profile (uncertainty condition).

Participants were then asked to rate the attractiveness of each picture (1-not at all attractive to 7-very attractive) and state whether or not they would “smile” at this person in the dating app. They were told that the eye tracker data was being collected while the pictures were on screen and asked to focus on the picture for the duration of its display. Finally, once participants completed all tasks, they were debriefed (Appendix C) and informed of the deception and the actual theory being tested with their participation.

## **Measures**

*Demographics.* Participants were asked to provide their gender, age, and sexuality (Appendix D).

*Intolerance of Uncertainty Scale (Carleton, Norton, & Asmundson, 2007).* The Intolerance of Uncertainty Scale is a 12-item measure of aversion to uncertainty (Appendix E). This 12 item scale is shortened from 150 items by Carleton et al (2007). Items include statements (“unforeseen events upset me greatly”, “I can’t stand being taken by surprise”, “uncertainty keeps me from living a full life”) rated by participants as to how descriptive of themselves the statement is (1-not at all characteristic to 5-very characteristic). For the present study the Intolerance of Uncertainty Scale showed acceptable reliability ( $\alpha = 0.78$ ).

*Attractiveness Ratings.* Participants were then asked to rate the attractiveness of each picture (1-not at all attractive to 7-very attractive) and state whether or not they would “smile” at this person in the dating app.

*Stimuli.* The pictures, 10 of men and 10 of women, were all pretested by 36 undergraduate men and women at Western Carolina University and rated on average between a 5 and 7 self-report attractiveness scale to ensure they were of about equal attractiveness (Appendix A).

*Pupil Dilation.* Pupil size was recorded for both eyes every 0.07 milliseconds using the Tobii eye tracker 3.4.5. The size was averaged across eyes giving one score per observation and then range of size change was calculated from those scores per participant, per picture viewed.

*Experimental Manipulation.* Due to previously outlined issues with preconceived ideas of Tinder, we decided to not use Tinder profiles for this research but rather create the idea for participants of a new dating application specifically for college students in the state system that is similar to Tinder, meetU, where users swipe left or right to “smile at” or “ignore” other users. All survey questions and pictures were delivered through the Tobii Eye Tracker 3.4.5 while eye tracking and pupil dilation data were only collected during the display of the meetU profile pictures.

## CHAPTER 4: RESULTS

### **Preliminary analyses**

In order to assess whether self-reported uncertainty aversion may be an important variable to include in my analyses, I examined the bivariate correlations between uncertainty aversion and self-reported ratings of attractiveness and physiological arousal. No correlations reached conventional levels of significance, thus there is no evidence suggest that uncertainty aversion should be included in the analyses.

### **Main Analyses**

*Self-reported attractiveness.* In order to test the hypothesis that subjects would be more explicitly attracted to the target in the uncertainty condition, I conducted a one-way analysis of variance (ANOVA). The goal of this analysis was to compare the effect of the experimental manipulation (i.e., presentation of visual stimuli) on ratings of target attractiveness in the certainty and uncertainty conditions. This ANOVA revealed no significant uncertainty effect,  $F(2, 61) = .483, p = .490$  (see table 1 for means). These results failed to replicate the findings of Whitchurch et al (2011).

*Pupil dilation.* In order to test the hypothesis that subjects would be more implicitly attracted to the target in the uncertainty condition, I conducted a one-way analysis of variance (ANOVA). The goal of this analysis was to compare the effect of the experimental manipulation (i.e., presentation of visual stimuli) on pupil dilation in the certainty and uncertainty conditions. This ANOVA revealed no significant uncertainty effect,  $F(2, 61) = 1.38, p = .245$  (see table 2 for means).

Table 1: Self-report attractiveness ratings for men and women across all stimuli

	Condition	N	Mean	Std. Deviation	Std. Error Mean
Average	Certain	31	4.4742	.95078	.17076
	Uncertain	32	4.3531	.75647	.13373
rate1	Certain	31	5.03	1.080	.194
	Uncertain	32	5.00	1.391	.246
rate2	Certain	31	4.4839	1.65068	.29647
	Uncertain	32	4.1250	1.64120	.29013
rate3	Certain	31	4.97	1.602	.288
	Uncertain	32	4.41	1.775	.314
rate4	Certain	31	4.16	1.734	.311
	Uncertain	32	3.97	1.513	.267
rate5	Certain	31	4.03	1.663	.299
	Uncertain	32	4.16	1.609	.284
rate6	Certain	31	4.16	1.551	.279
	Uncertain	32	4.09	1.729	.306
rate7	Certain	31	4.19	1.470	.264
	Uncertain	32	4.00	1.884	.333
rate8	Certain	31	4.87	1.857	.334
	Uncertain	32	4.81	1.731	.306
rate9	Certain	31	4.65	1.330	.239
	Uncertain	32	4.25	1.606	.284
rate10	Certain	31	4.19	1.759	.316
	Uncertain	32	4.72	1.442	.255

Table 2: Pupil dilation ranges for men and women across all stimuli

	Condition	N	Mean	Std. Deviation	Std. Error Mean
Average	Certain	31	1.5021	.35753	.06421
	Uncertain	32	1.6428	.43209	.07638
pup1	Certain	31	1.9394	.54954	.09870
	Uncertain	32	1.9550	.52679	.09312
pup2	Certain	31	1.5947	.71714	.12677
	Uncertain	32	1.5947	.71714	.12677
pup3	Certain	31	1.4968	.57629	.10350
	Uncertain	32	1.6128	.54071	.09559
pup4	Certain	31	1.4284	.50808	.09125
	Uncertain	32	1.6459	.69571	.12298
pup5	Certain	31	1.3997	.48183	.08654
	Uncertain	32	1.6206	.74194	.13116
pup6	Certain	31	1.4458	.45688	.08206
	Uncertain	32	1.7500	.66333	.11726
pup7	Certain	31	1.4961	.52275	.09389
	Uncertain	32	1.4497	.47895	.08467
pup8	Certain	31	1.4806	.54256	.09745
	Uncertain	32	1.5013	.66096	.11684
pup9	Certain	31	1.4942	.53019	.09523
	Uncertain	32	1.5716	.47417	.08382
pup10	Certain	31	1.4916	.49482	.08887
	Uncertain	32	1.7269	.65730	.11620

## Exploratory Gender Analyses

In order to explore potential gender differences in explicit and implicit attraction, I conducted separate analyses by gender.

*Self-reported attractiveness.* Analysis of variance revealed no significant difference between certainty and uncertainty conditions for women,  $F(2, 30) = .028, p =$



.868, on self-report attraction. Analysis of variance also revealed no significant difference between conditions for men,  $F(2, 29) = 1.689, p = .204$ , on self-report attraction.

*Pupil dilation.* Analysis of variance showed no significant difference between conditions for women on pupil dilation,  $F(2, 30) = .078, p = .782$ . The final analysis of variance did not reveal a significant difference between conditions for men on pupil dilation either,  $F(2, 29) = 1.689, p = .204$ .

## CHAPTER 5: DISCUSSION

The goal of the present study was to examine whether participants would exhibit greater explicit and implicit attraction under uncertainty conditions. Based on past research examining explicit attraction (Whitchurch, et al., 2011), we predicted that participants would report greater explicit attraction to targets under conditions of uncertainty. This prediction was not supported. Based on previous research examining implicit attraction (Walsh, Meister, & Kleinke, 1977; Janisse, 1974; Hess, 1955), we also predicted that participants would exhibit increased implicit attraction to targets under conditions of uncertainty. This hypothesis was also not supported.

Since we did not find the predicted uncertainty effects in our main analyses, we explored the impact of gender on explicit and implicit attraction. We found no significant effect of uncertainty on self-reported attraction for men or women, or for pupil dilation on women or men.

### **Limitations**

This study failed to replicate previous findings on the effect of uncertainty on initial attraction and therefore, calls into question the existing theory and enhances the need for further research on this topic. Because this was not an exact replication of the methods previously used, there could be some explanation in the methodology as to why this study did not yield significant results similar to those found in Whitchurch et al (2011) and Wilson et al (2005). Previous studies used fewer target pictures as stimuli while we used 10, so there could be some effect of subject exhaustion because of duration and frequency of stimuli. Whitchurch et al (2011) also allowed time between viewing of stimuli and the rating of attractiveness allowing for rumination which was not

represented in the current study and may be a key in determining the effect of uncertainty on attraction.

Measuring pupil dilation, though an accepted form of physiological arousal, may be difficult to obtain accurately using the Eye Tracker. Subjects become distracted and may look away from the stimuli during the recording resulting in an incomplete set of data. Participants wearing glasses were also asked to remove their glasses for the presentation of stimuli to enhance accuracy of the recordings which also may influence size of pupil dilation due to inability to fully observe stimuli. 4 subjects were removed from this analysis due to incomplete recordings. However, the eye tracker is recording pupil size every 0.07 milliseconds so in most cases, data were judged to be sufficient.

Though the Tinder-like atmosphere used in the present study has many benefits, there is also a possibility that subjects of this age range are desensitized to the process and therefore not as physiologically aroused as they may be when faced with another form of stimulus, a face-to-face interaction for example.

### **Future Directions**

The failure of replication of previous findings in the current study beg for more research in the domain of uncertainty in attraction as well as gender differences in sexual concordance. Future replications should be conducted in order to ascertain the true effect of uncertainty on attraction. Given that the measure of uncertainty orientation yielded no significant correlation with responses of attraction, this measure may or may not need to be included in future research.

Whitchurch et al (2011) used a similar online platform as the current research in order to present stimuli. Though it is important to tease out this effect, and the implied

importance to modern dating is clear, taking on an approach suggested by Finkel and Eastwick (2008) using a speed-dating scenario may encourage a more accurate measure of both self-reported attractiveness of stimuli as well as the physiological arousal. This also places subjects in a more naturalistic environment and physiological arousal could be measured using pupil dilation or heart rate as in previous sexual concordance research.

## **Conclusion**

The present study attempted to replicate past research on explicit attraction while adding a novel implicit component. Despite the fact this study produced null findings, it contributes to our understanding of the replication crisis in psychology. With the current public skepticism of psychological science and its validity, many researchers have outlined issues with the science in general and many cite the replication problem that we face in that our research is not being replicated and when it is, the results vary (Lilienfeld, 2012; Ferguson, 2015; Open Science Collaborative, 2015). There are many reasons why we are not replicating each other's work including the lack of publication interest in replicated research, the lack of publication interest in non-significant findings, and our own negative disposition toward the idea of someone else replicating our research or even requesting to take a look at our data (Lilienfeld, 2012). Because of this current crisis in our science, it is important to not only build on theory to promote forward momentum but to also replicate results of existing theory to be sure it is sound and empirically valid.

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# APPENDICES


## APPENDIX A

### Sample meetU Profiles

meetU

**ASHLEY**

Age: 20 10 mi



Hobbies: Hiking, Cheering, Swimming

☰

meetU

**JAMES**

Age: 20 10 mi



Hobbies: Music, Gaming, Friends

☰

meetU

**CAMILLE**

Age: 20 10 mi



Hobbies: Music, Dancing, Art

☰

meetU

**KEVIN**

Age: 21 10 mi



Hobbies: Football, Music, Hiking

☰

## APPENDIX B

### Consent Form to Participate in a Research Study

**Project Title:** meetU

**Principal Investigator:** Dr. Erin Myers

**Description and Purpose of the Research:**

The purpose of this project is to assess the look and feel of a new meet up app called meetU for students at WCU and other UNC system universities.

**What you will be asked to do:**

First, we will take a picture of you to upload to meetU and create your profile (your profile will be removed after your session in order to maintain privacy). We will collect a few pieces of demographic information for this profile as well as your answers to a quick survey for a colleague conducting a separate project. You will be asked to view profile pages of meetU users at UNC system universities, rate their attractiveness from 1-7, and say whether or not you would like to 'smile at' them. Participants at other institutions are completing this project as well so your profile will be viewed as part of this session. Again, your profile will be deleted once your session is over. In order to get a full assessment of this new app, we are using the eye tracker so we can analyze viewing patterns and determine if the look of the profiles is capturing your attention. If you experience any discomfort, please notify the researcher immediately and you will be able to withdraw your participation. Participation in this activity is voluntary should take about 10 minutes.

**Risks and Discomforts:**

We anticipate that your participation in this survey presents no greater risk than everyday use of the Internet. There is a small possibility that you will experience some disorientation from the eye tracker. If this happens, please let the experimenter know.

**Benefits:**

There are no direct benefits to you for participating in this research study. The study may help us better understand what users look for in a meet up application and you may be around to use this app in the future.

**Privacy/Confidentiality/Data Security:**

The data collected will be kept completely anonymous and stored on a password protected WCU computer by Dr. Myers. Students in Dr. Myers' and Professor McCord's PSY 150 courses are excluded from participation for added anonymity.

**Voluntary Participation:**

Participation is voluntary and you have the right to withdraw your consent or discontinue participation at any time without penalty. If you choose not to participate or decide to withdraw, there will be no impact on your grades or academic standing.

**Compensation for Participation:**

You will receive .5 SONA participation points for your participation in this project.

**Contact Information:** For questions about this study, please contact Annie McCord at [amccord@wcu.edu](mailto:amccord@wcu.edu). You may also contact Dr. Myers, the principal investigator and faculty advisor for this project, at [emmyers@wcu.edu](mailto:emmyers@wcu.edu).

If you have questions or concerns about your treatment as a participant in this study, you may contact the Western Carolina University Institutional Review Board through the Office of Research Administration by calling 828-227-7212 or emailing [irb@wcu.edu](mailto:irb@wcu.edu).

I understand what is expected of me if I participate in this research study. I have been given the opportunity to ask questions, and understand that participation is voluntary. My signature shows that I agree to participate and am at least 18 years old.

Participant Name (printed): \_\_\_\_\_

Participant Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name of Researcher Obtaining Consent: \_\_\_\_\_

Researcher Signature: \_\_\_\_\_ Date: \_\_\_\_\_

If you would like to receive a summary of the results, once the study has been completed, please write your email address (as legibly as possible) here:

\_\_\_\_\_

## APPENDIX C

### Debrief

Thank you for your completion of this study, we are grateful for your time and effort. I must take this time, however, to explain the study to you. There is more to this study than what I originally told you. First, let me explain why I had to deceive you. Often in Social Psychological research, we are interested in how a person responds to a given stimulus in a specific setting. Researchers need these responses to be genuine and authentic. If participants feel as if they understand what the study is truly about, he or she may be inclined to respond in a way that they think conforms to what we are looking for, instead of responding genuinely and authentically. An individual's responses need to be free of bias and influence. Researchers use deceptions to ensure that participants respond to stimuli in a genuine and authentic way.

The true purpose of this study was to assess how uncertainty influences physical attraction. Previous research suggests that women who are told that a target man has no opinion about them, are more attracted to that target man than if they are told the target is attracted to them. Theoretically, uncertainty about how the other person feels about you, increases your attraction toward them. You were either told that the profile pictures you were viewing had already indicated that they wanted to meet you or that there was no input from the person in whose profile you were viewing. We did not really upload your picture to any site, it was immediately deleted from the device used to take it. There are no participants at other institutions viewing profiles, meetU does not exist. We hypothesize that those who were uncertain about the target person's feelings about them will rate the profile pages as more attractive though both conditions viewed the same pictures. Further, we added the Eye Tracker data to tease out any physiological arousal change with uncertainty.

Again, I thank you for your participation in this study. Please do not share information about this study with other students who could be potential participants. If at any time you feel like you have been mistreated, please feel free to contact me at amccord@email.wcu.edu. Thank you for your time.



## APPENDIX D

### Demographic Questions

1. What is your age?
2. What Gender do you most identify with?
3. What is your Sexual Orientation?
4. What is your Race?
5. List three hobbies.
6. Rate your attitude towards online dating.

1	2	3	4	5	6	7
Very Agreeable	Agreeable	Somewhat Agreeable	No Opinion	Somewhat Disagreeable	Disagreeable	Very Disagreeable

## APPENDIX E

### Intolerance of Uncertainty Scale

*(Carleton, Norton, & Asmundson, 2007)*

*Please circle the number that best corresponds to how much you agree with each item.*

	Not at all characteristic of me	A little characteristic of me	Somewhat characteristic of me	Very characteristic of me	Entirely characteristic of me
1. Unforeseen events upset me greatly.	1	2	3	4	5
2. It frustrates me not having all the information I need.	1	2	3	4	5
3. Uncertainty keeps me from living a full life.	1	2	3	4	5
4. One should always look ahead so as to avoid surprises.	1	2	3	4	5
5. A small unforeseen event can spoil everything, even with the best of planning.	1	2	3	4	5
6. When it's time to act, uncertainty paralyses me.	1	2	3	4	5
7. When I am uncertain I can't function very well.	1	2	3	4	5
8. I always want to know what the future has in store for me.	1	2	3	4	5
9. I can't stand being taken by surprise.	1	2	3	4	5
10. The smallest doubt can stop me from acting.	1	2	3	4	5
11. I should be able to organize everything in advance.	1	2	3	4	5
12. I must get away from all uncertain situations.	1	2	3	4	5

Score: \_\_\_\_\_