

Running Head: UNCERTAINTY AND INTERPERSONAL RELATIONS

The Effects of Uncertainty on Interpersonal Relations

in Terms of Prolonged Satisfaction Ratings

Allyshia R. Smith

Faculty Advisor: Chris Buchholz

Roanoke College

Abstract

Research shows that there is a curvilinear relationship between uncertainty and obtained pleasure. That is, an individual caught in a situation of high uncertainty will experience increased pleasure up until a specific maximum threshold, where that pleasure will then be replaced with discomfort or unease. Studies also show that individuals vary with the amount of uncertainty they prefer in any given situation, and that those individuals scoring high on several measures of cognitive ability (e.g., need for cognition, complexity preference, openness to experience) and risk taking are more likely to prefer higher levels of uncertainty. While research has been done on the relationship between uncertainty and pleasure in terms of music, movies, game preference, and random acts of kindness, little research has been done on the application of uncertainty to interpersonal relations. It would seem, however, that those preferring a certain degree of uncertainty in other aspects of their lives would also prefer a degree of uncertainty within their own personal relations with others. This study aims at thoroughly examining the relationship between levels of uncertainty and various personality and cognitive traits.

## The Effects of Uncertainty on Interpersonal Relations in Terms of Prolonged Satisfaction Ratings

Interpersonal relations play an important part in an individual's life. Humans as social creatures are motivated to establish and maintain intimate relations with others. Many individuals define themselves in relation to their close relationships with others (Cross, Morris, & Gore, 2002). Relationships provide an individual with the emotional support, stimulating companionship, the opportunity for disclosure, feelings of belongingness (Morry & Kito, 2009), social support, and well-being (Berscheid & Reis, 1998). Relationships are also central in self-definition, self-enhancement, and self-expression (Cross, Gore, & Morris, 2003). In terms of what makes a relationship fulfilling, however, varies within individuals in relation to personality factors, expectations, and preference for cognitive ability. Research shows that happiness in relationships depends on many things, including one's expectations, the uncertainty of the results, how much control is involved, how much self-disclosure is involved, and so forth (Bar-Anan, Wilson, & Gilbert, 2009). For example, extroverts take on different tactics than introverts when interacting with others (Thorne, 1987): extraverts are more willing to establish common ground and be involved in self-disclosure, whereas introverts are more likely to take the stance of an interviewer in order to avoid too much self-disclosure. Furthermore, complex individuals scoring higher in cognitive abilities are more likely to seek out partners that match in intellectual stimulation, while intellectual ability for those scoring low in cognitive abilities may not be as important an attribute.

One component of relationships in which we are specifically interested in for the purpose of this research is that of uncertainty: the state in which an individual lacks

information about whether, where, when, how, or why, an event has occurred or will occur (Bar-Anan et al, 2009 Knight, 1921;). Uncertainty typically has two components: an informational component, where there exists some deficit in knowledge, and a subjective component, which is a feeling of not knowing (Bar-Anan et al, 2009; Smith & Washburn, 2005). While some relationships involve a high level of uncertainty, other relationships are more predictable and less uncertain. Uncertainty thus varies within relationships depending on individual preference; while some individuals may enjoy this state of “not knowing”, other individuals constantly seek out information in order to predict and control their environment (Loewensein, 1994), and reduce the negative state that uncertainty instills within them. In past research, it has been consistently assumed that uncertainty is a negative drive state, which produces pleasure only when the individual moves to reduce the uncertainty (Bar-Anan et al, 2009; Lowenstein, 1994; Hogg, 2000). Consequently, uncertainty makes unpleasant events more unpleasant by producing negative emotions that individuals strive to reduce. However, more recent literature has proposed that uncertainty, while making unpleasant events more unpleasant, also acts to make pleasant events more pleasant (Bar-Anan et al, 2009; Knoblock-Westerwick & Keplinger, 2008; Wilson, Centerbar, Kermer & Gilbert, 2005). This is known as the *uncertainty intensification hypothesis*, where uncertainty intensifies emotions to positive events as well as negative events (Bar-Anan et al, 2009; Wilson & Gilbert, 2008), and is thus supported by what is known as the Pleasure Paradox.

Affective adaption is used to describe the conditions under which an individual’s affective reactions to an event subside over time due to habituation (Bar-Anan et al, 2009; Wilson & Gilbert, 2008). That is, as people are motivated to understand the events

that surround them, the more quickly they come to adapt to it (Wilson & Gilbert, 2008). A paradoxical consequence of this unavoidable sense-making is that the events lose some of their affect as they lose their uncertainty, and thus in working to understand an event in order to repeat it and make it more pleasurable, individual are actually losing their ability to be moved by them (Bar-Anan et al, 2009; Wilson & Gilbert, 2008). This is exactly what the Pleasure Paradox entails: by making sense of events, people emotionally adapt to them (Wilson et al, 2005). Certainty then reduces the pleasure of an event, by making it seem more normal and inevitable than it really is. If sense making was inhibited, then, impeding understanding, the uncertainty would then prolong the pleasure attached to the event.

This prolonged pleasure caused by uncertainty is attributed by a number of factors. Firstly, it is suggested that uncertainty heightens people's attention, thus keeping an event accessible after it occurs, intensifying one's reactions as they continue to attend to it (Bar-Anan et al, 2009). Secondly, if an individual is paying closer attention to an event, then they are more prone to become emotionally engaged in it to justify their attentive state. A third factor is that of increased cognitive ability and complexity, in which those that gain pleasure from uncertainty also tend to enjoy and engage in thinking, thus are cognitively motivated to keep a certain level of uncertainty in their lives (Cacioppo & Petty, 1982). While the first two factors deal with how pleasure is obtained by uncertainty, the last factor deals with those who are most likely to seek out uncertainty in their lives, and gain prolonged pleasure from doing so. We are mainly interested in this third factor for the purpose of this research.

As stated above, the need for cognition is the tendency to enjoy and engage in thinking (Cacioppo & Petty, 1982). Those who score high in need for cognition desire to engage in effortful thinking, and “naturally tend to seek, acquire, think about, and reflect back on information to make sense of stimuli, relationships, and events in the world” ( pg 243). Those scoring high in need for cognition are more prone to seek out stimuli that cognitively challenge them. A study done by Knoblock-Westerwick & Keplinger (2008) explored the relationship between those high in need for cognition and preference to uncertainty by presenting participants with short murder mysteries, which varied in complexity and uncertainty in regards to their endings. Prior research by Knoblock-Westerwick & Keplinger (2006) revealed a relationship between NFC and responses to mystery resolutions- simple plots and confirmed resolutions were negatively related to high scores in NFC, and positively related to more complex plots and surprise resolutions. That is, the higher one scored in NFC, the more pleasure they obtained from complex plots with an interesting twist, and the less pleasure they obtained from simple plots with predictable endings. Therefore, the more uncertainty involved in the mystery, the more it was enjoyed by those with high need for cognition- to a certain extent. The research done by Knoblock-Westerwick & Keplinger (2008) also revealed that the relationship between NFC and uncertainty is in fact curvilinear: enjoyment increased up until moderate levels of uncertainty were perceived, and then decreased once again. This has been further backed up by research, in which moderate levels of uncertainty are found to be pleasurable, whereas high levels of uncertainty cause increased discomfort (Wilson et al, 2005; Knoblock-Westerwick & Keplinger, 2006, 2008). Berlyne (1974) further supported this, by stating that while pleasure is obtained from viewing ambiguous

stimuli, this pleasure increases with increased ambiguity and complexity to an *optimal* level before it can no longer be processed, by then which pleasure is decreased.

Another study by Bar-Anan, Wilson, & Gilbert (2009) revealed similar results. They conducted a study in which participants viewed two versions of a pleasurable movie with different endings. One ending left the individuals in a high degree of uncertainty, whereas one ending was self-explanatory in its conclusion. As predicted, those participants who remained in a state of uncertainty had improved moods for a significantly longer period of time than those who watched a movie where the ending provided closure (Bar-Anan et al, 2009). As Bar-Anan et al (2009) hypothesized, the study demonstrated that uncertainty does in fact intensify affective reactions to ongoing events (whether positive or negative), whereas the study by Knoblock-Westerwick & Keplinger (2008) implied that certain preferences for cognition are involved in whether pleasure is obtained from uncertainty or not.

A further study on uncertainty and the pleasure paradox was done by Wilson, Centerbar, Kermer & Gilbert (2005), where participants were 35 students at the University of Virginia, who were studying alone in cubicles at the library. Participants were randomly given one of two cards, both of which contained vague information about “promoting random acts of kindness”. The only difference between cards was that one included the presence of questions to which answers were provided (i.e, “Who are we? The smile society). After five minutes of receiving the card, the students were approached by a second researcher, pretending to be a student, who then asked them if they would fill out a questionnaire on “community thoughts and feelings” (2005). The questionnaire contained questions about the student’s current mood, some word

completion tasks, and demographic inquiries. As hypothesized, the researchers found those in the uncertain card looked at the card longer than those in the certain condition. A significant relationship was found between uncertainty and mood; that is, those who were in the uncertain condition reported having more positive moods than those in the certain condition.

If increased uncertainty does in fact lead to prolonged pleasure under the right conditions, this has significant implications for further research. While the above studies addressed uncertainty preference in relation to movies, books, and random acts of kindness, we are primarily interested in how preference for uncertainty affected relationships. Would those who prefer uncertainty in other aspects of their lives, also prefer uncertainty within their interpersonal relations? Furthermore, if need for cognition is related to preference for complexity and uncertainty, would certain individuals be more likely than others to pursue relationships high in uncertainty? If so, what individual factors predicted this preference of uncertainty over certainty? It can be predicted, that if individuals high in need for cognition prefer more complex stimuli and uncertainty in order to gain prolonged pleasure from an event, then they would also prefer relationships which involved a certain amount of uncertainty to them. Furthermore, these individuals would gain more pleasure from relationships that held a moderate level of uncertainty, than from relationships with only a low level of uncertainty. In contrast, those scoring low in need for cognition would be more apt to pursue relationships low in uncertainty, and would experience less pleasure with the higher degree of uncertainty involved.

Another important factor to mention is that of risk taking, which is the tendency to seek out novel, complex, and intense sensations and experiences (Kogan & Wallach, 1964). In



the study done by Knoblock-Westerwick & Keplinger (2008), risk taking and sensation seeking were also positively correlated with that of preference for uncertainty. Thus, we are also interested in seeing if those who score high in risk taking also prefer higher levels of uncertainty in their relationships, and if there is a significant interaction between the trait NFC and that of risk taking- when combined, is there an increased likelihood that an individual will be more apt to seek out uncertainty in interpersonal relations? What we are primarily interested in are the specific personality traits that help predict which individuals will prefer relationships involving high uncertainty, and if relationships high in uncertainty lead to more prolonged states of pleasure than those low in uncertainty.

In the following experiment, we propose to look at how individuals with varying levels of need for cognition and propensity for risk taking react to situations in uncertainty in the form of social feedback. We hypothesize that those scoring high in need for cognition and sensation seeking will be more likely to prefer to interact with an individual in a situation high in uncertainty, and will gain more pleasure from such an interaction. On the other hand, those scoring low in need for cognition and risk taking will be more likely to withdraw from situations high in uncertainty, and to gain less pleasure from such an interaction.

## Method

### *Participants*

This study included a normative sample of 64 Roanoke College undergraduates between the ages of 18-22, with 15 participants excluded due to faulty responding or incomplete data. Both males and females were included, though our participants were largely female, including only a few males. Participation was voluntary and exchanged for partial fulfillment of Psychology Course requirement during the spring of 2010. To ensure equivalence, participants were randomly assigned to the different conditions of the study. All participants read and completed an informed consent prior to the experiment.

### *Materials*

*Personality and Trait Questionnaires.* Several questionnaires were used in this study in order to assess various personality traits in individuals. These included: Big Five Ten-Item Personality Inventory (TIPI), Sensation Seeking Scale (SSS), The Need for Closure Scale (NFC), and Rosenberg (1965)'s self-esteem and self concept stability questionnaire. The TIPI is a 10-item scale measuring the five components of personality: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. The individual is given a score for each component of this scale. Rosenberg's scale consists of 14 statements in which the individual must indicate their level of agreement or disagreement. It is scored on a scale 1 (strongly agree) to 4 (strongly disagree) and consists of two subscales, self-esteem and self concept stability. Items 1-10 measure self esteem, including statements such as "I take a positive attitude towards myself". Items 11-14 measure self concept stability, including statements such as "I have noticed my

ideas about myself change very quickly.” Select statements are reverse-scored to prevent response score bias or response set.

The SSS measures an individual’s tendency to pursue novel and stimulating experiences. It includes four subscales, which are: experience seeking, thrill and adventure, disinhibition, and boredom susceptibility. Individuals are given scores for each of the four subscales, while also receiving a total scale score. This scale consists of 40 items, in which the individual must choose between two given statements for each item. The NFC scale measures an individual’s preference for closure- for predictable patterns that have a conclusive ending rather than leaving one guessing. This questionnaire is in the format of a 6-point Likert scale, scored on a scale of one (strongly disagree) to 6 (strongly agree). There are 42 questions which individual’s must indicate their level of agreement or disagreement to. Select statements are reverse-scored.

*Cognitive Ability Questionnaire.* In order to measure an individual’s level of cognitive ability, the Need for Cognition (NFC) scale will be used. The NFC scale consists of 34 statements measuring the extent to which an individual engages in and enjoys effortful cognitive endeavors. This scale is scored on a scale 1 (extremely uncharacteristic of me) to 5 (extremely characteristic of me). A self-invented scale on preference for complexity will also be used, in which the students will indicate their level of agreement to specific statements, on a scale of 1 (strongly agree) to 4 (strongly disagree).

*Uncertainty Questionnaires.* Three separate uncertainty questionnaires were used to assess the degree of uncertainty preference that the individual maintains: The Uncertainty Response Scale (URS), the Uncertainty Tolerance Scale (UTS), and Ally’s Uncertainty

Scale (AUC). Three separate scores were given for each uncertainty questionnaire, with a total combined score to measure the individual's total preference for uncertainty- that is, how little knowledge about a situation can an individual endure before the level of arousal is no longer pleasurable?

The UTS is an 8-item self-report questionnaire measuring an individual's tolerance to uncertainty. It is scored on a 6-point Likert scale with 1 being (strongly disagree) and 6 (strongly agree). Three of the six items are reverse-scored. The URS is a 48-item self-report questionnaire measuring an individual's response- negative or positive- to uncertain situations. It is scored on a 4-point Likert scale, 1 (Never) through 4 (Always).

The AUC is a 45-item self-constructed personality questionnaire measuring an individual's preference for uncertainty. Example items are such as 'I am an individual who prefers routine', 'I have a hard time adapting to change', and 'I prefer movies that have conclusive endings to those that leave you "hanging"'. The questionnaire was developed in self-report format, on a Likert scale ranging from 1 (Strongly Agree) to 4 (Strongly disagree). For scoring purposes, values from 1 to 4 on the scale have been positioned on a continuum ranging from prefers more uncertainty to prefers less uncertainty, respectively. Several of the questions are reverse-scored items.

*Uncertainty Feedback Manipulation.* To present the participants with either high or low situations of uncertainty, they were given one of two versions of relational feedback. Low uncertainty feedback provided a clearly detailed and informative description of a prospective date, whereas the high uncertainty feedback provided a short and vague description of a prospective date. Thus the feedback low in uncertainty allowed the participant to get a clear picture of the individual who wrote it, while the feedback high in

uncertainty lefts much to the imagination. This feedback allowed the participant to believe that they had been evaluated in relation to their responses on previously distributed questionnaires, and that the evaluation had been written by an individual who has expressed interest in meeting with them. The participant, on reading the feedback, then responded by answering several questions about the prospective meeting that assessed their emotional response as well as their extent of knowledge about the individual. Questions were such as “I am very excited about meeting this person”, “It seems like me and this person have very little in common”, “I would rather know more about this person before I met them”, and “Even if I had a choice, I would still choose to meet with this person”.

#### *Procedure*

Participants were randomly assigned to the two conditions on entering the study (high uncertainty/low uncertainty). After filling out the consent form, they received a packet of questionnaires measuring the following traits: the big five factor, self esteem, Need for Cognition, Need for Closure, and Sensation Seeking. Participants were informed that the purpose of the study was to measure compatibility between two individuals unknown to one another, and that the purpose of the questionnaires was to receive an overall picture of each participant, and that it is crucial to the experiment to answer honestly to each questionnaire. They were told that on finishing the questionnaires, the questionnaires would be taken to another room to be scored by another individual (who they would not have met prior to the study). At the end of the study, the participant would receive feedback about their questionnaires- including an assessment of their responses, and a description about their prospective match- and would then have the chance to meet the

individual. The participants were further informed that their answer would remain anonymous unless otherwise specified at the end of the study. The participants were then asked to fill out the questionnaires.

The questionnaires were picked up as each participant finished them, and taken to a separate room. It is important to note that the investigator did not wait until all the participants had finished with the first questionnaires- they were finished and taken up at staggered times. The participants were then informed that, as they were waiting for their feedback, to fill out an additional packet of surveys. They were told that this packet was to keep them busy while they were waiting, and included a pilot testing of another study to be run in the future. This packet included the three uncertainty questionnaires. After a sufficient time has passed for the questionnaires to be “scored”, participants received one of the two versions of handwritten feedback. Each of these versions were descriptions of a person that the participant has supposedly been matched with, and who has expressed interest in meeting this particular participant. While half of the participants received a lengthy and detailed description of an individual, half of the participant received a vague and uninformative description of an individual. These represent high and low situations of uncertainty, respectively.

The participants were then asked to fill out additional questions attached to their match description. These questions focused on asking the participant if she/he wishes to meet the person, the amount of uncertainty or discomfort they have about meeting the person, if the feelings they have towards that person are positive/negative, and so on. After these questions have been filled out, they were collected, and the participants was then debriefed and informed of the manipulation

## Results

In order to examine the effect of uncertainty on reported mood, a 2 (high/low certainty) x 2 (positive/negative mood) between subjects analysis of variance was conducted. The ANOVA indicated a significant main effect for the Ally Uncertainty Scale,  $F(1,63)=7.196, p=.009, \eta^2=.109$ . The higher the level of uncertainty experienced, the better the mood reported, and the more excited the participant was to meet his/her matched partner: uncertainty ( $M=25.052$ ), certainty ( $M=24.208$ ). While analysis of simple main effects showed only an approaching of significance, the pattern remained the same: those preferring uncertainty reported more excitement to meet their unknown partner whereas those preferring certainty reported less excitement. There was also a significant main effect for Need for Cognition,  $F(1, 63)=6.404, p=.014, \eta^2=.096$ , and a significant interaction between Need for Cognition and preference for Uncertainty,  $F(1, 63)=6.211, p=.015, \eta^2=.094$ . This interaction reveals that those preferring certainty scored lower in need for cognition ( $M=21.895$ ) than those preferring uncertainty, who scored higher in need for cognition ( $M=25.254$ ). There was, however, no significant interaction between the uncertainty manipulation and reported mood.

There was also a significant main effect for Need for Closure,  $F(1,63)=11.990, p=.001, \eta^2=.169$ . While this was opposite than what was predicted, with those scoring high in need for closure reporting higher excitement, ( $M=24.926$ ), and those scoring lower reporting lower excitement ( $M=23.961$ ), this makes logical sense when considering that the process of meeting an unknown individual would provide those preferring certainty with the closure they required.

## Discussion

As revealed in the results, the original hypothesis was shown to be correct: those scoring high in Need for Cognition and Sensation Seeking, also scored high in Uncertainty preference. This shows that those who are more open to intellectual complexity, and prone to sensation seeking, are also more tolerable of ambiguous situations which invoke uncertainty. These implications make sense. One who is more apt to seek out highly stimulating sensations should be less apt to enjoy situations high in predictability and familiarity- these certainty-imbued situations would offer no stimulation to such individuals. Furthermore, those individuals who are prone to enjoying problem-solving and complex problems would find little stimulation from close-ended questions and easily solved problems. That they seek uncertainty in their lives as well, the exciting prospect of “not knowing”, is just another one of life facet’s which they prefer to be stimulating.

In contrast, those who score low on sensation seeking and need for cognition are less likely to enjoy the stimulation of ambiguous and high-excitement situations. These individuals are deterred by complex problem-solving of which there may be no solution to the problem, nor do they find enjoyment in environments high in sensation (arousal). This only falls in line with their low preference for uncertain situations, which would only invoke more unwanted arousal in the individual.

It was also found that there was a significant main effect of Need for Closure. However, it was different than originally predicted. Those with a high need for Closure were shown to have more positive feelings towards meeting an unknown stranger. Furthermore, those who preferred need for closure did not prefer uncertainty- the less one



enjoyed uncertainty, the more closure was preferred. While this negative correlation was originally predicted, the following was not: that those who did not enjoy uncertainty, and who had a high need for closure, also reported more excitement for meeting their anonymous partner. Moreover, the higher the situation was in uncertainty, the more excited the individuals were to meet this stranger. How could this be? Assessing the data, it can be assumed that those who score high in need for closure, have a need to tie up all loose ends and to gain as much information about a situation as possible. Thus, those who score high in this need, and who are deterred by uncertainty, when placed in a situation high in uncertainty, have a drive to reduce this uncertainty by meeting this person and gaining information about them, hence finding closure. Thus, the 'excitement' to meet the individual in a highly uncertain situation can be termed more accurately as 'arousal' - a negative drive state that must be reduced.

Conscientiousness and Openness to Experience were also found to correlate with uncertainty preference. Those scoring higher in conscientiousness were found to prefer less uncertainty- thus the more conscientious an individual, the less uncertainty tolerated. Furthermore, those scoring high in openness to experience were found to prefer *more* uncertainty- thus, those more open to new experiences an individual was, the more open they were to uncertainty as well. The other three factors of the TIPI Scale were not found to be significant (Agreeableness, Extroversion, and Neuroticism).

As mentioned above, while the manipulation had no significant effect nor interaction with any of the variables, there was a significant main effect of the AUC Scale. Those scoring higher in preference for uncertainty, as depicted by this scale, when placed in an uncertain situation, reported more positive feelings. When placed in a certain situation,

these reports drastically dropped- those preferring uncertainty reported significantly less positive feelings when placed in a situation low in uncertainty. Those scoring low in preference for uncertainty, as depicted by the scale, when placed in an uncertain situation, reported moderately pleasurable feelings- but these positive feelings increased significantly when these individuals were placed in a highly certain condition.

These results have many implications for future research. While significant results were found, in order to gather a larger picture about the actual interaction between uncertainty and reported positive affectations, a larger normative sample should be used. Only 64 college-aged participants were used in this study- with a larger sample, including more diverse age range, along with a more representative sample of both males and females, would be highly useful in assessing valid and reliable results. This study is only the tip of the iceberg in the study of uncertainty-emotion interaction. If this study were to be repeated, I would extend the time period in which it occurred, to make it more believable. Given the limitation to an hour, it is a concern that not all of the participants were convinced about the validity of their score assessment- they were skeptical that their questionnaires could be scored in such a short time. In future studies, steps to make this more believable should be procured. Furthermore, a longer version of the Five-factor model should be used against the analysis of uncertainty preference to further ensure the relationship of the five personality factors with one's tolerance for uncertainty.

That uncertainty can indeed increase life satisfaction in a number of situations is a contradiction to past studies. Hence, more research on this new advancement can only be expected. The expansion of uncertainty preference to several life facets- relationships, occupations, education, interests, life choices- leaves room for extensive future research.

The extent of satisfaction gained from uncertainty, and how much uncertainty can be tolerated before the maximum threshold is reached, should be just some of many areas for research. Applying this research to various life aspects to increase satisfaction in many areas of life- such as in the workplace or at home- has exhilarating insinuations. It can only be hoped that future research will further delve into this question of uncertainty and emotion.

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