

IS IT WORTH IT? INTEREST IN RISKY BEHAVIORS AS A
CONSEQUENCE OF SENSATION SEEKING AND POSITIVE AFFECT

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ABSTRACT

Researchers have yet to examine how trait sensation seeking and state positive affect combine to influence participation in risky behaviors. This study examined how participant levels of sensation seeking and positive affect interacted to influence participant interest in performing a risky behavior. It was hypothesized that an interaction between sensation seeking and positive affect would be found, such that high sensation seekers low in positive affect would show more interest in participating in a risky activity than high sensation seekers that were high in positive affect or all participants low in sensation seeking, regardless of positive affect. Trait sensation seeking was measured in an initial group of participants (N = 693), using a subscale of the Zuckerman-Kuhlman Personality Questionnaire (Zuckerman Kuhlman, Joireman, Teta, & Kraft, 1993). Using these scores, high and low sensation seekers (N = 99) were invited to a second study, where videos were used to manipulate levels of state positive affect (Hemenover, 2003). Participants were then given a questionnaire to measure interest in participating in a risky drug study. No interaction was found, but a main effect for sensation seeking (Zuckerman, 1971) was discovered, such that high sensation seekers reported more interest in participating in a risky behavior than low sensation seekers. Therefore, it appears that participant interest in risky behaviors was a function of levels of trait sensation seeking. It is possible that problems with data collection or the risk-taking scenario contributed to the inability to support the hypothesis.

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Introduction

Research has examined how trait sensation seeking and state positive affect relate to participating in risky activities. High sensation seekers are interested in risky activities, while low sensation seekers are avoidant of them (Zuckerman, 1971). People high in state positive affect tend to be avoidant of risky activities, while those low in state positive affect will sometimes engage in them (Isen, 2000). However, no work has looked at how both sensation seeking and positive affect interact to influence openness to risky behaviors. Therefore, the purpose of this study was to see how these two constructs would interact to influence participation in risky activities.

Sensation Seeking

Sensation seeking is a disposition influencing people to actively search out and participate in complex, differing, and novel experiences (Zuckerman, 1971; Zuckerman, Bone, Neary, Mangelsdorff, & Brustman, 1972). High levels of sensation seeking has been linked to volunteering for novel experiments (Zuckerman, 1979), extreme sports such as in-line skating or whitewater rafting (Schrader & Wann, 1999), illicit substance abuse and risky sexual behaviors (Kalichman, Heckman, & Kelly, 1996; Levenson, 1990), 'Adventure Holidays,' or active vacations (Gilchrist, Povey, Dickinson, & Povey, 1995), drinking games (Johnson & Cropsey, 2000), gambling (Coventry & Norman, 1997), and fast, dangerous driving (Nell, 2002; Iversen & Rundmo, 2002). However, the cause of sensation seeking is still unknown.

Sensation seekers may be biologically predisposed to have a high preferred state of arousal and engage in stimulating or novel activities to reach that state. The idea that sensation seekers have a preferred state of arousal is predicted by Larsen's (2000) mood

regulation theory. Larsen argues that people have a specific desired level of affect that they wish to maintain. In the case of positive affect, that desired level may be significantly higher for some people than for others. Thus, high sensation seekers may have a higher preferred level of positive affect than low sensation seekers and may engage in stimulating behaviors to achieve that higher level. Rusting and Larsen (1995) found that extraverts (who are conceptually similar to high sensation seekers; Aluja, Garcia, & Gargia, 2002) reported desiring more intense pleasant experiences than introverts (low sensation seekers). Compared to high sensation seekers, low sensation seekers may have a lower optimal state of positive affect, and the introduction of any sort of stimulation may overload their desired level of positive affect. Because of this, low sensation seekers should avoid stimulating behaviors.

Consistent with the possibility that there may be a biological basis for sensation seeking, studies indicate that 58% of the variance in sensation seeking is explained by heredity (Zuckerman, 2002). Similarly, the dopamine receptor DRD4 has been linked with novelty seeking (Ebstein et al., 1996), such that participants possessing longer (vs. shorter) forms of this allele had significantly higher scores on a measure of novelty seeking (Ebstein et al., 1996). Dopamine is a neurotransmitter that produces pleasurable sensations, and the longer the DRD4 allele is the less efficient that receptor is in processing dopamine. This lack of efficiency results in a lower amount of pleasurable sensations. A shorter DRD4 receptor will process dopamine more efficiently, which will increase amounts of pleasurable sensations. Novelty seeking has been associated with impulsiveness, exploring and excitability (Ebstein et al., 1996), which are conceptually similar to constructs that describe sensation seeking. This similarity can then lead to a

link between DRD4 and sensation seeking. People with a longer DRD4 allele may have the same levels of dopamine in their system, but since they are less able to process it efficiently, they will have lower levels of positive affect. This may indicate that sensation seekers may search out more novel or stimulating activities to correct their deficiency in dopaminergic processing and increase positive affect. Low sensation seekers may have a shorter DRD4 allele that is more efficient in processing dopamine, so they do not need as much stimulation to feel good.

The relationship between dopamine processing and affective experiences can be illustrated further with the Behavioral Activation System (BAS; Pickering & Gray, 1999). The BAS is a motive system associated with sensitivity to rewards, such as positive affect. Those with a reactive BAS adapt their behavior to increase rewards, and high BAS has been associated with high scores on measures of impulsiveness and sensation seeking. These individuals with high BAS will participate in pleasurable activities that tend to enhance their levels of dopamine. High sensation seekers may be high in BAS as well, which can describe sensation seekers as people who are sensitive to rewarding situations and engage in them when they are presented. Low sensation seekers may not have a reactive BAS and do not react as strongly to potentially pleasurable activities.

Trait extraversion, which correlates with sensation seeking (Aluja, Garcia, & Gargia, 2002), can also illustrate how biological processes of sensation seeking affect attitudes towards risky behaviors. Eysenck (1982) described how extraverts have a higher arousal threshold in the reticular activation system than introverts, so extraverts at baseline are less aroused than introverts and require more arousal to feel satisfied (for a

review see Brocke and Battmann, 1992). Extraverts have also been found to require more adverse stimulation before reporting an unpleasant feeling (Ludvig & Happ, 1974). In addition, disinhibited high sensation seekers show increased cortical arousal, even when low sensation seekers show reduced cortical potentials (Zuckerman, 1983). This indicates that when low sensation seekers are either satiated or over-satiated, some high sensation seekers are still receptive to arousal.

The activities that sensation seekers perform to increase their arousal frequently entail risk (Arnett, 1994; Zuckerman & Kuhlman, 2000). For example, Hansen and Breivik (2001) found that sensation seeking correlated with socially undesirable activities, such as underage drinking or harassing others. High sensation seekers may learn to perform these activities by observing peers performing those risky behaviors themselves (Bandura, 1991). Research has illustrated that sensation seekers are attracted to, search out, and create bonds with other sensation seekers (Arnett, 1994; Zuckerman, 1994). For this learning to occur, sensation seekers would need to make a cognitive link between a risky behavior and a positive outcome (Bandura, 1999), usually increased positive affect. Horvath and Zuckerman (In Zuckerman, 1994) found that self-reports of peer behavior greatly influenced one's own risky behavior in areas such as criminal activity, financial activities, sports, and minor legal violations. Consistent with these findings, Tellegen et al. (1988) found that familial factors on impulsivity were essentially zero. This indicates that environmental factors (like friends) account for much of the impact of learning such impulsive and risky behaviors.

Another key to a sensation seeker's openness to risky behaviors may be disinhibition, a form of general sensation seeking. Disinhibition is a tendency to behave

impulsively, to be concerned only with the immediate present, and to disregard the implications of behavior. Disinhibitors may focus solely on the pleasure of a task, ignoring any negative consequences arising from potential risk. Thus, they will only focus on the pleasurable aspects of a situation, and judge their interest in participation on their perceptions of reward, regardless of any potential risk (Watson & Clark, 1993). So, disinhibited individuals will ignore the risk in a situation, in favor of whatever pleasurable sensations the situation may bring. Disinhibition has been found to correlate with activities as drug and alcohol abuse and frequent sexual encounters, disorganization, carelessness, and ignorance of cultural norms (Watson & Clark, 1993). These characteristics are similar to high sensation seeking and may indicate that high sensation seekers also score high in measures of disinhibition, further describing sensation seekers as ignoring the risky implications inherent in a particular situation. Low sensation seekers, however, may focus on the negative affective consequences the risk may bring and not engage in the activity (Zuckerman, 1994).

Positive Affect

Sensation seeking theories, however, do not take into account the possible influences of the positive affect they strive to achieve. Positive affect can be described as a temporary, pleasant feeling that is created or manifested in an individual. Even though the state is temporary, it can have an effect on thoughts (Clark & Isen, 1982), recall (Isen, 1999), and behavior (Isen & Simmonds, 1978). Positive affect is also associated with variety seeking, or trying new, interesting and unknown types of activities. This tendency is strongest for safe, non-risky activities, such as trying snack foods (Kahn & Isen, 1993). However, when the risk is real, even if the probability of loss is small, participants high

in positive affect have been shown to be hesitant of risky decisions (Isen, 1999, 2000). For instance, Mittal and Ross (1998) induced positive affect in participants, and asked them to rate the likelihood of participation in a series of investment strategies. Each of these strategies contained a certain amount of risk of failure (and losing all monies invested). They found that as the risk of the investments increased, positive affect participants reported less interest than negative affect participants.

One reason that positive affect is associated with avoidance of risk may be because positive affect increases sensitivity to loss (Nygren, Isen, Taylor, & Dulin, 1996). Participants high in positive affect may be more attentive to the possibility that something valuable (such as money, physical health, or positive affect) can be taken away and that negative affect will increase as a consequence of the risky activity. The perceived loss that can result from risky situations can prove too great a threat for those high in positive affect. Thus, people in good moods may actively examine the hedonic consequences of a behavior (Wegener & Petty, 1994). If the activity has the potential to increase negative affect and make the person feel worse, happy persons may tend to avoid it.

Interactions Between Sensation Seeking and Positive Affect

Until now, no study has examined a possible interaction of the opposite influences of trait sensation seeking and state positive affect on openness to performing risky behaviors. This may not be surprising, since positive affect is associated with avoiding risky situations and sensation seeking is associated with participating in potentially risky situations.

It may be possible that a main effect for sensation seeking occurs, such that the risk-accepting tendencies of sensation seeking would influence behavior more than the risk-averse tendencies of positive affect. This would mean that, regardless of positive affect, high sensation seekers would actively participate in novel, exciting, and sometimes risky, activities, whereas low sensation seekers would not. This possible effect would be concurrent with previous research that has shown trait-level constructs overriding temporary state-level constructs. Two studies by Zelenski and Larsen (2002) found that personality traits of extraversion and punishment predicted likelihood judgments of positive and negative future events when current mood state was controlled for. Mayo (1983) found that personality traits, such as neuroticism and extraversion, contribute significantly to the recall of pleasant and unpleasant memories, but mood did not contribute at all. If there are studies that show traits can significantly impact behavior, even in the presence of moods, we may be able to expect that as levels of sensation seeking increase, regardless of positive affect, the participants may be more receptive to participating in risky situations.

Another possible outcome is a main effect for positive affect, where the risk-averse properties of positive affect would override sensation seeking in controlling risky behaviors. For those high in positive affect, this may indicate that risky behavior would be completely avoided, regardless of level of sensation seeking. This would be because people high in positive affect would be sensitive to potential loss from risky behaviors. For participants low in positive affect, an attraction to risk behaviors should become evident as a method to increase their positive affect. State conditions have been shown to have an effect on behavior, regardless of personality traits. Erber and Erber (1994) found

that, after mood had been induced, participants in a positive mood remembered mood-congruent memories, whereas participants in a negative mood remembered mood-incongruent memories, possibly to improve their mood. This may indicate that positive affect would be the sole factor influencing participation in a risky behavior.

However, it may be unlikely that a main effect of trait sensation seeking or state positive affect will solely affect risk taking. Rusting (1998) argues that traits and states can interact, and states that both should be included in studies looking at behavioral influences. Weis and Lovejoy (2002) found that state positive mood influenced a mother's report of interactions with her child, but was mediated by trait positive affect. A mother's state positive mood affected self-reports more when the mother's trait positive affect was high. Burns (1995) found that experiencing state negative affect from a stressful situation interacted with trait anger expression style (suppressing or expressing anger) to influence their cardiovascular reactivity. Anger suppressors showed more cardiovascular reactivity when subjected to a harassment condition, but anger expressors showed cardiovascular reactivity in general, regardless of condition. Rusting (1999) found that when a participant's mood had been manipulated, the new mood state interacted with traits (such as positive and negative affectivity) to influence performance in cognitive tasks, such as word recall. One example is that negative mood interacted with neuroticism, so that neurotics in a negative mood recalled more negative words than positive words and wrote more negative stories than stables that were in a negative mood.

Since interactions between states and traits have been found in previous studies, it is expected that sensation seeking and positive affect will interact to influence risk taking behavior in this study, similar to state-trait interactions described by Rusting (1998).

Looking at sensation seeking and positive affect, two different motives become apparent; the motive to increase positive affect and the motive to avoid negative affect. People high in positive affect are motivated to avoid negative affect, which leads them to avoid risky situations (Isen, Nygren, & Ashby, 1988). Similarly, low sensation seekers are motivated to avoid gaining negative affect potentially arising from overstimulation, so they are likely to avoid any sort of affective experience, risky or not. People low in positive affect are motivated to gain positive affect, so they are open to engaging in risky behaviors. Similarly, high sensation seekers are motivated to increase positive affect, so they would be more likely be interested in participating in risky behaviors.

When the motives of sensation seeking and positive affect are complementary, predictions are clear. When sensation seeking is high and positive affect is low, those participants should be open to risky behaviors. Both high sensation seeking and low positive affect carry motives to increase positive affect, which would lead these people to perform potentially risky behaviors. When participants are high in positive affect and low in sensation seeking, they should be risk avoidant. People high in positive affect are motivated to avoid negative affect so they should avoid risky situations, whereas people low in sensation seeking are avoidant of risky situations, possibly to protect against overstimulation. In both of these cases the motives from personality and affect are similar, so predictions about behavior can be clearly made.

Predictions can be difficult to make when the motives of sensation seeking and positive affect are inconsistent with each other. However, an examination of relevant literature by Baumeister, Bratslavsky, Finkenauer and Vohs (2001) indicates that, in general, bad is more influential than good. This tendency has been illustrated in many

different areas, such as bad events being forgotten slower than good events, people spending more effort trying to remove bad moods than for gaining good moods, and bad memories being recalled better than good memories. In a situation where competing motives are present, it can be expected that motives concerning negative affect would overpower motives concerning positive affect. When a person has dueling motives (a motive to avoid negative affect and a motive to produce positive affect), the avoidance motive should override the enhancement motive, and the person will avoid behaviors likely to enhance negative affect (e.g. risky behaviors; Baumeister et al., 2001).

This principle of bad being stronger than good can be applied to motives arising from low sensation seeking and low positive affect. People low in positive affect are motivated to increase positive affect, while people low in sensation seeking are motivated to avoid negative affect. Because of the potential for overstimulation and the negative affect overstimulation may cause, I expect to see that motives from low sensation seeking will override motives from low positive affect, and these people will be avoidant of risky situations. This would also indicate that, in this case, motives arising from a trait level construct will override motives arising from a state level construct.. Concerning high sensation seeking and high positive affect, high sensation seeking is associated with a motive to increase positive affect and high positive affect is associated with a motive to avoid negative affect. Due to the threat of loss that may come from risky behaviors (Isen, 1999, 2000) and the potential for negative affect that loss can have, I expect that motives arising from high positive affect will override motives arising from high levels of sensation seeking, and these people will be avoidant of risky situations (Baumeister et al.,

2001). In this situation, motives from a state level construct would override motives from a trait level construct.

Hypotheses

It is hypothesized that sensation seeking and positive affect will interact to influence risky behavior. People low in positive affect and high in sensation seeking are expected to be open to risky behaviors, whereas people low in positive affect and low in sensation seeking, and people low in sensation seeking (regardless of level of positive affect) will not report interest in participating in a potentially risky behavior.

Pilot Study

Method

In the main study, interest in participating in a risky study was measured by providing participants with a vignette describing a hypothetical drug study that was about to occur and asking how interested they would be in volunteering for it. The vignette was written to look realistic and to provide an exciting drug effect without having an excessively threatening side effect. To make sure that the vignette used was realistic and effective, a pilot study was performed to examine 12 different versions of the vignette.

Participants

Participants in a general psychology class ($N = 28$) were used in the pilot study. These participants were taken from a small Southeastern college in the Fall 2003 semester. All participants received extra credit in their classes, and were not permitted to participate in the rest of the study.

Materials and Procedure

Risky Study Vignettes. Participants read 12 different vignettes describing a drug study and were asked to rate how much each vignette realistically portrayed the study as both risky and capable of producing high levels of positive affect (See Appendix B for the complete text of all vignettes used). The vignettes contained a description of both the intended drug effect and of possible side effects. Both of these descriptions were changed slightly in each vignette. The vignettes describe the drug as producing feelings of peace, relaxation, and happiness (vignette 1), feelings of euphoria and intense pleasure (vignettes 3-6), being similar to Ecstasy (vignettes 2 & 3), an anti-stress medication (vignette 4), or as a recreational drug (vignette 5-7). Vignettes also describe potential side effects as being general well-being (vignettes 8-10 & 12), hallucinations (vignettes 7 & 11), unknown (vignettes 9-12) or unknown but potentially aversive side effects (vignette 1, 2, 4-8). Descriptions of side effects of the drug were also not included in vignette 3. Filler material, designed to enhance realism, was also added but did not change in any of the vignettes.

Participants received a packet containing each of the 12 description vignettes and 5 questions for each vignette. These questions asked whether participants wanted to take part in the study (yes or no) and measured four aspects of how participants thought the vignettes conveyed the intended information (See Appendix C for the vignette questions used). Two of those aspects examined how interested the participant would be in taking part in the study and how realistic the description of the study was. Ratings for these two questions were made on a 7-point Likert scale with 1 being the most negatively valenced response (*Very disinterested* or *very unrealistic*), and 7 being the most positively valenced response (*very interested* or *very realistic*). The vignettes were also rated on

questions asking how they thought the study would make participants feel and how risky participating appeared to be. Ratings for these questions were made on a 7-point Likert scale with 1 being the most positively valenced response (*very good* or *very safe*), and 7 being the most negatively valenced response (*very bad* or *very risky*). Upon completion, participants were thanked and dismissed.

Results

The vignettes used in the pilot study were tested so a vignette that realistically described an exciting drug study could be found. The optimal vignette would have a higher percentage of participants interested in participating in the study it described than the other vignettes measured. This optimal vignette would also rate higher on the measure of perceived realism than other vignettes, with a higher score indicating a more realistic study. Participants would also rate an optimal vignette higher on the measure of interest in participating in the study the vignette described, with a higher score indicating more interest in participating. The optimal vignette would rate lower than other vignettes on a measure of how badly the study would probably make them feel, with a low score indicating higher anticipated good feelings. Finally, an optimal vignette would receive lower scores on a measure of how safe participants felt the study would be, with lower scores indicating a safer perception of the study.

Scores on each measure of the vignettes were compared to identify a vignette that scored higher than other vignettes in measures of participant interest in participating and realism, but also scored lower in measures of perceived study risk and perceived good feelings from the study. The vignette that appeared to meet these score requirements was Vignette 4 (See Table 1 for vignette means and percentages). The vignette described the

drug as an anti-stress medication, intended to increase feelings of peace, relaxation, and happiness in users. According to this vignette, the drug was experimental, and could produce unknown side effects.

For vignette 4, 64% of participants reported wanting to participate in the study it described, the second highest percentage of interest in all of the vignettes in the pilot study (range = 17% to 71%). Participants also rated this vignette the highest in how real the study appeared to be ($M = 4.25$, $SD = 1.55$, mean range = 3.46 to 4.25) and third highest in how interested participants were to volunteer in the study ($M = 4.07$, $SD = 1.84$, mean range = 2.14 to 4.48). Vignette 4 was rated second from last in how bad participants believed the study the vignette described would make them feel ($M = 3.71$, $SD = 1.30$, mean range = 3.37 to 5.29) as well as how risky the study the vignette described was ($M = 4.39$, $SD = 1.52$, mean range = 4.32 to 5.68).

Vignette 4 did not significantly differ from all of the other vignettes in every aspect of the vignettes that was looked at. Other vignettes received good scores, but contained descriptions that were deemed to be either too vague or not as exciting as the description vignette chosen. This vignette was chosen as the vignette for this study since it received good scores compared to the other vignettes and had a desirable description.

Since participants appeared to rate Vignette 4 more favorably on the aspects that were examined than the other vignettes, it was decided to compare the vignette to the other vignettes studied. Four series of paired samples t tests were conducted to see whether Vignette 4 differed significantly than the other vignettes in the measures of perceived study realism, participant interest in performing the study, perceived negative feelings from participating in the study, and perceived risk from participating in the

study. To do this, 11 *t* tests were conducted for each of the 4 aspects, comparing vignette 4 to the other 11 vignettes. Since vignette 4 performed more favorably than most of the other vignettes, it is expected that it will differ significantly with many of the other vignettes studied. It is not expected that the vignette will show a significant difference with all of the other vignettes, because the vignette did not receive top ratings for every aspect studied. It did receive a top rating in how real the participants perceived the study was, so it could be expected that Vignette 4 will significantly differ from more of the other vignettes studied with this aspect than with the other three aspects studied.

Once all of the *t* tests were completed, Vignette 4 scored significantly higher than only one other vignette (Vignette 9) in how real participants perceived the vignette to be, the lowest number of significant differences in the four questions measured (*t* range = -1.93 to 2.33; See Table 2 for *t* test scores). This vignette also differed moderately better than four other vignettes (Vignettes 2, 6, 8 and 11) in this measure. The vignette was rated significantly better than four vignettes in interest in participation (Vignettes 2, 3, 6 and 7; *t* range = -2.82 to 4.55; See Table 3 for *t* test scores). Vignette 4 scored significantly better than five other vignettes (Vignettes 2, 3, 5, 6 and 7) in how risky participants thought the study would be (*t* range = -3.96 to 3.35; See Table 4 for *t* test scores) and significantly better than six other vignettes in how bad participants believed the study would make them feel (Vignettes 2, 3, 5, 6, 7 and 11; *t* range = -4.26 to 2.42; See Table 5 for *t* test scores), the largest amount of significant differences for all of the questions measured.

Looking at the *t* tests comparing vignette 4 to the other vignettes, it appears that vignette 4 rates significantly better than more vignettes when the tests look at negative

aspects of the vignette descriptions than on the positive aspects. Vignette 4 was rated significantly better than the other vignettes 5 times when looking at the positive aspects of study realism and participant interest in participating. When looking at the negative affects of perceived study risk and perceived bad effects, the vignette scored significantly better than the other vignettes 11 times. This may indicate that the vignette appears less likely to produce a potential negative outcome from participation than other vignettes in the pilot study.

Main Study

The study utilized a two-part structure. During the first part, Time 1, participant levels of sensation seeking were measured. Afterward, selected participants were invited to the second part, Time 2. During the second part, participants were randomly assigned to either a high or a low positive affect group. Participants then watched a video designed to manipulate positive affect respective to their assigned positive affect group and answered questionnaires including measures of positive affect and interest in participating in a risky activity.

The study was split into two times to avoid having to collect large amounts of data for participants who would not be measured as a result of inadequate levels of sensation seeking. This study structure also greatly reduced the amount of time it took to administer the study.

Main Study - Time 1

Method

At Time 1, a sensation seeking survey was administered along with demographic questions. The surveys were administered at the end of the session of General Psychology

courses. Once participants were finished with the survey, they were thanked and dismissed.

Participants

For Time 1, six hundred and ninety three participants (221 male, 469 female, 3 did not answer) enrolled in General Psychology courses were obtained¹. Participants were taken from one campus of a large Southeastern community college in the Fall 2003 semester (316 participants; age $M = 22.81$, $SD = 6.44$, 77.5% Female, 49.4% Sophomore, 44.3% White), and from a large Midwestern university in the Fall semester of 2004 (225 participants; age $M = 18.83$, $SD = 1.41$, 52.2% Female, 72.1% First-Year student, 85% White).

It was necessary to obtain samples from multiple schools at different times to correct participant turnout problems that occurred while administering the study. To find participants, psychology professors at each campus were contacted. Permission was obtained to enter their classes early in the semester and administer Time 1 questionnaires. All participants received extra credit in their classes for their participation.

Materials

Demographics. Four demographic questions measured age, race, gender, and year in college. Contact information (name, E-mail address, and phone no.) was also asked. Semester, school, and professor were recorded.

Sensation Seeking. Trait sensation seeking was measured by the Sensation Seeking subscale of the Impulsive Sensation Seeking (ISS) subscale of the Zuckerman-Kuhlman Personality Questionnaire (ZKPQ; Zuckerman Kuhlman, Joireman, Teta, &

¹ Another sample was obtained at a separate campus of the same community college in Spring 2004 (N = 150). However, due to administration problems, it was not possible to invite this sample to Time 2.

Kraft, 1993; See Appendix D for the complete scale used in the study). Participants rated 12 statements (plus 8 filler items taken from other subscales of the ZKPQ) according to how much they felt the statements described them (For all Time 1 participants, $\alpha = .83$; For participants who finished Time 2, $\alpha = .91$). Statements were rated on a 1 to 7 Likert scale, from *strongly disagree* to *strongly agree*. A sample item is “I sometimes like to do things that are a little frightening.”

Procedure

Participants were approached at the end of their classes about participating in what was described as a study on stress in community college or university students. They were told the packet of questionnaires they were about to receive would measure their personality. They were also told about the follow-up study, and that they may be asked to participate in that study at a later date. Participants then completed the packet containing demographic questions, contact information, and the sensation seeking scale. Upon completion, participants were thanked and dismissed.

Main Study - Time 2

Participants

Based on rank ordered scores taken from the sensation seeking scale administered during Time 1, participants who scored in the top 18% (high) or the bottom 18% (low) of sensation seeking (as measured by the ZKPQ) were contacted and asked to complete part 2 of the study. The top and bottom 18% were selected to find the strongest high and low sensation seekers possible to test the predictions. The large cutoff percentage was also chosen to compensate for a potential in low participant turnout in Time 2.

Of the 316 participants who completed Time 1 in Fall 2003, 106 were eligible. From this, 45 participants (10 Male, 35 Female; age $M = 22.42$, age $SD = 4.89$; 42% of eligible participants) completed Time 2. Of the 225 participants who completed Time 1 in Fall 2004, 87 were eligible, and 44 participants completed Time 2 (23 Male, 21 Female; age $M = 18.66$, age $SD = 1.24$; 51% of eligible participants). There were 45 low sensation seekers who completed Time 2 (age $M = 20.42$, $SD = 4.21$), and 44 high sensation seekers who completed Time 2 (age $M = 20.70$, $SD = 3.89$; See Table 6 for complete demographic information). For participants eligible to participate in Time 2, no significant differences were found in sensation seeking score between eligible participants who participated and eligible participants who did not participate.

Materials

Risk Assessment. Participants were given the description of the drug and the study using the vignette that had previously been pilot tested. They were then asked if they wished to participate (*yes* or *no*; this question was intended to support the cover story), and to complete an 'interest in participation' question on a 7-point scale, from *very disinterested in participating* to *very interested in participating*. The form also asked participants who declined the study to discuss why they did so (See Appendix E for the complete form).

Positive Affect Inducement. To create two groups with different levels of positive affect (high and low), participants watched video clips. Previous studies have shown that having participants watch videos and pretend to be an observer to the situations will change participant mood (Hemenover, 2003). Other studies have used the giving of gifts, such as bags of candy, as a way to enhance mood (Nygren, Isen, Taylor, & Dulin, 1996).

It was thought, however, that participants who were given a gift at the beginning of the study would participate in the risky activity out of a sense of obligation, not from genuine interest in the study itself. Watching videos was not presumed to create such feelings of obligation, since no service is provided to the participants.

It was assumed that most participants had moderate levels of positive affect at the beginning of Time 2, so videos were used to maintain positive affect for participants in the high positive affect condition and to lower positive affect for participants in the low positive affect condition. Participants in the high positive affect condition watched a video that included 1-2 minute clips from the movies *Four Seasons* (Alda, 1981), *Ace Ventura: Pet Detective* (Shadyac, 1994), and *Beautiful Girls* (Demme, 1996) and three 1-minute clips from the movie *Caddyshack* (Ramis, 1980). Low positive affect participants watched a video containing a segment from a discussion on globalization. It was thought that clips from comedy movies would produce the intended positive affect in participants. It was also thought that participants would be uninterested in globalization, and would experience decreases in positive affect when watching a video about the topic.

Positive Affect. State positive affect in participants was measured with the Positive Affect Negative Affect Schedule (PANAS: Watson, Clark, & Tellegen, 1988; See Appendix F for the complete scale). The PANAS is a 20-item scale that measures positive and negative affect on a 5-point Likert scale ranging from *very slightly or not at all* to *extremely*. Participants rated how well each of 20 adjectives (e.g., enthusiastic, afraid) describe their current affective state. The PANAS was administered twice, and the order of the items of the two scales was changed, to prevent participant recall of previous responses.

Stress. To bolster the cover story, participants completed the Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983; See Appendix G for the complete scale). The PSS is a 14-item scale that measured how stressed participants have felt in the past two weeks on a 5-point Likert scale ranging from *never* to *very often*. A sample item is “In the last 2 weeks, how often have you felt that things were going your way?”

Video Questions. To further bolster the cover story, participants were given three questions about the videos directly after the affect manipulation (See Appendix H for the complete list of questions). The questions rated the participant’s perceived enjoyment of the situations presented in the videos on a 5-point Likert scale, with 1 being the lowest rating and 5 being the highest rating.

Procedure

Participants were randomly assigned to the high or low positive affect condition. For low sensation seekers, 23 participants were assigned to the high positive affect condition, and 22 participants were assigned to the low positive affect condition. For high sensation seekers, 22 participants were assigned to the high positive affect condition, and 22 participants were assigned to the low positive affect condition. Participants were told the study may take up to 1 hour, but should take only one-half hour. They completed the PSS and the PANAS (pre-video), and then watched the assigned video. Participants were told that the video was being shown to examine the effect that the video may have on alleviating stress. After the video was shown, participants completed the PANAS again (post-video), and then were asked to quietly sit before the rest of the study is ready.

Once the participants finished the questionnaires, they were told about another study being administered on campus that they could participate in. The other study was

described as taking an anti-stress medication, which is experimental and may have unknown side effects. Participants received a sheet containing a description of the study (the vignette chosen during the pilot study), a question to ask if they wish to participate in the study (yes or no; this question was added to support the cover story as the method that a participant would use to accept or decline participation in the study), and the ‘interest in participation’ question. Once participants filled out this form, they were debriefed and dismissed.

Results

Time 2 Selection

To decide what participants from Time 1 would be selected to participate in Time 2, sensation seeking scores were rank ordered from lowest to highest and participants whose scores ranked in the top and bottom 18% were invited to return. The reason that the top and bottom 18% were invited back was to protect against the possibility of low participant return to Time 2. It was thought that if the percentage of participants that were invited back was low, the final sample of participants would be too low to perform the analysis of the study.

Sensation seeking scores from Fall 2003 and Fall 2004 were similar, but not exact. For Fall 2003, the bottom 18% consisted of participants scoring 3.17 or lower on the sensation seeking scale, and the top 18% scoring 5.36 or higher. For Fall 2004, the bottom 18% consisted of participants scoring 3.83 or lower on the sensation seeking scale, and the top 18% scoring 5.67 or higher.

Affect Manipulation Check

Positive affect was manipulated with the use of videos that have been shown in previous studies to maintain positive affect in one group with one video while decreasing positive affect in another group with a different video (Hemenover, 2003). To see whether the video affect manipulation produced the expected effects in this study, two paired-samples *t* tests were performed. Each *t* test examined the difference in positive affect in either the high or low positive affect conditions. If the manipulation produced the effects it has been shown to do in previous studies, we would expect to see participants in the high positive affect condition maintain their initial level of positive affect through the affect manipulation, while positive affect in participants in the low positive affect condition would significantly decrease. When the *t* tests were performed, participants who watched the high positive affect videos had no significant change in levels of positive affect (pre-video: $M = 3.05$, $SD = .75$; post-video: $M = 2.91$, $SD = .93$; $t(44) = 1.31$, $p = .20$). Participants who watched the low positive affect video experienced a significant decrease in positive affect from pre-video ($M = 2.88$, $SD = .75$) to post-video ($M = 2.30$, $SD = .83$; $t(43) = 4.85$, $p < .001$), a result that is concurrent with previous literature. These *t* tests indicate that the affect manipulation videos produced the effects on positive affect as indicated in previous research.

Interest in Participation Analyses

The study examined how sensation seeking and positive affect interacted to influence risk taking behavior. To examine this interaction, a 2 (positive affect condition) x 2 (sensation seeking level) between-subjects ANOVA was conducted on the interest to participate item from the risk assessment questionnaire (ANOVA results are presented in Table 7). The analysis examined how high and low levels of sensation seeking, as

measured by the scale in Time 1, and high and low levels of positive affect, as affected by the video manipulation in Time 2, influenced participant responses on the measure of interest in participating in the risky study described by the vignette. A higher score on the measure indicated more interest in participating in the study. It was expected that participants high in sensation seeking who were in the low positive affect condition would report significantly more interest in participating in the risky study than participants high in sensation seeking that were in the high positive affect condition or all participants low in sensation seeking in either positive affect condition. This avoidance is expected since previous research has shown that participants low in sensation seeking tend to avoid risky, thrilling activities (Zuckerman, 1994) and high sensation seeking participants already high in positive affect may avoid a situation where they have the potential for losing that positive affect (Nygren, Isen, Taylor, & Dulin, 1996). We expect that only high sensation seeking participants in the low positive affect condition would be interested in participating in the study, since these participants have no positive affect to potentially lose and have been shown in previous studies to actively search out exciting and potentially risky studies.

Contrary to the hypothesis, no interaction between sensation seeking and positive affect was found. Participants high in sensation seeking who were in the low positive affect condition did not report significantly more interest in participating in the risky study than participants high in sensation seeking in the low positive affect condition and all participants low in sensation seeking. However, a main effect was found for sensation seeking. Participants high sensation seeking reported significantly higher interest in participating than low sensation seekers, regardless of positive affect condition (See

Table 8 for Means and Standard Deviations). This shows that participants high in sensation seeking were more interested in participating in the risky study than participants low in sensation seeking, a result that fits in with previous sensation seeking research (Zuckerman, 1971; Zuckerman, Bone, Neary, Mangelsdorff, & Brustman, 1972).

Interest in Participation by Location Analyses

Due to issues affecting data collection, the study took place at two different times in two different locations. It was thought that the differences in location may have had an effect on the failure to support the hypothesis, such that participants in one location may have reported more interest in participating in the risky study than participants in the other location. To examine this possible effect of location, two analyses were conducted.

The first analysis was performed to determine whether study location combined with sensation seeking and positive affect to have an effect on interest in participating in the risky study. Since the study was performed in two different locations in two different sections of the country, study location may have had an unexpected effect on the hypothesized interaction between sensation seeking and positive affect. To examine whether that unexpected effect existed, a 2 (positive affect condition) x 2 (sensation seeking level) x 2 (location) between-subjects ANOVA was performed. It was expected that a three-way interaction between sensation seeking level, positive affect condition and location would exist, indicating that the location of the participant combined with level of sensation seeking and positive affect condition to influence interest in participating in the risky study described by the vignette. Interest in participation was measured using the same 7-point item used in the previous analysis (ANOVA results are presented in Table

9; Means and Standard Deviations listed by level of sensation seeking and location are presented in Table 10). Contrary to expectations, an interaction between sensation seeking, positive affect and location was not found, which indicates that location did not combine with the other constructs to influence participant interest in the risky study. However, a main effect for sensation seeking was found again. Regardless of location and positive affect condition, participants high in sensation seeking reported more interest in participating in the risky study than participants low in sensation seeking. A marginally significant interaction between location and positive affect was also found, showing that Southeast participants in the high positive affect condition reported more interest in participating than participants in the Midwest in the high positive affect condition. Midwest participants in the low positive affect condition, however, reported more interest in participating than Southeast participants in the low positive affect condition. Because of these results, it was decided to perform follow-up analyses on both the main effect of sensation seeking and on the moderate interaction of location and positive affect to further investigate what the results showed.

Since a main effect for levels of sensation seeking was found when sensation seeking was analyzed along with positive affect condition and location, a follow-up analysis was conducted to look at how high and low sensation seekers in each location and positive affect condition grouping differed in their reported interest in participating in the risky study. To do this, a series of paired-sample *t* tests comparing high and low sensation seekers in each positive affect condition for each location were conducted. Since high sensation seekers were shown to report more interest in participating in the risky study than low sensation seekers in the previous analysis, it is expected that high

sensation seeking participants in each location and positive affect condition grouping will show significantly more interest in participating in the risky study than low sensation seeking participants (Means and Standard Deviations listed by positive affect condition and location are presented in Table 11).

Only one *t* test, performed on Southeast participants in the high positive affect condition, showed the expected results at a significant level. Participants in this condition that were high in sensation seeking reported significantly more interest in participating than participants low in sensation seeking ($t(21) = -2.14, p < .05$). For participants in the Midwest in the high positive affect group, high sensation seekers were only moderately more interested in participating than low sensation seekers ($t(20) = -1.82, p = .08$). There was no significant difference in interest in participating between high sensation seekers and low sensation seekers in the low positive affect condition in either the Midwest ($t(20) = -1.64, p = .12$) or the Southeast ($t(20) = -1.16, p = .26$). These results indicate that only participants in the high positive affect conditions that are high in sensation seeking reported more interest in participating than their low sensation seeking counterparts. There was no difference in interest in participation between high and low sensation seekers in the low positive affect conditions. This is unexpected, since previous research has shown participants high in positive affect to shy away from potentially risky activities, whereas participants low in positive affect are more receptive to these activities (Nygren, Isen, Taylor, & Dulin, 1996).

Since a marginally significant interaction between location and positive affect condition was found when location, positive affect condition and sensation seeking level were analyzed together, a follow-up analysis was performed to examine how interest in

participating in the risky study differed between positive affect conditions in each location. To do this, two one-way between-subjects ANOVAs were performed on participants in low and high positive affect conditions in each location. It was expected that, regardless of location, participants in the low positive affect conditions would report more interest in participating in the risky study than participants in the high positive affect condition. This expectation is because previous work by Isen (1999, 2000) has shown participants already high in positive affect to avoid risky behaviors that could potentially reduce their positive affect. Participants low in positive affect have no positive affect to lose, so they may be more willing to accept risk in exchange for the possibility of increased positive affect (ANOVA results for participants in the Southeast are presented in Table 12 and ANOVA results for participants in the Midwest are presented in Table 13; Means and Standard Deviations listed by level of sensation seeking and location are presented previously in Table 10). As expected, there was a significant difference in participation interest for participants in the Southeast, with participants in the low positive affect condition reporting more interest in participating in the risky study than participants in the high positive affect condition. There was no significant difference in interest in participation, however, between positive affect conditions in the Midwest. So, participant responses in the Southeast, but not the Midwest, were concurrent with existing literature indicating that participants low in positive affect being more willing to accept risk than participants high in positive affect. Finding these expected results in only one of the two locations studied is what may have lead to the marginal nature of the interaction.

The second analysis that examined how location may have influenced the possible interaction between sensation seeking and positive affect to influence risk taking behavior looked at how controlling for the effect of location would effect the hypothesized interaction between sensation seeking and positive affect. There was a marginal interaction between positive affect and location when sensation seeking, positive affect, and location were previously analyzed, so controlling for any influences of location may have an effect on the hypothesized interaction between sensation seeking and positive affect. To do this, a 2 (positive affect condition) x 2 (sensation seeking levels) between-subjects ANCOVA was performed, controlling for location (Means and Standard Deviations are presented previously in Table 11; ANOVA results are presented in Table 14). We may expect to see that the originally hypothesized findings of participants high in sensation seeking in the low positive affect conditions reporting more interest in participating than participants in other sensation seeking-positive affect groups exist once effects of location have been removed from the analysis. This may be because the effect of location had an adverse effect of some kind on the interaction, similar to the previous follow-up study that found Southeast participants in different positive affect conditions differed in their interest to participate in a risky study, but Midwest participants in different positive affect conditions did not. An analysis controlling for location may remove the impact of factors like these.

When location was controlled for, there was still no interaction between sensation seeking and positive affect in influencing interest in participating in a risky behavior. Once again, the only significant result is a main effect of sensation seeking. Participants high in sensation seeking reported more interest to participate in the study than

participants low in sensation seeking. This main effect is consistent with previous analyses done in this study that have shown participants high in sensation seeking reporting significantly more interest in participating in the risky study than participants low in sensation seeking. This result is also consistent with previous research showing high sensation seekers being more interested in searching out potentially risky experiences than low sensation seekers (Zuckerman, 1971; Zuckerman, Bone, Neary, Mangelsdorff, & Brustman, 1972).

Discussion

This study looked at how trait sensation seeking and state positive affect interacted to influence risk taking behavior. Previous research has shown that participants high in sensation seeking are interested in seeking out and participating in novel, exciting and potentially risky activities as a way to augment levels of positive affect (Zuckerman, 1971; Zuckerman, Bone, Neary, Mangelsdorff, & Brustman, 1972). Participants low in sensation seeking have been shown to be avoidant of these same activities. Positive affect research has indicated that participants high in positive affect did not participate in a situation that could potentially increase levels of positive affect but also presents the possibility of risk, due to the participant's interest in preventing the loss of positive affect (Isen, 1999, 2000). Participants who were low in positive affect were more likely to participate in such activities to increase their positive affect.

This study focused on the observation that sensation seeking and positive affect literature presented different predictions about how these two aspects of personality would influence participating in a potentially risky behavior, conceptualized in this study as a drug study that could potentially increase positive affect but also may have a

potential for risky side effects. The hypothesis predicted that participants experiencing negative feelings towards participating in a potentially risky study would not be interested in participating since previous literature has indicated that negative things, such as mood states or activities, tend to influence behavior more than positive things (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). Studies have shown that participants that are either low in sensation seeking or high in positive affect avoid risky behaviors, so it was expected that only participants who were high in sensation seeking and low in positive affect would be interested in participating in the risky study. Participants in all other combinations of sensation seeking and positive affect were not expected to be interested in participating.

To examine this hypothesis, a two-part study was created. The first part measured sensation seeking in participants and indicated the top and bottom sensation seekers in the sample. These high and low sensation seekers were invited to participate in a second part where, after positive affect was manipulated, they were asked if they wished to participate in a rewarding but potentially risky study. It was expected that the high sensation seekers who were placed in the low positive affect condition would report significantly more interest in participating in the risky study than high sensation seekers in the high positive affect condition, or low sensation seekers regardless of positive affect condition. Participants low in sensation seeking, regardless of positive affect condition, would be avoidant of risk due to the threat of negative feelings it would contain, and participants in the high positive affect condition, regardless of level of sensation seeking, would be avoidant of risk as a measure to guard against the potential loss of positive affect. Participants that were high in sensation seeking and low in positive affect would

be drawn to a risky activity, and would not have any pre-existing positive affect to protect.

When the data was analyzed the hypothesis was not supported, so it did not appear that sensation seeking and positive affect interacted to influence risk taking behavior for the participants in the study. The only significant interaction found was a main effect of sensation seeking, such that participants high in sensation seeking reported more interest in participating in the risky study than participants low in sensation seeking. Since the study took place in two different locations, it was thought that location may have had an effect on the results. Adding or controlling for location, however, showed only the main effect for sensation seeking and no effect of location or the interaction that was originally expected.

These results support existing sensation seeking literature that indicates high sensation seekers are interested in performing risky behaviors to augment their levels of positive affect. This is similar to participants that are high in extraversion (a similar construct to sensation seeking; Aluja, Garcia, & Gargia, 2002). Participants high in extraversion have been shown to require higher amounts of positive affect to feel satiated (Brocke and Battmann, 1992) than participants low in extraversion. Looking at BAS (Pickering & Gray, 1999), another similar construct, participants with a reactive BAS are geared to continually search out and participate in potentially rewarding situations. The search and participation drive for people with a reactive BAS may be so great that, even when satisfied, they still participate in other potentially rewarding activities. It may be possible that sensation seekers contain a drive similar to this which would influence their

interest in participating in the risky study, regardless of the risk avoidant tendencies associated with high levels of positive affect.

The results of this study, however, seem incongruent with studies on positive affect that indicate participants high in positive affect are avoidant of risky activities, possibly to prevent a decrease in positive affect. Since the risk was supposed to be real, it was expected to see participants in the high positive affect condition avoid the study to protect their high level of positive affect. However, since other studies have shown personality traits overriding the expected effects of mood states (Zelenski & Larsen, 2002; Mayo, 1983), this result may not be completely surprising. It may be that the effects of the mood states in this study were not as strong as the effects of personality traits and were subsequently overpowered.

Problems during data collection may have been a factor in the inability for the study to support the hypothesis. Data was collected at two different times in two different geographical locations (Fall 2003 in a small Southeastern community college and Fall 2004 in a large Midwestern university). The participant pools also had different demographics, with Southeastern participants being older (median age for Southwestern = 21; Midwestern = 18), more likely to be female (percentage of Females in Southeast = 77.8%; Midwest = 47.7%), and were ethnically different (top three ethnicities in Southeast = 57.8% White, 20% Hispanic, 8.9% Black; in Midwest = 86.4% White, 6.8% Asian, 4.5% black) than Midwest participants. Future iterations of this study may be better served by taking place in only one location at one time.

It is also possible that the participants did not believe the risky study vignette was real, which would not produce the avoidance effects of high positive affect in risky

situations that previous research has indicated. The study vignette used was rated the most realistic of all of the vignettes created for the study, but this rating may not indicate how realistic the vignettes were in regards to real-world situations. Since previous research has shown that participants high in positive affect are avoidant of risky situations only when they perceive the risk to be real (Isen, 1999, 2000), a future direction this study could be taken in is to perform Time 2 in a location close to a real-world risky activity, such as the classroom of a skydiving facility, and tie the risky study vignette into that activity. Since the risky activity in question would be real and close to the study, this may increase perceptions of realism.

Since the study showed that a trait was the single factor that influenced participant interest in participating in a potentially risky activity, this study can also show to be a useful methodology in studying how states and traits interact. By separating the top and bottom scorers in the personality trait being studied, this study was able to create two distinct and different levels of the trait being studied. These two groups could then be given a mood manipulation and a scale or measure to see how these two aspects of personality interact. This way, studies can further investigate how stable personality traits and temporary mood states influence the activities of participants.

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Appendix A

Tables

Table 1

Vignette Scores from Pilot Test

Vignette	Wanting to Participate (% yes)	"Interest in Study" M^+	"Interest in Study" SD	"How Would Study Make You Feel" M^a	"How Would Study Make You Feel" SD	"How Risky Is Study" M^a	"How Risky Is Study" SD	"Vignette Realism" M^+	"Vignette Realism" SD
1	71.4	4.48	1.60	3.37	.88	4.32	1.47	4.18	1.06
2	32.1	2.89	2.01	4.63	1.67	5	1.68	3.46	1.73
3	32.1	3.14	1.96	4.46	1.71	5.25	1.60	3.82	2.02
4*	64.3	4.07	1.84	3.71	1.30	4.39	1.52	4.25	1.55
5	53.6	3.48	2.12	4.5	1.62	5.11	1.53	3.82	1.81
6	39.3	3.29	1.96	4.54	1.64	4.96	1.60	3.68	1.72
7	17.9	2.14	1.60	5.29	1.56	5.68	1.33	3.89	1.79
8	57.1	4.04	2.01	3.75	1.29	4.64	1.52	3.61	1.71
9	46.4	3.54	1.82	3.86	1.21	4.54	1.60	3.57	1.69
10	57.1	4.25	1.65	3.93	1.33	4.46	1.40	3.79	1.64
11	25	3.07	2.02	4.54	1.35	5	1.52	3.71	1.72
12	42.9	3.75	1.94	3.79	1.29	4.68	1.36	3.68	1.85

Note. *Indicates vignette chosen as dependent variable for main study. ⁺Indicates Mean of 1 to 7 Likert scale where 7 is most positively valenced. ^a Indicates Mean of 1 to 7 Likert scale where 1 is most positively valenced.

Table 2

t Test on Vignette Realism Pairing Rejected Vignettes Against Accepted Vignette*

Vignette	<i>t</i>	<i>df</i>	<i>p</i>
1	-.24	27	.81
2	-1.93	27	.06
3	-1.25	27	.22
5	1.09	27	.29
6	1.75	27	.09
7	.93	27	.36
8	1.90	27	.07
9	2.33	27	.03
10	1.49	27	.15
11	1.72	27	.10
12	1.55	27	.13

Note. *Accepted Vignette refers to Vignette 4. See Appendix B for complete text of all vignettes.

Table 3

t Test on Participant Interest in Participation Pairing Rejected Vignettes Against

Accepted Vignette*

Vignette	<i>t</i>	<i>df</i>	<i>p</i>
1	1.63	26	.11
2	-2.82	26	.01
3	-2.13	27	.03
5	1.63	26	.12
6	2.69	27	.01
7	4.55	27	.001
8	.08	27	.94
9	1.08	27	.29
10	-.39	27	.70
11	1.63	27	.11
12	.67	27	.51

Note. *Accepted Vignette refers to Vignette 4. See Appendix B for complete text of all vignettes.

Table 4

t Test on How Risky Participants Felt the Study Would Be Pairing Rejected Vignettes

Against Accepted Vignette*

Vignette	<i>t</i>	<i>df</i>	<i>p</i>
1	-.21	27	.84
2	2.01	27	.05
3	3.35	27	.01
5	-2.21	26	.04
6	-2.30	27	.03
7	-3.96	27	.001
8	-.68	27	.50
9	-.47	27	.65
10	-.21	27	.84
11	-1.62	27	.19
12	-1.03	27	.31

Note. *Accepted Vignette refers to Vignette 4. See Appendix B for complete text of all vignettes.

Table 5

t Test on How Participants Felt the Vignette Would Make Them Feel Pairing Rejected

Vignettes Against Accepted Vignette*

Vignette	<i>t</i>	<i>df</i>	<i>p</i>
1	-1.18	26	.25
2	2.42	26	.02
3	2.29	27	.03
5	-2.82	27	.01
6	-2.78	27	.01
7	-4.26	27	.001
8	-.12	27	.90
9	-.48	27	.64
10	-.73	27	.47
11	-2.19	27	.04
12	-.27	27	.79

Note. *Accepted Vignette refers to Vignette 4. See Appendix B for complete text of all vignettes.

Table 6

Time 2 Participant Demographics

Sensation Seeking Level	% Of Eligible Participants Returned	Age <i>M</i>	Age <i>SD</i>	% Female	% White
Low	47	20.42	4.89	73.3	66.7
High	45	20.70	4.21	52.3	77.3

Table 7

Analysis of Variance for Interest in Participation

Source	<i>df</i>	<i>F</i>	η^2	<i>p</i>
Positive Affect Condition (P)	1	2.04	.02	.16
Sensation Seeking (S)	1	11.50	.12	.001
P x S	1	.04	.00	.84
error	85	(3.05)		

Note. Value enclosed in parentheses represent mean square errors.

Table 8

Means and Standard Deviations of Interest to Participate by Level of Sensation Seeking and Positive Affect Condition

Source	<i>M</i>	<i>SD</i>
Low Sensation Seeking		
High Positive Affect Condition	3.26	1.84
Low Positive Affect Condition	3.86	2.05
Total	3.56	1.95
High Sensation Seeking		
High Positive Affect Condition	4.59	1.62
Low Positive Affect Condition	5.05	1.40
Total	4.82	1.51

Table 9

Analysis of Variance for Interest in Participation with Location

Source	<i>df</i>	<i>F</i>	η^2	<i>p</i>
Positive Affect Condition (P)	1	2.17	.03	.15
Sensation Seeking (S)	1	11.43	.12	.001
Location (L)	1	.17	.00	.68
P x S	1	.25	.00	.62
P x L	1	3.33	.04	.07
S x L	1	.02	.00	.88
P x S x L	1	.30	.00	.58
error	81	(3.06)		

Note. Value enclosed in parentheses represent mean square errors.

Table 10

Means and Standard Deviations for Post-Video Interest in Participation Listed by

Sensation Seeking

Source	<i>M</i>	<i>SD</i>
High Sensation Seekers - Southeast		
High Positive Affect Condition	4.31	1.80
Low Positive Affect Condition	5.15	1.57
All Participants	4.73	1.71
High Sensation Seekers – Midwest		
High Positive Affect Condition	5.00	1.32
Low Positive Affect Condition	4.89	1.17
All Participants	4.94	1.21
Low Sensation Seekers – Southeast		
High Positive Affect Condition	2.70	1.77
Low Positive Affect Condition	4.33	1.73
All Participants	3.47	1.90
Low Sensation Seekers – Midwest		
High Positive Affect Condition	3.69	1.84
Low Positive Affect Condition	3.54	2.26
All Participants	3.62	2.02
All Participants – Southeast		
High Positive Affect Condition	3.61	1.92
Low Positive Affect Condition	4.82	1.65
All Participants	4.20	1.88
All Participants – Midwest		
High Positive Affect Condition	4.23	1.74
Low Positive Affect Condition	4.09	1.97
All Participants	4.16	1.84

Table 11

Means and Standard Deviations for Post-Video Interest in Participation Listed by

Positive Affect Condition

Source	<i>M</i>	<i>SD</i>
High Positive Affect Condition - Southeast		
High Sensation Seeking	4.31	1.80
Low Sensation Seeking	2.70	1.77
All Sensation Seeking	3.61	1.92
High Positive Affect Condition - Midwest		
High Sensation Seeking	5.00	1.32
Low Sensation Seeking	3.69	1.84
All Sensation Seeking	4.23	1.74
Low Positive Affect Condition - Southeast		
High Sensation Seeking	5.15	1.57
Low Sensation Seeking	4.33	1.73
All Sensation Seeking	4.82	1.65
Low Positive Affect Condition - Midwest		
High Sensation Seeking	4.89	1.17
Low Sensation Seeking	3.54	2.26
All Sensation Seeking	4.09	1.97
All Positive Affect Conditions – Southeast		
High Sensation Seeking	4.73	1.71
Low Sensation Seeking	3.47	1.90
All Sensation Seeking	4.20	1.88
All Positive Affect Conditions - Midwest		
High Sensation Seeking	4.94	1.21
Low Sensation Seeking	3.62	2.02
All Sensation Seeking	4.16	1.84

Table 12

Analysis of Variance for Interest in Participation in Southeast

Source	<i>df</i>	<i>F</i>	η^2	<i>p</i>
Positive Affect condition	1	5.10	.60	>.05
error	43	(3.23)		

Note. Value enclosed in parentheses represent mean square errors.

Table 13

Analysis of Variance for Interest in Participation in Midwest

Source	<i>df</i>	<i>F</i>	η^2	<i>p</i>
Positive Affect condition	1	.06	.06	.81
error	42	(3.47)		

Note. Value enclosed in parentheses represent mean square errors.

Table 14

Analysis of Variance for Interest in Participation Controlling for Location

Source	<i>df</i>	<i>F</i>	η^2	<i>p</i>
Location (L)	1	.20	.00	.66
Positive Affect Condition (P)	1	2.00	.02	.16
Sensation Seeking (S)	1	11.58	.12	.001
P x S	1	.04	.00	.85
error	84	(3.08)		

Note. Value enclosed in parentheses represent mean square errors.

Appendix B – Pilot Study Vignettes

Vignette 1 - Thank you for agreeing to participate in this study. Medical Associates of Central Florida, LLC. is currently testing an anti-stress medication, designed to increase feelings of peace, relaxation, and happiness. The medication is experimental, and may produce unknown, potentially aversive side effects. People are being asked to volunteer to take this medication, and report their responses. Registered nurses will be able to take care of any aversive conditions that may arise. The total procedure will take 1 hour, and you will be compensated for your time.

Vignette 2 - Thank you for agreeing to participate in this study. Medical Associates of Central Florida, LLC. is currently testing an herbal form of the popular recreational drug known as Ecstasy. The medication is experimental, and may produce unknown, potentially aversive side effects. People are being asked to volunteer to take this medication, and report their responses. Registered nurses will be able to take care of any aversive conditions that may arise. The total procedure will take 1 hour, and you will be compensated for your time.

Vignette 3 - Thank you for agreeing to participate in this study. Medical Associates of Central Florida, LLC. is currently testing an herbal form of the popular recreational drug known as Ecstasy, which is expected to produce feelings of euphoria and intense pleasure. People are being asked to volunteer to take this medication, and report their responses. Registered nurses will be able to take care of any aversive conditions that may arise. The total procedure will take 1 hour, and you will be compensated for your time.

Vignette 4 (This vignette was used as the risky study description in the main study) - Thank you for agreeing to participate in this study. Medical Associates of

Central Florida, LLC. is currently testing an anti-stress medication, designed to increase feelings of euphoria and intense pleasure. The medication is experimental, and may produce unknown, potentially aversive side effects. People are being asked to volunteer to take this medication, and report their responses. Registered nurses will be able to take care of any aversive conditions that may arise. The total procedure will take 1 hour, and you will be compensated for your time.

Vignette 5 - Thank you for agreeing to participate in this study. Medical Associates of Central Florida, LLC. is currently testing a recreational medication, designed to increase feelings of euphoria and intense pleasure. The medication is experimental, and may produce unknown, potentially aversive side effects.

People are being asked to volunteer to take this medication, and report their responses. Registered nurses will be able to take care of any aversive conditions that may arise. The total procedure will take 1 hour, and you will be compensated for your time.

Vignette 6 - Thank you for agreeing to participate in this study. Medical Associates of Central Florida, LLC. is currently testing a recreational medication, which may increase feelings of euphoria and intense pleasure. The medication is experimental, and may produce unknown, potentially aversive side effects.

People are being asked to volunteer to take this medication, and report their responses. Registered nurses will be able to take care of any aversive conditions that may arise. The total procedure will take 1 hour, and you will be compensated for your time.

Vignette 7 – Thank you for agreeing to participate in this study. Medical Associates of Central Florida, LLC. is currently testing a recreational medication, which may produce psychotropic side-effects, such as hallucinations. The medication is experimental, and

may produce unknown, potentially aversive side effects. People are being asked to volunteer to take this medication, and report their responses. Registered nurses will be able to take care of any aversive conditions that may arise. The total procedure will take 1 hour, and you will be compensated for your time.

Vignette 8 - Thank you for agreeing to participate in this study. Medical Associates of Central Florida, LLC. is currently testing a medication, which may increase general feelings of positive affect. The medication may produce unknown, potentially aversive side effects. People are being asked to volunteer to take this medication, and report their responses. Registered nurses will be able to take care of any aversive conditions that may arise. The total procedure will take 1 hour, and you will be compensated for your time.

Vignette 9 - Thank you for agreeing to participate in this study. Medical Associates of Central Florida, LLC. is currently testing a medication, which may increase general feelings of positive affect. The medication may produce unknown side effects. People are being asked to volunteer to take this medication, and report their responses. Registered nurses will be able to take care of any aversive conditions that may arise. The total procedure will take 1 hour, and you will be compensated for your time.

Vignette 10 - Thank you for agreeing to participate in this study. Medical Associates of Central Florida, LLC. is currently testing a medication, which may enhance general feelings of positive affect. The medication may produce unknown side effects. People are being asked to volunteer to take this medication, and report their responses. Registered nurses will be able to take care of any aversive conditions that may arise. The total procedure will take 1 hour, and you will be compensated for your time.

Vignette 11 - Thank you for agreeing to participate in this study. Medical Associates of Central Florida, LLC. is currently testing a medication, which may produce psychedelic-style feelings of positive affect. The medication may produce unknown side effects.

People are being asked to volunteer to take this medication, and report their responses.

Registered nurses will be able to take care of any adverse conditions that may arise. The total procedure will take 1 hour, and you will be compensated for your time.

Vignette 12 - Thank you for agreeing to participate in this study. Medical Associates of Central Florida, LLC. is currently testing a medication, which is designed to make people feel very good. The medication may produce unknown side effects. People are being asked to volunteer to take this medication, and report their responses. Registered nurses will be able to take care of any adverse conditions that may arise. The total procedure will take 1 hour, and you will be compensated for your time.

Appendix C – Pilot Study Questions

These questions were placed at the end of each vignette during the pilot study

(See Appendix B for the complete text of all of the vignettes).

a. Are you interested in participating in this study? YES or NO

b. How interested would you say you are in participating in this study?

1-----2-----3-----4-----5-----6-----7
Very Disinterested Unknown/ Doesn't matter Very Interested

c. How do you think this study would make you feel?

1-----2-----3-----4-----5-----6-----7
Very Good Somewhat Good Good Neither Good Nor Bad Bad Somewhat Bad Very Bad

d. How risky do you think participating in this study would be?

1-----2-----3-----4-----5-----6-----7
Very Safe Somewhat Safe Safe Nor Risky Neither Safe Risky Risky Risky Somewhat Risky Very Risky

e. How realistic do you think the description of this study is?

1-----2-----3-----4-----5-----6-----7
Very Unrealistic Unknown/ Not Sure Very Realistic

Appendix D – Sensation Seeking Scale

Instructions: This scale asks you to rate yourself on certain behavioral tendencies. Read each statement, and rate the extent to which you believe that statement describes you in general. Rate your responses according to the scale below. Please circle only ONE number.

1-----2-----3-----4-----5-----6-----7
 Strongly Disagree Slightly Disagree Don't Know/ Neither Slightly Agree Agree Strongly Agree

- | | |
|---------------------------|---|
| 1---2---3---4---5---6---7 | 1) I like to have new and exciting experiences and sensations even if they are a little frightening |
| 1---2---3---4---5---6---7 | 2) I like to wear myself out with hard work or exercise. |
| 1---2---3---4---5---6---7 | 3) I sometimes like to do things that are a little frightening. |
| 1---2---3---4---5---6---7 | 4) I like 'wild' uninhibited parties. |
| 1---2---3---4---5---6---7 | 5) I like doing things just for the thrill of it. |
| 1---2---3---4---5---6---7 | 6) I like to be active as soon as I wake up in the morning. |
| 1---2---3---4---5---6---7 | 7) I like to explore a strange city or section of town by myself, even if it means getting lost. |
| 1---2---3---4---5---6---7 | 8) I like to keep busy all the time. |
| 1---2---3---4---5---6---7 | 9) I prefer friends who are excitingly unpredictable. |
| 1---2---3---4---5---6---7 | 10) I probably spend more time than I should socializing with friends. |
| 1---2---3---4---5---6---7 | 11) I would like to take off on a trip with no pre- |

planned or definite routes or timetables.

1---2---3---4---5---6---7

12) I sometimes do 'crazy' things just for fun.

1---2---3---4---5---6---7

13) Generally, I like to be alone in a place for some days without human contacts.

1---2---3---4---5---6---7

14) I do not need a large number of casual friends.

1---2---3---4---5---6---7

15) I'll try anything once.

1---2---3---4---5---6---7

16) I would like the kind of life where one is on the move and traveling a lot, with lots of change and excitement.

1---2---3---4---5---6---7

17) I spend as much time with my friends as I can.

1---2---3---4---5---6---7

18) I am an impulsive person.

1---2---3---4---5---6---7

19) I would like a job that provided a maximum of leisure time.

1---2---3---4---5---6---7

20) I enjoy getting into new situations where you can't predict how things will turn out.

Appendix E – Risk Assessment Questionnaire

This questionnaire was given to participants at the end of Time 2. It contains the vignette chosen in the Pilot Study, as well as the question concerning interest in participating in the risky study.

Dear Participant,

Thank you for agreeing to participate in this study. Medical Associates of Central Florida, LLC. is currently testing an anti-stress medication, designed to increase feelings of euphoria and intense pleasure. The medication is experimental, and may produce unknown, potentially aversive side effects. People are being asked to volunteer to take this medication, and report their responses. Registered nurses will be able to take care of any adverse conditions that may arise. The total procedure will take 1 hour, and you will be compensated for your time.

Are you interested in participating in this study? YES NO

If NO, why? _____

What follows are a few questions to gauge your interest in participating in the study. Please answer the questions even if you are not interested in participation, since your answers may be used in preparation for future studies.

Regardless of whether you will participate or not, how interested would you say you are in participating in this study (circle one)?

Very Disinterested Somewhat Don't Somewhat Interested Very
Disinterested Disinterested Know Interested Interested

Regardless of whether you will participate or not, how do you think this study would make you feel (circle one)?

Very Bad Somewhat Don't Somewhat Good Very
Bad Bad Know Good Good

Regardless of whether you will participate or not, How risky do you think participating in this study would be (circle one)?

Very Risky Somewhat Don't Somewhat Safe Very
Risky Risky Know Safe Safe

For those of you who will participate in the study, thank you. A medical history questionnaire will be provided once you arrive at the experiment site. Once again, thank you for your time.

- Medical Associates of Central Florida, LLC

Appendix F – Positive Affect/Negative Affect Schedule (PANAS)

This is the PANAS as it was first given to participants at the beginning of Time 2. After the positive affect manipulation video, this scale was given again, but the words were presented in a randomized order. This was done to prevent participant recall of previous answers.

This part of the questionnaire deals with how you are currently feeling. Please mark the extent to which each word describes how YOU are feeling RIGHT NOW, that is at this present moment. Use the following scale for your answers

1-----2-----3-----4-----5
very a moderately quite extremely
slightly little

- | | |
|----------------------|---------------------|
| 1. ____ ashamed | 11. ____ distressed |
| 2. ____ upset | 12. ____ alert |
| 3. ____ excited | 13. ____ afraid |
| 4. ____ determined | 14. ____ scared |
| 5. ____ jittery | 15. ____ irritable |
| 6. ____ active | 16. ____ proud |
| 7. ____ interested | 17. ____ attentive |
| 8. ____ hostile | 18. ____ strong |
| 9. ____ enthusiastic | 19. ____ guilty |
| 10. ____ inspired | 20. ____ nervous |

Appendix G – Perceived Stress Scale

This scale was added into the questions at Time 2 to bolster the cover story. It was not used in any of the analyses.

Instructions: The questions in this scale ask you about your feelings and thoughts during the last 2 weeks. In each case, you will be asked to indicate *how often* you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer each question fairly quickly. That is don't try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate. For each question choose from the following alternatives:

1-----	2-----	3-----	4-----	5
never	almost never	sometimes	fairly often	very often

____ 1. In the last 2 weeks, how often have you felt upset because of something that happened unexpectedly?

____ 2. In the last 2 weeks, how often have you dealt successfully with irritating life hassles?

____ 3. In the last 2 weeks, how often have you felt confident about your ability to handle your personal problems?

____ 4. In the last 2 weeks, how often have you been unable to control irritations in your life?

____ 5. In the last 2 weeks, how often have you felt that you were on top of things?

____6. In the last 2 weeks, how often have you found yourself thinking about things that you have to accomplish?

____7. In the last 2 weeks, how often have you been unable to control the way you spend your time?

____8. In the last 2 weeks, how often have you felt that things were going your way?

____9. In the last 2 weeks, how often have you felt nervous or scared?

____10. In the last 2 weeks, how often have you been angered because of things that happened that were outside of your control?

____11. In the last 2 weeks, how often have you felt that you were successfully coping with important changes that were occurring in your life?

____12. In the last 2 weeks, how often have you found that you could not cope with the things that you had to do?

____13. In the last 2 weeks, how often have you felt that you were unable to control the important things in your life?

____14. In the last 2 weeks, how often have you felt difficulties were piling up so high that you could not overcome them?

Appendix H – Post-Video Questions

This scale was given directly after the positive affect manipulation video at Time 2 to bolster the cover story. It was not used in any of the analyses.

1. How amusing did you find the situation(s) depicted in the video?

1-----2-----3-----4-----5
Very Unamusing Neither Amusing Very
Unamusing Amusing

2. How stressful did you find the situation(s) depicted in the video?

1-----2-----3-----4-----5
Very Relaxing Neither Stressful Very
Relaxing Stressful

3. How much would you like to be a part of the situation(s) depicted in the video?

1-----2-----3-----4-----5
Not at all Not very A little Somewhat A Lot
Much