VALENCE CONVERSION AND THE HEDONIC EQUATION: A NEW FRAMEWORK FOR UNDERSTANDING THE CONSUMPTION OF AVERSIVE EXPERIENCES

by

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DISSERTATION ABSTRACT

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Title: Valence Conversion and the Hedonic Equation: A New Framework for Understanding the Consumption of Aversive Experiences

I propose two new theories to explain the consumption of aversive experiences: valence conversion and the hedonic equation. The principle of valence conversion asserts that discrete emotions that share a similar set of cognitive appraisals and level of arousal, but are of opposite valence, can be quickly converted from one to the other contingent on internal cognitions, goals and cues from the environment. I propose that fear and excitement meet these conditions; thus, an aversive stimulus that is not too extreme as to prevent the activation of goals related to positive affect can also be interpreted as exciting. The hedonic equation postulates that across four time points (anticipatorily, in the moment, residually, and remembered), if the sum of excitement is greater than the sum of fear, an individual will choose to re-consume an aversive stimuli while controlling for other non-emotive motivations. These two theories together explain why some individuals willingly consume aversive experiences, even if at some points they are unpleasant.

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For my father
R. C. Wardley D.Sc. Ph.D. B.Sc.

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CHAPTER I

INTRODUCTION, CONSTRUCT DOMAIN, AND EMOTIONS

Introduction

What motivates some individuals to jump out of airplanes, go bungee jumping or pick up paragliding? In the case of skydivers, fear and anxiety are frequently reported emotions (Celsi, Rose, & Leigh, 1993; Chatterton, Vogelsong, Lu, & Hudgens, 1997; Epstein & Fenz, 1965; Roth, Breivik, Jorgensen, & Hofmann, 1996), and, in the case of novice jumpers, hormones associated with fear and anxiety rise rapidly to very high levels minutes before entering the aircraft (Chatterton et al., 1997). If these activities cause such high negative affect, why do people choose to pursue them?

In order to understand the consumption of fear-inducing experiences ranging from skydiving to watching horror movies, a number of theories have been advanced. These theories can be roughly grouped into two categories: emotion centric and non-emotion centric. The emotion centric theories include opponent process, excitation transfer and state sensation seeking; and the non-emotion centric theories include self and other signaling, emotional and skill mastery and optimal arousal level (Barlow, Woodman, & Hardy, 2013; Celsi et al., 1993; Loewenstein, 1999; Solomon & Corbit, 1974; Zillmann, 1983; Zuckerman, 1979). Due to the centrality of the emotional experience in the consumption of fear and the importance of emotions in decision-making (Loewenstein & Lerner, 2003), any theory attempting to explain the willful consumption of aversive events must contain an emotional element. This current paper proposes and tests two new emotion centric theories: valence conversion and the hedonic equation. These two

theories together explain the consumption of fear inducing experiences and integrate the non-emotion centric theories into a conceptual framework.

The principle of valence conversion asserts that discrete emotions, which share a similar set of cognitive appraisals and level of arousal but are of opposite valence, can be quickly converted from one to the other contingent on internal cognitions, goals, and cues from the environment. I propose that fear and excitement share a similar set of cognitive appraisals and level of arousal; thus, during the consumption of a fear-inducing event that is not too extreme as to prevent the activation of goals related to positive affect, excitement can also be experienced. To the best of my knowledge the proposition that fear and excitement share a similar set of cognitive appraisals has not been previously tested. This proposition will be tested at a later date and is not tested in the current document. The hedonic equation postulates that across four time points (anticipatorily, in the moment, residually, and remembered), if the sum of excitement is greater than the sum of fear, an individual will choose to re-consume the fear inducing stimuli. These two theories together explain why individuals willingly consume fear-inducing experiences even if at some points they are unpleasant.

Valence conversion and the hedonic equation have important implications not only for understanding the consumption of aversive events, but also for both marketing and psychological research. According to valence conversion, under certain conditions a fear-inducing stimulus can also be experienced as exciting; hence, any study that manipulates or induces fear is potentially confounded unless excitement is also accounted for. Additional, by integrating the non-emotion centric theories into a conceptual framework, valence conversion links a number of literatures together and provides a clear

path for future research. Lastly, according to the hedonic equation, in order to understand the emotive motivations for consuming aversive experiences, affect must be considered across four time points. Thus, any study that has only considered one or two time points is potentially incomplete.

The emotion-centric theories of opponent process, excitation transfer, and state sensation seeking have received mixed empirical support (see Andrade & Cohen, 2007); hence, I seek to fill this gap by outlining a new theoretical model and experimentally testing its propositions. From a theoretical standpoint, any empirical contribution should equally explain the consumption of fear-inducing experiences across a variety of contexts, including extreme sports (such as skydiving), horror movies, haunted houses, and playing scary video games. This paper will proceed by discussing the construct domain, theories of emotion, emotion centric and non-emotion centric theories for the consumption of aversive events, valence conversion and the hedonic equation, and will conclude with three studies testing empirical propositions.

Construct Domain

Valence conversion and the hedonic equation are theories specific to the willful consumption of activities that cause more than trivial amounts of fear. Although valence conversion and the hedonic equation will be tested in the context of horror movies, it is not that these theories are specific to the consumption of horror movies per se, but rather any activity that is willfully consumed and that causes fear. For example, if an individual finds crime dramas particularly scary, yet still willingly consumes them, valence conversion and the hedonic equation provide a viable explanation. Alternatively, if an

individual does not find skydiving to be the least bit frightening, the tenets of valence conversion or the hedonic equation should not hold true. Throughout this document *aversive* will be used to describe experiences that cause more than trivial amounts of fear.

Emotions and the Circumplex

The following section defines emotions and affect, and discusses basic theories of emotion. According to Damasio (2012), emotions can be triggered by an outside stimulus or the recollection of a stimulus and are "… largely automated programs of actions concocted by evolution" (p.109). Feelings, on the other hand, "…are composite perceptions of what happens in our body and mind when we are emoting" (p.109). In other words, feelings or affect are the perception of both our bodies' and brains' responses while we are experiencing an emotional program. In this framework, *emotions* are automated programs of action and *feelings/affect* are our perceptions of these programs as they play out in our mind and body (see Figure 1.1).

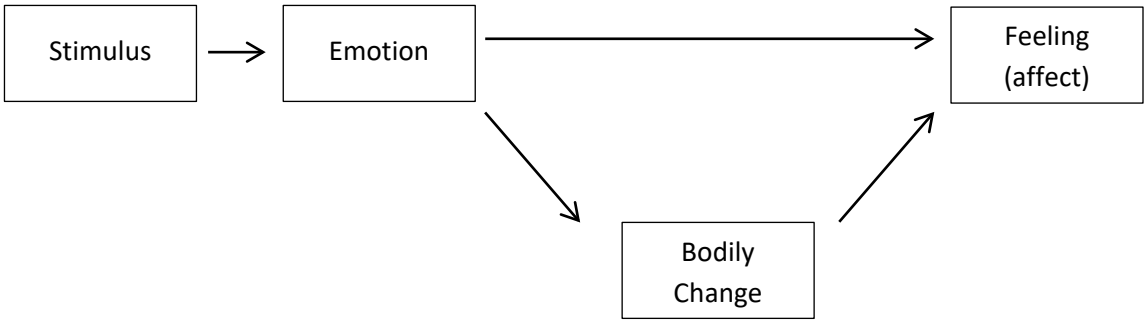

Figure 1.1. Conceptual Diagram Relating Emotion, Arousal, and Affect. Based on Damasio (2012)

Affect can be broken down into two components: level of physiological arousal (high or low) and valence (pleasant or unpleasant). If these two dimensions are considered bipolar and orthogonal, affect can then be categorized around a circle placed on a Cartesian grid, with arousal commonly being placed on the Y axis and valence on the X axis. This conceptualization is in essence the circumplex model of affect. See Figure 1.2. Because the circumplex reduces the cognitive script to its most basic components (i.e., this experience is good or bad, highly or lowly arousing), the circumplex fails to distinguish between some finer shades of the emotional program. For example, both fear and anger, which are high arousal negative emotions, would be classified in the same area on the circumplex; however, anger generally involves approach tendencies, whereas fear generally stimulates withdrawal. Indeed in the realm of risky decisions, fear and anger have been shown to influence decision-making in different ways (Han, Lerner, & Keltner, 2007). Because the circumplex greatly simplifies the experience of emotion, it is referred to as measuring *core affect* instead of being a complete model of affect or emotion. According to Russell (2003), core affect is the "…neurophysiological state consciously accessible as the simplest raw (non-reflective) feelings evident in moods and emotions" (p.148).

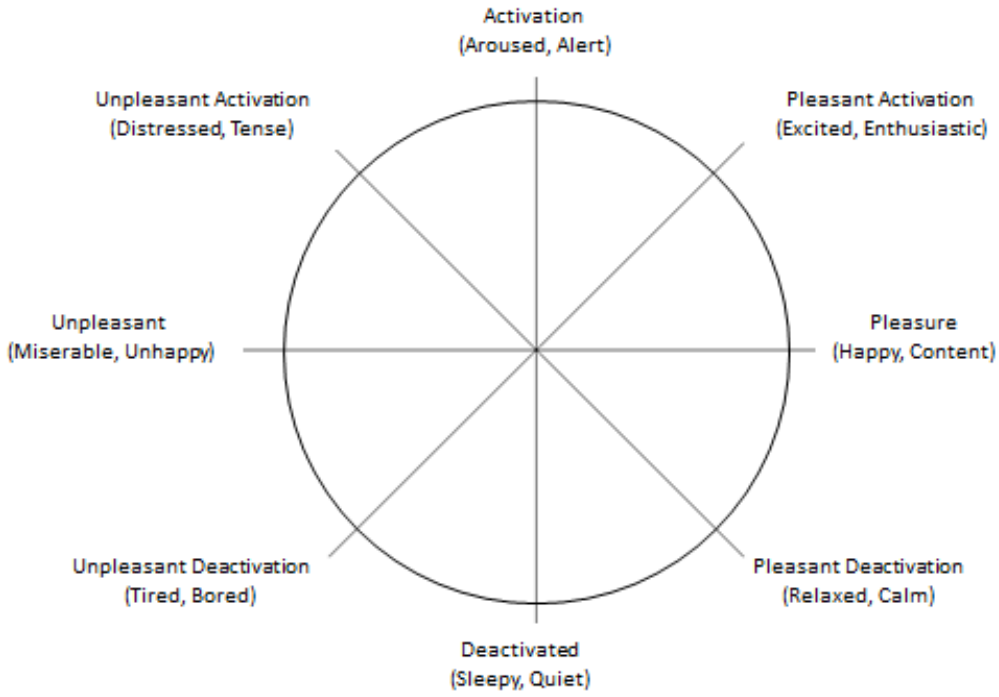

Figure 1.2. The Circumplex Model of Affect. Adapted from Barrett and Russell (1998)

The ordering of valence and arousal around a circle in a Cartesian grid (i.e., the circumplex) can be traced back to the work of Schlosberg (1941, 1952). More recently, other models of affect including Watson and Tellegen's (1985) positive and negative affect, Larsen and Diener's (1992) eight combinations of pleasantness and activation, and Thayer's (1989) tense and energetic arousal have been shown to conform to the circumplex model of affect (Yik, Russell, & Feldmen Barrett, 1999). Indeed, a substantial amount of recent evidence has accumulated supporting the circumplex model of affect (Remington, Fabrigar, & Visser, 2000).

Although the circumplex has been well supported in the literature, the orthogonal relationship between valence and arousal has recently come into question. Kuppens, Tuerlinckx, Russell, and Barrett (2013) argue that the relationship between valence and

arousal is more consistent with a “V” shape rather than being orthogonal. In other words, as positive or negative valence increases, so does arousal. See Figure 1.3. This finding has important consequences for the circumplex and how it is normally conceptualized. Happiness by default is modeled as being representative of 0°, and all other emotional clusters are placed on the circumplex in relation to happiness. If the assumption that happiness is at 0° is incorrect, this view would effect the position and relation of the emotional clusters on the circumplex. To our knowledge, no study has undertaken re-examining the circumplex utilizing this new conceptualization.

The location of fear and excitement on the circumplex has important consequences for the consumption of aversive experiences. Although individual studies vary, excitement is normally at 45° on the circumplex and fear at 135° (Remington, Fabrigar, & Visser, 2000). At 90° the theoretical correlation between two points on the circumplex is zero (Russell & Barrett, 1999). However, more recent research has placed excitement at 60° (Yik, Russell, & Steiger, 2011), and if the findings of the symmetrical V-shaped relationship between arousal and valence are correct, then fear and excitement may be positionally closer and hence positively correlated. Indeed, the present research finds a mild and positive correlation between fear and excitement.

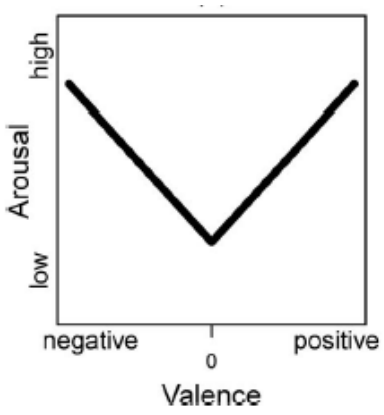

Figure 1.3. Symmetric V Shaped Relation Between Arousal and Valence. Adapted from Kuppens et al., (2013)

CHAPTER II

COMPETEING THEORIES

Theories for explaining the consumption of aversive experiences can be roughly grouped into two categories: emotion centric and non-emotion centric. The emotion centric theories are opponent process, excitation transfer and state sensation seeking (Solomon & Corbit, 1974; Zillmann, 1983; Zuckerman, 1979). The non-emotion centric theories include self and other signaling, emotional and skill mastery and arousal seeking (Celsi, Rose, & Leigh, 1993; Loewenstein, 1999; Zuckerman, 2009). Each theory will be discussed in turn starting with opponent process.

Opponent Process

The opponent process theory of acquired motivation was first proposed by Solomon and Corbit (1974) and later expanded on by Solomon (1980). Since its introduction, opponent process has received mixed empirical support. Mauro (1988), Myers and Siegel (1985) and Craig and Siegel (1979) found positive support for opponent process; however, other researchers including Sandvik, Diener, and Larsen (1985) and Andrade & Cohen (2007) have found either no support or partial support.

Opponent process is based on the assumption that emotional states, whether positive or negative, are automatically opposed by the central nervous system. Although the strength and latency of the opponent process varies, the opposing emotional state eventually returns the organism to homeostasis. Opponent process has been applied to explain a diverse range of acquired motives including drug addiction, social attachment,

love, and the consumption of aversive experiences such as parachuting, sauna bathing, running and self-administered electric shocks. At its core, opponent process is an affective theory based on three processes: contrast, habituation, and withdrawal.

Hedonic contrast is the process of reversal by which an unconditioned stimulus (UCS), which initially produces a hedonic state of one valence, may produce an hedonic state of opposite valence when the stimulus is removed. For example, the first time an individual takes heroin, or some other narcotic, the resulting state is often described as "euphoria" or a "rush" (an intensely pleasurable feeling). After the body has metabolized the drug the user goes into a state of mild discomfort. Solomon and Corbit (1974) refer to the hedonic state precipitated by the UCS as an "A process" and the opposing state as a "B process." In the case of a first-time IV drug user the A process is intense euphoria whereas the B process is mild discomfort.

Habituation or a decrease in affect associated with the onset of the unconditioned stimulus occurs when the stimulus is frequently repeated over a relatively short period of time. After repeated dosages an IV drug user no longer gets the same high and must consume higher dosages to achieve the same state. According to Solomon Corbit (1974) the A process is not seriously affected by frequent consumption, it is the strengthening of the opposing B process and the decrease in latency to response that occurs with repetition, that makes the manifest affective response associated with the A process seem less extreme.

After habituation has occurred (and the B process has gained in strength and decreased in latency), the affective withdrawal syndrome, at the termination of the stimulus, now acts as a reinforcing operant. The IV drug user who was initially motivated

to re-consume by the euphoric state created by the A process is now motivated to consume to remove the aversive withdrawal syndrome created by the B process. In this manner the reinforcing operant has switched from the A process to the B process. After habituation has occurred, the A process is referred to as A' and the B process as B'. See figure 2.1.

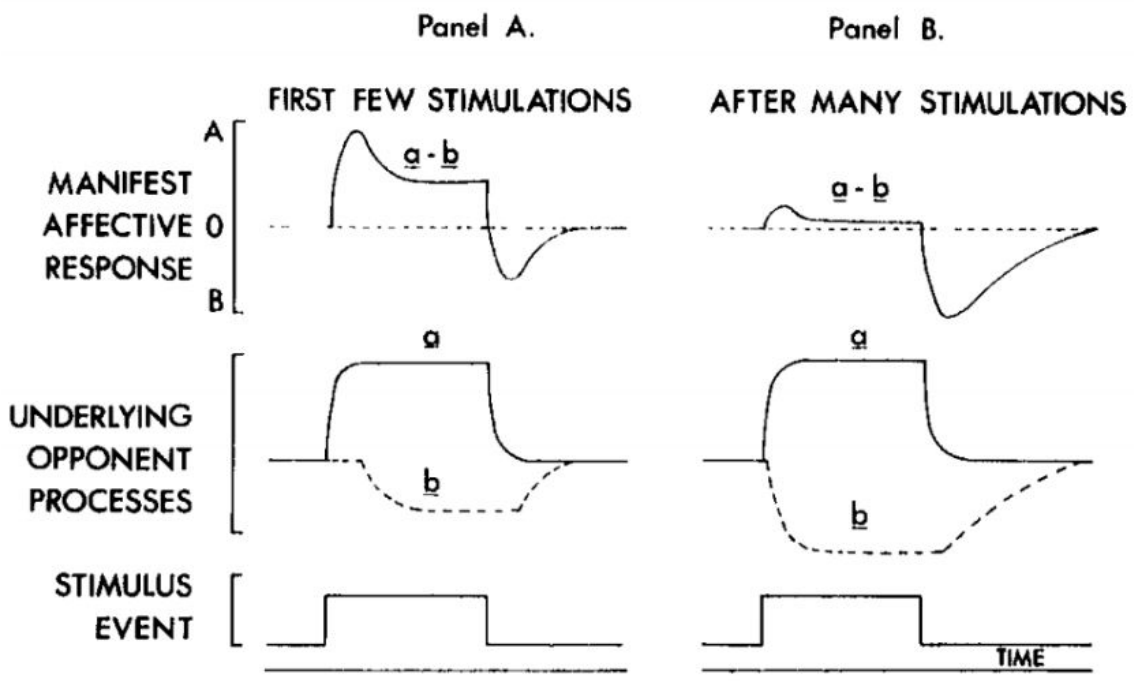

Figure 2.1 Visual Depiction of Opponent Process. Adapted from Solomon and Corbit (1974)

Opponent Process and the Consumption of Aversive Experiences

As mentioned previously, opponent process has been applied to explain acquired motives such as jogging, running marathons, sauna bathing, and parachuting. It can be argued that running and sauna bathing may be practiced for their health benefits; however, parachuting or skydiving, in a nonmilitary context, is strictly a hedonic activity.

Solomon and Corbit (1974) and Solomon (1980) use Epstein's (1967) study of parachutists as evidence for the opponent process explanation for acquired motivation. According to Solomon and Corbit (1974):

"When parachutists make their first jump, they are often terrified, judging by telemetered autonomic responses and photographed facial expressions. When they land safely, they look stony-faced or stunned for several minutes, then gradually resume normal composure. After the parachutists have made several jumps and are experts, their responses are different. When jumping, they are no longer terrified. They may be anxious, tense, or even eager. After they land safely, they feel exuberant, exhilarated, and good. They like the feeling, and the mood lasts sometimes for hours. Such parachutists love to jump because of this after-feeling." (p. 123)

Applying the language of opponent process, a new jumper experiences a highly aversive A process characterized by terror or fear. After landing the B process, which has not been strengthened by repetition, kicks in weakly, and the parachutists appear "stunned and stony faced;" a state which may be characterized as "relief" (Solomon, 1980, p. 697). After many jumps, the B' process is strengthened so that before jumping the state of the parachutists can best be described as eagerness mixed with tension. After jumping, and the termination of the unconditioned stimulus, the now powerful B' process propels the parachutists into a state of "exhilaration" (Solomon, 1980, p. 697). This powerful B' process now represents a new operant, motivating continued consumption of the activity.

Opponent Process Predictions

Based on the circumplex model of affect we know that the opposite of fear must be a low arousal positive emotion such as relief or relaxation; however, Solomon (1980) is somewhat equivocal in the language he uses to describe the affective state of novice and habituated skydivers. For novice jumpers the B process is characterized by "relief" but for experienced jumpers the B' process is characterized by "exhilaration." Irrespective of emotional labels opponent process theory requires that whatever the A process, the B process must be opposite or opponent. Further, for novice skydivers the A process should be intensely negative and the B process mildly positive, whereas for experienced skydivers the A' process should be mildly negative and the B' process intensely positive. Since the A process in skydiving, or any aversive event, is characterized by "fear," the B process must be a low arousal positive emotion such as "relief." Although this line of reasoning is most consistent with Soloman's opponent process theory (1974), a viable alternative is that opponent process may function more as a general affective process rather than specific to discrete emotional states. Therefore, in reference to the consumption of aversive experiences, the A process may be characterized by general negativity and the B process may be characterized by general positivity.

Based on the preceding, opponent process makes a number of testable predictions. First, frequent consumers will experience less fear/negativity during consumption (in the moment) compared to non-consumers. Second, consumers will experience more relief/positivity after consumption (residually) in contrast to non-consumers. Third, affect experienced during the residual phase will be the main motivator for re-consumption.

Excitation Transfer

Excitation transfer is an emotion centric theory originally proposed by Dolf Zillmann. It has been used to explain the consumption of suspenseful drama (Zillmann, 1980, 1996). In addition to explaining suspenseful drama, excitation transfer has been suggested as an explanation for the consumption of horror movies (Sparks & Sparks, 2000; Walters, 2004; Zillmann & Gibson, 1996). Suspense, a critical component of both drama and horror movies, is defined by Zillmann (1996) as a "…noxious affective reaction that characteristically derives from the respondents' acute, fearful apprehension about deplorable events that threaten liked protagonists, this apprehension being mediated by high but not complete subjective certainty about the occurrence of the anticipated deplorable events" (p. 208). According to excitation transfer theory, fear induced by the suggestion of negative outcomes to liked characters creates physiological arousal. Upon the *satisfactory* conclusion of the dramatic episode, either in the grand structure or microstructure of the narrative, the physiological arousal intensifies subsequent positive feelings. According to Zillmann, a satisfactory conclusion normally takes the form of both some type of positive outcome for liked protagonists and negative outcomes for resented antagonists; however, if negative events befall liked protagonists and positive events befall resented antagonists, dysphoric reactions will be elicited (Zillmann, 1996). See Figure 2.2.

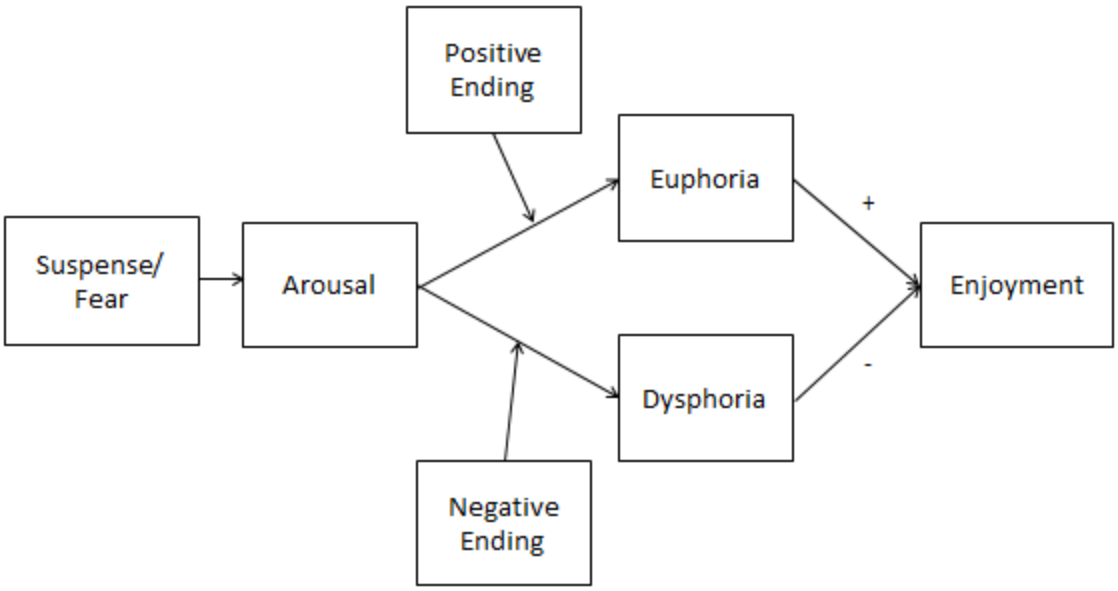

Figure 2.2. Model of Excitation Transfer Theory. Based on (Zillmann, 1980, 1996)

According to excitation transfer theory, suspense generates distress and physiological arousal, which causes an affective "overreaction" upon the successful conclusion of the narrative. Due to the comparatively slow decay of sympathetic activity, the arousal elicited from the preceding distress intensifies the euphoric response to the positive ending, enhancing enjoyment of the suspenseful drama (Zillmann, 1996). Excitation transfer has been demonstrated in a number of domains including in the enjoyment of dramatic exposition (for reviews see: Hoffner & Levine, 2005; Sparks & Sparks, 2000), aggressive behavior (Zillmann, 1971) and humor (Cantor, Bryant, & Zillmann, 1974). More recently Madrigal, Bee, Chen, and Labarge (2011) have demonstrated that when a suspenseful film's outcome is unambiguously favorable, relief is elicited and positively related to enjoyment.

According to Zillmann and Gibson (1996), "Analogous to suspenseful drama, horror often features some sort of satisfying resolution, a resolution that may be enjoyed for what it is and whose enjoyment may be intensified by residual excitation from preceding terror" (p. 28). Although, satisfactory conclusions were characteristic of many early 20th century horror movies, more recent horror movies feature decidedly negative endings (Hoffner & Levine, 2005). Indeed, many successful horror movie franchises such as *Halloween*, *Friday the 13th*, and *Saw* rely on survival of the antagonist for subsequent sequels. For example, in the first *Saw* movie three of the four protagonists die, and the film's antagonist survives to make at least seven sequels.

Excitation Transfer Predictions

Excitation transfer makes a number of predictions in relation to the consumption of aversive experiences. First, excitation transfer presupposes that suspense is noxious and does not generate positive affect. Second, greater initial fear will lead to more enjoyment upon a favorable resolution. Third, an unsatisfactory resolution where unfavorable events befall the protagonists and favorable events befall the antagonist will produce dysphoric reactions. Fourth, a satisfactory resolution where favorable events befall the protagonists and unfavorable events befall the antagonist following a suspenseful or fear-inducing scene will produce euphoric reactions.

State Sensation Seeking

State sensation seeking is an emotion centric theory developed by Marvin Zuckerman and Richard Neary and is closely related to Zuckerman's work on trait sensation seeking (Neary, 1975; Zuckerman, 1976, 1979). Trait sensation seeking is

based on the precept that there are stable individual differences in what people consider their optimal level of stimulation (arousal). To achieve their optimal level, individuals seek either to augment or to reduce stimulation. Trait sensation seeking is defined as "…the seeking of varied, novel, complex, and intense sensations and experiences, and the willingness to take physical, social, legal, and financial risks for the sake of such experience" (Zuckerman, 1994, p. 27). However, according to Zuckerman (1976), "Traits can only manifest themselves in states, and it is the state at the moment the organism behaves that determines behavior, not the trait" (p. 166).

State sensation seeking has been conceptualized by Zuckerman (1976) as mirroring competing approach and withdrawal tendencies with state sensation seeking (positive affect) representing approach and anxiety (negative affect) representing withdrawal," which increases up to a point of maximum novelty and then decreases as appraised risk increases. Anxiety is conceptualized as a linear function of appraised risk. When state sensation seeking is higher than state anxiety, approach tendencies predominate. When anxiety is higher than state sensation seeking, withdraw is most likely. See figure 2.3. For high trait sensation seekers, the gradient of anxiety is lower and the optimal level of arousal is shifted to the right in comparison to low trait sensation seekers (Zuckerman, 1979).

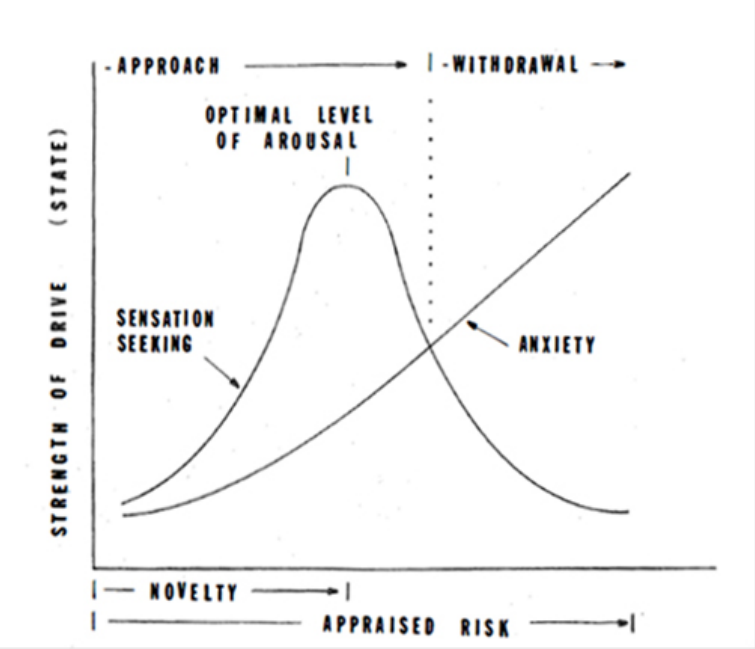

Figure 2.3. Theoretical Model Showing the Relation between Novelty, Appraised Risk and the Affective States of Anxiety and Sensation Seeking. Adapted from Zuckerman (1979).

Utilizing scale construction procedures, Neary (1975) (see Zuckerman, 1976) developed a state sensation seeking scale and a state anxiety scale. The state sensation seeking and state anxiety scale utilized adjectives from the Change, Order, and Liability scales (Gough & Heilbrun, 1965), the affect adjective checklist (Zuckerman, 1960), the inventory of personal reactions (Zuckerman, 1976), and the trait sensation seeking scale (Zuckerman, 1971). The final scale contains 15 sensation seeking and 15 anxiety related adjectives and is referred to as the Sensation Seeking and Anxiety States Test (SSAST). Evidence of criterion validity is provided by a single study in which participants completed the SSAST in relation to taking a drug (reported to induce hallucinations) or undergo hypnosis. Results of the study indicate a positive correlation between the drug taking decision and state sensation seeking and a negative correlation with state anxiety. Susceptibility to hypnosis was related only to state sensation seeking and not anxiety.

Zuckerman (1979) conducted a further test of state sensation seeking. Participants who scored in the top and bottom decile of the Trait Sensation Seeking Scale Form V were utilized in the study. Participants were exposed to two scenarios with each scenario composed of four different parts, each of increasing risk. State sensation seeking and state anxiety were assessed utilizing a shortened (12 item) version of the SSAST. The first scenario involved taking the current study, a social psychology experiment, undergoing hypnosis, or taking an unknown drug and the second scenario involved travel to Europe, US, Asia, Antarctica and the Moon. For the first scenario, the results of the study supported predictions with a curvilinear pattern for state sensation seeking crossed by linearly increasing anxiety. For the travel scenario, the state sensation seeking conformed to the curvilinear prediction and state anxiety to the linear prediction; however, the two lines did not intersect, possibly due to a lack of equivalence in the scales or in the range of risk sampled (Zuckerman, 1979). Since Zuckerman's and Neary's early work, little further research has been conducted on state sensation seeking (Steenkamp & Baumgartner, 1992).

State Sensation Seeking Predictions

In relation to the consumption of aversive experiences such as watching horror movies or skydiving, Zuckerman's and Neary's (Neary, 1975; Zuckerman, 1976) State Sensation Seeking Theory makes a number of testable predictions. First, for those who willingly consume aversive experiences, state sensation seeking will be higher than state anxiety seeking as measured by the SSAST. Second, consumers will have higher state sensation seeking and lower state anxiety than non-consumers. Third, during the

consumption of the aversive event, if anxiety surpasses sensation seeking at any point, the individual will withdraw.

CHAPTER III

NON-EMOTION CENTRIC THEORIES

In addition to the emotion centric theories, a number of non-emotion centric theories have been proposed to explain the consumption of aversive experiences. These theories can be grouped into approximately five categories: self signaling, other signaling, emotional mastery, skill mastery, and arousal seeking. As discussed previously, any theory attempting to explain the consumption of aversive experiences must contain an emotional component. These non-emotion centric theories can therefore be thought of as goals or motives related to the consumption of aversive experiences, which, when met, allow for the experience to be perceived as positive (see Chapter IV). Next, I will discuss each of these five goals/motives in turn and review the relevant literature.

Self Signaling

According to Bodner and Prelec (2003), self signaling "…is an action chosen partly to secure good news about one's traits or abilities, even when the action has no causal impact on these traits and abilities" (p. 105). Self signaling is closely related to self-perception theory (Bem, 1972); however, it goes a step further and predicts that not only do we infer traits or characteristics from our behaviors, but we specifically perform actions to signal to ourselves that we possess desirable characteristics. A particular action therefore may have not only outcome utility, but also diagnostic utility for determining one's inner disposition.

It has been argued that self signaling represents somewhat of a philosophical paradox (see Bodner and Prelec, 2003). For example, if people donate to charity to signal to themselves that they are altruistic, knowledge that they are donating just to appear altruistic is then no longer valid evidence of the trait; however, this philosophical paradox is based on the supposition that individuals are consciously aware of the reason for their actions. It has been known for quite some time that humans have little or no introspective access to higher order cognitive processes (e.g., Nisbett & Wilson, 1977).

A number of studies have demonstrated self signaling across a variety of contexts (see Bodner and Prelec 2003; Dhar and Wertenbroch 2012); however, to our knowledge there has been no empirical work linking self signaling to the consumption of aversive events. From a theoretical perspective, Loewenstein (1999) argues that the consumption of aversive experiences, such as mountaineering, offers a unique opportunity to signal exceptional characteristics primarily because it is such a difficult undertaking. Additionally, Celsi et al. (1993) contend that high-risk activities provide a clear means to seek a new self-identity, which may be related to the self signaling of desirable traits. In light of both the empirical work related to self signaling and theorizing by Lowenstein (1999), I believe there is good reason to suggest that self signaling may be an important underlying motive/goal for the consumption of aversive events.

Other Signaling

It is well established that consumers use products to express their identities (Belk, 1988; Escalas & Bettman, 2003), and people infer others' identities based on their purchase decisions (Calder & Burnkrant, 1977; Holman, 1981). Celsi et al., (1993) argue that for skydivers, the bond of shared experiential consumption has benefits related to in-

group camaraderie and sense of community. Ewert (1985) demonstrates that recognition and socializing are key motivating factors for inexperienced mountain climbers. Participation in the consumption of aversive experiences therefore, may have signaling properties for both in-group and out-group members.

In relation to the consumption of horror movies, Zillmann, Weaver, Mundorf, and Aust (1986) and Sparks (1991) demonstrate empirical support linking signaling others, in accord with gender roles, to increased enjoyment. According to Zillmann et al. (1986), gender role theory predicts men should exhibit emotional control in the face of danger whereas women are "… encouraged to freely express distress, fear, and panic…" (p. 586). To test whether fulfilling gender roles increases enjoyment, Zillmann et al. (1986) and Sparks (1991) had participants watch a horror movie clip in the presence of an opposite sex confederate either exhibiting distress or mastery. The results of these studies indicate that men enjoy the horror movie most in the company of a distressed woman and least in the company of a fear-mastering woman. In comparison, women enjoy the horror movie most in the company of a fear mastering man and least in the company of a distressed man. Presumably, by successfully fulfilling their gender roles and signaling their companions, enjoyment increased. Additionally, by displaying emotional control, males who were low in physical attractiveness enhanced their sexual appeal and positive character traits in the eyes of their female companions (Zillmann et al., 1986). These findings provide support for the efficacy of signaling others in the enjoyment of aversive experiences. Signaling others of desirable characteristics through the consumption of aversive experiences, may be a viable strategy for mate acquisition and affiliation and for mate retention - evolutionary motivations proposed by Griskevicius and Kenrick (2013).

Skill Mastery

Mastery of a particular skill is related to the constructs of agency and efficacy and likely plays an important role in relation to the consumption of some aversive experiences, such as skydiving, and may be almost nonexistent in relation to the consumption of others, such as watching a horror movie. Agency "… is to influence intentionally one's functioning and life circumstances" (Bandura, 2006, p. 164), and efficacy is "the power to produce and effect" ("Efficacy," n.d.). Mastery of skill necessitates control over one's environment (Loewenstein, 1999); hence, skill mastery, agency, and efficacy are interrelated constructs. A number of theories of intrinsic motivation have emphasized the importance of causal agency and the ability to effect one's environment as intrinsically motivating factors (Gecas, 1989). In relation to the consumption of aversive experiences, Barlow, Woodman, and Hardy (2013) developed a Sensation Seeking, Emotion Regulation, and Agency Scale (SEAS) and demonstrated that agency is an important motive underlying both skydiving and mountaineering. Further, Celsi et al. (1993) argue that efficacy motives, such as the desire to develop technical skill in skydiving, is important as it relates to both social status and personal satisfaction. Personal satisfaction can be enhanced through the completion of mastery goals, and social status is conferred upon individuals who display a high degree of technical competence. Skill mastery is also related to the concept of flow, whereby skill perfectly matches up with the challenge, which can also be intrinsically motivating (Nakamura & Csikszentmihalyi, 2014).

Emotional Mastery

Emotional mastery, or in the context of aversive experiences mastering one's fear, may be intrinsically rewarding and hence an important contributing factor to the consumption of aversive experiences. In the previous section on *Other Signaling* Zillmann et al. (1986) and Sparks (1991) demonstrate that for men, signaling emotional mastery while watching a horror movie can increase their level of perceived attractiveness and increase the enjoyment of a female companion. In relation to mating motivations, displaying emotional mastery for men may be associated with positive outcomes related to mate acquisition and thus be rewarding. Emotional mastery under the name benign masochism has been advanced as an explanation for the consumption of experiences including oral irritation, fear, physical exhaustion and disgust (Rozin, Guillot, Fincher, Rozin, & Tsukayama, 2013). According to Rozin et al. (2013), "Benign masochism refers to enjoying initially negative experiences that the body (brain) falsely interpreted as threatening. This realization that the body has been fooled, and that there is no real danger, leads to pleasure derived from 'mind over body.' This can also be framed as a type of mastery" (p. 439). Therefore, benign masochism can be understood as emotional mastery wherein emotional reactions are controlled, and this control brings a sense of pleasure. One prediction of benign masochism is that individuals will choose to consume the most intense stimulus that they can stand. To test this prediction, Rozin and colleagues conducted a survey assessing the consumption of sadness, (hot) spice, disgust, fear, pain, alcohol, exhaustion and bitterness, and whether the participants liked to consume these experiences to the greatest extent they could stand. Results generally confirmed the prediction that individuals like to consume the most intense stimuli they

are able to tolerate. In addition to benign masochism, Barlow et al. (2013) have demonstrated that emotional mastery is associated with the consumption of both skydiving and mountaineering. On the SEAS scale, skydivers and mountaineers report greater emotional regulation than controls. In sum, these three studies lend support to the possibility that mastering one's emotions/fear can be rewarding and hence contribute to positive affect associated with consuming aversive events.

Optimal Level of Arousal

The idea that there is an optimal level of physical arousal, and that individuals will undertake actions to either augment or reduce their level of arousal, has factored into a number of theories of intrinsic motivation (Steenkamp & Baumgartner, 1992). Indeed, Zuckerman's work on trait sensation seeking was an attempt to operationalize the construct of optimal level of arousal as a personality dimension (Zuckerman, 1979). Arousal augmentation can take a number of different forms including risk (Slovic, 1964), curiosity, and variety seeking (Steenkamp & Baumgartner, 1992).

A number of scales have been developed to measure optimal level of arousal. These scales include the Arousal Seeking Tendency Scale (Mehrabian & Russell, 1973) and the subsequent revised Arousal Seeking Tendency Scale II (Mehrabian, 1978), the Change Seeker Index (Garlington & Shimota, 1964), the Sensation Seeking Scale Form V (M Zuckerman, 1979) and the Novelty Experiencing Scale (Pearson, 1970). These scales all measured the same underlying construct of optimal level of arousal (McReynolds, 1971). More recently, Gotts, Kerr, and Wangeman (2000) developed a telic-paratelic dominance scale of which arousal seeking is a factor. Hoyle, Stephenson,

Palmgreen, Lorch, and Donohew (2002) have validated a shortened version of the sensation seeking scale, and Steenkamp and Baumgartner (1995) have developed a short form of the Change Seeker Index. With each of these scales, a subsequent literature has developed; however, the sensation seeking and brief sensation seeking scales have been perhaps the most widely used, with hundreds of studies demonstrating the relevance of trait sensation seeking in relation to drugs, food preferences, art, risk-taking, and psychopathology among others (Zuckerman, 2013). In relation to the consumption of aversive experiences, empirical evidence suggests that individuals higher in trait sensation seeking have a greater likelihood to engage in high-risk activities such as skydiving and also a preference for aversive media including horror movies and violent sports (Hymbaugh & Garrett, 1974; McDaniel, 2004; Shoham, Rose, & Kahle, 1998). Based on empirical evidence, it is therefore reasonable to suggest that arousal augmentation by consuming aversive events may contribute to positive affect.

CHAPTER IV

THEORY DEVELOPMENT

Valence Conversion

The principle of valence conversion asserts that discrete emotions, which are of opposite valence but share a similar level of arousal and set of cognitive appraisals (e.g. Smith & Ellsworth, 1985),can be quickly converted from one to the other contingent on goals, internal cognitions, and cues from the environment. In this context I define arousal as gross sympathetic nervous system activation. I propose that fear and excitement share a similar set of cognitive appraisals and level of arousal. Thus, an aversive stimulus that is not too extreme as to prevent the activation of goals related to positive affect can also be appraised as exciting. The following sections delineate a cognitive model of emotion and discuss implications for the consumption of aversive experiences. The section will first discuss cognitive appraisals, goals, cognitions and the environment, similar propositions and the protective frame and conclude with valence conversion predictions.

Cognitive Appraisals

Although theorists have proposed a number of different cognitive appraisal dimensions (e.g. Frijda, Kuipers, & Ter Schure, 1989; Roseman, 1984; Scherer 1984; Smith & Ellsworth, 1985) substantial agreement exist as to the content of these dimensions (Ellsworth & Scherer, 2003). Six dimensions in particular are shared across most cognitive appraisal theorists and hence will be utilized here. These dimensions include pleasantness, attention, certainty, control, responsibility/legitimacy and anticipated effort. Valence conversion asserts that aside from the appraisal of

pleasantness, fear and excitement share a similar set of cognitive appraisals, such as high uncertainty, attention, effort, responsibility and situational control (Han, Lerner, & Keltner, 2007; Ruth, Brunel, & Otnes, 2002; Smith & Ellsworth, 1985). I hypothesize that during the consumption of an aversive stimulus, only the dimension of pleasantness will vary, when controlling for level of fear/excitement. For example, an individual reporting a 7 out of 11 on a Likert-like scale assessing fear would report the same appraisals, aside from the pleasantness dimension, as another individual reporting a 7 out of 11 on a Likert-like scale assessing excitement. The similar set of cognitive appraisals for fear and excitement allow individuals to quickly switch back and forth between the two feeling states dependent on the individual's goals, cognitions and cues from the environment.

Goals and the Experience of Emotion

During the consumption of an aversive event, a number of factors influence the extent to which the stimulus is perceived as exciting or fear provoking. These include goals, the environment, and cognitions. See Figure 4.1. I define goals as a *desired result,* whether unconsciously motivated or consciously explicit, the *environment* as any external stimulus or condition (in addition to the aversive stimulus), and *cognitions* as thought or mindset.

The valence or pleasantness/unpleasantness of a stimulus is a function of how relevant the stimulus is to achieving an organism's goals (Brendl & Higgins, 1996; Roseman, 1984; Scherer et al., 1984). Therefore, during the consumption of an aversive event if the stimulus is meeting an individual's goals, it can be appraised as pleasant. I propose that the motives of self and other signaling, emotional and skill mastery, and

achieving an optimal level of arousal (see earlier sections) serve as goals, which when met (or in the process of being met), allow for the stimulus to be appraised as pleasant.

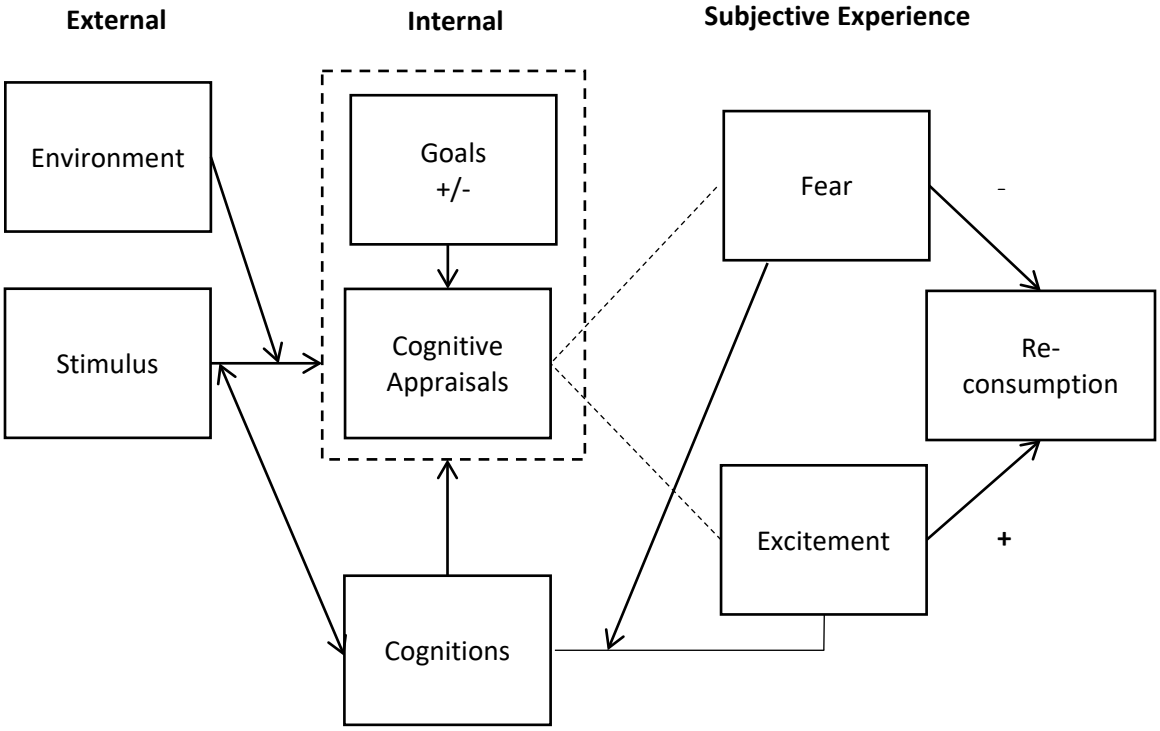

Figure 4.1. A Cognitive Model of Emotion with Valence Conversion

The goal or motive most responsible for the experience of fear in relation to the consumption of aversive experiences is most likely a threat to self-preservation. In the consumption of more extreme endeavors, such as skydiving, self-preservation is clearly an important motive underlying fear; however, even in the case of the consumption of horror movies the motive of self-preservation is likely functioning. During dramatic exposition individuals can become empathetically involved with the characters and hence experience concordant affect (see Zillmann, 1996). Clearly there is no physical danger

related to simply watching a film; however, film or other types of dramatic exposition can make us feel emotions in accord with certain characters. Thus, when a liked character experiences fear we may also experience fear. Further, Kreibig, Wilhelm, Roth, and Gross (2007) have shown that fear-inducing film clips produced a pattern of physiological response generally confirming the presence of a defensive reaction. In sum, the extent that the motives of self and other signaling, emotional and skill mastery and optimal level of arousal are being met, the individual will experience greater excitement. To the extent that these motives and other motives such as self-preservation and the avoidance of harm are not being met, the individual will experience greater levels of fear.

Cognitions and the Environment

In the model above cognitions are defined as any thought or mindset and the environment as any external stimulus in addition to the aversive stimulus. Both cognitions and the environment have an impact on experienced affect. Cognitions can impact both the perception of the stimulus and also effect cognitive appraisals and goal salience. For example, at a particularly scary part of a horror movie an individual may seek to down regulate negative affect by looking away from the screen. This action fundamentally alters the nature of the stimulus and hence how it is appraised. Further, an individual going skydiving could be thinking about how exciting and exhilarating the experience is going to be, or alternatively focusing on the fact that he or she could die. These thoughts may in turn impact both cognitive appraisals and goal salience and hence effect experienced affect. Another consequence of the valence conversion framework is that being asked to rate the intensity of an emotion on a Likert scale may act as a

"cognition" and hence influence self-reports. This labeling effect, if present, is likely to occur only when a small number of emotions are being measured.

The environment can also impact how an aversive stimulus is perceived. For example, an individual watching a horror movie with a group of friends who are laughing and excited may appraise the movie as more pleasant than an individual watching a horror movie with a group of people displaying signs of fright and terror.

Similar Propositions and the Protective Frame

Propositions similar to valence conversion have been made by a number of authors including Apter, Kerr and Murgatroyd (1993) and Andrade and Cohen (2007). According to Apter et al., (1993) in their book *Advances in Reversal Theory*, a protective "…frame 'filters out' the threatening quality of threat, while still leaving something of its essential quality… the result in this particular case is that the threat continues to cause arousal, but that the arousal can now be enjoyed as excitement" (p.29). In other words within the confines of a "protective frame," the arousal caused by the threat can be interpreted by the individual as excitement. In a similar vein Andrade and Cohen (2007) postulate that "…negative affect represents a reliable source of arousal, one that can be continuously converted into positive affect as long as people place themselves within a given protective frame" (p.296).

According to Apter a protective frame is a subjectively determined mindset that allows for the perception of risk or danger to be viewed as controllable. When risk or danger is viewed as controllable it can be enjoyed (Apter, 2001). Utilizing the valence conversion framework Apter's protective frame is simply the belief that whatever dangers present can be controlled and hence won't violate self-preservation goals. For

example, if an individual is going skydiving for the first time and perceives the danger as uncontrollable, the goal of self-preservation will dominate and the experience will be experienced as solely negative; however, if the individual perceives the danger as controllable and the goal of self-preservation is being met, it allows for other goals to become salient and the consumption experience to also be perceived as exciting.

Valence Conversion Predictions

Valence conversion makes a number of testable predictions. First, fear and excitement will share a similar level of arousal and set of cognitive appraisals (aside from valence). Second, the presence or absence of certain motives/goals such as self and other signaling, emotional and skill mastery, optimal level of arousal and self-preservation will determine to what extent the stimulus is perceived as exciting or fear provoking. Third, cognitions and the environment can effect cognitive appraisals and goal salience, and hence they effect experienced excitement and fear. Fourth, excitement will have a positive effect on consumption frequency, and fear will have a negative effect. Next, we turn our attention to habituation and the hedonic equation.

Habituation and Consumer Groups

The following section discusses habituation and its relation to the consumption of aversive experiences. Habituation (desensitization in other literatures) or the diminishing of an emotional response with repeated exposure has effects on experienced emotions, including both fear and excitement, and hence re-consumption. Habituation is tied to goals in that one way an individual can become habituated is satiating certain goals. With repeated exposure goals can become satiated and thus result in diminished affect.

Habituation is likely dependent on a number of factors including consumption frequency, individual differences, and the latency between consumption events (see Foa & Kozak, 1986).

Habituation of positive affect associated with an aversive event may lead an individual to seek more intense stimuli. For skydiving, this may take the form of increasingly risky maneuvers in freefall, BASE jumping, and/or swooping (intentionally diving one's canopy at the ground, to increase speed, and leveling out across the ground). In the case of horror movie aficionados, this may involve seeking out more intense and disturbing material. Habituation of positive affect may also explain why the average time in the sport for skydivers is in the range of 3 to 5 years. If the consumption event is no longer fulfilling certain goals, one would expect that consumption would cease unless alternative goals for consumption arise, or more powerful stimuli are found.

Fear habituation, or a lessening of the salience of self-preservation motives, would be expected to have a positive impact on re-consumption; however, with fear habituation, goals such as emotional mastery may become less important. Once the goal of mastering emotional responses to a particular type of aversive stimulus is achieved, it will no longer be relevant and thus will not generate positive affect. In this manner the habituation to both positive and negative affect are inherently linked.

Due to the effects of habituation to both positive and negative affect, continued consumption of an aversive stimulus is likely dependent on a different set of goals than when the individual first began. In the case of skydivers the initial positive experience may have been predicated on arousal seeking and emotional mastery. With habituation and the satiation of these goals, the event becomes less positive and the individual is less

likely to re-consume, unless other goals are or become active. For skydivers who continue past the point of habituation, the experience may become more about the social aspect of the sport (social affiliation goal) and achieving performance milestones such as pulling off increasingly difficult maneuvers (mastery goal).

The effect of habituation on experienced affect means that there may be different groups of people: 1) non-habituated non-consumers – individuals who do not, or very seldom, consume aversive experiences, 2) non-habituated consumers – individuals who consume aversive experiences but are not habituated, 3) habituated consumers – individuals who are habituated and consume, and 4) habituated non-consumers – individuals who are habituated and no longer consume. During the consumption of an aversive experience, each group will show a different pattern of emotional responding. Consumers will experience more excitement than non-consumers. Individuals who are habituated to fear will experience less fear than non-habituated individuals (see Table 4.1).

This pattern of affect is expected to be derived from a different pattern of motives for each consumer group. Non-habituated non-consumers are individuals who have never or very seldom participated in the consumption of particular aversive events. Individuals in this group find aversive events frightening and not exciting. Non-habituated consumers are individuals who choose to willingly consume aversive experiences and have not yet become habituated to the fear associated with the consumption activity. This group is likely characterized by high goal salience of consumption motives including arousal seeking and emotional mastery and they find aversive events both exciting and frightening. Habituated non-consumers are individuals who presumably consumed the

experience at one point but have now become habituated to both the fear and excitement associated with the consumption event. For this group the activity once fulfilled various consumption motives however with habituation the experience has become less positive and hence is no longer consumed. The last group is habituated consumers who presumably have been consuming over an extended period of time and who do not experience much fear but still find the experience exciting.

Table 4.1. *Consumer Type and Level of Fear and Excitement during the Consumption of an Aversive Experience*

	Emotion	
Consumer Type	**Fear**	**Excitement**
Non-habituated Consumers	High	High
Non-habituated Non-Consumers	High	Low
Habituated Consumers	Low	High
Habituated Non-Consumers	Low	Low

Habituation Predictions

The effect of fear habituation on the valence conversion framework yields a number of testable predictions. First, the four consumer types as measured by recent consumption frequency and fear habituation will yield the pattern of responses as seen in Table 4.1. Second, a different pattern of motives will underlie the emotional experience of each of the consumer types. Third, consumption frequency will be positively related to fear habituation, and fear habituation will be related to a decrease in negative affect related to the consumption of the aversive event.

The Hedonic Equation

The decision to engage in an aversive experience is likely contingent on a number of factors and differs between people consuming a particular event for the first time and people choosing to re-consume. The decision to engage in any event in part depends on the emotional response generated in anticipation of the activity. In the case of consuming an aversive experience for the first time, anticipatory affect, expectations and peer influence likely play a large role (Celsi et al., 1993; Solomon & Corbit, 1974). Once an aversive event has been consumed the affect experienced both before (anticipatory), during (in the moment) and after (residual) the event influences how the event is both perceived and remembered. How the event is remembered is dependent on these three time points and especially the peak and end of the experience (Kahneman, Fredrickson, Schreiber, & Redelmeier, 1993). If there is a substantial period of time between consumption events it is this remembered affect which effects anticipatory affect and hence any subsequent decision to re-consume. If the aversive experience has been consumed more than once, the remembered affect is likely an average of emotional responses across all previous similar events, weighted in favor of the most recent consumption. This weighted average of all previous events then effects anticipatory affect and hence any subsequent decision to re-consume.

Based on this line of reasoning I propose a new theory, to describe the consumption of aversive experiences, called the hedonic equation. The hedonic equation is centered on three specific ideas. First, in order to understand the utility derived from an aversive experience, all four time points (anticipatory, in the moment, residual, and remembered) must be taken into account. Second, individuals who experience a positive

balance of affect (across all four time points) will choose to re-consume an aversive experience while individuals who experience a negative balance will not. Third, based upon the principle of valence conversion, the utility or disutility in consuming an aversive experience is best encapsulated by experienced excitement and fear. Hence, the following equation will hold for people that re-consume aversive stimuli:

(Anticipatory excitement + In the Moment excitement + Residual excitement + Remembered excitement) > (Anticipatory fear + In the Moment fear + Residual fear + Remembered fear)

I define the anticipatory time period as any point in time leading up to the consumption of the aversive experience in which the experience is actively considered and hence generates affect. In the moment is while the aversive stimulus is present. The residual period is after the aversive stimulus has been removed, but before levels of physiological arousal have returned to their baseline levels, and remembered is any time point in which the aversive stimulus is being remembered and thus generating affect.

Although, the affect generated at any of these four time points maybe either positive or negative, I predict that on the whole, positive activation will outweigh negative activation for people who choose to consume aversive stimuli repeatedly, while controlling for non-emotional motives and changes in expectations. If this equation is negative, the individual will no longer consume the aversive stimuli unless he or she expects a different outcome. This equation then explains why people choose to consume

aversive experiences. For people who choose to consume the experience, it is more positive than negative.

Part of the power of the hedonic equation is it allows for the possibility that any one time point, of the aversive experience, may be perceived as more negative than positive and yet an individual may still choose to re-consume. It is not necessarily the valence of any one time point that motivates re-consumption. It is instead an aggregate of valence across four time points, which ultimately motivates re-consumption controlling for other non-emotive motivations. Further, the contribution of each of the four time points likely varies across individuals and consumption contexts. For example, an individual may find the anticipation of going to see a new horror movie particularly exciting but find the movie itself quite frightening, which may spill over into both the residual and remembered phase. The individual will choose not to re-consume unless he or she expects a different outcome (i.e., they may choose to go and see a less frightening movie). In the case of skydiving, the anticipation of jumping may be particularly negative, but the in the moment, residual, and remembered time points may be perceived as positive; hence, if the utility from the latter three time points is higher than the first, the individual will choose to re-consume.

The Hedonic Equation Predictions

The hedonic equation makes a number of testable predictions. First, consumers will experience a positive balance of excitement to fear, and non-consumers will experience a negative balance of excitement to fear. Second, excitement and fear across all four time points will predict consumption intentions. Third, anticipatory affect will be the main predictor of re-consumption intention. Fourth, fear and excitement together will

be more predictive of consumption intentions than either fear or excitement alone. Fifth, the four time points that compose the hedonic equation (anticipatory, in the moment, residual, and remembered) will be a stronger predictor of consumption intentions than any one time point alone.

CHAPTER V

FEAR AND FILM VALIDATION

Fear

The experience of fear has been studied across a number of different consumption contexts including skydiving (Celsi, Rose, & Leigh, 1993; Roth et al., 1996), haunted houses (Kerr, 2015), horror movies (G. Sparks & Sparks, 2000; Tamborini, 1991; Marvin Zuckerman, 2013), and video games (Jansz, 2005; Perron, 2009). Since 1995, horror movies have grossed (on average) slightly less than half a billion dollars ($493 million) annually, adjusting for inflation, with over 62 million tickets sold per year ("Box Office History for Horror Movies," 2015).

Like many situations that elicit emotions in everyday life, films are composed of dynamic visual and auditory sequences and often portray situations relevant to survival and well-being (Rottenberg, Ray, & Gross, 2007). What's more, fear inducing film clips have been shown to elicit strong physiological responses associated with a defensive reaction. Utilizing two horror movie clips (*I Know What You Did Last Summer* and *I Still Know What You Did Last Summer*), Kreibig, Wilhelm, Roth, and Gross (2007) assessed participants' cardiovascular, electrodermal, respiratory and facial behavior in addition to emotional self-reports. While watching the fear inducing film clips, participants showed the predicted heart rate acceleration, shortened pre-ejection period, elevated blood pressure, increased skin conductance levels, faster respiration, heightened corrugator supercilii muscle activity, and a decrease in tidal pCO_2. The researchers concluded that the fear eliciting film clips produced physiological response patterns similar to other fear

induction paradigms and generally confirmed the presence of a defensive reaction characterized by a fight or flight response (Kreibig et al., 2007).

In addition to horror movies, fear has been experimentally elicited using: photographs depicting combat, brutality, and aggression (Bernat, Patrick, Benning, & Tellegen, 2006; Bradley, Codispoti, Cuthbert, & Lang, 2001), photographs of facial expressions depicting fear (Dimberg & Karlsson, 1997; Lerner, Dahl, Hariri, & Taylor, 2007), musical excerpts (Etzel, Johnsen, Dickerson, Tranel, & Adolphs, 2006; Krumhansl, 1997), imagery (Sinha & Parsons, 1996; Gerhard Stemmler, 1989; Van Diest et al., 2001; Vrana & Rollock, 2002), preparation for a public speech (Borkovec & O'Brien, 1977; Pauls & Stemmler, 2003; Stemmler, Heldmann, Pauls, & Scherer, 2001), and the directed facial action task utilizing fearful expressions (Ekman, Levenson, & Friesen, 1983; Levenson, Ekman, & Friesen, 1990; Levenson, Ekman, Heider, & Friesen, 1992). Although different elicitation procedures have proven successful, two meta-analyses (Gerrards-Hesse, Spies, & Hesse, 1994; Westermann, Stahl, & Hesse, 1996) concluded that film clips are one of the best methods for general mood induction (i.e., positive or negative).

Arousal conversion predicts that under the right conditions a fear inducing stimulus can also be interpreted as excitement. Horror movies represent an ideal way to study fear in the laboratory due to their high internal and external validity, availability and ease of presentation. With this in mind we now turn our attention to the discrete emotion elicitation literature, specifically horror movie clips in the elicitation of fear.

Film Validation: The Case of Fear Inducing Film Clips

Going as far back as Sternbach (1962) and Averill (1969), researchers have used film clips to elicit emotions in the laboratory; however, it wasn't until the work of McHugo, Smith, and Lanzetta (1982) that a validated set of film clips for emotion elicitation were made generally available. Participants in McHugo's et al., (1982) study rated two sets of eight film clips on a shortened version of the Differential Emotion Scale (DES) (Izard, Dougherty, Bloxom, & Kotsch, 1974). The film clips, which were primarily black and white, ranged in production date from 1933 (*Morning Glory*) to 1970 (*M*A*S*H*). Based on a principal components analysis of the modified DES responses, the film clips were then grouped into one of three categories: amused-warmhearted, fearful-anxious, and disgusted-scornful. I will now review five more recent film validation studies. See Table 5.1 for a complete listing of all emotional measures used in the studies reported here. See Table 5.2 for a complete listing of all fear film clips (located at the end of the chapter).

Philippot (1993)

The first purely descriptive study, which attempted to validate films for eliciting discrete emotions, was conducted by Philippot (1993). Philippot had 60 (25 male) French-speaking students from the University of Louvain at Louvain-la-Neuve in Belgium rate 12 different movie excerpts pretested to elicit joy, anger, fear, sadness, disgust and a neutral state. The two fear film clips were taken from *Psycho* (1953) and *Halloween* (1981). Participants rated the film clips using three separate emotional measures. The first measure was a modified version of the DES, identical to the one utilized by McHugo et al., (1982), with the addition of two adjective groups (surprised,

amazed, astonished; warmhearted, gleeful, elated). The second scale, the Semantic Differential Scale (SD) (Osgood, 1964), was originally designed to study linguistics cross culturally and contains emotional adjective pairs such as “little-large”; “lively-indolent”; “living-death”; and “huge-tiny” measured on bipolar five-point Likert scales. The third emotional measure used a free labeling (FL) format. For the FL measure, participants *were required* to write down three adjectives that best described their emotional state.

Analyzing the results of the DES scale using post hoc Bonferroni comparisons, the film excerpts eliciting sadness, happiness, neutral, and fear were all significantly differentiated with the target emotions being the most strongly activated. The anger and disgust clips yielded a more complex emotional pattern and were only marginally significantly differentiated ($p < .09$). Of note, the “interest” component of the DES received high scores on all excerpts except for neutral and was thus not taken into consideration in the analysis. Separate 2 x 2 x 9 (Gender x Film x SD Scale) ANOVA’s were run to test whether film clips were differentiated based on the SD scale. The results indicated that all Film x SD interactions were statistically significant ($ps < 0.001$) except for anger-disgust and anger-fear. For the FL measure, “tension,” “anxiety,” and “fear,” where the most common emotional adjectives listed for the fear film clips. Based on discriminant analysis, the fear clips were correctly identified 61% of the time. These clips were mistaken for disgust 22% of the time. Across all film clips, the average classification accuracy for the FL measure was 75%. An analysis across all measures yielded good discrimination between film excerpts. However, anger ($z = 3.90$, $p < .001$) and to a lesser extent fear ($z = 1.65$, $p = .0495$) were significantly less well discriminated,

in contrast to the other film clips, based on an average of all measures. In both cases this result was largely driven by the SD scale.

Gross and Levenson (1995)

In 1995, Gross and Levenson undertook a comprehensive film validation study, starting with a pool of 78 film clips and a sample of 494 undergraduate participants (265 women). Participants rated each film using a 16 item measure adapted from Ekman, Freisen, and Ancoli (1980). This scale, although comparable to the DES used by Philippot (1993), used single words rather than adjective pairings. The initial analysis identified the 16 best films (two film clips for each target emotion: amusement, anger, contentment, disgust, fear, neutral, sadness and surprise). Additional analyses were carried out on these clips. The 2 fear film clips were taken from *The Shining* (1980) and *The Silence of the Lambs* (1991).

The 16 film clips were subjected to a discriminant analysis, a 16 level within-subjects ANOVA with pairwise comparisons, and hierarchical cluster analysis. Based on the discriminant function analysis, fear was correctly classified 78% of the time with an average across all categories of 83%. Pairwise comparisons for the target emotion and each non-target emotion were significant for amusement, disgust, sadness and surprise clips. For both of the fear films, ratings of *interest* and *attention* were not significantly less than ratings of fear. The results of the hierarchical cluster analysis indicated that each exemplar film clip was more similar to its pair than to any of the other clips.

Hewig, Hagemann, Seifert, Gollwitzer, Naumann and Bartussek (2005)

In 2005, German researchers Hewig, Hagemann, Seifert, Gollwitzer, Naumann and Bartussek validated a set of 20 film clips pretested to elicit anger, disgust, fear,

sadness, amusement and neutral. Thirty-nine German-speaking students (21 females) from the University of Trier rated each of the films on 21 individual emotional measures. The measures included 17 emotional states rated on unipolar scales and 4 opposing pairs rated on bipolar scales. As the set of films was initially developed for brain asymmetry research, all of the clips were shown without sound. The 3 fear-inducing film clips were taken from *The Silence of the Lambs* (1991), *Halloween* (1978), and *Marathon Man* (1976).

Based on the unipolar ratings, cluster analysis confirmed the a priori expectation of 5 groups for each of the target emotions. Utilizing post hoc t-tests with a Bonferroni adjusted alpha level of 0.003, both *The Silence of the Lambs* and *Halloween* induced significantly higher self-reports of fear than any of the non-target emotions; however, for *Marathon Man,* fear and disgust were not significantly different ($p = .38$).

Rottenberg, Ray, and Gross (2007)

In 2007, Rottenberg, Ray, and Gross reported and extension of Gross and Levenson (1995) previous work using a different scale and a number of different films. The film stimuli *The Shining* (1980) and *The Silence of the Lambs* (1991) were identical to Gross's (1995) earlier work. Although no comparison statistics are reported, based on descriptive statistics, it appears that reports of fear for *The Shining* (1980) and *The Silence of the Lambs* (1991) are significantly greater than any of the other non-target emotions excluding interest.

Schaefer, Nils, Sanchez, and Philippot (2010)

In 2010, Schaefer, Nils, Sanchez, and Philippot report the results of an extensive film validation study utilizing 364 French speaking participants (294 females) and a pool

of 70 pretested film clips selected to elicit fear, anger, sadness, disgust, amusement, tenderness and neutral state. Participants rated the film clips on three separate scales. The first scale was a single item measure of emotional intensity measured on a 7-point scale anchored by "*I felt no emotion at all*" to "*I felt very intense emotions.*" The second scale was an extended version of the DES originally used and translated into French by Philippot (1993), and the third was the positive and negative affect scale (PANAS) (D Watson, Clark, & Tellegen, 1988). The 10 fear clips tested were from the following films: *The Blair Witch Project* (1999), *The Shining* (1980), *Scream 1* (1996), *Misery* (1990), *Scream 2* (1997), *Child's Play 2* (1990), *Copycat* (1995), *It* (1990), *The Exorcist* (1973) and *Seven* (1995).

Using a repeated measures ANOVA, significance criteria of $p < .001$, and $\eta 2$ of at least .06, levels of emotional intensity were significantly different across film clips except for the comparisons between anger-fear, anger-tenderness, and tenderness-fear. It should be noted that this finding does not in any way speak to the discriminability of the discrete emotions elicited by the film clips, but simply demonstrates that the anger, fear, and tenderness film clips elicited similar levels of emotional intensity. Analysis of the DES items revealed a significant interaction between film category and emotional scale items. Further analysis utilizing a set of six predefined paired t-tests compared the target state and each non-target state for each participant. Due to the large sample size and number of planned comparisons, Bonferroni corrections for multiple comparisons were applied and the significance threshold was set at $p < .0001$. The results indicated that fear film clips successfully elicited more fear than any of the other non-target emotions (i.e., anger, sadness, amusement, tenderness, disgust, and neutral). Results from the PANAS indicate

that all negative films had significantly higher negative affect (NA) scores than positive films; however, results from the positive affect (PA) subscale were mixed. The contrasts between amusement-anger, amusement-fear, and tenderness-fear were not significantly different based on a confidence interval of $p < .001$. For the fear-tenderness and fear-amusement comparison, the nonsignificant result appears to have been driven by "active", "alert" and "excitement" which were higher in the fear film clip. According to the authors, "The apparent failure of PA scores to differentiate negative and positive films seems to be driven by a subset of items (e.g., attentive, alert, active) reflecting a general "arousal" and "alertness" component that might not necessarily be valence specific" (p. 1159). Due to the failure of the PA subscale differentiating between positive and negative films, a positive and negative score was created by averaging five positive items from the DES and eight negative items (Cronbach's alpha >.60). The results of two one-way ANOVAs and Bonferroni post hoc comparisons indicate that all positive and negative films were significantly differentiated.

Table 5.1. *Film validation studies: Emotional Measures*

Authors	Scale(s)	Specific Measures
Philippot (1993)	Modified Differential Emotion Scale (DES)[1 2] Semantic differential (SD)[3 4] Free labeling (FL)[5]	DES: (1) interested, concentrated, alert ; (2) amused, joyful, merry; (3) sad, downhearted, blue; (4) angry, irritated, mad; (5) fearful, scared, afraid; (6) anxious, tense, nervous; (7)disgusted, turn off, repulsed; (8) disdainful, scornful, contemptuous; (9) surprised, amazed, astonished; (10) warmhearted, gleeful, elated SD: (1) pleasant/unpleasant; (2) little/large; (3) lively/indolent; (4) strong/weak; (5) slow/fast; (6) bad/good; (7) living/death; (8) nice/wicked; (9) huge/tiny
Gross and Levenson (1995)	16 item inventory [6 7]	Amusement, anger, arousal, confusion, contempt, contentment, disgust, embarrassment, fear, happiness, interest, pain, relief, sadness, surprise, tension
Hewig et al. (2005)	17 item inventory [8] 4 item bipolar measure [9]	17 item inventory: Happiness, pleasure, amusement, hope, affection, desire, sympathy/empathy, relief, boredom, frustration, anger, rage, sadness, fear, disgust, shame, guilt 4 item bipolar measure: (1) unpleasant/pleasant; (2) weak/strong; (3) stressed /content; (4) ecstatic/depressed
Rottenberg, Ray, and Gross (2007)	18 item inventory [10] Single bipolar pleasantness vs. unpleasant measure	18 item inventory: Amusement, anger, anxiety, confusion, contempt, disgust, embarrassment, fear, guilt, happiness, interest, joy, love, pride, sadness, shame, surprise, unhappiness
Schaefer, Nils, Sanchez, and Philippot (2010)	Emotional intensity Extended Modified DES [11] Positive and negative affect scale (PANAS) [12]	Emotional intensity: "While I was watching the film…" (1) = "I felt no emotion at all" (7) = "I felt very intense emotions" DES: (1) interested, concentrated, alert; (2) amused, joyful, merry; (3) sad, downhearted, blue; (4) angry, irritated, mad; (5) fearful, scared, afraid; (6) anxious, tense, nervous; (7) disgusted, turn off, repulsed; (8) disdainful, scornful, contemptuous; (9) surprised, amazed, astonished; (10) warmhearted, gleeful, elated; (11) loving, affectionate, friendly; (12) guilty, remorseful; (13) moved; (14) satisfied, pleased; (15) calm, serene, relaxed; (16) ashamed, embarrassed PA: Active, alert, attentive, determine, enthusiastic, excited, inspired, interested, proud, strong NA: Afraid, shame, distress, guilty, hostile, irritable, jittery, nervous, scared, upset

(1) DES (Izard et al., 1974) modified by McHugo et al. (1982); (2) Scale assessed on five-point Likert scales anchored by "not at all" and "very strongly"; (3) Semantic Differential Scale (Osgood, 1964) translated into French by Hogenraad and David (1971) (4) Scale assessed on bipolar five-point Likert scales; (5) Three names or adjectives to describe emotional state; (6) Adapted from Ekman, Freisen, & Ancoli, 1980; (7) Scale assessed on nine point Likert scales (0-8) anchored by "not at all/none" and "extremely/a great deal" midpoint "somewhat/some"; (8) Scale assessed on nine point Likert scales anchored by "not at all" and "very strong"; (9) Scale assessed on 10 point bipolar Likert scales (0-9); (10) Scale assessed on nine point Likert scales (0-8) anchored by "not at all/none" and "extremely/a great deal" midpoint "somewhat/some" (11) Izard et al., (1974) scale assessed with seven point Likert scale anchored by "not at all" and "very intense"; (12) Watson, Clark, and Tellegen (1988) scale assessed with five-point Likert scale anchored by "very slightly or not at all" and "extremely".

Table 5.2. *Film Validation Studies: Fear Inducing Clips*

Authors	**Film Clips**	**Time (min:sec)**	**Segment Description**
Philippot (1993)[1]	Psycho (1953)	N.R.[2]	Motel murder
	Halloween (1981)	N.R.	Babysitter pursued by killer
Gross and Levenson (1995)	The Shining (1980)	1:22	Boy plays in hallway
	The Silence of the Lambs (1991)	3:29	Basement chase scene
Hewig et al. (2005)[3]	Halloween (1978)	3:28	Babysitter pursued by killer
	The Silence of the Lambs (1991)	3:22	Basement chase scene
Rottenberg, Ray, and Gross (2007)	The Shining (1980)	1:22	Boy plays in hallway
	The Silence of the Lambs (1991)	3:29	Basement chase scene
Schaefer, Nils, Sanchez, and Philippot (2010)[4 5]	The Blair Witch Project (1999)	3:57	Final scene in which the characters are apparently killed
	The Shining (1980)	4:15	The character played by Jack Nicholson pursue his wife
	Scream 1 (1996)	6:33	A girl receives a threats through the phone
	Misery (1990)	3:31	Annie (Kathy Bates) breaks Paul's legs (James Caan)
	Scream 2 (1997)	3:35	A pursuit takes place in a school
	Child's Play 2 (1990)	1:05	Chucky beats Andy's teacher with a ruler
	Copycat (1995)	2:23	One of characters gets caught by our murderer in a toilet
	It (1990)[6]	2:13	A clown hidden in a sewer attracts a boy
	The Exorcist (1973)	1:41	A priest tries to cure a girl who is possessed by the devil
	Seven (1995)	1:43	Policeman find the body of a savagely tortured man

(1) All movies shown in French; (2) N.R. Not Reported; (3) Movies shown without sound; (4) All movies shown in French; (5) Segment description taken verbatim from Schaefer, Nils, Sanchez, and Philippot (2010); (6) There is a discrepancy between the published article and supplemental information on the eighth -ranked fear inducing film clip. In the published article it is listed as *The Dentist* in the supplemental information it is listed as *It*. *It* is included in the supplemental information yet not included in the table covering the top film clips for any emotional category and hence it is assumed that *The Dentist* which is the six ranked disgust film clip was transposed with *It* in the published article.

In conclusion, the less than optimal findings for Philippot (1993) are mainly due to the use of the SD scale which, with measures such as “little-large” or “lively-indolent”, has little use in the context of consumption emotions. Further, measures of “interest” and “attention” as reported by Philippot (1993) and Rottenberg et al. (2007) are not discrete emotions per se but rather states that can assume either positive or negative valence. Therefore, across these five studies and the psychophysiological study by Kreibig et al. (2007) there is good evidence to suggest that in comparison to the other film clips, and across the emotions tested, horror movies do elicit fear and more so than other discrete emotions. I now turn to empirical tests of arousal conversion and the hedonic equation.

CHAPTER VI

STUDY 1A AND 1B: ESTABLISHING EXCITEMENT DURING HORROR MOVIE CONSUMPTION

Overview of Studies

Three studies were conducted to examine the tenets of valence conversion and the hedonic equation. Study 1a and 1b are surveys designed to rule out a labeling effect, due to specific fixed response measurement, as potential explanations for effects observed in subsequent studies. Study 2 tests the predictions of valence conversion and habituation by assessing fear and excitement during and immediately following the consumption of a horror movie. Lastly, Study 3 tests the predictions of the hedonic equation.

Study 1a & 1b: Survey and Free Response

Study 1a and 1b are surveys designed to address the priming influence of specific fixed response affective measurement in relation to horror movie consumption. One consequence of the valence conversion framework is that being asked to rate the intensity of an emotion on a Likert scale may act as a "cognition" and hence influence self-reports. This labeling effect is likely to only occur when a small number of emotions are being measured. Thus, in order to rule out the possibility that self-reports of excitement during horror movie consumption are solely due to the priming influence of specific discrete measurement, Study 1a measures 40 consumption emotions and Study 1b measures emotions utilizing a free response format.

Method 1a

Participants

Two hundred and ninety participants (53% male; average age 21.6) were recruited from a large northwestern university and received course credit in exchange for their participation.

Procedure

The study was conducted online using Qualtrics. Participants were recruited to take part in a survey involving movie preferences and emotions. After reading a consent form, participants rated how often they watched the seven most popular genres of movies (horror, comedy, adventure, action, drama, thriller/suspense and romantic comedy), in random order, on a seven-point ordinal scale with the following values: (1) *at most once a year*, (2) *every six months,* (3) *every three months*, (4) *once a month*, (5) *twice a month*, (6) *once a week,* and (7) *a couple times a week or more*. To aid with genre identification, titles of three of the top five grossing movies (1995-2015) for each genre were provided ("Market Share for Each Genre 1995-2015," 2015). Next participants were presented with an alphabetized list of 40 emotions selected from Richins' (1997) Consumption Emotions; Yik, Russell, and Steiger (2011) 12 Point Affect Circumplex; Watson and Clark's (1999) PANAS-X. See Appendix A for the complete list. Participants were instructed to select which emotions they felt most strongly in relation to horror movies and to consider their emotions across four time points. The four time points participants were asked to consider were: "Anticipating going to see the movie, watching the movie, immediately after watching the movie, and remembering watching the movie." Lastly, participants provided basic demographic information and were dismissed.

Results and Discussion Study 1a

Participants reported an average of 6.89 emotions (SD = 3.51). The top 15 most reported emotions in order were: afraid, tense, anxious, nervous, distressed, thrilled, surprise, disgusted, excited, agitated, unhappy, frustrated, eager, angry, and dissatisfied (see Figure 6.1). Excitement was the ninth highest reported emotion, and the highest reported positive emotion, with 26% (75) of the sample reporting excitement. To examine the relation between reported emotions and horror movie consumption frequency (M = 2.35, SD = 1.58), Pearson product-moment correlation coefficients were calculated. There were significant and negative correlations between consumption frequency and distressed ($r(121) = -.140$, $p = .017$), disgusted ($r(92) = -.185$, $p = .002$), agitated ($r(70) = -.222$, $p < .001$), unhappy ($r(70) = -.314$, $p < .001$), frustrated ($r(64) = -.118$, p = .044), angry ($r(55) = -.213$, $p < .001$) and dissatisfied ($r(54) = -.168$, $p = .004$). There were significant positive correlations between consumption frequency and thrilled ($r(119) = .324$, $p < .001$), excited ($r(75) = .432$, $p < .001$) and eager ($r(62) = .187$, $p < .001$).

Based on the current study, excitement is the most often reported positive emotion in relation to horror movie consumption. This finding provides evidence that excitement is experienced in relation to horror movie consumption, and without the potential biasing effect of fixed response measurement. Further, the valence conversion model predicts a positive correlation between excitement and consumption frequency and a negative correlation between fear and consumption frequency. The positive correlation between excitement and consumption frequency, observed in this study, supports the valence conversion model. The lack of a negative correlation between consumption frequency and afraid ($r(209) = -.095$, $p = .107$) may be due to high number of participants who

selected afraid and the dichotomous nature of the emotion data, reducing necessary variance to detect an effect; however, distressed and agitated show the predicted negative correlation with consumption frequency.

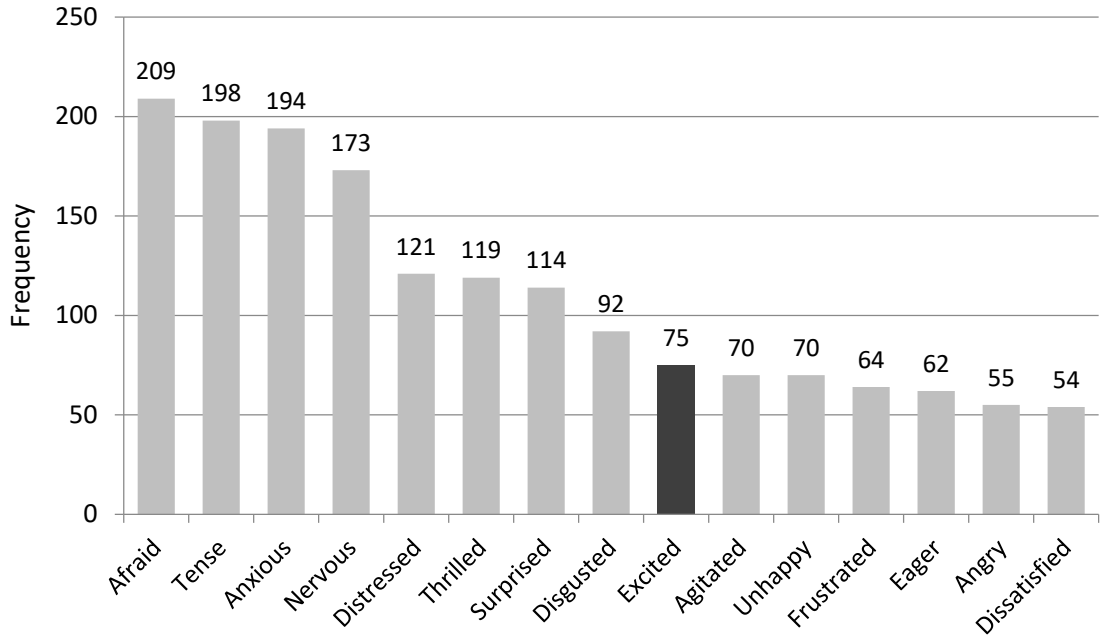

Figure 6.1. Frequencies of the Top 15 Reported Emotions In Relation to Horror Movie Consumption

Method 1b

Participants

Ninety-eight participants (63% male; average age 38) were recruited from MTurk and paid one dollar in exchange for their participation.

Procedure

The study was conducted online using Qualtrics. Participants were ostensibly recruited for a movie rating survey which involved watching two randomly selected clips, from different movie genres, and providing ratings. It was stressed that, in order to be paid for the study, the participants must be able to correctly identify which movie clips they had watched. Participants first read a consent form, and then (following procedures established by Andrade and Cohen; 2007) watched a documentary to set affective state before the horror movie stimulus. The documentary was a 2 minute clip from *Alaska's Wild Denali,* which had been previously rated as affectively neutral (Rottenberg et al., 2007). After the documentary, participants were instructed to report their emotions via free response and instructed to try to avoid using synonyms for the same feelings. See Appendix B for a complete description of the free response instructions. Next participants watched a 3 minute and 29 second clip of *The Silence of the Lambs,* which was validated by Gross and Levenson (1995) to cause fear. After the horror movie clip, participants repeated the same free response procedure and lastly, provided basic demographic information.

Results and Discussion 1b

To determine whether excitement would be reported by the participants without the potential biasing effect of the fixed response measurement procedure, participants were asked to report how they felt during horror movie consumption by free response. The free responses were combined into categories so that different tenses of the same word were included in the same category. For example, anxious, anxiousness, and anxiety were combined into anxious. See Appendix C for complete description of this

procedure. The top 10 most-reported emotions were in order: fear, anxious, tense, scared, curious, excited, suspense, nervous, disgust and anger (see Figure 6.2). Excitement was the sixths highest reported emotion, and the highest reported positive emotion, with 16% (16) of participants reporting excitement during the horror movie clip. Similar to study 1a, study 1b provides evidence that excitement is experienced during the consumption of horror movies, and more so than any other positive emotion. In this study, this pattern was observed without the potential influence of priming by the list of emotion words used in the previous study.

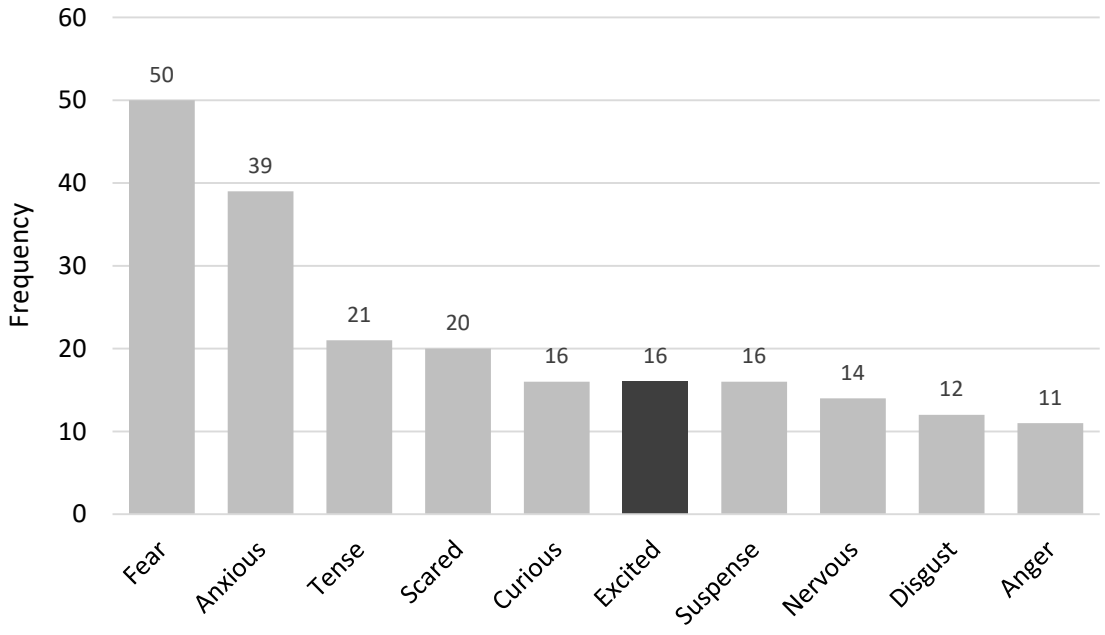

Figure 6.2. Emotion Free Response Frequencies for Horror Movie Consumption

CHAPTER VII

STUDY 2: THE ROLE OF FEAR AND EXCITEMENT IN HORROR MOVIE CONSUMPTION

Study 2 was designed to test predictions of valence conversion and habituation and to assess the role of discrete emotions in horror movie consumption. Valence conversion predicts a positive relation between consumption frequency and excitement and a negative relation between consumption frequency and fear. Habituation predicts that the negative relation between consumption frequency and fear will be explained by habituation. Further, habituation predicts the presence of four different consumer groups defined by recent consumption frequency and level of habituation, which lead to different levels of experienced fear and excitement. To test these predictions and assess the role of discrete emotions in horror movie consumption, seven different emotional states were measured both before and after horror movie consumption. First, affective tone was set with a neutrally valenced documentary clip, and affect was assessed. Second, participants then watched a horror movie clip, and affect was assessed a second time (documentary, affect measures, horror, affect measures).

Method

Participants and Design

Three hundred ninety-eight participants (52.8% male; average age 37) were recruited online from Amazon mechanical Turk and were paid one dollar in exchange for their participation. The experiment employed a 2 (emotional measure: in the moment vs.

residual) by 2 (stimulus replicate: *The Silence of the Lambs* vs. *The Shining*) by 2 (timing: before vs. after horror movie exposure) mixed design. The first two factors were manipulated between subjects.

Procedure

The study was conducted online using Qualtrics. Participants were ostensibly recruited for a movie rating survey which involved watching two randomly selected clips, from different movie genres, and providing ratings. Participants were randomly assigned to either the *in the moment* or *residual* condition. Next, following the procedure from Study 1b, the neutrally valence documentary, *Alaska's Wild Denali*, was used to set affective state. After the documentary (and horror movie clip), participants' affective states were assessed utilizing five emotions from the circumplex model of affect: happy (pleasant affect), excited (positive activation), physical aroused (arousal), fearful (negative activation), and unhappy (unpleasant affect) adapted from Remington, Fabrigar, & Visser (2000). Additionally, general positive and negative affective states were assessed with the following measures: pleasant/good/positive and unpleasant/bad/negative. Affect question order was randomized for each subject. Scale items were administered in adjective format using the following stimulus wording, for the *in the moment* condition: "Indicate how ___ you felt while watching the film clip" and in the *residual* condition: "How ___ do you feel right now?" Responses to the specific affect questions were measured on 11-point Likert scales anchored by *not at all* and *extremely* with the midpoint labeled *moderately*.

After completing the scale items, participants were randomly assigned to a stimulus replicate condition (*The Silence of the Lambs* vs. *The Shining*). *The Silence of*

the Lambs clip was identical to the clip used in Study 1b. The clip from *The Shining* was 4 minutes and 15 seconds in length and validated by Schaefer et al. (2010) to cause fear. After the horror movie clip, participants completed the same seven measures of emotion worded and measured in exactly the same manner as after the first clip. After the emotion measures, consumption frequency, habituation, and the valence and arousal of excitement, fear, and physical arousal was assessed.

Consumption frequency. Consumption frequency was assessed with two measures. The first measure was designed to assess recent consumption; and utilized the following stimulus wording: "Over the last year about how often have you watched Horror movies? For example, movies like: Hannibal, The Blair Witch Project, and The Ring." The second frequency measure was designed to capture a previous year maximum; and utilized the following stimulus wording: "In any previous year (but not including the last year) what is the most you have ever watched Horror movies? For example…" Responses were recorded on nine point Likert-like scales anchored by *never* and *very often*.

Habituation. Habituation to horror movies was assessed with the following wording: "As an adult are horror movies more or less frightening than when you first started watching them?" Responses were recorded on 11 point Likert-like scales anchored by *much less frightening* and *much more frightening* with the midpoint labeled *about the same*.

Valence and arousal of excitement, fear and physical arousal. To determine how participants perceived the valence and arousal of excitement, fear, and physical arousal, the participants were asked a series of questions. They were informed that the questions

were not in reference to any of the movie clips they had previously viewed. The valence of excitement, fear, and physical arousal was assessed utilizing the following wording: "Please indicate whether the feeling of ___ is pleasant, neutral, or unpleasant." Responses were recorded on seven point Likert scales anchored by *unpleasant/bad/negative* and *pleasant/good/positive* with the midpoint labeled *neutral*. The level of physical arousal for excitement, fear, and physical arousal was assessed utilizing the following stimulus wording: "Please indicate whether the feeling of ___ is associated with being physically aroused, neutral, or inactive." Responses were recorded on seven point Likert scales anchored by *inactive/quiet/still* and *aroused/alert/activated* with the midpoint labeled *neutral*.

Demographics and Debriefing. Lastly, participants were asked to identify the horror movie clip they had watched, if they experienced any problems, whether they had seen the movie or movie clip before, and basic demographic information.

Results and Discussion

This analysis is composed of three parts. First, a general set of analyses is conducted on 1) the stimulus replicate condition, 2) the effect of having previously viewed the movie or movie clip, 3) the affective responses to the documentary and horror movie clip, 4) the valence of excitement, 5) the intensity of fear and excitement experienced during and after the horror movie clip, 6) differences between the in the moment and residual conditions. The second set of analyses addresses consumption frequency and tests the predictions of valence conversion. These analyses examine super users and the effect of consumption frequency on fear and excitement. The last set of

analyses concerns habituation. Specifically, the relation between habituation consumption frequency and fear is examined along with a test of the four different consumer groups.

Part I: General Analyses

Stimulus Replicates

To explore the relation between fear and excitement, two pre-validated movie clips (*The Silence of the Lambs* and *The Shining*) were used. To test the equivalency of the two movie clips, one-way ANOVAs were performed on assessed emotions. There were no significant differences between the stimuli on assessed emotions (*in the moment* physical arousal $F(1, 199) = 2.862$, $p = .092$; all other p values >.1, F statistic range .031-2.38). Based on a chi-square analysis, significantly more people had seen *The Shining* (Seen =144, Not seen = 52) than *The Silence of the Lambs* (Seen = 118, Not seen = 84; χ^2 (1, $N = 398$) = 10.021, $p = .002$). Having "seen" the film or film clip did not interact with stimulus replicate condition on any of the assessed emotions ($p > .1$); hence, the stimulus replicate conditions were collapsed and all subsequent analyses conducted on the collapsed conditions.

The Effect of Having Previously Viewed the Horror Movie or Movie Clip

The effect of previously viewing the horror movie or movie clip on assessed emotions was analyzed for both the *in the moment* (seen = 138, not seen = 63) and *residual* conditions (seen = 124, not seen = 73). To control for multiple comparisons, Bonferroni corrections were applied and $p = .05/7 = .007$ set as the critical significance level. For the *in the moment* condition, one-way ANOVAs yielded no significant differences between participants who had previously viewed the movie/clip and ones who had not on assessed emotions ($p > .1$). For the *residual* condition, participants who had

previously viewed the movie/clip reported more excitement (M = 4.66, SD = 2.82) than ones who had not (M = 5.84, SD = 2.88; $F(1, 195) = 7.846$, $p = .006$). Due to the positive correlation between seen (M = 0.63, SD = 0.48) and consumption frequency (M = 4.34, SD = 2.37; $r(197) = .273$, $p < .001$), a regression analysis was run to test for the effect of seen on residual excitement, controlling for consumption frequency. Based on the Bonferroni corrected p value the results are not significant ($B = .953$, $t(194) = 2.190$, $p = .030$). There were no other differences in the *residual* condition on assessed emotions between participants who had viewed the movie clip and ones who had not ($p > .1$). Prior research on using films for emotion elicitation has found that previously viewing the film or film clip elicited more of the target emotion (Gross & Levenson, 1995). The difference between the current study and prior research may be due to the age of the film clips used in the present study. *The Shining* was released in 1980 and *The Silence of the Lambs* in 1991. It is therefore quite likely that it may have been many years since participants had previously viewed the movie, which may have attenuated the effect found by Gross and Levenson (1995).

Comparison of Affective Responses to the Documentary and Horror Movie Clips

To establish the affective profile of the horror movie clip, the differences between the neutrally valenced documentary and the horror movie clip were assessed. Paired sample t-tests were performed on the happy, excited, physical arousal, fearful, unhappy, pleasant/good/positive and unpleasant/bad/negative scales for both the *in the moment* and *residual* conditions. To control for multiple comparisons, Bonferroni corrections were applied and $p = .05/7 = .007$ set as the critical significance level. For the *in the moment* condition, results indicate that participants reported experiencing significantly more

happiness and positivity during the documentary than during the horror movie, and they experienced significantly more excitement, physical arousal, fear, unhappiness, and negativity during the horror movie than during the documentary (see Table 7.1). For the *residual* condition, participants reported experiencing significantly more happiness and positivity after the documentary than after the horror movie, and they experienced significantly more excitement, physical arousal, fear, unhappiness, and negativity after the horror movie than after the documentary (see Table 7.2). These findings serve as a manipulation check and confirm that the horror movie clips produced more negative and high arousal emotions than the neutrally valence documentary.

Table 7.1.
Comparison of In the moment Affect: Documentary vs. Horror Movie Clips

	Documentary		Horror				95% CI		Cohen's
Variable	*M*	*SD*	*M*	*SD*	*t*(200)	*p*	*LL*	*UL*	*d*
Happy	7.79	2.31	3.24	2.45	19.59	<.001	4.09	5.00	1.91
Excited	4.55	2.68	6.49	2.96	-7.85	<.001	-2.43	-1.46	0.69
Physically Aroused	3.57	2.65	5.09	3.28	-7.86	<.001	-1.91	-1.14	0.51
Fearful	1.37	1.16	6.71	3.00	-25.33	<.001	-5.75	-4.92	2.35
Unhappy	1.95	1.93	4.75	3.15	-11.56	<.001	-3.28	-2.32	1.07
Positive	8.49	2.02	3.21	2.4	22.94	<.001	4.83	5.74	2.38
Negative	1.76	1.65	6.27	3.03	-18.93	<.001	-4.99	-4.05	1.85

Note. *CI* = confidence interval; *LL* = lower limit; *UL* = upper limit

Table 7.2.

Comparison of Residual Affect: Documentary vs. Horror Movie Clip

	Documentary		Horror				95% CI		Cohen's
Variable	*M*	*SD*	*M*	*SD*	*t*(196)	*p*	*LL*	*UL*	*d*
Happy	7.71	2.24	4.30	2.63	15.87	<.001	2.987	3.84	1.40
Excited	4.73	2.64	5.40	2.91	-2.75	.006	-1.15	-0.19	0.24
Physically Aroused	3.52	2.45	5.10	3.28	-7.05	<.001	-2.03	-1.14	0.55
Fearful	1.60	1.35	5.21	3.09	-16.47	<.001	-4.04	-3.18	1.51
Unhappy	2.18	1.92	4.45	2.90	-10.76	<.001	-2.68	-1.85	0.92
Positive	9.03	2.12	5.08	2.83	17.22	<.001	3.49	4.40	1.58
Negative	2.02	1.87	5.40	2.92	-15.18	<.001	-3.82	-2.94	1.38

Note. *CI* = confidence interval; *LL* = lower limit; *UL* = upper limit

Differences between Genders on Assessed Emotions to the Horror Movie Clip

To test for any differences between genders on emotional reactions to the horror movie clip, independent sample t-tests were performed. To control for multiple comparisons, Bonferroni corrections were applied and p =.05/7=.007 set as the critical significance level. For the *in the moment condition*, women report significantly more fear, unhappiness, and negativity than men (see Table 7.3). For the *residual* condition men report marginally more positivity than women (see Table 7.4). Prior research has found that women experience higher emotional intensity and more negative affect during film consumption (e.g. Schaefer, Nils, Sanchez, & Philippot, 2010; Gross & Levenson, 1995). The current study supports these findings that women report higher levels of negative affect during horror movie consumption.

Table 7.3.

In the moment Condition Comparison of Men and Women on Assessed Emotions

	Men (n = 109)		Women (n = 92)				95% CI		Cohen's *d*
Variable	*M*	*SD*	*M*	*SD*	*t*(199)	*p*	*LL*	*UL*	
Happy	3.47	2.31	2.98	2.59	1.42	.158	-0.19	1.17	.20
Excited	6.70	2.96	6.25	2.95	1.07	.286	-0.38	1.27	.15
Physically Aroused	4.68	3.11	5.59	3.41	-1.97	.050	-1.82	0.00	.28
Fearful	6.15	3.02	7.37	2.85	-2.93	.004	-2.05	-0.40	.42
Unhappy	4.16	2.95	5.46	3.25	-2.97	.003	-2.16	-0.44	.42
Positive	3.38	2.31	3.01	2.50	1.07	.283	-0.30	1.03	.15
Negative	5.61	2.89	7.07	3.02	-3.50	.001	-2.28	-0.64	.49

Note. *CI* = confidence interval; *LL* = lower limit; *UL* = upper limit

Table 7.4.

Residual Condition Comparison of Men and Women on Assessed Emotions

	Men (n = 101)		Women (n = 96)				95% CI		Cohen's *d*
Variable	*M*	*SD*	*M*	*SD*	*t*(195)	*p*	*LL*	*UL*	
Happy	4.67	2.64	3.91	2.58	2.07	.040	0.03	1.50	.29
Excited	5.65	2.72	5.14	3.08	1.25	.212	-2.98	1.33	.18
Physically Aroused	5.01	3.25	5.20	3.32	-0.40	.689	-1.11	0.74	.06
Fearful	4.97	3.10	5.46	3.08	-1.11	.270	-1.36	0.38	.16
Unhappy	4.40	2.80	4.50	3.02	-0.25	.802	-0.92	0.71	.03
Positive	5.57	2.71	4.56	2.87	2.55	.012	0.23	1.80	.36
Negative	5.05	2.86	5.76	2.94	-1.72	.087	-1.53	0.10	.24

Note. *CI* = confidence interval; *LL* = lower limit; *UL* = upper limit

The Valence of Excitement

The subsequent analysis is predicated on the fact that excitement is a positive emotion and not simply being construed as physical arousal. To test whether excitement is a positive emotion and different than physical arousal, two sets of analyses were carried out. First, responses to questions assessing the valence and arousal of excitement,

fear, and physical arousal were evaluated. Second, correlations between the measured emotions were examined. As predicted, paired sample T-tests indicate that excitement (M = 6.48, SD = 1.53) is perceived as significantly more positive than physical arousal (M = 6.02, SD = 1.53; $t(397) = 6.625$, $p < .001$) and fear (M = 2.71, SD = 1.74; $t(397) = 32.233$, $p < .001$). Further, paired sample T-tests indicate that excitement (M = 5.91, SD = 1.33) is less physically arousing than physical arousal (M = 6.06, SD = 1.39; $t(396) = 2.828$, $p = .005$) and more physically arousing than fear (M = 5.30, SD = 1.79; $t(394) = 7.599$, $p < .001$). See Figure 7.1. An examination of the correlations between excitement, physical arousal and fear with the other assessed emotions also shows the expected pattern of results. For the *in the moment* condition, excitement is positively correlated with positivity, happiness, physical arousal, fear, and enjoyment and not significantly correlated with unhappiness and negativity. Physical arousal is positively correlated with fear, unhappiness, and negativity but not significantly correlated with positivity, happiness, and enjoyment. Fear is negatively correlated with positivity, happiness, and enjoyment, and it is positively correlated with physical arousal, unhappiness and negativity. See Table 7.5. For the *residual* condition excitement is positively correlated with positivity, happiness, physical arousal and enjoyment and not significantly correlated with fear, unhappy and negativity. Physical arousal is positively correlated with fear, unhappy, negativity and enjoyment and not significantly correlated with positivity and happiness. Fear is negatively correlated with positivity and happiness; positively correlated with physical arousal unhappiness and negativity; and not significantly correlated with enjoyment. See Table 7.6.

The results of this study provide evidence that excitement is indeed a positive emotion and is not being construed as solely physical arousal. Excitement is perceived as more positive than physical arousal and is primarily correlated with positive emotions whereas physical arousal is only correlated with negative emotions. These findings in conjunction with the circumplex model of affect, in which excitement falls in the high arousal positive quadrant (between 45 and 60 degrees), provides evidence that excitement is indeed a positive emotion and not analogous to physical arousal.

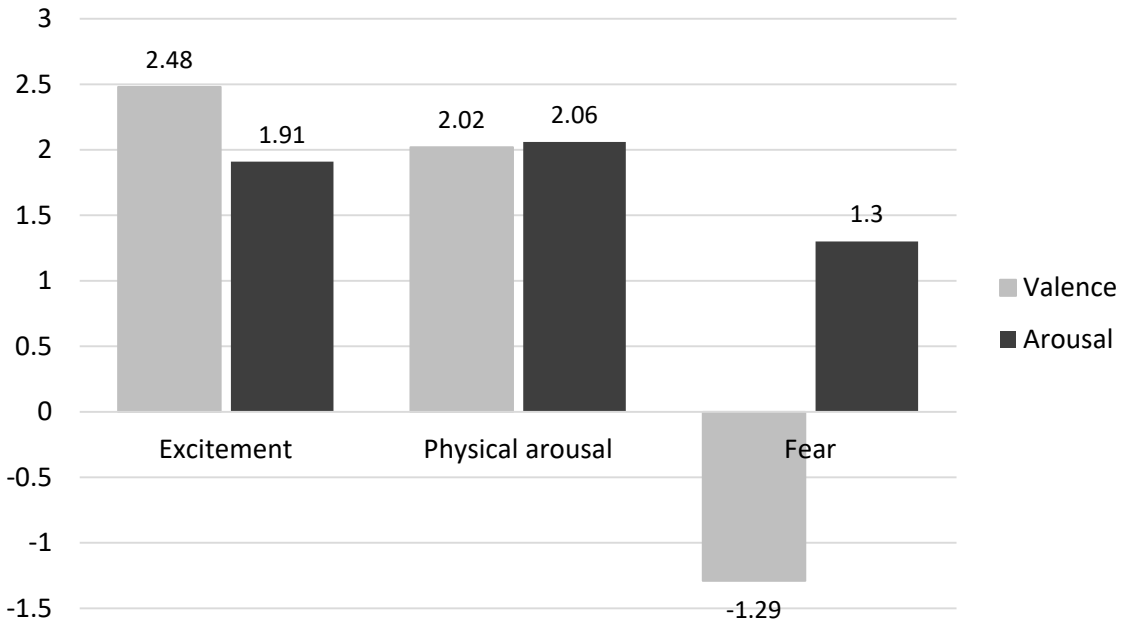

Figure 7.1. The Valence and Arousal of Excitement, Physical Arousal and Fear

Table 7.5.

In the moment Condition Correlations between Excitement, Physical Arousal Fear and Measured Emotions

Variable	Excitement	Physical Arousal	Fear
Positive	.358**	*n.s.*	-.302**
Happiness	.418**	*n.s.*	-.299**
Physical Arousal	.463**	--	.309**
Fear	.171*	.309**	--
Unhappy	*n.s.*	.244**	.572**
Negative	*n.s.*	.186**	.680**
Enjoyment	.494**	n.s.	-.191**

* Correlation is significant at the .05 level (2 tailed).

** Correlation is significant at the .001 level (2 tailed).

Table 7.6.

Residual Condition Correlations between Excitement, Physical Arousal Fear and Measured Emotions

Variable	Excitement	Physical Arousal	Fear
Positive	.263**	n.s.	-.500**
Happiness	.253**	n.s.	-.524**
Physical Arousal	.630**	--	.247**
Fear	n.s.	.247**	--
Unhappy	n.s.	.172*	.705**
Negative	n.s.	.207**	.745**
Enjoyment	.364**	.247**	N.S.

* Correlation is significant at the .05 level (2 tailed).

** Correlation is significant at the .001 level (2 tailed).

Comparison of Excitement and Fear in the Horror Movie Clip

To examine whether the amount of fear elicited by the horror movie clip differs from the amount of excitement, paired sample t-tests were carried out. For the *in the moment* condition, participants report experiencing similar amounts of excitement (M = 6.49, SD = 2.96) and fear (M = 6.71, SD = 3.00; $t(200) = 0.21$, $p = .430$). In the *residual*

condition, participants also report similar levels of excitement (M = 5.21, SD = 2.91) and fear (M = 5.40, SD = 3.09; $t(196) = 0.69$, p = .499). Both of the film clips used in this study *The Silence of the Lambs* and *The Shining* were pre-validated to induce fear and more so than other emotions tested (Gross & Levenson, 1995; Schaefer et al., 2010). However, excitement was never considered as a discrete emotion (in the case of Schaefer et al., (2010) excitement was considered in the context of the PANAS). The results of the current study suggest that these film stimuli cause as much excitement as they do fear. This calls into question any study which has manipulated fear without controlling for excitement.

Comparison between the In the Moment and Residual Conditions

To determine whether there were any differences on assessed emotions between the *in the moment* and *residual* conditions for the horror movie clip, one-way ANOVAs were performed. To control for multiple comparisons Bonferroni corrections were applied and p =.05/7=.007 set as the critical significance level. Participants reported significantly more excitement, fear, and unpleasantness for the *in the moment* condition and significantly more happiness and pleasantness in the *residual* condition. Physical arousal and unhappiness were not significantly different between the two conditions (see Table 7.7). It was expected that most emotions would be experienced as more intense during the movie clip than after. These results conform to expectations and demonstrate participants were able to successfully report their emotions retrospectively.

Table 7.7.

Differences between the In the moment and Residual on Assessed Emotions

	In the moment (*n* = 201)		*Residual* (*n* = 197)				
Variable	*M*	*SD*	*M*	*SD*	*F*(1,396)	*p*	η^2
Happy	3.24	2.45	4.30	2.63	17.22	<.001	.042
Excited	6.49	2.96	5.40	2.91	13.79	<.001	.034
Physical Aroused	5.09	3.28	5.10	3.28	0.00	.983	.000
Fearful	6.71	3.00	5.21	3.09	24.05	<.001	.057
Unhappy	4.75	3.15	4.45	2.90	1.00	.317	.003
Pleasant/good/pos	3.21	2.40	5.08	2.83	50.89	<.001	.114
Unpleasant/bad/neg	6.27	3.03	5.40	2.92	8.67	.003	.021

Part II: Super Users and Valence Conversion

The following sections report tests of valence conversion predictions and assess the role of consumption frequency and its relation to excitement and fear. Specifically, valence conversion predicts a positive relation between consumption frequency and excitement, and it predicts a negative relation between consumption frequency and fear. First, the consumption frequency distribution is examined for evidence of bimodality and then the predictions of valence conversion are assessed.

Super Users

Based on a visual inspection of the consumption frequency distribution (*N* = 398, *M* = 4.34, *SD* = 2.36; see Figure 7.2) there is evidence of bimodality. Thirty participants selected "very often" on both frequency measures and were classified as super (heavy) users. The remaining data were divided into consumers (N = 168, M = 5.82, SD = 1.24) and non-consumers (N = 200, M = 2.40, SD = 0.96) via a median split. Utilizing one-way ANOVAs with planned contrasts, emotions by consumer group were analyzed for the *in the moment* and *residual* conditions. To control for multiple comparisons Bonferroni

corrections were applied and p =.05/7=.007 set as the critical significance level. For the *in the moment* condition there were no significant differences between consumers and non-consumers (p > .014). Super users experienced greater excitement and less unhappiness and marginally more happiness and pleasantness than consumers (see Table 7.8). For the *residual* condition, super users experienced marginally less unhappiness than consumers (see Table 7.9).

Although previous research has used consumption frequency as a variable (e.g., Andrade & Cohen, 2007; Madrigal, et. al., 2011) to our knowledge no other researchers have reported evidence of bimodality; however, it is not surprising that groups of devoted consumers exist, given the presence of fan conventions and Facebook fan pages dedicated to particular genres. In the present research, these super using consumers' emotional reactions differed in predictable ways by displaying more positive emotions and less negative emotions than other participants. Due to evidence of bimodality, the following analyses on the effect of consumption frequency and habituation on excitement and fear are conducted utilizing the full sample and with super users removed.

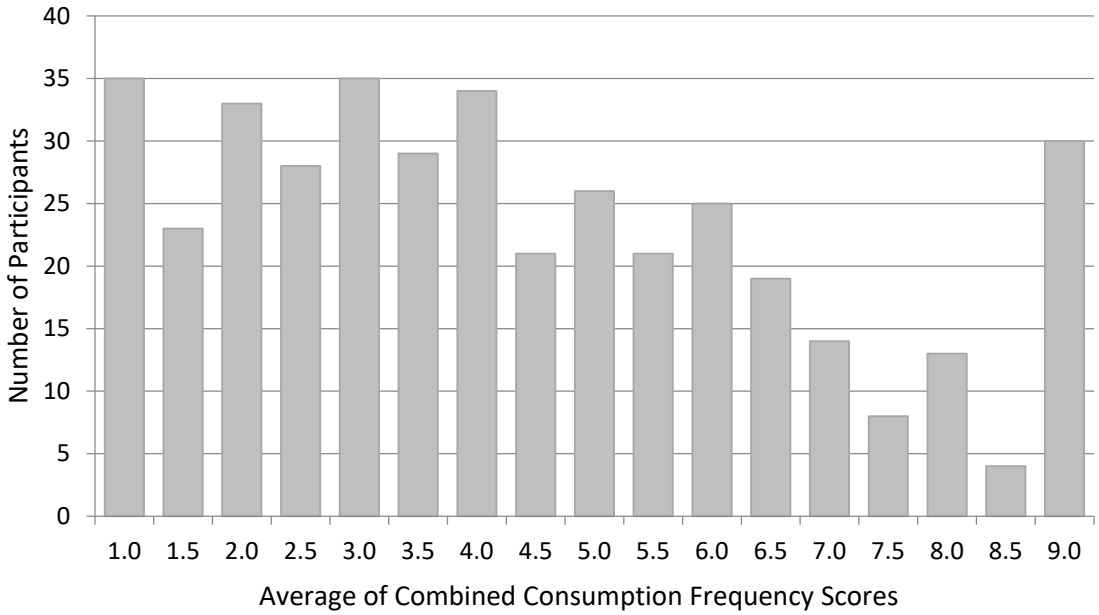

Figure 7.2. Distribution of Combined Consumption Frequency Scores (*n* = 398)

Table 7.8.

In the moment Comparison between Non-Consumers, Consumers and Super Users on Measure Emotions

	Non-consumers		Consumers		Super Users		ANOVA		Contrast 1*		Contrast 2**	
Variable	M(96)	SD	M(89)	SD	M(16)	SD	*F*(2,198)	*p*	*t*(198)	*p*	*t*(var)***	*p*
Happy	2.74	2.12	3.28	2.17	6.06	3.68	14.361	<.001	1.600	.111	2.930	.009
Excited	6.09	3.00	6.55	2.90	8.56	1.71	5.010	.008	1.070	.285	3.800	.001
Physical Aroused	5.14	3.29	5.04	3.25	5.13	3.54	0.018	.982	-0.187	.852	0.084	.934
Fearful	6.93	3.17	6.74	2.74	5.19	3.15	2.346	.098	-0.423	.673	-1.854	.079
Unhappy	4.75	3.10	5.21	3.18	2.19	2.11	6.598	.002	1.027	.306	-4.845	<.001
Pleasant/good/pos.	2.70	2.09	3.29	2.16	5.81	3.56	13.083	<.001	1.783	.076	2.740	.014
Unpleasant/bad/neg.	6.75	2.98	6.12	2.93	4.25	3.17	5.062	.007	-1.433	.153	-2.200	.040

Note: * Contrast between non-consumers and consumers equal variance assumed ** Contrast between consumers and super users equal variance not assumed *** Variable degrees of freedom.

Table 7.9.

Residual Comparison between Non-Consumers, Consumers and Super Users on Measure Emotions

	Non-consumers		Consumers		Super Users		ANOVA		Contrast 1*		Contrast 2**	
Variable	M(87)	SD	M(96)	SD	M(14)	SD	*F*(2,194)	*p*	*t*(194)	*p*	*t*(var)***	*p*
Happy	4.01	2.46	4.52	2.74	4.57	2.90	0.937	.393	1.309	.192	0.061	.952
Excited	5.06	2.82	5.55	2.91	6.50	3.28	1.750	.177	1.153	.250	1.025	.320
Physical Aroused	5.01	3.25	5.18	3.28	5.14	3.68	0.059	.943	0.339	.735	-0.033	.974
Fearful	5.39	3.23	5.19	3.03	4.21	2.64	0.875	.419	-0.444	.658	-1.265	.222
Unhappy	4.71	3.03	4.49	2.77	2.50	2.35	3.615	.029	-0.526	.600	-2.893	.009
Pleasant/good/pos.	4.63	2.62	5.43	2.91	5.50	3.25	1.992	.139	1.910	.058	0.079	.938
Unpleasant/bad/neg.	5.59	2.94	5.43	2.86	4.00	2.96	1.811	.166	-0.370	.712	-1.692	.109

Note: * Contrast between non-consumers and consumers equal variance assumed ** Contrast between consumers and super users equal variance not assumed *** Variable degrees of freedom.

The Effect of Consumption Frequency on Excitement and Fear

The effects of consumption frequency on the amount of excitement and fear participants experience for both the *in the moment* and *residual* conditions was examined. Recent consumption frequency (M = 3.87, SD = 2.56) and previous maximum consumption frequency (M = 4.81, SD = 2.41) were highly correlated (r (398) = .808, p < .001) and hence averaged and combined into a single measure. Simple linear regressions were calculated to predict excitement from consumption frequency and fear from consumption frequency. For the *in the moment* condition, consumption frequency positively predicts excitement (B = .201, t(199) = 3.687, p < .001; R^2 = .064, F(1,199) = 13.595, p < .001) and negatively predicts fear (B = -.114, t(199) = -2.065, p = .040; R^2 = .021, F(1,199) = 4.266, p = .040; see Figure 7.3). The more horror movies that participants consumed, the less fear and the more excitement they reported experiencing during the film. For the *residual* condition, consumption frequency positively predicts excitement (B = .149, t(195) = 2.588, p = .010; R^2 = .033, F(1,195) = 6.697, p < .010). Consumption frequency did not predict fear (B = -.062, t(195) = -1.140, p = .256; R^2 = .007, F(1,195) = 1.299, p < .256; see Figure 7.4). The more horror movies that participants consumed, the more excitement they reported experiencing after the film clip ended.

The Effect of Gender and Consumption Frequency on Fear. As noted previously, women differ from men in their emotional responses to horror films. The moderating effects of gender on the relation between consumption frequency and in the moment fear were examined using the PROCESS macro (v 2.12.1), Model 1 template in SPSS (v21, IBM Corp). Consumption frequency was centered prior to analysis and entered as the

independent variable, gender as the moderator, and in the moment fear as the dependent variable. There is a significant interaction between gender and frequency on in the moment fear (ΔR^2 = .023 B = .392; t(197) = 2.202, p = .029; 95% *CI*: .041, .743). Additionally, there is a significant main effect of gender (B = -1.092; t(197) = -2.625, p = .009; 95% *CI*: -1.912, -.272), such that women experience more fear than men, and a significant main effect of frequency (B = -.371; t(197) = -2. 779, p = .006; 95% *CI*: -.635, -.108) such that as consumption frequency increases, fear decreases. An analysis of the simple slopes reveals that the effect of consumption frequency on fear is significant such that as consumption frequency increases, fear decreases for women (B = -. 371; t(197) = -2.779, p = .006; 95% *CI*: -. 635, -.108) but not for men (B = .021; t(197) = 0.175, p = . 861; 95% *CI*: -.211, .252). See Figure 7.5. There were no significant effects of gender on the relation between consumption frequency and excitement; or between gender, excitement and fear in the *residual* condition (p >.1).

The Effect of Consumption Frequency on Excitement and Fear with Super Users Removed. With super users removed, the effects of consumption frequency on the amount of excitement and fear participants experience for both the *in the moment* and *residual* conditions were examined. Simple linear regressions were calculated to predict excitement from consumption frequency, and fear from consumption frequency. For the *in the moment* condition, consumption frequency positively predicts excitement (B = .252, t(183) = 2.316, p = .022; R^2 = .028, F(1,183) = 5.362, p = .022). Consumption frequency did not predict fear (B = -.122, t(183) = -1.019, p = .310; R^2 = .006, F(1,183) = 1.039, p = .310). For the *residual* condition, consumption frequency positively predicts excitement (B = .218, t(182) = 2.137, p = .034; R^2 = .025, F(1,181) = 4.566, p = .034).

Consumption frequency did not predict fear (B = -.061, t(181) = -0.543, p = .588; R^2 = .002, F(1,181) = 0.295, p =.588). For participants who were not super users, the more horror movies that the participants had seen, the greater their reported excitement during and after viewing the film clip.

The Effect of Gender and Consumption Frequency on Fear with Super Users Removed. With super users removed, the interaction between consumption frequency and gender on *in the moment* fear is not significant (p > .1). There is a main effect of gender (B = -1.392; t(181) = -3.183, p = .002; 95% *CI*: -2.255, -.529), such that women experience more fear than men. The effect of frequency was not significant (p > .1).

The Effect of Consumption Frequency on Excitement and Fear Discussion. Based on the full sample, two predictions of valence conversion were supported. For the *in the moment* condition, the more horror movies seen, the more excitement and the less fear was reported. For the *residual* condition the more horror movies seen, the more excitement reported; however, the effect of consumption on fear was not significant. The lack of significance between consumption frequency and fear may be due to the lower intensity of emotions experienced in the *residual* condition.

However, the effects of consumption frequency on fear for the *in the moment* condition are qualified by gender. The observed negative relation between consumption frequency and fear is significant for women but not for men. In addition, when super users are removed, there is no longer any relation between consumption frequency and fear; however, the relation between consumption frequency and excitement remains significant. Therefore, it appears that the significant relation between consumption frequency and fear, in the full sample, is driven by super users. The lack of a significant

relation between consumption frequency and fear when qualified by gender and super users may be due to a number of factors. These factors include the stimuli not being sufficiently frightening; a response bias whereby men feel compelled by gender roles to underreport their level of fear, and/or an increase in consumption frequency may lead to a third variable, such as habituation, which may reduce fear. This last possibility is explored in the next section.

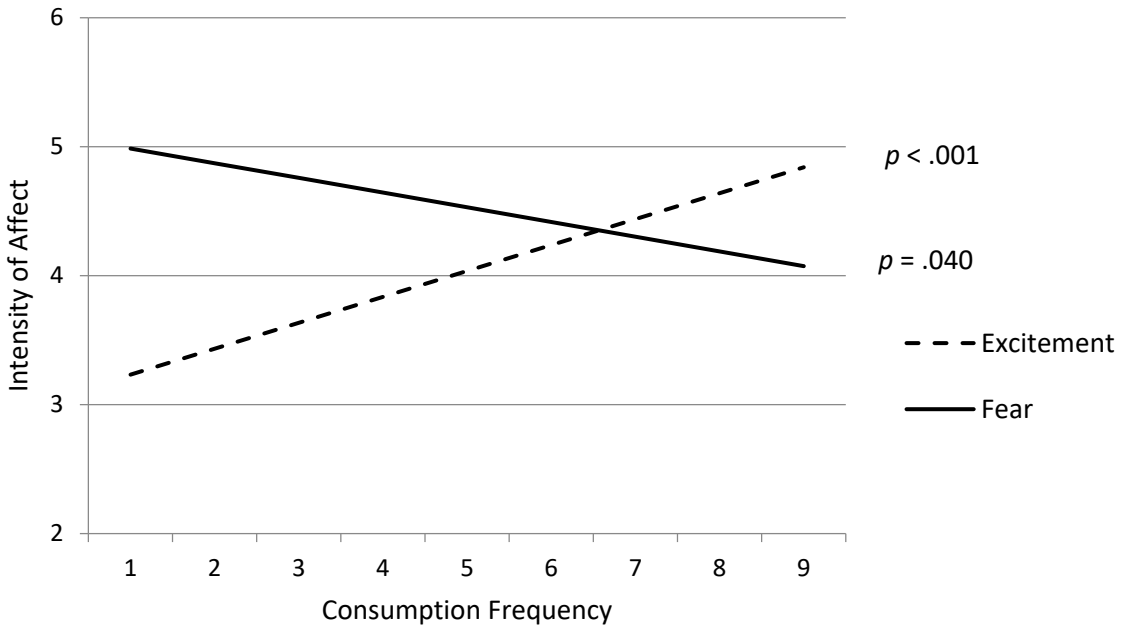

Figure 7.3. In the Moment Fear and Excitement by Consumption Frequency

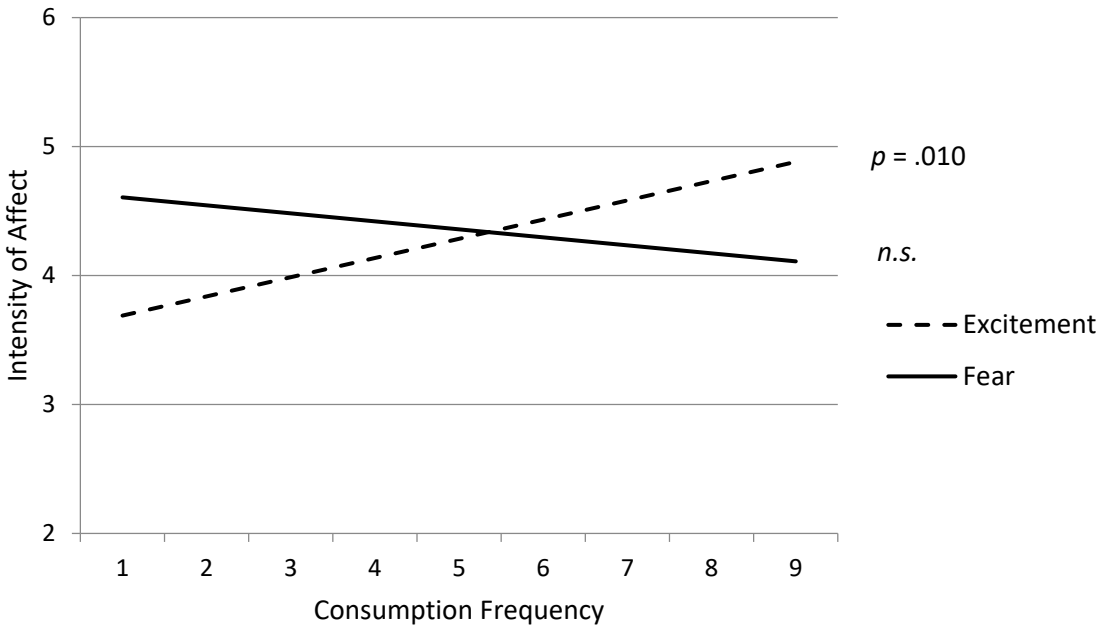

Figure 7.4. Residual Fear and Excitement by Consumption Frequency

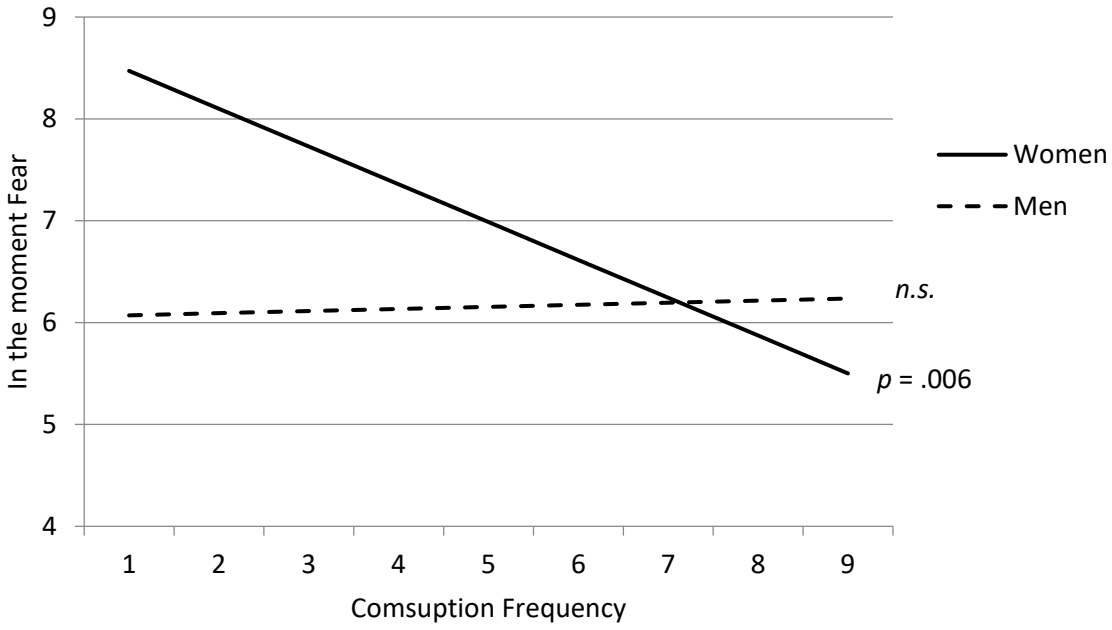

Figure 7.5. Interaction between Gender and Consumption Frequency on In the Moment Fear

Part III: Habituation

This last section of analyses reports tests related to habituation. Two predictions in particular are tested. First, habituation is hypothesized to mediate the relation between consumption frequency and fear. Second, the presence of the four consumer groups is tested. Specifically, it is predicted that four consumer groups should exist based on recent consumption frequency and habituation, and each group should experience different levels of fear and excitement relative to each other.

Habituation, Consumption Frequency, Fear, and Gender

With increased consumption, individuals may habituate to the emotional effects of horror movies. To determine the effect of consumption frequency on fear through habituation and to examine whether gender moderates the relation between consumption frequency and habituation, a moderated mediation analysis was conducted. Utilizing the PROCESS macro (v 2.12.1), Model 7 template in SPSS (v21, IBM Corp), consumption frequency was entered as the independent variable, habituation as the mediator, gender as the moderator between consumption frequency and habituation, and in the moment fear as the dependent variable. Results indicate a significant interaction between consumption frequency and gender on habituation (ΔR^2 = .099, B = -.364, t(197) = -2.264, p = .025, 95% *CI*: -.681, .-047). Additionally, there is a significant main effect of gender (B = 1.106, t(197) = 2.946, p = .004, 95% *CI*: .365, 1.846), such that men are more habituated than women and a significant main effect of frequency (B = .189, t(197) = 2.366, p = .019, 95% *CI*: .031, .346) such that as consumption frequency increases so does habituation. Providing evidence for moderated mediation the index of moderated mediation is significant (B = .152, *SE* = .073, *CI*: .027, .324), suggesting that there is a

significant difference in the indirect effect of consumption frequency on in the moment fear, between men and women, on habituation. There is no direct effect of consumption frequency on fear (*B* = -.095, *t*(198) = -1.122, *p* = .263, 95% *CI*: -.262, .072) and a significant indirect effect of consumption frequency on *in the moment* fear through habituation for women (*B* = -.161, *SE* = .056, *CI*: -.290, -.063) but not for men (*B* = -.009, *SE* = .043, *CI:* -.094, .077). See figure 7.6.

In the *residual* condition the interaction between gender and consumption frequency on habituation was not significant (p >.1); hence, the mediating effect of habituation on the relation between consumption frequency and residual fear was assessed. Utilizing the PROCESS macro (v 2.12.1), Model 4 template in SPSS (v21, IBM Corp), consumption frequency was entered as the independent variable, habituation as the mediator and residual fear as the dependent variable. Consumption frequency has a significant effect on habituation (R^2 = .086, *B* = .320, *t*(195) = 4.291, *p* <.001, 95% *CI*: .173, .467) and habituation has a significant effect on residual fear (R^2 = .055, *B* = -.274, *t*(194) = -3.139, *p* = .002, 95% *CI*: -.446, -.102). There is no direct effect of consumption frequency on residu*al* fear (*B* = -.018, *t*(194) = -.192, *p* = .848, 95% *CI*: -.206, .170) but a significant indirect effect (*B* = -.088, *CI*: -.172, -.032), suggesting full mediation. See figure 7.7.

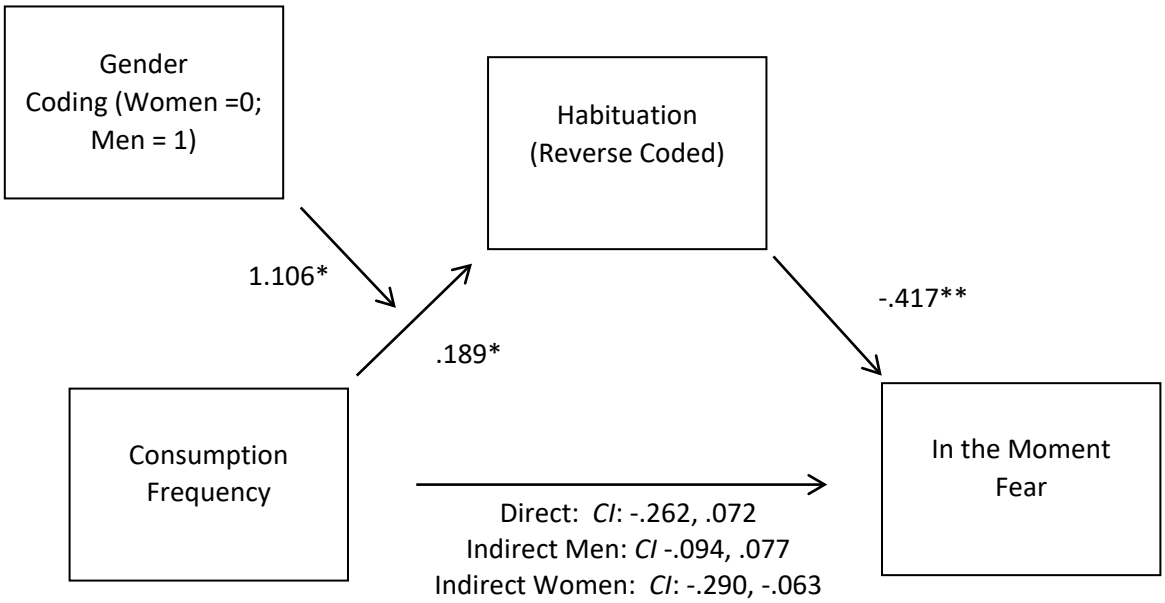

Figure 7.6. Moderated Mediation of the Relation between Consumption Frequency and In the Moment Fear by Habituation and Gender. *Note*: *p <.05 ** p <.001

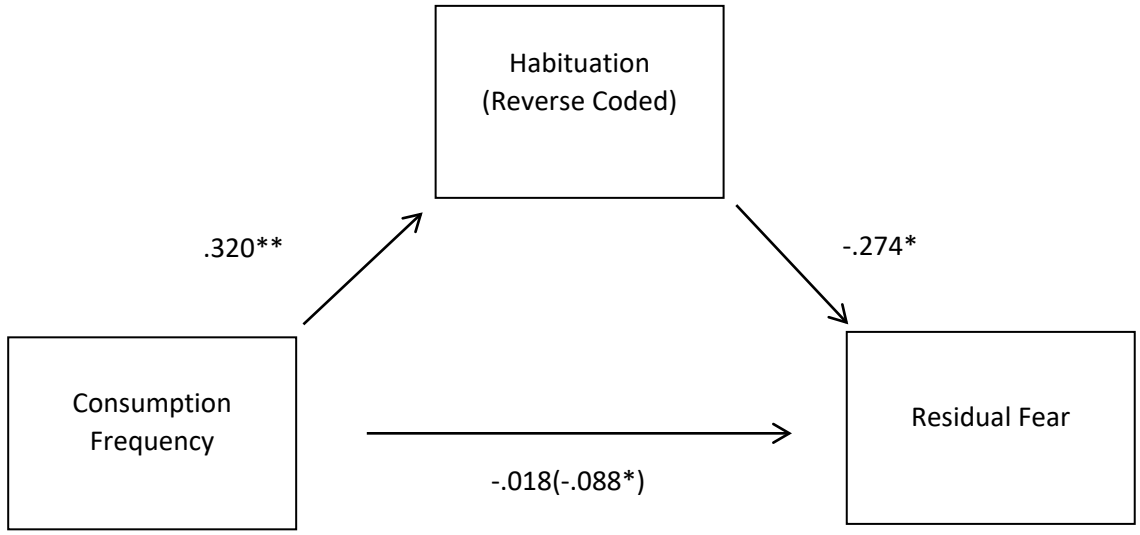

Figure 7.7. Full Mediation of Consumption Frequency by Habituation on Residual Fear
Note: *p <.05, **p <.001, () denote indirect path

Habituation, Consumption Frequency, Fear, and Gender with Super Users Removed. With super users removed, a moderated mediation analysis was conducted to test the relation between consumption frequency and *in the moment* fear mediated by habituation and the relation between consumption frequency and habituation moderated by gender. Results indicate a marginally significant interaction between consumption frequency and gender on habituation (ΔR^2 = .089, *B* = -.343, *t*(181) = -1.737, *p* = .084, 95% *CI*: -.734, .047). There is a significant main effect of gender (*B* = 1.286, *t*(181) = 3.277, *p* = .001, 95% *CI*: .512, 2.061) such that men are more habituated than women. The main effect of consumption frequency was not significant (*B* = .150, *t*(181) = 1.520, *p* = .130, 95% *CI*: -.045, .345). Due to the marginally significant interaction the index of moderated mediation was not significant (*B* = .147, *SE* = .092, *CI*: -.026, .333) and thus the indirect effects of gender should be treated cautiously. There is a significant indirect effect of consumption frequency on in the moment fear through habituation for women (*B* = -.142, *SE* = .067, *CI*: -.279, -.017) but not for men (*B* = .005, *SE* = .057, *CI* -.109, .116). There was no direct effect of consumption frequency on fear (*B* = -.030, *SE* = .102, *CI*: -.232, .171).

Due to the marginally significant moderated mediation, a mediation analysis was also run to assess the mediating effect of habituation on the relation between consumption frequency and fear. Results indicate that consumption frequency has a marginally significant effect on habituation (ΔR^2 = .019, *B* = .190, *t*(185) = 1.881, *p* = .062, 95% *CI*: -.009, .399) and habituation has a significant effect on residual fear (ΔR^2 = .161, *B* = -.030, *t*(185) = -5.800, *p* < .001, 95% *CI*: -.574, -.283). There is a significant indirect effect of consumption frequency on residual fear (*B* = -.082, *CI*: -.181, -.002) but

no direct effect (*B* = -.030, *t*(185) = -.297, *p* = .767, 95% *CI*: -.232, .170) suggesting full mediation.

In the residual condition, the mediating effect of habituation on the relation between consumption frequency and fear was assessed. Consumption frequency has a significant effect on habituation (ΔR^2 = .077, *B* = .344, *t*(183) = 3.880, *p* <.001, 95% *CI*: .169, .519) and habituation has a significant effect on residual fear (ΔR^2 = .070, *B* = -.331, *t*(183) = -3.633, *p* = .004, 95% *CI*: -.510, -.151). There is a significant indirect effect of consumption frequency on *residual* fear (*B* = -.114, *CI*: -.224, -.049) but no direct effect (*B* = .053, *t*(183) = -.468, *p* = .641, 95% *CI*: -.170, .276) suggesting full mediation.

Habituation, Consumption Frequency, Fear, and Gender Discussion. Based on the full data set, for the *in the moment* condition, consumption frequency has a significant effect on fear through habituation for women but not for men. Further, men are more habituated than women and as consumption frequency increases so does habituation. One of the main predictions of the valence conversion model is a negative relation between fear and consumption frequency. Based on the full data set this relation operates through habituation for women but not for men. However, when super users are removed the interaction between gender and the relation between consumption frequency and habituation becomes marginal and habituation fully mediates the relation between consumption frequency and fear. Therefore, it appears that super users may be driving the interaction between consumption frequency and gender on habituation. Since, the valence conversion model predicts the same effect in both men and women i.e. habituation mediating the relation between consumption frequency and fear these relations will be explored in subsequent studies.

In the *residual* condition there is no significant effect of gender, and habituation fully mediates the effect of consumption frequency on fear. Further, as consumption frequency increases, habituation increases and fear decreases. With super users removed there is no change in the relations and habituation fully mediates the relation between consumption frequency and fear as predicted by the valence conversion model.

The less than optimal results for the *in the moment* condition appear to be at least partially driven by super users and will be further explored in subsequent studies. However, taken together these results suggest that the effect of consumption frequency on fear is through habituation. Presumably as participants consume more horror movies they become more habituated and hence experience less fear during and after consumption. These findings provide partial support for the negative relation between fear and consumption frequency, operating through habituation, as proposed by the valence conversion model.

Consumer Groups

In order to assess the presence of the four hypothesized consumer groups (habituated consumers, non-habituated consumers, habituated nonconsumers and non-habituated nonconsumers) the relations between habituation, frequency and fear; and habituation frequency and excitement were assessed. It is hypothesized that relative to each other habituated consumers will have low fear and high excitement, habituated non-consumers will have low fear and low excitement, non-habituated consumers will have high fear and high excitement and non-habituated non-consumers will have high fear and low excitement. Therefore, habituated consumers and habituated non-consumers should experience significantly less fear than non-habituated consumers and non-habituated non-

consumers while controlling for the effect of recent consumption frequency and the interaction between habituation and recent consumption frequency. Further, habituated consumers and non-habituated consumers should experience more excitement than habituated non-consumers and non-habituated non-consumers while controlling for the effect of habituation and the interaction between recent consumption frequency and habituation. To test for these relations two sets of analysis were conducted.

To establish that as habituation increases fear decreases while controlling for the effect of consumption frequency and the interaction between habituation and recent consumption frequency a moderation analysis was conducted. Using the PROCESS macro (v 2.12.1), Model 1 template in SPSS (v21, IBM Corp) mean centered and reverse scored habituation was entered as the independent variable, mean centered recent consumption frequency as the moderator, and *in the moment* fear as the dependent variable. As predicted there was a significant main effect of habituation such that as habituation increases fear decreases (B = -.413; t(197) = -5.533, p <.001; 95% *CI*: -.560, -.266) and as predicted the interaction between habituation and recent consumption frequency was non-significant (ΔR^2 = .000 B = .004; t(197) = .130, p = .897; 95% *CI*: .-.053, .061) as was the main effect of recent consumption frequency (B = -.097; t(197) = -1.215, p = .226; 95% *CI*: -.254, .060; See Figure 7.8). A similar pattern of results was observed in the *residual* condition. As predicted there is a significant main effect of habituation such that as habituation increases fear decreases (B = -.286; t(193) = -3.246, p = .001; 95% *CI*: -.460, -.112) a nonsignificant interaction (ΔR^2 = .001 B = -.013; t(193) = -.390, p = .697; 95% *CI*: -.076, .051) and a nonsignificant main effect of recent consumption frequency (B = .010 ; t(193) = .108, p = .914; 95% *CI*: -.165, .184). These

findings suggest that there is no difference between consumers and non-consumers on the amount of fear experienced. However, there is a significant difference between habituated and non-habituated participants on fear such that as habituation increases the amount of fear decreases. There were no significant effects of gender in this analysis.

In order to establish that as recent consumption frequency increases excitement increases while controlling for the effect of habituation and the interaction between habituation and recent consumption frequency a moderation analysis was conducted. Using the PROCESS macro (v 2.12.1), Model 1 template in SPSS (v21, IBM Corp) mean centered and reverse scored habituation was entered as the independent variable, mean centered recent consumption frequency as the moderator, and in the moment excitement the dependent variable. As predicted there was a significant main effect of recent consumption frequency such that as consumption frequency increases excitement increases (B = .295; t(197) = 3.587, p <.001; 95% *CI*: .133, .458), and as predicted the interaction between habituation and recent consumption frequency was non-significant (ΔR^2 = .003 B = .023; t(197) = .761, p = .448; 95% *CI*: -.036, .082), as was the main effect of habituation (B = -118; t(197) = -1.523, p = .129; 95% *CI*: -.270, .035; See Figure 7.9). A similar pattern of results was observed in the *residual* condition, with a significant main effect of recent consumption frequency, such that as consumption frequency increases excitement increases (B = .189; t(193) = 2.252, p = .026; 95% *CI*: .023, .354) a nonsignificant interaction (ΔR^2 = .003 B = .024; t(193) = .779, p = .437; 95% *CI*: -.037, .084) and a nonsignificant main effect of habituation (B = -.119 ; t(193) = -1.420, p = .157; 95% *CI*: -.284, .046). These findings suggest that there is no significant difference between participants who are habituated and non-habituated on excitement; however,

there is a significant difference between consumers and non-consumers on excitement such that consumers experience more excitement than non-consumers.

Consumer Groups Discussion. These findings conform to predictions and provide support that there are four distinct consumer groups each with a unique affective profile. Non-habituated consumers have higher excitement and high fear, habituated consumers have high excitement and low fear, non-habituated non-consumers have high fear and low excitement and habituated non-consumers have low fear and low excitement. These results attest to the importance of measuring both consumption frequency and habituation and how they underlie the level of excitement and fear experienced during consumption.

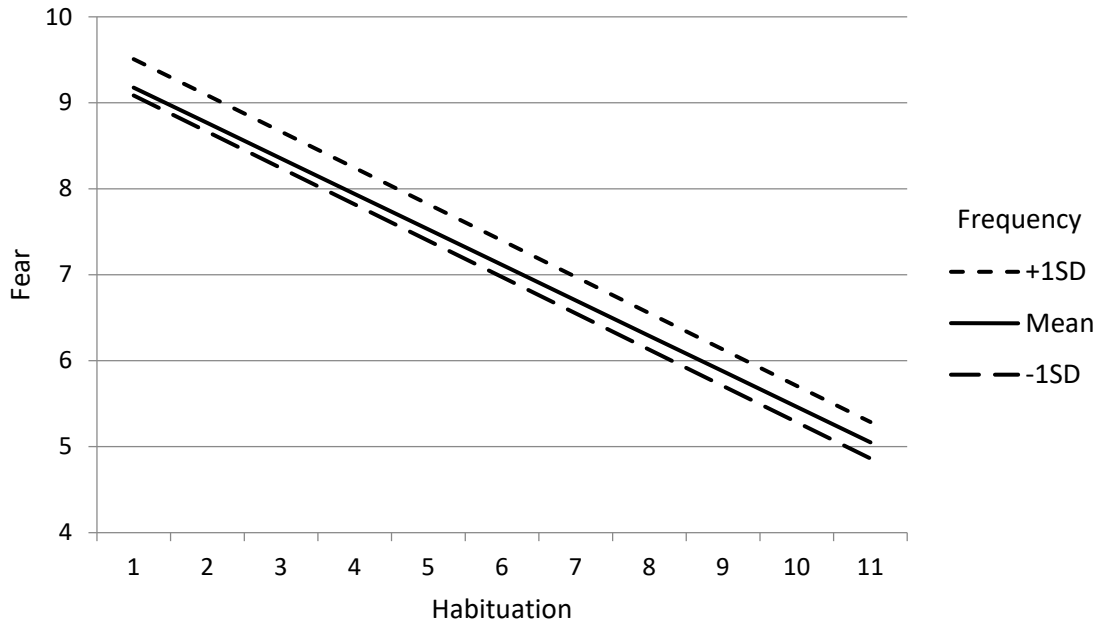

Figure 7.8. The Effect of Frequency Habituation and Their Interaction on In the Moment Fear

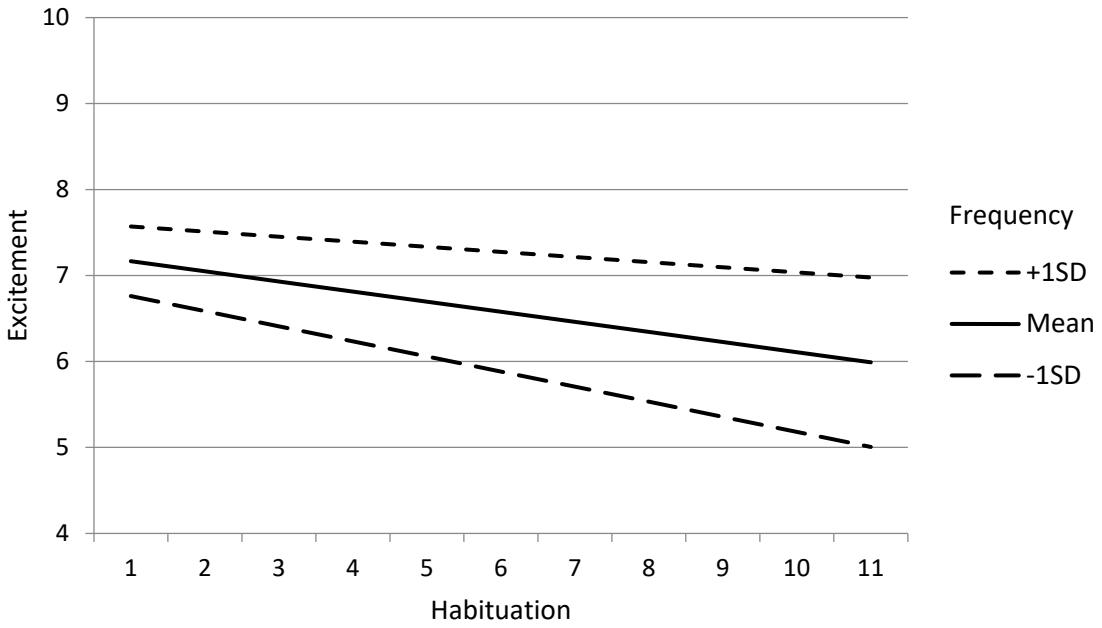

Figure 7.9. The Effect of Frequency, Habituation and Their Interaction on In the Moment Excitement

CHAPTER VIII

STUDY 3: THE HEDONIC EQUATION

Study 3 is designed to test five predictions of the hedonic equation. First, consumers will experience a positive balance of excitement to fear, and non-consumers will experience a negative balance of excitement to fear. Second, excitement and fear across all four time points will predict consumption intentions. Third, anticipatory affect will be the main predictor of re-consumption intentions. Fourth, fear and excitement together will be more predictive of consumption intentions than either fear or excitement alone. Fifth, the four time points which compose the hedonic equation (anticipatory, in the moment, residual, and remembered) will be a stronger predictor of consumption intentions than any one time point alone. Further, replicating the analyses in Study 2, the relations between fear, excitement, consumption frequency, habituation and gender will be examined. In order to test these predictions participants watched two parts of a documentary clip (to set affective state), two parts of a horror movie clip; and remembered, anticipatory, in the moment, and residual affect were assessed for the horror movie stimulus. The order of presentation is as follows: documentary, remembered affect, documentary, anticipatory affect, horror, in the moment affect, horror, and residual affect.

Method

Participants and Design

Two hundred ninety-eight participants (55% male; average age 37) were recruited online from Amazon mechanical Turk and were paid one dollar in exchange for their

participation. The experiment employs a 2 (stimulus replicate: *The Silence of the Lambs* vs. *Salem's Lot*), by 4 (measurement time: remembered, anticipatory, in the moment, residual) mixed design. Stimulus replicate was manipulated between subjects.

Procedure

The study was conducted online using Qualtrics and employed the same recruitment and consent procedures as Study 2. After reading a consent form, participants were asked to rank seven movie genres (horror, romantic comedy, action, thriller/suspense, adventure, comedy and drama) in order of preference from what they would "most like to watch" to "least like to watch." The presentation order was randomized for each participant. Next, to set affective state, participants watched the same two minute documentary clip used in Study 2. Following the documentary, participants were told that they would be asked the same set of questions about their feelings at four separate time points and that they should try to focus on how they felt at each time point. Remembered affect was assessed first, by using the following question: "Thinking about horror movies you have seen previously. How ___ do you feel right now?" The same affective states from the top half of the circumplex (happy, excited, physically aroused, fear, unhappy) from study 2, were utilized in each of the four conditions and were recorded with 11 point Likert scales anchored by *not at all* and *extremely* with the midpoint labeled *moderately*. Question order was randomized for each participant. Next, participants watched another two minutes of the same documentary to reset their affective state. After the second half of the documentary, participants were informed that the next movie clip would be from a horror movie and anticipatory affect was assessed. The question wording for the anticipatory time point was as follows: "You

will now watch a horror movie clip. How ___ do you feel right now?" After completing the anticipatory measures, participants were randomly assigned to a stimulus replicate condition (*The Silence of the Lambs* or. *Salem's Lot*). The clip from *The Silence of the Lambs* was the same clip utilized in study 1b and 2. The 3 minute and 46 second movie clip from *Salem's Lot* has been used in previous research examining the consumption of aversive experiences (Andrade and Cohen, 2007). At approximately the midpoint of each movie clip (1 minute and 48 seconds for *The Silence of the Lambs* and 1 minute and 52 seconds for *Salem's Lot*) the movie was paused and in the moment affect was assessed. In the moment affect was assessed using the following question: "You are halfway through the movie clip. How ___ do you feel right now?" After completing the in the moment measures, participants watched the second half of the movie clip. At the end of the movie clip, residual affect was assessed. Residual affect was assessed utilizing the following question "The movie clip is complete. How ___ do you feel right now?" After completing the residual measures, participants completed the same frequency questions, habituation question, demographic, and debriefing questions as in Study 2.

Results and Discussion

The following analysis is broken down into two separate sections. The first section contains the analyses and discussion for the stimulus replicate condition, the effect of having previously viewed the movie or movie clip, an analysis of fear and excitement across and between time points and tests of the hedonic equation. The second section replicates the analyses from Study 2 testing the predictions of valence conversion and habituation. Specifically, gender, consumption frequency, super users, habituation

and their relation to fear and excitement, for each of the four time points, is analyzed and discussed.

Part I: The Hedonic Equation

Stimulus Replicate

Before testing the predictions of the hedonic equation, the stimulus replicate condition, the effect of previously having viewed the movie or movie clip, and fear and excitement across and between time points is analyzed and discussed. To test the equivalency of the two movie clips (*The Silence of the Lambs* and *Salem's Lot*) independent sample t-tests were performed on assessed emotions for the in the moment and residual time points. To control for multiple comparisons Bonferroni corrections were applied and p =.05/5=.01 set as the critical significance level. There were no significant differences between the stimuli on assessed emotions for either the in the moment time point (p >.02) or the residual time point (p > .02). See Appendix D for complete results. As an additional test an analysis of variance was performed to assess whether the stimulus replicate condition interacted with the two main dependent variables of interest: consumption frequency and consumption intentions. Results indicate there were no significant interactions between the stimulus replicate condition and consumption frequency (p > .2) and consumption intentions (p > .05) on assessed emotions. Based on a chi-square analysis, significantly more people had seen *The Silence of the Lambs* (Seen = 95, Not seen = 56) than *Salem's Lot* (Seen = 2, Not seen = 145; χ^2 (1) = 128.11, p < .001, N=298). Having *seen* the film or film clip did not interact with stimulus replicate condition in predicting any of the assessed emotions for either the in the moment or residual time points (p > .05). Since there were no significant differences

on assessed emotions, and no interaction between the stimulus replicate condition and the dependent variables of interest, the stimulus replicate conditions were collapsed and all subsequent analyses conducted on the collapsed conditions.

The Effect of Having Previously Viewed the Horror Movie or Movie Clip

In order to establish that having previously viewed the movie or movie clip did not affect self-reports of emotion, over and above the effect of consumption frequency, responses to the variable *seen* were analyzed. For *Salem's Lot,* only one percent of the sample had previously viewed the movie or movie clip (seen = 2; not seen = 145) and hence no analysis was conducted on *seen* for *Salem's Lot*. To test whether having previously viewed *The Silence of the Lambs* or not, affected participants' emotional responses, independent sample t-tests were performed on each of the 5 emotions measured, for both the in the moment and residual time points. To control for multiple comparisons, Bonferroni corrections were applied and p =.05/5=.01 set as the critical significance level. Results indicate that for the in the moment time point, participants who had previously *seen* the movie or movie clip were significantly less unhappy than those who had not (seen M = 2.89, SD = 2.56; not seen M = 4.23, SD = 2.67; $t(149)$ = 3.051, p = .003). For the residual time point participants who had previously seen the movie or movie clip were significantly more excited (seen M = 6.36, SD = 3.04; not seen M = 5.00, SD = 3.03; $t(149)$ = -2.656, p = .009) and less unhappy (seen M = 3.38, SD = 2.84; not seen M = 4.98, SD = 2.98; $t(149)$ = 3.286, p = .001) than those who had not. Due to the positive correlation between seen (M = 0.63, SD = 0.49) and consumption frequency (M = 4.55, SD = 2.55; $r(151)$ = .233, p = .004) a regression analysis was run to test for the effect of having previously seen the movie, on in the moment unhappiness,

residual excitement, and residual unhappiness, taking into account consumption frequency. Based on the Bonferroni corrected *p* value the results are marginal for in the moment unhappiness (b = -1.024, $t(148)$ = -2.335, p = .0209) and residual unhappiness (b = -1.184, $t(148)$ = -2.457, p = .0152). Controlling for consumption frequency the effect of seen on residual excitement was not significant (b = .805, $t(148)$ = 1.644, p = .102).

Based on the preceding analysis for *The Silence of the Lambs,* participants who had previously viewed the movie or movie clip were marginally less unhappy than those who had not, controlling for consumption frequency. It is possible that some familiarity with the story makes participants less unhappy. In Study 2 there were no effects of having previously viewed the movie or movie clip on unhappiness in either the in the moment or residual conditions. However, there are methodological differences between Study 2 and Study 3, which may account for the observed inconsistencies. In Study 2, the in the moment condition is assessed retrospectively after the completion of the horror movie clip whereas in Study 3, the in the moment time point is assessed halfway through the movie clip. Further, in Study 2 participants were asked to report their emotions only once in reference to the horror movie stimulus. In Study 3, participants were asked to report the same emotions in regards to the horror movie clip at four different time points. It is therefore possible that the methodological differences between Study 2 and Study 3 account for the observed differences on assessed emotions.

Comparison of Excitement and Fear Across Time Points

In order to better understand the profile of fear and excitement across time points and to examine whether the amount of fear elicited differs from the amount of excitement, paired sample t-tests were carried out. For the remembered time point, participants report experiencing significantly more excitement (M = 4.30, SD = 2.89)

than fear (*M* = 3.07, *SD* = 2.46; *t*(298) = 6.168, *p* <.001). For the anticipatory time point, participants report greater excitement (*M* = 5.21, *SD* = 2.91) than fear (*M* = 4.74, *SD* = 3.18; *t*(298) = 5.025, *p* <.001). For the in the moment time point, participants report greater excitement (*M* = 5.63, *SD* = 2.97) than fear (*M* = 4.73, *SD* = 2.87; *t*(298) = 4.195, *p* <.001) and also for the residual time point participants report greater excitement (*M* = 5.48, *SD* = 2.92) than fear (*M* = 4.59, *SD* = 3.05; *t*(298) = 4.299, *p* <.001).

Comparison of Excitement and Fear Across Time Points Discussion. For both the remembered and anticipatory time point participants reported more excitement than fear suggesting that participants experience more positive affect than negative affect both remembering and anticipating watching a horror movie clip. For the in the moment and residual time points participants also report greater excitement in comparison to fear. Both movie clips used in the present study have been utilized in prior research on fear and in the case of *The Silence of the Lambs* have been pre-validated to cause fear more so than the other emotions tested. In Study 2 there were no significant differences between the amount of fear and excitement elicited for either the in the moment or residual condition. The discrepancy between Study 2 and Study 3 is again likely due to methodological differences. It appears that the repetition of emotional questions has increased the positivity in comparison to the negativity in which the horror stimulus has been perceived. Thus, the significant differences between excitement and fear are likely due to methodological considerations.

Comparison of Excitement and Fear between Time Points

To gain a better understanding of excitement and fear between time points and examine whether the amount of excitement and fear differed a repeated measures analysis

of variance was performed. For excitement, Mauchly's Test of Sphericity indicated that the assumption of sphericity had been violated ($\chi^2(5) = 81.638$, $p < .001$) therefore degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\varepsilon = 0.850$). Results indicate significant differences between time points on excitement ($F(2.550,757.249) = 35.539$, $p < .001$). Simple contrasts indicate that anticipatory excitement ($M = 4.74$, $SD = 3.182$) is significantly higher than remembered excitement ($M = 4.30$, $SD = 2.79$; $F(1, 297) = 10.471$, $p = .001$). In the moment excitement ($M = 5.63$, $SD = 2.93$) is significantly higher than anticipatory excitement ($F(1, 297) = 40.843$, $p < .001$). There was no difference between in the moment and residual excitement ($p > .1$).

For fear, Mauchly's Test of Sphericity indicated that the assumption of sphericity has been violated ($\chi^2(5) = 61.704$, $p < .001$) therefore degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\varepsilon = 0.874$). Results indicate significant differences between time points on fear ($F(2.623,779.029) = 58.132$, $p < .001$). Simple contrasts indicate that anticipatory fear ($M = 3.47$, $SD = 2.72$) is significantly higher than remembered fear ($M = 3.07$, $SD = 2.46$; $F(1, 297) = 9.132$, $p = .003$) and in the moment fear ($M = 4.73$, $SD = 2.87$) is significantly higher than anticipatory fear ($F(1, 297) = 71.836$, $p < .001$). There was no difference between in the moment and residual fear ($p > .1$). See Figure 8.1.

Comparison of Excitement and Fear between Time Points Discussion. These analyses indicate that both excitement and fear are higher for the anticipatory time point than the remembered time point and higher for the in the moment time point than the anticipatory time point. These findings make intuitive sense in that remembering a

stimulus is generally less emotive than anticipating it and actually consuming the stimulus is generally more emotive than just anticipating it. These analyses provide a good picture of how fear and excitement differ between time points. In Study 2 both fear and excitement were significantly higher for the in the moment condition in comparison with the residual condition. The difference between Study 2 and Study 3 are likely due to participants being asked to report the same five emotions at four different time points increasing the relative balance of positive affect to negative affect.

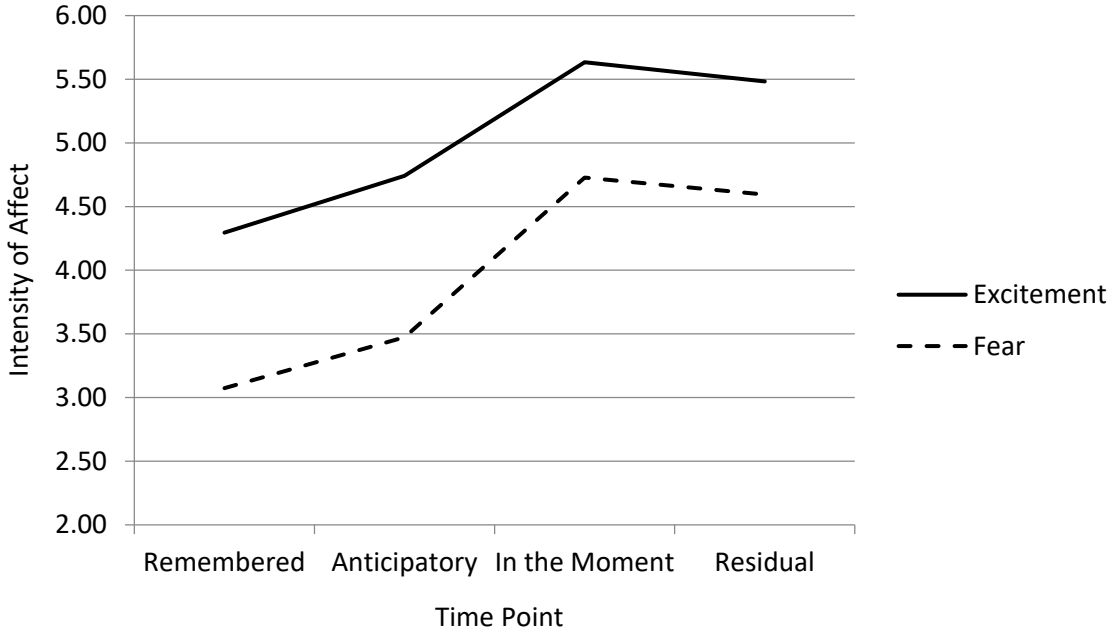

Figure 8.1. Intensity of Excitement and Fear across the Remembered, Anticipatory, In the Moment, and Residual Time Points

The Hedonic Equation

The hedonic equation makes five specific predictions. First, consumers will experience a positive balance of excitement to fear (averaged across all four time points)

and non-consumers will experience a negative balance of excitement fear (averaged across all four time points). Second, excitement and fear across all four time points will predict consumption intentions. Third, anticipatory affect will be the main predictor of re-consumption intentions. Fourth, fear and excitement together will be more predictive of consumption intentions than either fear or excitement alone. Fifth, the four time points which compose the hedonic equation (anticipatory, in the moment, residual, and remembered) will be a stronger predictor of consumption intentions than any one time point alone. To test these predictions participant's rank of movie genres from what they would "most like to watch" to "least like to watch" was used as a proxy for consumption intentions. Participant's rank of movie genres was chosen as a proxy for consumption intentions because it is believed to be a more stringent measure than simply asking participants how much they would like to consume a horror movie. Participants could potentially have no preference in regard to the type of genre of movie they consume. For example, an individual could have an equal preference for watching an action, comedy, or horror movie. By having participants rank movie genres in order of preference it forces a choice between the genres and hence is a more stringent measure of consumption intentions. The consumption intention variable was created by taking participants absolute rank of horror movies and reverse scoring such that higher numbers indicate a greater likelihood of consuming. This variable was analyzed in conjunction with fear and excitement across each time point utilizing both logistic and linear regression. These analyses yielded very similar results. For the sake of parsimony and ease of interpretation only the linear regression results will be reported.

Consumers and Non-Consumers. The first prediction of the hedonic equation is that consumers will experience greater excitement in comparison to fear and non-consumers will experience greater fear in comparison to excitement. The two groups (consumers and non-consumers) were created by a median split of the consumption intentions variable. Next, a new variable was calculated by taking the average of remembered, anticipatory, in the moment, and residual excitement and subtracting it from the average of remembered, anticipatory, in the moment, and residual fear (M = 1.07, SD = 3.21). Using binary logistic regression this balance of excitement to fear variable was used to predict consumers and non-consumers. The overall logistic regression model was statistically significant, ($\chi^2(1) = 101.117$, $p < .001$) and explained 38.5% (Nagelkerke R^2) of the variance in consumer type. The model correctly classified 75.5% of cases and those with a positive balance of excitement to fear were 1.672 times more likely to be consumers than non-consumers. The results indicate that consumers are more likely to have a more positive balance of excitement to fear and non-consumers are more likely to have a more negative balance of excitement to fear.

The results of this analysis support the first prediction of the hedonic equation. The greater the balance of excitement to fear the more likely participants were to report greater consumption intentions and hence be classified as a "consumer." These results confirm that individuals who choose to consume horror movies derive greater positive affect from the experience than negative affect which explains why they consume.

Fear and Excitement on Consumption Intentions. The second prediction of the hedonic equation is that fear and excitement will predict consumption intentions and the third prediction is that anticipatory affect will be the main predictor of re-consumption

intentions. To test whether fear and excitement, across each of the four time points, is predictive of consumption intentions (M = 2.84, SD = 2.17) and the influence of anticipatory affect, a simple linear regression was performed. Results indicate that fear and excitement significantly predict consumption intentions (R^2 = .378, $F(8,289)$ = 21.920, p <.001). An examination of the coefficients reveals a significant positive effect of anticipatory excitement, a significant and negative effect of anticipatory fear and a marginal effect of residual fear all other p values >.1. See table 8.1.

The results of this analysis confirm the second and third prediction of the hedonic equation. Considering both fear and excitement together across each of the four time points explains almost 38 percent of the variance in consumption intentions. Further, the coefficients reveal that the main driver of this effect is anticipatory excitement and anticipatory fear. Intuitively it makes sense that affect immediately before consumption would have the greatest impact on whether an individual chooses to consume an event.

Table 8.1.
Regression Coefficients: Remembered, Anticipatory, In the Moment, and Residual Fear and Excitement on Consumption Intentions

Model	Variable	Un-standardized regression coefficient (*b*)	*t*	*p*
1	(Constant)	2.050	7.291	<.001
	Remembered Excitement	.053	1.003	.317
	Remembered Fear	.037	.668	.504
	Anticipatory Excitement	.324	6.200	<.001
	Anticipatory Fear	-.117	-2.205	.028
	In the Moment Excitement	.034	.535	.593
	In the Moment Fear	-.068	-1.200	.231
	Residual Excitement	-.021	-.367	.714
	Residual Fear	-.096	-1.881	.061

Fear vs. Excitement. To test whether fear and excitement are more predictive of consumption likelihood (M = 2.84, SD = 2.17) than either one alone, two sets of hierarchical regression analyses were performed. For the first analysis, remembered, anticipatory, in the moment, and residual excitement were entered in the first step and remembered, anticipatory, in the moment, and residual fear were entered in the second step. Results indicate that excitement significantly predicts consumption intentions (R^2 = .298, F(4,293) = 31.136, p <.001). The addition of the four time points of fear significantly increases the predictive power of the model (ΔR^2 = .079, F(4,289) = 9.213, p <.001).

For the second analysis the four time points of fear were entered as the first step and the four time points of excitement enters as the second step. Results indicate that fear significantly predicts consumption intentions (R^2 = .093, F(4,293) = 7.540, p <.001). The addition of the four time points of excitement significantly increase the predictive power of the model (ΔR^2 = .284, F(4,289) = 31.136, p <.001).

These results support the third prediction of the hedonic equation and indicate that the four time points of fear and excitement together are more predictive of consumption intentions than either fear or excitement alone. However, the proportion of the variance explained by excitement is greater than the proportion of variance explained by fear. In this study excitement is much more predictive of consumption intentions than fear suggesting excitement is a more powerful motivator of consumption than the demotivating effects of fear.

Time Points. To test whether the four time points of remembered, anticipatory, in the moment, and residual, fear and excitement are more predictive than any single time

point four hierarchical regression analyses were performed. For the first analysis remembered fear and excitement were entered in the first step and anticipatory, in the moment, and residual fear and excitement were entered in the second step. Results indicate that remembered fear and excitement significantly predict consumption intentions (R^2 = .185, F(2,295) = 34.614, p <.001). An examination of the coefficients reveals a significant positive effect of remembered excitement (b = .325; t(295) = 7.857, p < .001) and a negative effect of remembered fear (b = -.184; t(295) = -3.928, p < .001). The addition of anticipatory, in the moment, and residual fear and excitement significantly increases the predictive power of the model (ΔR^2 = .188, F(6,289) = 14.517, p <.001).

For the second analysis anticipatory fear and excitement were entered in the first step and remembered, in the moment, and residual fear and excitement were entered in the second step. Results indicate that anticipatory fear and excitement significantly predict consumption intentions (R^2 = .345, F(2,295) = 79.314, p <.001). An examination of the coefficients reveals a significant positive effect of anticipatory excitement (b = .358; t(295) = 11.106, p < .001) and a negative effect of anticipatory fear (b = -.187; t(295) = -4.963, p < .001). The addition of remembered, in the moment, and residual fear and excitement significantly increases the predictive power of the model (ΔR^2 = .028, F(6,289) = 2.163, p =.047).

For the third analysis in the moment fear and excitement were entered in the first step and remembered, anticipatory, and residual fear and excitement were entered in the second step. Results indicate that in the moment fear and excitement significantly predict consumption intentions (R^2 = .216, F(2,295) = 40.533, p <.001). An examination of the

coefficients reveals a significant positive effect of in the moment excitement (b = .307; $t(295) = 7.894$, $p < .001$) and a negative effect anticipatory fear (b = -.223; $t(295) = -5.637$, $p < .001$). The addition of remembered, anticipatory, and residual fear and excitement significantly increases the predictive power of the model ($\Delta R^2 = .162$, $F(6,289) = 12.544$, $p < .001$).

For the fourth analysis residual fear and excitement were entered in the first step and remembered, anticipatory, and in the moment fear and excitement were entered in the second step. Results indicate that residual fear and excitement significantly predict consumption intentions ($R^2 = .161$ $F(2,295) = 28.226$, $p < .001$). An examination of the coefficients reveals a significant positive effect of residual excitement (b = .259; $t(295) = 6.258$, $p < .001$) and a negative effect of residual fear (b = -.229; $t(295) = -5.760$, $p < .001$). The addition of remembered, anticipatory, and in the moment fear and excitement significantly increases the predictive power of the model ($\Delta R^2 = .217$, $F(6,289) = 16.796$, $p < .001$).

These four analyses together support the last prediction of the hedonic equation and that the four time points of remembered, anticipatory, in the moment and residual are more predictive of consumption intentions than any one time point alone. However, anticipatory excitement and fear explain the vast majority of consumption intentions with the addition of the three other time points explaining only approximately 3 percent of the variance. This suggests that in predicting consumption intentions the most important time point is the anticipatory phase.

The Hedonic Equation Discussion. The hedonic equation makes five predictions. First, consumers will experience a positive balance of excitement to fear while non-

consumers will experience a negative balance. Second, excitement and fear across all four time points will predict consumption intentions. Third, anticipatory affect will be the main predictor of re-consumption intentions. Fourth, fear and excitement together will be more predictive of consumption intentions than either fear or excitement alone. Fifth, the four time points which compose the hedonic equation (anticipatory, in the moment, residual, and remembered) will be a stronger predictor of consumption intentions than any one time point alone. The results of this analyses support each of these predictions. Consumers derive more positive affect than negative affect from horror movie consumption which explains why they choose to consume the genre. Further, the hedonic equation explains almost 38% of the variance in consumption intentions. Although, anticipatory fear and excitement were the strongest predictors of consumption intentions, affect experienced at each of the four time points significantly affected consumption intentions. These results suggest that in order to understand the consumption of aversive experiences both fear and excitement at each of the four time points are important factors to consider.

Part II: Valence Conversion and Habituation

The second part of the analyses for Study 3 replicates the analyses performed in Study 2 for each time point (remembered, anticipatory, in the moment, residual). First, differences between gender on assessed emotions, super users, and consumption frequency will be analyzed and discussed. Second, the effect of consumption frequency, habituation, super users, and gender on excitement and fear will be analyzed and discussed for each of the four time points.

Differences between Genders on Assessed Emotions

In order to gain a better understanding of any differences between men and women on emotional reactions, paired sample t-tests were performed. To control for multiple comparisons Bonferroni corrections were applied and p =.05/5=.01 set as the critical significance level. For the remembered time point there were no significant differences between men and women on assessed emotions (p >.08). For the anticipatory time point, women were significantly more fearful than men. There were no other significant differences between men and women for the anticipatory time point (p >.1). For the in the moment time point, there were no significant differences between men and women (p > .03) or for the residual time point (p >.05). See Appendix E for complete results.

Of note there are some differences between Study 2 and Study 3. In Study 2, there are significant differences between men and women with women reporting more in the moment fear, unhappiness, and negativity and for the residual condition men report marginally more positivity. As discussed previously being asked to report the same five emotions at four time points seems to have increased the positive emotions in relation to negative emotions. This effect also seems to have influenced differences between men and women.

Consumption Frequency

The measures of consumption frequency for Study 3 were identical to the measures utilized in Study 2. Recent consumption frequency (M = 3.99, SD = 2.70) and previous maximum consumption frequency (M = 4.93, SD = 2.54) were highly correlated (r (298) = .807, p < .001) and hence combined into a single measure.

Super Users

As in Study 2, there is evidence of bimodality in the consumption frequency distribution (N = 298, M = 4.46, SD = 2.49); see Figure 8.2. Twenty-six participants selected "very often" on both frequency measures and were hence classified as super users. The remaining data were divided into consumers (N = 134, M = 5.88, SD = 1.38) and non-consumers (N = 138, M = 2.22, SD = 0.79) via a median split. Due to the bimodality, analyses were conducted to see whether the affective responses of super users differed in comparison to consumers. Additionally, consumers and non-consumers were also compared.

Utilizing one-way ANOVAs with planned contrasts, emotions by consumer group were analyzed for each time point. To correct for multiple comparisons, Bonferroni corrections were applied and the critical significance level set at p =.05/5=.01. For the remembered time point, consumers experience greater happiness and excitement and marginally less physical arousal than non-consumers. Super users experience greater happiness and marginally more excitement and less unhappiness (see Table 8.2). For the anticipatory time point, consumers experience greater happiness, excitement, and physical arousal and less unhappiness than non-consumers. Super users experience greater happiness, excitement, and physical arousal, and less fear and unhappiness than consumers (see Table 8.3). For the in the moment time point, consumers experience greater happiness, excitement, and physical arousal, and less unhappiness than non-consumers. Super users experience marginally less fear than consumers (see Table 8.4). For the in the residual time point consumers experience greater happiness and

excitement, marginally more physical arousal and less unhappiness than non-consumers. There were no significant differences between super users and consumers (see Table 8.5).

There were significant and predictable differences between non-consumers and consumers and between consumers and super users on assessed emotions. Across the four time points, consumers experienced greater happiness, excitement and physical arousal (marginally for the remembered and residual time points) and less unhappiness than non-consumers. In Study 2 there were no significant differences between consumers and non-consumers on assessed emotions utilizing a median split of the data with super users removed. Again the discrepancies between Study 2 and Study 3 may be due to methodological differences. The greater number of significant differences between consumers and non-consumers observed in Study 3 may be due to an increase in the salience of positive emotions due to their repetition. Comparing super users and consumers in Study 3, super users report significantly less anticipatory fear than consumers. In Study 2 super users report greater in the moment excitement and less unhappiness and marginally more happiness and pleasantness than consumers with no significant differences in the residual condition.

Across both studies the significant differences are in predictable directions with consumers experiencing more positive affect and less negative affect than non-consumers and super users experiencing more positive affect and less negative affect than consumers. Of note, these analyses are expected to be less representative of the relations in the data due to the loss of variance associated with splitting data into groups rather than assessing relations continuously. Due to evidence of bimodality the following data analysis is conducted with the full sample and with super users removed.

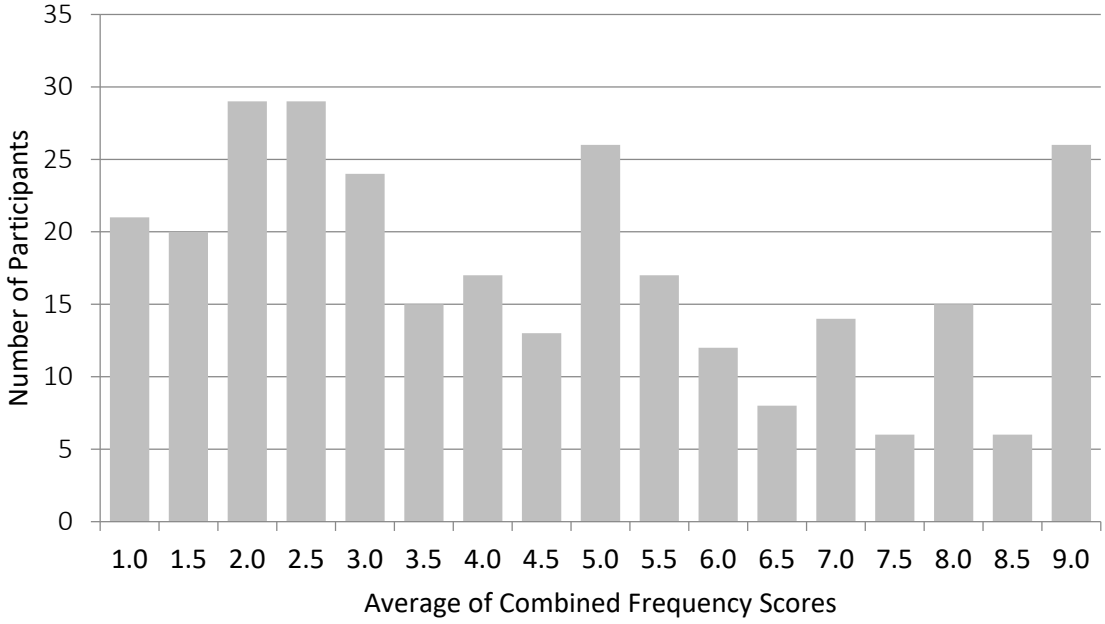

Figure 8.2. Distribution of Combined Frequency Scores (*n* = 298)

Table 8.2.

Remembered Comparison between Non-Consumers, Consumers and Super Users on Measure Emotions

	Non-consumers		Consumers		Super Users		ANOVA		Contrast [1]		Contrast [2]	
Variable	M(138)	SD	M(134)	SD	M(26)	SD	*F*(2,295)	*p*	*t*(295)	*p*	*t*(var)[3]	*p*
Happy	4.57	2.56	6.26	2.13	8.04	2.86	30.990	<.001	5.790	<.001	3.010	.005
Excited	3.15	2.12	4.99	2.70	6.81	3.59	31.590	<.001	5.950	<.001	2.460	.020
Physical Aroused	3.03	2.17	3.81	2.58	5.35	3.33	10.600	<.001	2.589	.010	2.230	.033
Fearful	3.30	2.64	2.90	2.27	2.73	2.38	1.187	.307	-1.348	.179	-0.341	.735
Unhappy	3.80	2.80	3.16	2.55	1.96	2.25	5.873	.003	-1.971	.050	-2.435	.020

Note: [1] Contrast between non-consumers and consumers equal variance assumed [2] Contrast between consumers and super users equal variance not assumed [3] Variable degrees of freedom.

Table 8.3.

Anticipatory Comparison between Non-Consumers, Consumers and Super Users on Measure Emotions

	Non-consumers		Consumers		Super Users		ANOVA		Contrast [1]		Contrast [2]	
Variable	M(138)	SD	M(134)	SD	M(26)	SD	*F*(2,295)	*p*	*t*(295)	*p*	*t*(var)[3]	*p*
Happy	4.14	2.79	6.46	2.68	8.92	3.01	44.793	<.001	6.948	<.001	3.886	<.001
Excited	2.96	2.31	5.88	2.88	8.31	3.06	67.143	<.001	9.087	<.001	3.740	.001
Physical Aroused	3.40	2.37	4.46	2.64	6.62	3.16	18.710	<.001	3.416	.001	3.256	.003
Fearful	3.83	2.86	3.43	2.63	1.85	1.67	6.052	.003	-1.237	.217	-3.972	<.001
Unhappy	4.81	3.40	3.12	2.76	1.54	1.61	18.601	<.001	-4.643	<.001	-4.002	<.001

Note: [1] Contrast between non-consumers and consumers equal variance assumed [2] Contrast between consumers and super users equal variance not assumed [3] Variable degrees of freedom.

Table 8.4.

In the Moment Comparison between Non-Consumers, Consumers and Super Users on Measure Emotions

	Non-consumers		Consumers		Super Users		ANOVA		Contrast [1]		Contrast [2]	
Variable	M(138)	SD	M(134)	SD	M(26)	SD	*F*(2,295)	*p*	*t*(295)	*p*	*t*(var)[3]	*p*
Happy	3.84	2.33	5.61	2.47	6.69	3.12	25.155	<.001	5.920	<.001	1.667	.106
Excited	4.39	2.49	6.57	2.77	7.42	3.24	28.573	<.001	6.673	<.001	1.261	.216
Physical Aroused	4.62	2.77	5.72	2.82	6.27	3.11	7.010	.001	3.216	.001	.843	.405
Fearful	5.04	2.81	4.71	2.85	3.15	2.92	4.858	.008	-.972	.332	-2.493	.018
Unhappy	4.63	2.90	3.07	2.68	2.81	3.24	11.994	<.001	-4.551	<.001	-.384	.704

Note: [1] Contrast between non-consumers and consumers equal variance assumed [2] Contrast between consumers and super users equal variance not assumed [3] Variable degrees of freedom.

Table 8.5.

Residual Comparison between Non-Consumers, Consumers and Super Users on Measure Emotions

	Non-consumers		Consumers		Super Users		ANOVA		Contrast [1]		Contrast [2]	
Variable	M(138)	SD	M(134)	SD	M(26)	SD	*F*(2,295)	*p*	*t*(295)	*p*	*t*(var)[3]	*p*
Happy	4.14	2.65	5.60	2.42	6.92	3.12	18.331	<.001	4.644	<.001	2.049	.049
Excited	4.43	2.70	6.21	2.78	7.31	2.78	20.522	<.001	5.333	<.001	1.843	.074
Physical Aroused	4.69	2.97	5.59	2.93	5.26	2.99	5.888	.003	2.523	.012	1.530	.135
Fearful	4.80	3.05	4.59	3.08	3.50	2.67	2.021	.134	-.584	.560	-1.853	.071
Unhappy	5.25	2.97	3.66	2.70	4.33	2.96	14.671	<.001	-4.646	<.001	-1.349	.186

Note: [1] Contrast between non-consumers and consumers equal variance assumed [2] Contrast between consumers and super users equal variance not assumed [3] Variable degrees of freedom.

Remembered Time Point

Valence conversion predicts a positive relation between consumption frequency and excitement and a negative relation between consumption frequency and fear. The negative relation between consumption frequency and fear is predicted to be mediated by habituation. The following analysis tests these predictions and examines the effect of consumption frequency, gender, and habituation on remembered fear and excitement utilizing the full sample and with super users removed.

The Effect of Consumption Frequency on Remembered Excitement and Fear. To test the predictions of valence conversion, the effects of consumption frequency on the amount of excitement (M = 4.30, SD = 2.79) and fear (M = 3.07, SD = 2.46) participants reported for the remembered time point was examined. Simple linear regressions were calculated to predict excitement from consumption frequency, and fear from consumption frequency. Consumption frequency positively predicts excitement (b = .483, $t(296)$ = 8.196, $p < .001$; R^2 = .185, $F(1,296)$ = 67.179, $p < .001$) and negatively predicts fear (b = -.126, $t(296)$ = -2.208, p = .028; R^2 = .016, $F(1,296)$ = 4.877, p = .028; see Figure 8.3).

The Effect of Gender and Consumption Frequency on Remembered Fear. The moderating effect of gender on the relation between consumption frequency and remembered fear was examined using the PROCESS macro (v 2.12.1), Model 1 template in SPSS (v21, IBM Corp). Consumption frequency was mean centered and entered as the independent variable, gender as the moderator, and remembered fear as the dependent variable. Results indicate a significant interaction between gender and frequency on remembered fear (ΔR^2 = .016, b = .251, $t(294)$ = 2.222, p = .027; 95% CI: .029, . 474). Additionally, there is a marginal main effect of gender (b = -.513; $t(294)$ = -1.822, p =

.069; 95% *CI*: -1.066, .041) such that women experience more fear than men and a significant main effect of frequency (*b* = -.243; *t*(294) = -3.166, *p* = .017; 95% *CI*: -.394, .-.092) such that as consumption frequency increases, fear decreases. An analysis of the simple slopes reveals that the effect of consumption frequency on fear is significant such that as consumption frequency increases, fear decreases for women (*b* = -.243; *t*(294) = -3.166, *p* = .002; 95% *CI*: -.394, -.092) but not for men (*b* = .008; *t*(294) = 0.101, *p* = .920; 95% *CI*: -.155, .172). See Figure 8.4. There were no significant effects of gender on the relation between consumption frequency and remembered excitement (*p* >.1).

The Effect of Consumption Frequency on Remembered Excitement and Fear

Discussion. Valence conversion predicts that excitement will be positively related to consumption frequency and fear will be negatively related to consumption frequency. Based on the full sample, for the remembered time point, excitement is positively related to consumption frequency and fear is negatively related to consumption frequency hence confirming predictions. However, these findings are qualified by gender. For both genders, excitement is positively related to consumption frequency; however, fear is negatively related to consumption frequency only in women, not in men. These findings are similar to the in the moment condition for Study 2. Next, these effects will be re-examined with super users removed and then the relation between consumption frequency, habituation, and fear will be explored.

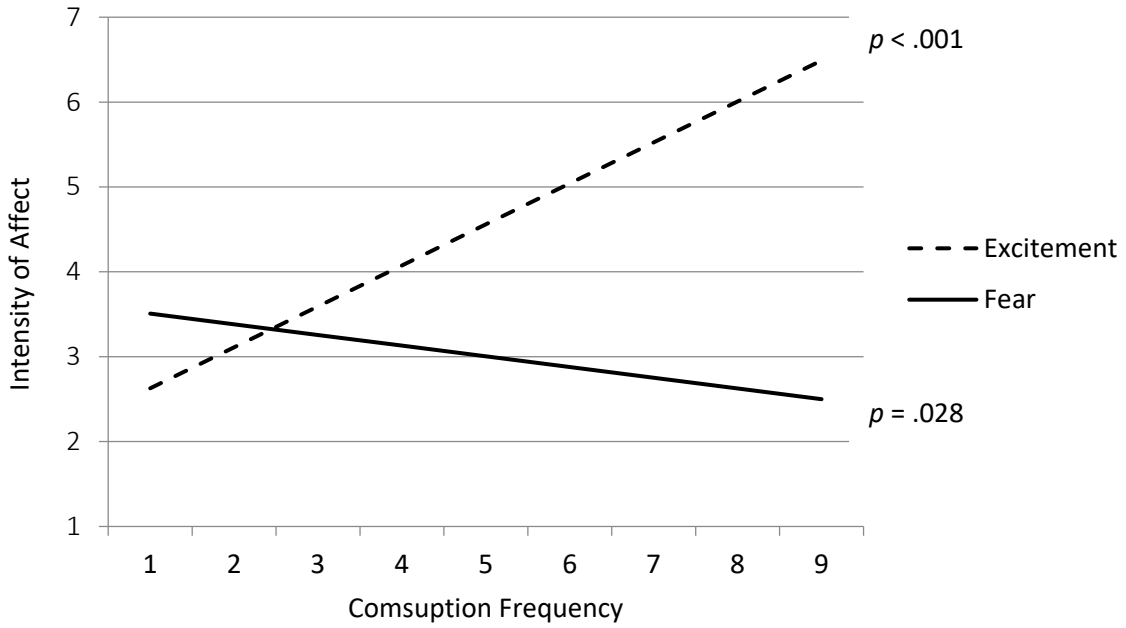

Figure 8.3. Remembered Time Point Fear and Excitement by Consumption Frequency

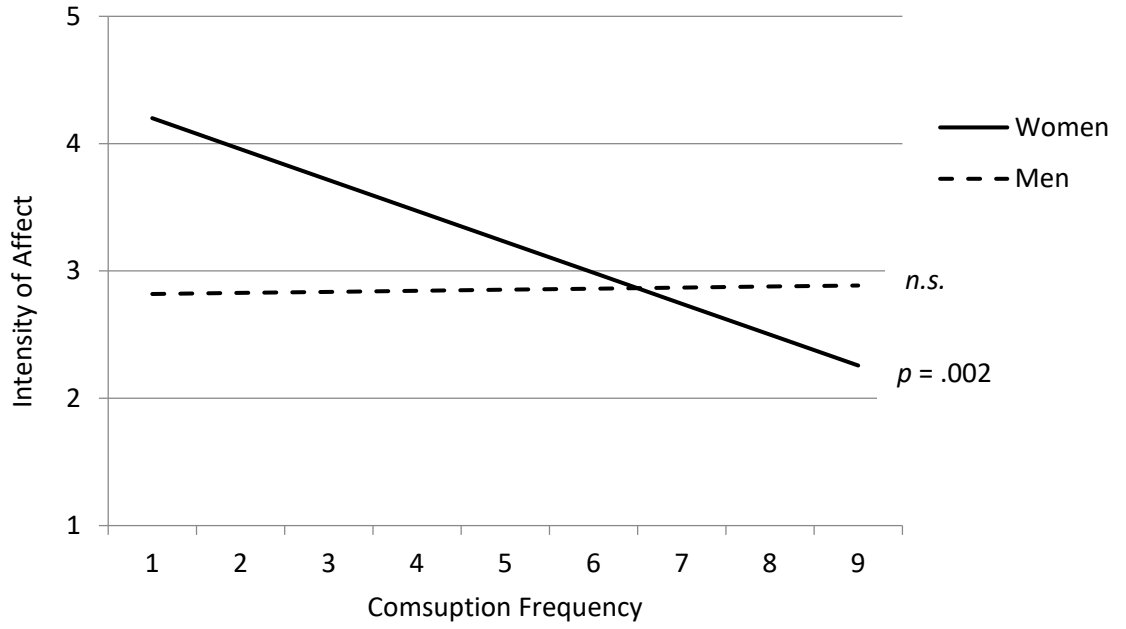

Figure 8.4. Interaction between Gender and Consumption Frequency on Remembered Fear

The Effect of Consumption Frequency on Remembered Excitement and Fear with Super Users Removed. With super users removed, the effects of consumption frequency on the amount of remembered excitement (M = 4.06, SD = 2.59) and fear (M = 3.11, SD = 2.47) was assessed. Simple linear regressions were calculated to predict excitement from consumption frequency, and fear from consumption frequency. Consumption frequency positively predicts excitement (b = .450, $t(270) = 6.612$, $p < .001$; $R^2 = .139$, $F(1,270) = 43.712$, $p < .001$) and negatively predicts fear (b = -.149, $t(270) = -2.156$, p = .032; $R^2 = .017$, $F(1,270) = 4.647$, p = .032).

The Effect of Gender and Consumption Frequency on Remembered Fear with Super Users Removed. With super users removed, the relation between consumption frequency and gender on remembered fear was reassessed. Results indicate a marginally significant interaction between gender and frequency on remembered fear ($\Delta R^2 = .010$; b = .234; $t(268) = 1.705$, p = .089; 95% *CI*: -.036, .505). Additionally, there is a significant main effect of gender (b = -.627; $t(268) = -2.110$, p = .036; 95% *CI*: -1.212, -.042) such that women experience more fear than men and a significant main effect of frequency (b = -.258; $t(268) = -2.659$, p = .008; 95% *CI*: -.450, -.067) such that as consumption frequency increases, fear decreases. An analysis of the simple slopes reveals that the effect of consumption frequency on fear is significant such that as consumption frequency increases, fear decreases for women (b = -.258; $t(268) = -2.659$, p = .008; 95% *CI*: -.450, -.067) but not for men (b = .024; $t(268) = -.0247$, p = .805; 95% *CI*: -.216, .167). However, these last results should be interpreted with caution due to the marginally significant interaction.

The Effect of Consumption Frequency on Remembered Excitement and Fear with Super Users Removed Discussion. With the removal of super users, there is no change in the significance of the relation between consumption frequency and fear and excitement. Fear is negatively related to consumption frequency and excitement is positively related. However, with the removal of super users, the significant interaction between gender and consumption frequency on remembered fear becomes marginal. Therefore, it appears that the interaction is partially due to super users. Next, the relation between consumption frequency, habituation and remembered fear will be examined.

Habituation, Consumption Frequency and Fear. It was predicted that consumption frequency would be positively related to habituation and habituation related to a decrease in experienced fear. To test these predictions for the remembered time point a mediation analysis was conducted. Utilizing the PROCESS macro (v 2.12.1), Model 4 template in SPSS (v21, IBM Corp) consumption frequency was entered as the independent variable, habituation as the mediator and remembered fear as the dependent variable. Consumption frequency has a significant effect on habituation (R^2 = .024, b = .168, t(296) = 2.687, p = .008, 95% *CI*: .045, .291) and habituation has a significant effect on remembered fear (R^2 = .107, b = -.277, t(295) = -5.485, p < .001, 95% *CI*: -.376, -.177). There is no direct effect of consumption frequency on remembered fear (b = -.079, t(296) = -1.440, p = .151, 95% *CI*: -.187, .029) but a significant indirect effect (b = -.047, *CI*: -.094, -.015) suggesting full mediation. There were no significant effects of gender on the relation between consumption frequency and habituation (p >.1). See Figure 8.5.

Habituation, Consumption Frequency and Fear with Super Users Removed. With super users removed the mediation analysis was reassessed. Consumption frequency has

a significant effect on habituation (R^2 = .017, *b* = .164, *t*(270) = 2.186, *p* = .030, 95% *CI*: .016, .312) and habituation has a significant effect on remembered fear (R^2 = .114, *b* = -.290, *t*(269) = -5.43, *p* < .001, 95% *CI*: -.396, -.185). There is no direct effect of consumption frequency on remembered fear (*b* = -.1018, *t*(270) = -1.531, *p* = .127, 95% *CI*: -.233, .029) but a significant indirect effect (*b* = -.048, *CI*: -.106, -.007) suggesting full mediation. There is no significant effects of gender on the relation between consumption frequency and habituation (*p* >.1).

Habituation, Consumption Frequency and Fear Discussion. The results of these analyses establish that the effect of consumption frequency on remembered fear is through habituation and this relation exists for both genders. Thus, these results conform to the predictions of valence conversion and habituation.

Remembered Time Point Discussion. In conclusion, the remembered time point conforms to the predictions of valence conversion and habituation. Consumption frequency positively predicts excitement and negatively predicts fear. This last result is qualified by gender. However habituation fully mediates the relation between consumption frequency and remembered fear, in the predicted direction, for both genders.

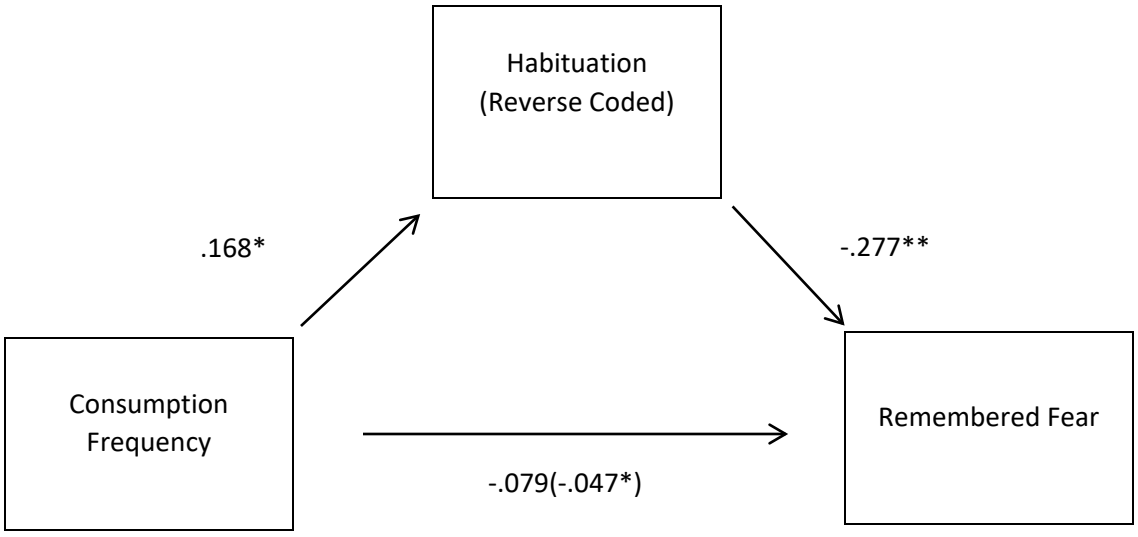

Figure 8.5. Full Mediation of Consumption Frequency by Habituation on Remembered Fear
Note: *p <.05, **p <.001, () denote indirect path

Anticipatory Time Point

The predictions of valence conversion and habituation are also tested in relation to anticipatory fear and excitement. Similarly to the remembered time point the following analysis examines the effect of consumption frequency, gender, and habituation on anticipatory fear and excitement utilizing the full sample and with super users removed.

The Effect of Consumption Frequency on Anticipatory Excitement and Fear. The effects of consumption frequency on the amount of excitement and fear participants reported for the anticipatory time point was examined. Simple linear regressions were calculated to predict excitement (M = 4.74, SD = 3.18) from consumption frequency, and fear (M = 3.47, SD = 2.72) from consumption frequency. Consumption frequency positively predicts excitement (b = .766, t(296) = 12.858, p < .001; R^2 = .358, F(1,296) = 165.315, p < .001) and negatively predicts fear (b = -.229, t(296) = -3.687, p < .001; R^2 = .044, F(1,296) = 13.592, p < .001; see Figure 8.6).

The Effect of Gender and Consumption Frequency on Anticipatory Fear. There were no significant effects of gender on the relation between consumption frequency and anticipatory fear or excitement ($p > .1$).

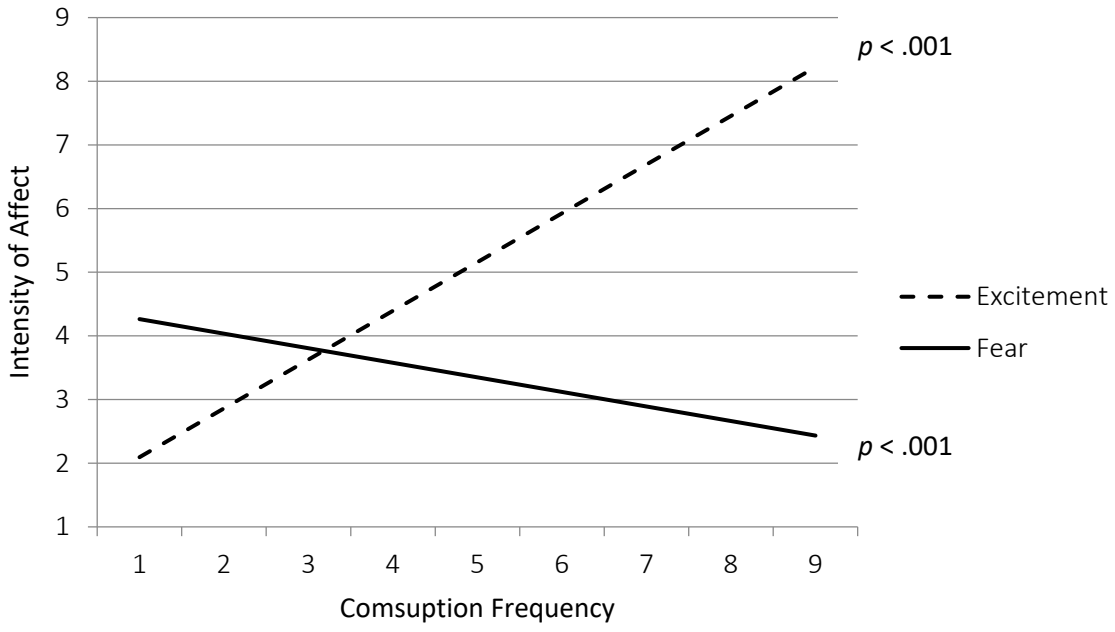

Figure 8.6. Anticipatory Time Point Fear and Excitement by Consumption Frequency

The Effect of Consumption Frequency on Anticipatory Excitement and Fear with Super Users Removed. With super users removed the effects of consumption frequency on the amount of anticipatory excitement ($M = 4.40$, $SD = 2.98$) and fear ($M = 3.63$, $SD = 2.75$) was assessed. Simple linear regressions were calculated to predict excitement from consumption frequency, and fear from consumption frequency. Consumption frequency positively predicts excitement ($b = .757$, $t(270) = 10.675$, $p < .001$; $R^2 = .297$, $F(1,270) =$

113.960, $p < .001$) and negatively predicts fear ($b = -.168$, $t(270) = -2.175$, $p = .030$; $R^2 = .017$, $F(1,270) = 4.731$, $p = .030$).

The Effect of Gender and Consumption Frequency on Anticipatory Fear with Super Users Removed. With super users removed there were no significant effects of gender on the relation between consumption frequency and anticipatory fear or excitement ($p > .1$).

The Effect of Consumption Frequency on Anticipatory Excitement and Fear Discussion. For the anticipatory time point the predictions of valence conversion and the negative relation between consumption frequency and fear and positive relation between consumption frequency and excitement are confirmed. This pattern of results occurs in the full sample and with super users removed and is not affected by gender thus supporting the predictions of valence conversion. Next I examine the relation between consumption frequency, habituation and anticipatory fear.

Habituation, Consumption Frequency and Fear. To test the predicted effect of consumption frequency, on anticipatory fear, through habituation a mediation analysis was conducted. Utilizing the PROCESS macro (v 2.12.1), Model 4 template in SPSS (v21, IBM Corp) consumption frequency was entered as the independent variable, habituation as the mediator and anticipatory fear as the dependent variable. Consumption frequency has a significant effect on habituation ($R^2 = .024$, $b = .168$, $t(296) = 2.687$, $p = .008$, 95% *CI*: .045, .291) and habituation has a significant effect on anticipatory fear ($R^2 = .182$, $b = -.376$, $t(295) = -7.063$, $p < .001$, 95% *CI*: -.482, -.272). There is a significant direct effect of consumption frequency on anticipatory fear ($b = -.165$, $t(296) = -2.842$, p

= .005, 95% *CI*: -.280, -.051) and a significant indirect effect (*b* = -.063, *CI*: -.094, -.015) suggesting partial mediation. See Figure 8.7.

Habituation, Consumption Frequency and Fear with Super Users Removed. With super users removed consumption frequency has a significant effect on habituation (R^2 = .017, *b* = .164, *t*(270) = 2.186, *p* = .030, 95% *CI*: .016, .312) and habituation has a significant effect on anticipatory fear (R^2 = .181, *b* = -.420, *t*(269) = -7.342, *p* < .001, 95% *CI*: -.533, -.308). There is no direct effect of consumption frequency on anticipatory fear (*b* = -.099, *t*(270) = -1.390, *p* = .166, 95% *CI*: -.239, .041) but a significant indirect effect (*b* = -.067, *CI*: -.137, -.012) suggesting full mediation.

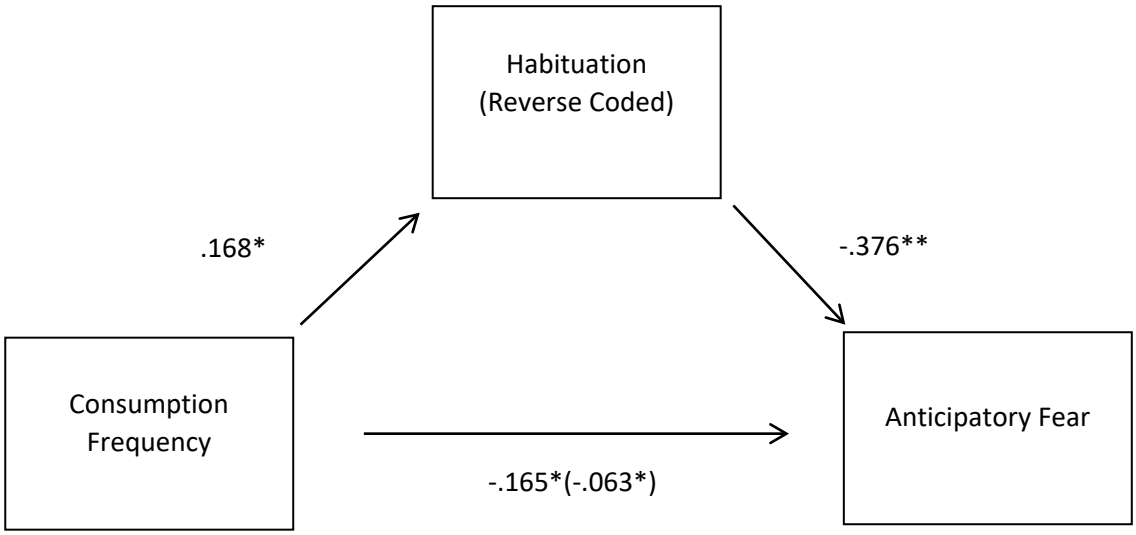

Figure 8.7. Partial Mediation of Consumption Frequency by Habituation on Anticipatory Fear
Note: **p* <.05, ***p* <.001, () denote indirect path

Anticipatory Time Point Discussion. The results of these analyses confirm the predictions of valence conversion and habituation. The predicted negative relation between consumption frequency and fear and positive relation between consumption

frequency and excitement are significant and are not qualified by gender or super users. Further, as predicted habituation (partially) mediates the effect of consumption frequency on anticipatory fear. These results confirm and generally extend the results for the remembered time point.

In the Moment Time Point

The same predictions for valence conversion and habituation are also tested for the in the moment fear and excitement. Similarly to the anticipatory time point the following analysis examines the effect of consumption frequency, gender, and habituation on in the moment fear and excitement utilizing the full sample and with super users removed.

The Effect of Consumption Frequency on In the Moment Excitement and Fear. The effects of consumption frequency on the amount of excitement (M = 5.63, SD = 2.93) and fear (M = 4.73, SD = 2.87) participants reported for the in the moment time point was examined. Simple linear regressions were calculated to predict excitement from consumption frequency, and fear from consumption frequency. Consumption frequency positively predicts excitement (b = .527, $t(296)$ = 10.530, $p < .001$; R^2 = .200, $F(1,296)$ = 74.217, $p < .001$) and negatively predicts fear (b = -.182, $t(296)$ = -2.745, p = .006; R^2 = .025, $F(1,296)$ = 7.537, p = .006; see Figure 8.8).

The Effect of Gender and Consumption Frequency on In the Moment Fear. There were no significant effects of gender on the relation between consumption frequency and in the moment fear or excitement (p >.1).

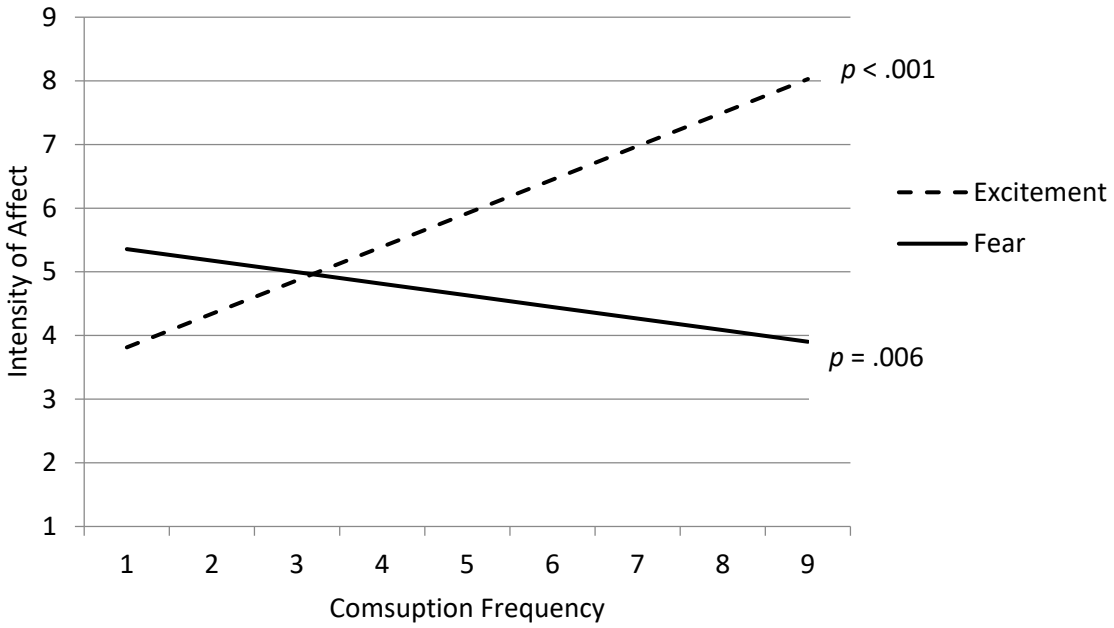

Figure 8.8. In the Moment Time Point Fear and Excitement by Consumption Frequency

The Effect of Consumption Frequency on In the moment Excitement and Fear with Super Users Removed. With super users removed the effects of consumption frequency on the amount of in the moment excitement and fear was reassessed. Simple linear regressions were calculated to predict excitement from consumption frequency, and fear from consumption frequency. Consumption frequency positively predicts excitement (b = .590, $t(270)$ = 9.399, $p < .001$; R^2 =.198, $F(1,270)$ = 66.751, $p < .001$). The relation between consumption frequency and fear was not significant (b = -.105, $t(270)$ = -1.309, p = .191; R^2 = .006, $F(1,270)$ = 1.715, p = .191).

The Effect of Gender and Consumption Frequency on In the moment Fear with Super Users Removed. With super users removed there were no significant effects of gender on the relation between consumption frequency and in the moment fear or excitement (p >.1).

The Effect of Consumption Frequency on In the Moment Excitement and Fear Discussion. For the full sample the effect of consumption frequency on in the moment excitement and fear conform to expectations with a positive relation between consumption frequency and excitement and a negative relation between consumption frequency and fear. However, with the removal of super users the relation between consumption frequency and fear is not significant. This suggests that super users are driving the negative relation between consumption frequency and in the moment fear. There were no effects of gender in any of the analyses. Next the relation between habituation, consumption frequency and in the moment fear will be assessed.

Habituation, Consumption Frequency and Fear. To test the predicted effect of consumption frequency, on in the moment fear, through habituation a mediation analysis was conducted. Utilizing the PROCESS macro (v 2.12.1), Model 4 template in SPSS (v21, IBM Corp) consumption frequency was entered as the independent variable, habituation as the mediator and in the moment fear as the dependent variable. Consumption frequency has a significant effect on habituation (R^2 = .024, b = .168, t(296) = 2.687, p = .008, 95% *CI*: .045, .291) and habituation has a significant effect on in the moment fear (R^2 = .162, b = -.397, t(295) = -6.945, p < .001, 95% *CI*: -.510, -.285). There is a marginal direct effect of consumption frequency on in the moment fear (b = -.115 t(296) = -1.849, p = .065, 95% *CI*: -.238, .007) and a significant indirect effect (b = -.067, *CI*: -.127, -.021) suggesting full (partial) mediation. See Figure 8.9.

Habituation, Consumption Frequency and Fear with Super Users Removed. With super users removed consumption frequency has a significant effect on habituation (R^2 = .017, b = .164, t(270) = 2.186, p = .030, 95% *CI*: .016, .312) and habituation has a

significant effect on in the moment fear (R^2 = .161, *b* = -.421, *t*(269) = -7.048, *p* < .001, 95% *CI*: -.538, -.303). There is no direct effect of consumption frequency on in the moment fear (*b* = -.036, *t*(270) = -0.481, *p* = .163 95% *CI*: -.182, .110) but a significant indirect effect (*b* = -.069, *CI*: -.136, -.015) suggesting full mediation.

In the Moment Time Point Discussion. The results for the in the moment time point conform to the predictions of valence conversion and habituation. There is a positive relation between consumption frequency and excitement and a negative relation between consumption frequency and fear. The relation between consumption frequency and fear is qualified by super users. With the removal of super users the relation between consumption frequency and fear is not significant (there were no effects of gender). Although, with the removal of super users the relation between consumption frequency and fear is not significant, habituation fully mediates the relation between consumption frequency and fear both in the full sample and with super users removed thus conforming to predictions.

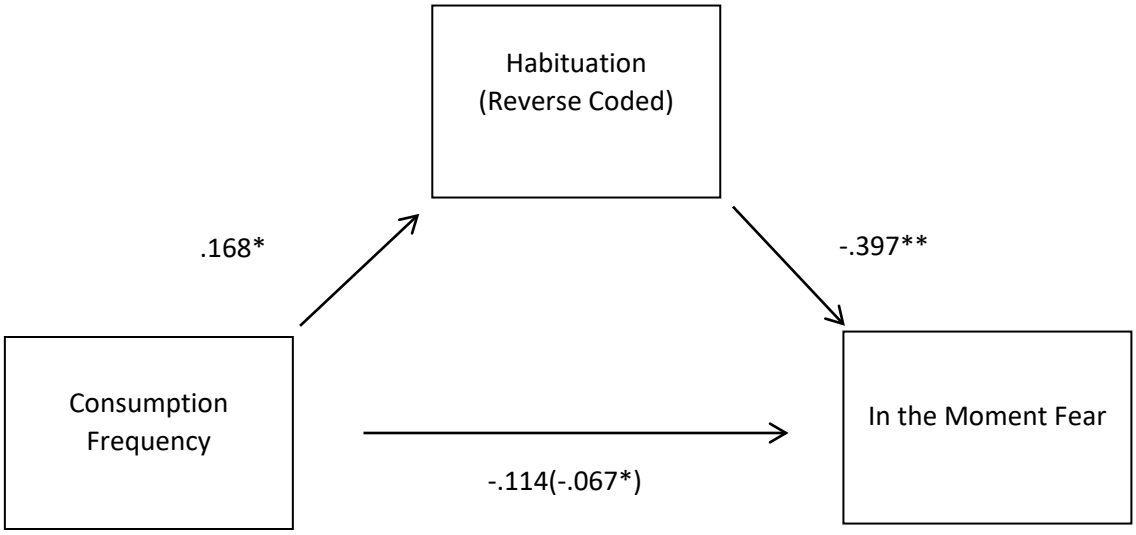

Figure 8.9. Full Mediation of Consumption Frequency by Habituation on In the Moment Fear
Note: *p <.05, **p <.001, () denote indirect path

Residual Time Point

The same predictions for valence conversion and habituation are also tested for the residual fear and excitement. Similarly to the in the moment time point the following analysis examines the effect of consumption frequency, gender, and habituation on residual fear and excitement utilizing the full sample and with super users removed.

The Effect of Consumption Frequency on Residual Excitement and Fear. To test the predictions of valence conversion the effects of consumption frequency on the amount of excitement (M = 5.48, SD = 2.92) and fear (M = 4.59, SD = 3.05) participants reported for the residual time point was examined. Simple linear regressions were calculated to predict excitement from consumption frequency, and fear from consumption frequency. Consumption frequency positively predicts excitement (b = .425, t(296) = 6.686, p < .001; R^2 = .131, F(1,296) = 44.708, p < .001) and negatively predicts fear (b = -.162, t(296) = -2.298, p = .022; R^2 = .018, F(1,296) = 5.280, p = .006; see Figure 8.10).

The Effect of Gender and Consumption Frequency on Residual Fear. There were no significant effects of gender on the relation between consumption frequency and residual fear or excitement (p >.1).

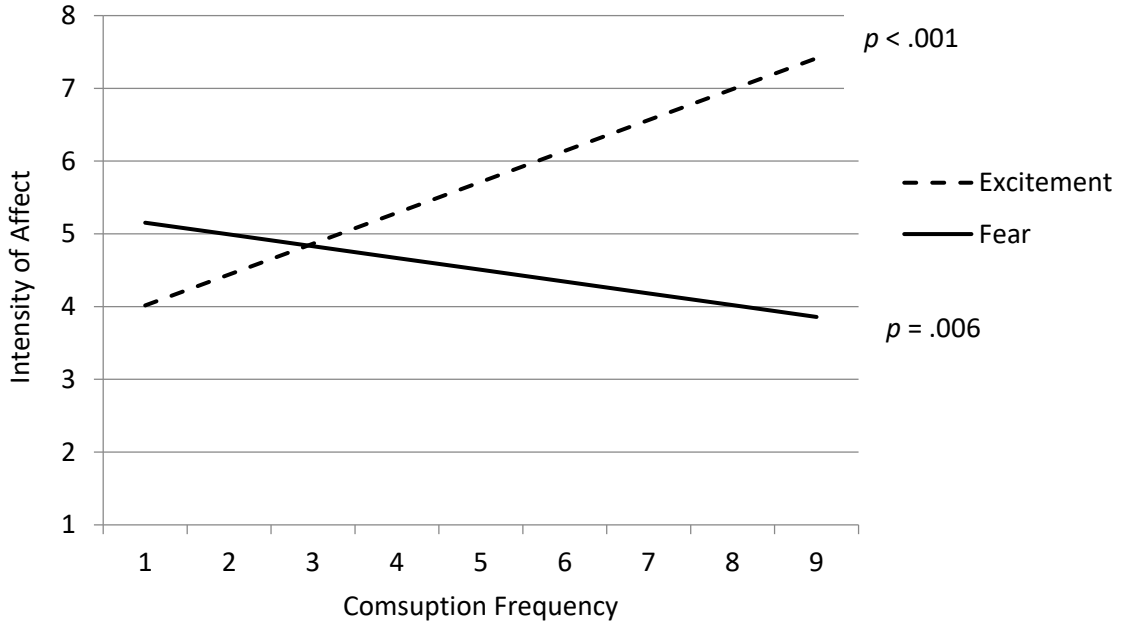

Figure 8.10. Residual Time Point Fear and Excitement by Consumption Frequency

The Effect of Consumption Frequency on Residual Excitement and Fear with Super Users Removed. With super users removed the effects of consumption frequency on the amount of residual excitement (M = 4.06, SD = 2.59) and fear (M = 3.11, SD = 2.45) were reassessed. Simple linear regressions were calculated to predict excitement from consumption frequency, and fear from consumption frequency. Consumption frequency positively predicts excitement (b = .436, $t(270) = 5.658$, $p < .001$; R^2 =.106, $F(1,270) = 32.011$, $p < .001$). The relation between consumption frequency and fear was

not significant (b = -.125, t(270) = -1.446, p = .149; R^2 = .008, F(1,270) = 2.091, p = .149).

The Effect of Gender and Consumption Frequency on Residual Fear with Super Users Removed. With super users removed there were no significant effects of gender on the relation between consumption frequency and residual fear or excitement (p >.1).

The Effect of Gender and Consumption Frequency on Residual Fear Discussion. Similarly to the in the moment time point there is a positive relation between consumption frequency and excitement and a negative relation between consumption frequency and fear. However, with the removal of super users the relation between consumption frequency and fear is not significant. There were no effects of gender in any of the analyses. Next the relation between habituation, consumption frequency and in the residual fear will be assessed.

Habituation, Consumption Frequency and Fear. To test the predictive effect of consumption frequency, on residual fear, through habituation a mediation analysis was conducted. Utilizing the PROCESS macro (v 2.12.1), Model 4 template in SPSS (v21, IBM Corp) consumption frequency was entered as the independent variable, habituation as the mediator and residual fear as the dependent variable. Consumption frequency has a significant effect on habituation (R^2 = .024, b = .168, t(296) = 2.687, p = .008, 95% *CI*: .045, .291) and habituation has a significant effect on residual fear (R^2 = .204, b = -.491, t(295) = -8.317, p < .001, 95% *CI*: -.607, -.375). There is a no direct effect of consumption frequency on residual fear (b = -.079 t(296) = -1.235, p = .218, 95% *CI*: -.206, .047) and a significant indirect effect (b = -.083, *CI*: -.148, -.024) suggesting full mediation. See Figure 8.11.

Habituation, Consumption Frequency and Fear with Super Users Removed. With super users removed consumption frequency has a significant effect on habituation (R^2 = .017, *b* = .164, *t*(270) = 2.186, *p* = .030, 95% *CI*: .016, .312) and habituation has a significant effect on residual fear (R^2 = .212, *b* = -.527, *t*(269) = -8.429, *p* < .001, 95% *CI*: -.650, -.404). There is no direct effect of consumption frequency on residual fear (*b* = -.039, *t*(270) = -0.497, *p* = .620 *CI*: -.192, .114) but a significant indirect effect (*b* = -.086, *CI*: -.163, -.015) suggesting full mediation.

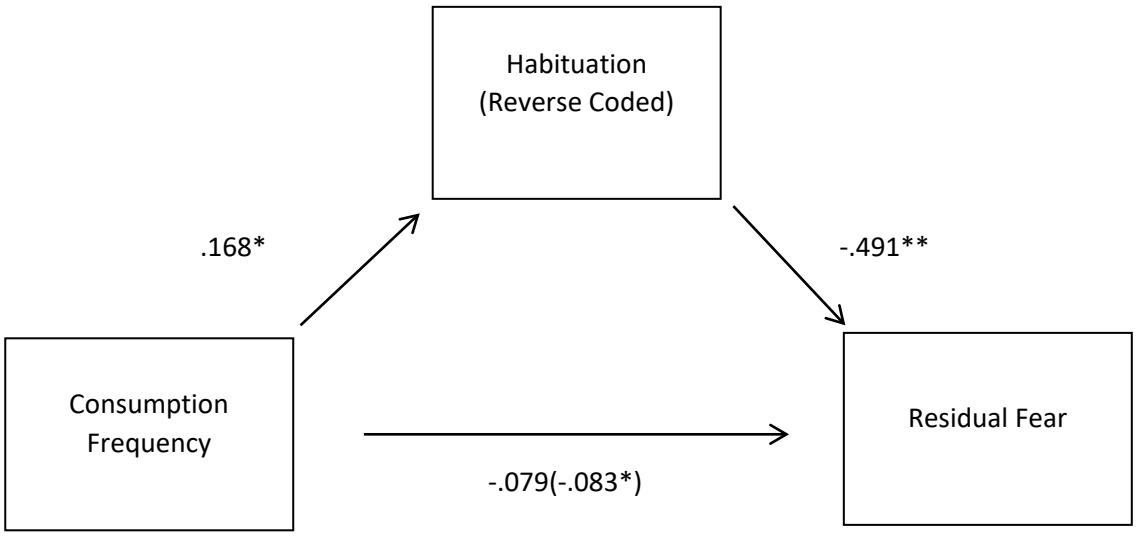

Figure 8.11. Full Mediation of Consumption Frequency by Habituation on Residual Fear
Note: *p <.05, **p <.001, () denote indirect path

Residual Time Point Discussion. The results for the residual time point are very similar to the results for the in the moment time point. There is a positive relation between consumption frequency and excitement and a negative relation between consumption frequency and fear. The relation between consumption frequency and fear is

qualified by super users. With the removal of super users the relation between consumption frequency and fear is not significant (there were no effects of gender). Although with the removal of super users the relation between consumption frequency and fear is not significant habituation fully mediates the relation between consumption frequency and fear both in the full sample and with super users removed thus conforming to predictions.

CHAPTER IX

GENERAL DISCUSSION AND MANAGERIAL IMPLICATIONS

In order to explain the consumption of aversive experiences ranging from skydiving to watching a horror movie, I propose and test two new theories: valence conversion and the hedonic equation. Valence conversion asserts that emotions that share a similar level of arousal and set of cognitive appraisals can be quickly converted from one to the other contingent on internal cognitions, goals, and cues from the environment. We propose that fear and excitement share a similar level of arousal and set of cognitive appraisals. Thus, an aversive stimulus that is not so extreme as to prevent the activation of goals related to positive affect can also be perceived as exciting. The valence conversion model predicts a negative relation between consumption frequency and fear and a positive relation between consumption frequency and excitement. Further, the negative relation between consumption frequency and fear is predicted to be explained by habituation. The effect of habituation on experienced emotion also means that four different consumer groups should be discernible based on recent consumption frequency and habituation. Each of these groups should experience different levels of fear and excitement relative to each other. Lastly, the hedonic equation proposes that across four time points (anticipatorily, in the moment, residually, and remembered), if the sum of excitement is greater than the sum of fear, an individual will choose to re-consume an aversive stimuli. Most importantly, the hedonic equation predicts that consumers will experience a positive balance of excitement to fear, whereas non-consumers will

experience a negative balance of excitement to fear; and excitement and fear across all four time points will predict consumption intentions.

Across three studies we demonstrate strong support for valence conversion and the hedonic equation. Study 1a and 1b demonstrate that in reference to horror movie consumption excitement is the most reported positive emotion and is experienced without the effects of fixed response measurement. Study 2 tests the valence conversion framework and demonstrates that excitement is positively related to consumption, and fear is negatively related to consumption through habituation. Analysis from Study 2 also calls into question fear induction through the use of film clips. Both film clips used in Study 2 had been pre-validated to cause fear, more than other emotions tested. The results of this study suggest that these film stimuli cause as much excitement as they do fear, which poses a problem for any study that has manipulated fear without controlling for excitement. Further, the four consumer groups based on recent consumption frequency and habituation (habituated consumers, habituated non-consumers, non-habituated consumers and non-habituated non-consumers) display the predicted pattern of emotional experience while watching the horror movie clip. Lastly, Study 3 provides evidence in support of the hedonic equation. Specifically, Study 3 demonstrates that consumers experience a positive balance of excitement to fear whereas non-consumers experience a negative balance, thus explaining why people choose to consume these apparently aversive events. Further, excitement and fear together explain almost 38 percent of the variance in consumption intentions. In conclusion, these studies provide good initial evidence for valence conversion and the hedonic equation, and further explain why individuals choose to consume aversive events.

On May 16th, 2015 Dean Potter and Graham Hunt wingsuited from Taft Point some 3000 feet above the valley floor in Yosemite National Park. While trying to clear a notch in one of Yosemite's famous granite walls they crashed and died. In the ensuing days, many people tried to come to grips with Potter and Hunt's death. In the popular press many questions abounded as to why people would risk their lives in such endeavors (Brown, 2015). In the academic literature a number of theories have been proposed to explain why people choose to consume such experiences; however, these theories have received mixed empirical support (see Andrade & Cohen, 2007). The two theories that I have proposed, valence conversion and the hedonic equation, and the three studies contained herein provide good initial evidence for why people willingly consume fear. From skydiving to watching horror movies it's not so much the fear that we consume but rather the excitement that comes along with it.

Limitations and Future Directions

These three studies have a number of limitations. First, each study utilizes a convenience sample, which may not be representative of the population as a whole. Second, Study 1b, Study 2 and Study 3 utilized movie clips as opposed to full-length horror movies. It is possible that affective reactions to full-length horror movies may be different than to a movie clip. Third, Study 1b, Study 2 and Study 3 employee similar experimental designs and measures; hence, they may suffer from a common response bias.

The three studies outlined above provide good preliminary evidence for valence conversion and the hedonic equation; however, a number of propositions remain

untested. Future research will explore the cognitive appraisals that underlie fear and excitement, the effect of goals on valence and test against competing theories.

Managerial Implications

Valence conversion and the hedonic equation have a number of relevant managerial implications. In particular purveyors of aversive experiences such as film studios, haunted houses, videogame designers and companies related to the consumption of extreme sports such as skydiving drop zones can benefit from this research in a number of ways. First, the balance of excitement in comparison to fear is the best measure of utility consumers derive from the experience and is positively related to re-consumption intentions. Thus, in measuring the utility derived from the product or service, excitement and fear should be the main variables of interest. Second, there is likely a sweet spot between the amount of fear and excitement that will lead to the greatest re-consumption intentions. This should be calibrated based on consumer profile. For example, a company whose consumer profile contains a higher proportion of individuals with salient goals related to arousal seeking, self or other signaling may benefit from more fear provoking stimuli. Third, since it is hypothesized that goals are related to the positive aspects of consuming aversive experiences, it may be possible to prime certain goals either before, during or after consumption, which may increase excitement and re-consumption intentions. For example, a skydiving drop zone could use self signaling appeals such as “prove to yourself that you are up to it” in promotional material, and a movie studio could encourage groups of people to attend horror movies together to increase excitement derived from other signaling.

APPENDIX A

STUDY 1A LIST OF EMOTIONS/STATES

Acceptance

Afraid

Agitated

Amused

Angry

Anxious

Ashamed

Bored

Calm

Content

Depressed

Disgusted

Dissatisfied

Distressed

Drowsy

Eager

Envious

Euphoric

Excited

Frustrated

Guilty

Happy

Hopeful

Loving

Nervous

Passionate

Peaceful

Physically aroused

Proud

Relaxed

Relieved

Romantic

Sad

Sexually aroused

Sexy

Surprised

Tense

Thrilled

Tired

Unhappy

APPENDIX B

STUDY 2B FREE RESPONSE INSTRUCTIONS

We would like you to tell us what emotions you felt while watching the movie clip by using the free response below. An emotion is a feeling (such as love, joy or anger) and is different than a general attitude such as I “liked” the movie clip. When providing your response please try and avoid using synonyms for words which describe the same feeling. For example, for many people (although not everyone) happy and content describe the same feeling.

There is no right or wrong answer. We are only interested in how you feel, not how you think you should feel or how you think others should feel.

Please list at least three different emotions you experienced while watching the film clip below.

APPENDIX C

STUDY 1B STANDARDIZATION OF FREE RESPONSE

1. Alert and alertness combined into alert
2. Amusement and amused combined into amused
3. Anger and angry combined into angry
4. Anticipating and anticipation combined into anticipation
5. Anxious, anxiousness and anxiety combined into anxious
6. Bored and boredom combined into bored
7. Concern and concerned combined into concern
8. Confused and confusion combined into confused
9. Curious and curiosity combined into curious
10. Dark and darkness combined into dark
11. Disgust and disgusted combined into disgusted
12. Excited and excitement combined into excited
13. Fear, fright, frightened and a fearful combined into fear
14. Hesitant and hesitation combined into hesitant
15. Humor and humored combined into humor
16. Interest and interested combined into interested
17. Intrigue and intrigued combined into intrigue
18. Nervous and nervousness combined into nervous
19. Nostalgic and nostalgia combined into nostalgic
20. Sadness and sad combined into a sad
21. Shock and shocked combined into shock

22. Surprise and surprised combined into surprise

23. Suspense and suspension combined into suspense

24. Suspicion and suspicious combined into suspicion

25. Tense, tenseness and tension combined into tense

26. Uneasy, unease, and uneasiness combined into uneasy

27. Worried and worry combined into worry

APPENDIX D

STUDY 3 STIMULUS REPLICATE CONDITION

In the Moment Time Point: Comparison of The Silence of the Lambs vs. Salem's Lot

	Silence (n = 151)		Salem (n = 149)				95% CI		Cohen's *d*
Variable	*M*	*SD*	*M*	*SD*	*t*(296)	*p*	*LL*	*UL*	
Happy	4.99	2.53	4.78	2.79	.706	.481	-.389	.825	.11
Excited	5.63	3.04	5.64	2.82	-.030	.976	-.679	.658	.00
Physically Aroused	5.17	2.89	5.35	2.87	-.543	.587	-.839	.476	.06
Fearful	4.37	2.70	5.10	3.01	-2.189	.029	-1.376	-.073	.26
Unhappy	3.39	2.67	4.16	3.14	-2.267	.024	-1.43	-.101	.26

Note. *CI* = confidence interval; *LL* = lower limit; *UL* = upper limit

Residual Time Point: Comparison of The Silence of the Lambs vs. Salem's Lot

	Silence (n = 151)		Salem (n = 149)				95% CI		Cohen's *d*
Variable	*M*	*SD*	*M*	*SD*	*t*(296)	*p*	*LL*	*UL*	
Happy	5.17	2.73	4.90	2.75	.822	.412	-.364	.885	.10
Excited	5.85	3.01	5.10	2.68	2.24	.026	.091	1.413	.26
Physically Aroused	5.55	3.12	4.95	2.83	1.728	.085	-.083	1.278	.20
Fearful	4.98	3.08	4.20	2.96	2.234	.026	.093	1.473	.26
Unhappy	3.97	2.99	4.69	2.90	-2.091	.037	-1.385	-.042	.24

Note. *CI* = confidence interval; *LL* = lower limit; *UL* = upper limit

APPENDIX E

STUDY 3 COMPARISON OF GENDER ON ASSESSED EMOTIONS

Remembered Time Point Comparison of Men and Women on Assessed Emotions

	Men (n = 164)		Women (n = 134)				95% CI		Cohen's *d*
Variable	*M*	*SD*	*M*	*SD*	*t*(var)	*p*	*LL*	*UL*	
Happy	5.75	2.56	5.72	2.74	.486	.628	-.456	.754	.011
Excited	4.52	2.67	4.02	2.92	-1.529	.127	-1.134	.142	.179
Physically Aroused	3.63	2.35	3.51	2.80	-.393*	.694	-.716	.478	.046
Fearful	2.85	2.27	3.35	2.65	1.738*	.083	-.067	1.073	.203
Unhappy	3.12	2.46	3.63	2.93	1.611*	.108	-.114	1.139	.189

Note. CI = confidence interval; LL = lower limit; UL = upper limit; var = variable degrees of freedom; * = Levine's Test significant ($p < .05$) equal variances not assumed

Anticipatory Time Point Comparison of Men and Women on Assessed Emotions

	Men (n = 164)		Women (n = 134)				95% CI		Cohen's *d*
Variable	*M*	*SD*	*M*	*SD*	*t*(var)	*p*	*LL*	*UL*	
Happy	5.76	2.84	5.41	3.47	-.926*	.355	-1.080	.389	.110
Excited	4.97	3.02	4.46	3.36	-1.370	.172	-1.235	.221	.160
Physically Aroused	4.20	2.68	4.10	2.78	-.305	.761	-.721	.527	.037
Fearful	3.09	2.47	3.95	2.93	2.710*	.007	.236	1.489	.317
Unhappy	3.51	3.04	4.07	3.33	1.523	.129	-.164	1.289	.176

Note. CI = confidence interval; LL = lower limit; UL = upper limit; var = variable degrees of freedom; * = Levine's Test significant ($p < .05$) equal variances not assumed

In the Moment Time Point Comparison of Men and Women on Assessed Emotions

	Men (n = 164)		Women (n = 134)				95% CI		Cohen's *d*
Variable	*M*	*SD*	*M*	*SD*	*t*(var)	*p*	*LL*	*UL*	
Happy	5.03	2.44	4.71	2.91	-1.020*	.309	-.942	.299	.119
Excited	5.96	2.75	5.23	3.10	-2.135*	.034	-1.407	-.057	.250
Physically Aroused	5.46	2.71	5.01	3.06	-1.344	.180	-1.109	.209	.155
Fearful	4.80	2.72	4.64	3.06	-.463*	.644	-.825	.511	.055
Unhappy	3.53	2.81	4.06	3.07	1.552	.122	-.142	1.200	.180

Note. CI = confidence interval; LL = lower limit; UL = upper limit; var = variable degrees of freedom; * = Levine's Test significant (p < .05) equal variances not assumed

Residual Time Point Comparison of Men and Women on Assessed Emotions

	Men (n = 164)		Women (n = 134)				95% CI		Cohen's *d*
Variable	*M*	*SD*	*M*	*SD*	*t*(var)	*p*	*LL*	*UL*	
Happy	5.12	2.44	4.94	3.07	-.538*	.591	-.819	.468	.065
Excited	5.70	2.73	5.22	3.13	-1.370*	.172	-1.148	.206	.163
Physically Aroused	5.33	2.76	5.16	3.26	-.465*	.642	-.864	.534	.056
Fearful	4.49	2.89	4.72	3.24	.658*	.511	-.471	.943	.075
Unhappy	4.03	2.84	4.69	3.08	1.911	.057	-.020	1.332	.222

Note. *CI* = confidence interval; *LL* = lower limit; *UL* = upper limit; var = variable degrees of freedom; * = Levine's Test significant (*p* < .05) equal variances not assumed

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