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Does Anyone Really Like Horror Movies? Personality and Automatic Affective Reactions to Frightening Films

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A thesis submitted in partial fulfillment of the requirements for the Doctor of Philosophy degree in Psychology

DOES ANYONE REALLY LIKE HORROR MOVIES? PERSONALITY AND AUTOMATIC AFFECTIVE REACTIONS TO FRIGHTENING FILMS

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Abstract

I sought to explain why many people willingly expose themselves to apparently unpleasant media, such as horror movies. Participants (*N* = 133*)* completed a modified version of the Affect Misattribution Procedure (AMP; Payne et al., 2005), which assessed initial affective reactions to screenshots from movies that were either frightening or neutral. The time between exposure to the screenshots and assessment of affect was either short (100 ms) or long (1000 ms). Explicit attitudes about the movies and about the horror genre were also assessed, in addition to the following personality variables: The Big Five, Machiavellianism (from the Supernumerary Personality Inventory), Sensation Seeking, and Psychopathy. There was little evidence for a direct connection between implicit reactions and explicit attitudes, but I found overall support for an aftermath-based model of horror enjoyment, in which affect gets increasingly positive after a horrific stimulus has been removed from the screen. However, this relief-like pattern was moderated by Agreeableness and Sensation Seeking. Personality correlates of horror liking (both explicit and implicit) were examined. Furthermore, gender differences supported a gender socialization theory of reactions to frightening media. Theoretical implications and practical applications are discussed.

Keywords: horror, implicit attitudes, personality, emotion, affect, fear, affective reactions, Affect Misattribution Procedure, gender, violence, media, movies, sensation seeking, big five, agreeableness, Machiavellianism, motivation for viewing horror, Supernumerary Personality Inventory, psychopathy.

Dedication

For Willow.

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"And this is the forbidden truth, the unspeakable taboo—that evil is not always repellent but frequently attractive; that it has the power to make of us not simply victims, as nature and accident do, but active accomplices."

— Joyce Carol Oates (1995), *Haunted: Tales of the Grotesque*

Fright and violence are not usually considered pleasant. Yet many people willingly subject themselves to fright and violence on a regular basis, whenever they watch scary movies. Horror films frequently depict violent mutilation, terror-ridden victims, startling special effects, powerful killers, and generally provide a few hours of fear, disgust, terror and depravity (Johnston, 1995). They present an apparent paradox, in that some people seem to enjoy being exposed to this imagery, despite potentially having negative emotional reactions to it. People are generally assumed to be hedonistic; that is, to prefer to pursue pleasure and to avoid pain (Andrade & Cohen, 2007). Nevertheless, potentially painful horror movies are undoubtedly popular and profitable (Gomery, 1996), even if not always appreciated by critics. In 2010, of the 51 weekly box office totals (based on gross profit), a horror film was in the top 10 movies on 36 weeks. Movies such as the horror-thriller *Shutter Island* (Scorsese, 2010), a *Nightmare on Elm Street* remake (Bayer, 2010), *Paranormal Activity 2* (Williams, 2010), and *Saw 3D* (Greutert, 2010) have made it to the number one spot. The horror-inspired romance (to classify it kindly), *The Twilight Saga:*

Eclipse (Slade, 2010), was the fourth highest grossing movie, making over 300 million dollars in North America (Box Office Mojo, 2010). Rather than being a niche market, horror movies are watched, and presumably enjoyed, by a large number of people.

Why do so many people engage in such paradoxical behaviour? Some research has revealed audiences' self-reported reasons for watching horror films, and several theories have been proposed to explain enjoyment of such films. However, little research has attempted to directly examine the affective reactions that an audience has to the imagery in a horror film. Furthermore, it is unclear whether fans of horror movies truly have a different affective reaction to horror films than do non-fans of horror, or if enjoyment of the films is a more reasoned, explicit reaction.

Using a recently developed technique designed to assess implicit attitudes (the affect misattribution procedure, or AMP; Payne, Cheng, Govorun, & Stewart, 2005), in addition to measures of explicit preference for horror and of personality, I attempted to determine who enjoys horror, and which existing theories can best explain *why* they enjoy it.

The Appeal of Horror

Theodor Adorno (2006) wrote that "horror is beyond the reach of psychology" (p. 164). Though perhaps not meant in the same context as it is here, this statement has proven to be false. While relatively few studies have examined horror (Hoffner & Levine, 2005), some researchers in psychology and other fields have been able to partially illuminate its dark appeal.

A question with an answer less obvious than it first appears is: why are scary

movies scary? After all, fear is, by definition, an emotion felt in response to danger (Merriam-Webster Online, 2010). People sitting at home or in a movie theatre, in a comfortable chair, eating popcorn, often with loved ones close by, are as far from danger as they can get. Yet reactions to horror films watched in such a setting do include, among other emotions, fear.

Money and Agius (2009) showed participants representative video clips from several genres (horror/thriller, action/sci-fi, comedy, drama/action, & drama/comedy) while continually monitoring physiological responses. They found that the horror/thriller content (clips from *The Exorcist*; Friedkin, 1973) elicited higher levels of electro-dermal response (a correlate of arousal level), constricted blood volume pulse flow to the extremities (suggesting fearfulness), increased respiration rates (again suggesting arousal), and decreased respiration amplitudes (suggesting higher arousal and negative emotional state). Furthermore, with the exception of comedy, horror stimuli were the only videos that elicited significant and identifiable physiological responses. Horror movies, perhaps more than any other genre, elicit emotional reactions, generally of a negative nature.

Joanne Cantor and colleagues (Cantor, 1994; Cantor & Oliver, 1996) propose that such reactions are at least partly due to stimulus generalization. Stimuli that would cause fear if encountered in person (either because of natural unconditioned responses or because of associations that have led to a conditioned response) evoke similar, but less intense, responses when encountered on a movie screen. In horror movies, a defining feature of the genre is the depiction of characters who are about to be in danger, are in

danger, or are no longer in danger (either by having removed the threat, or more often than not, by having died; Cowan & O'Brien, 1990). Depictions of the danger itself (e.g., killers, deformed monsters, supernatural happenings) certainly evoke a response as they would if encountered in reality. However, much time is also spent depicting victims' reactions, and thus empathy with these characters also evokes a reaction similar to, but less intense than, encountering a well-liked person suffering in reality. Furthermore, perhaps to make up for the diminished response to screen depictions, filmmakers employ techniques that build upon such responses. For example, dark settings, disorienting camera movements, and discordant sounds (the violins in *Psycho* being the classic case; Hitchcock, 1960) enhance the response to dangers on-screen. Furthermore, a well-placed and unexpected loud noise is sure to evoke an unconditioned response regardless of whether it is coming from the outside world or from a speaker in a movie theatre.

The primary reaction to frightening movies is fright. Fear, when elicited in real-world situations, generally leads to avoiding those situations. The fact that people actively seek out horror films, then, presents a contradiction. Why would people spend resources to expose themselves to stimuli that make them feel terrible?

One way to find out why people watch horror movies is to ask them. Tamborini and the aptly named Stiff (1987) had trained interviewers wait outside a movie theatre after a horror film (*Halloween II*; Rosenthal, 1981). They asked about five commonly-mentioned reasons for enjoying horror films: (a) because they were exciting; (b) because they were scary; (c) because of the destruction and power in them; (d) because the good guy wins in the end; and (e) because of the humour in them. They also measured general

attendance for movies, horror movies, and liking for the specific film, in addition to individual difference variables: sensation seeking, age, and gender.

Not surprisingly, Tamborini and Stiff (1987) observed that finding fright appealing predicted the frequency of horror movie attendance, and that horror movies were enjoyed most by males and younger viewers. More interestingly, they found that the appeal of fright was predicted by the audience's desire to experience a satisfying resolution in the film, the audience's desire to see destruction often found in the films, and, to a lesser extent, a sensation-seeking personality.

The results of this study highlight two contradictory reasons for enjoying horror movies. On one hand, it is suggested that the removal of negative affect (through a happy ending) can cause positive affect, and thus enjoyment of the film. On the other hand, arousal itself (brought about by violence and destruction in the films) can cause positive affect, and thus enjoyment of the film.

Johnston (1995) conducted a more detailed analysis of motivations for viewing horror films in a sample of adolescent viewers. Factor analyzing a myriad of possible reasons for viewing horror, she identified four main classes of motivations: gore watching, thrill watching, independence watching, and problem watching. Different motivations appeared to lead to different affect after watching horror movies. For example, thrill watchers (who watch because they enjoy being startled, scared and relieved when sympathetic protagonists escape danger) and independent watchers (who watch to demonstrate mastery over fear) report positive affect after a movie. However, problem viewers (who watch due to anger, loneliness, or personal problems) report

negative affect. Gore watchers (who are low in empathy, curious about physical violence, and attracted to the grotesque) did not have a clear affective relationship with horror, perhaps reflecting blunted affect. Different viewing motivations were also related to different personality profiles. However, when asking about feelings after movies, it is not clear if the affect elicited by horror films is intrinsically positive or negative, or if it only later takes on positive characteristics due to extrinsic factors, such as removal of suspense or self-presentation concerns, like appearing to be brave. Even the negative affect reported by problem viewers must have some positive angle, given that they continue to watch the films.

To try to disentangle affect felt during versus after a film, Andrade and Cohen (2007) tested several hypotheses involving affect ratings obtained both during and after watching a horror movie. In one experiment, participants continuously rated how scared and how happy they were on a grid, during a movie. Thus, they could independently rate fear and happiness (allowing the possibility for, e.g., simultaneous ratings of high fear and high happiness). Interestingly, they found that fans of horror movies were just as fearful as people who were not horror fans, both during and after a horror film clip. However, fans of horror also tended to rate themselves as being happier during the clips, and became more happy when they were more scared. They also found that when participants were manipulated to be in a *protective frame* (i.e., become detached from the action in the clip, by focusing on the fact that it was performed by actors), even people who normally avoided horror movies were able to experience positive feelings during the scary parts of the film clip.

Looking at specific aspects of horror movies that may or may not be enjoyable, King and Hourani (2007) studied whether *teaser endings* (endings in which the main villain appears to have been defeated, but is later revealed to have survived or is somehow resurrected) are more or less enjoyable than traditional endings (endings in which the main villain stays dead). Participants watched and rated movies that either kept their original teaser ending, or were edited so that the ending was more traditional. They also completed measures of Johnston's (1995) gore-watcher and thrill-watcher types of viewing motivation. The researchers found that, overall, traditional endings were preferred to teaser endings. Gore-watchers seemed to like them because they were unpredictable. Thrill-watchers, however, seemed to like traditional endings because they were expected and predictable. Different people, then, may enjoy horror movies for different reasons.

Two Competing Theories of Horror Enjoyment

A meta-analysis on the enjoyment of fright and violence by Hoffner and Levine (2005) summarized the research that has been done in this area, much of it similar to the research described above. A robust finding across studies was that self-reported negative affect during viewing was positively correlated with enjoyment of horror films. Arousal, however, as measured by various physiological responses, was not consistently related to enjoyment.

Several theories have been proposed that can provide an overall framework explaining the empirical findings above. It is difficult to reconcile positive attitudes toward horror films with traditional theories of attitudes, which generally assume that

attitudes function to help individuals approach what is good and avoid what is bad (Maio & Olson, 2000). Additional theoretical reasoning is required. Andrade and Cohen (2007) identify two main categories of horror appeal theories. *Intensity-based models* posit that there is really no conflict between traditional attitude theories and horror film enjoyment. Rather, there are people who experience positive affect in response to these apparently negative stimuli. They experience a high level of arousal as positive, whether the arousal is due to pleasant or unpleasant stimulation. Furthermore, individual differences in personality (see below) and psychobiology explain why some people respond positively to horror while others do not (Zuckerman, 1979, 1996). This model is consistent with much past research demonstrating that self-reported arousal correlates with enjoyment (Tamborini & Stiff, 1987), and that horror fans become more happy as they become more scared while watching a movie (Andrade & Cohen, 2007). It is less useful in explaining why some participants report more enjoyment when the threat in the movie is overcome or removed from the screen (King & Hourani, 2007). Intensity-based models predict that positive affect is directly proportional with arousal, and that enjoyment should diminish as arousal does.

Aftermath-based models (also known as excitation transfer; Johnston, 1995; see also Bryant & Miron, 2003, Zillmann, 1983) posit that people endure experiences that are truly negative in anticipation of relief and positive affect experienced after the exposure to the unpleasant imagery is over. In addition to relief itself, residual arousal from the unpleasant stimulus can be misattributed to—and thus intensify—the positive aftermath experience (following Schachter and Singer's, 1962, classic demonstrations that arousal

can be misattributed, a fact also exploited by the indirect measure of attitudes used in the current study, described below). Zillmann (1980) uses this theory to highlight the importance of plot resolution in horror films, though mere removal of the negative imagery is a minimum condition for this aftermath effect to occur. This model explains the general preference for movies with closed-ended finales (Tamborini & Stiff, 1987; King & Hourani, 2007), but is less able to explain a correlation between arousal and self-reported positive affect during a film (King & Hourani, 2007).

Neither intensity-based models nor aftermath models fully explain the existing body of literature. There are contradictions in past research and theory that have yet to be resolved. The present study endeavoured to resolve some of these contradictions.

Problems With Self-Reported Attitudes Toward Horror Films, and the AMP

Perhaps one reason for conflict in past literature is that the tools used to measure attitudes toward horror movies have been varied and generally crude. The vast majority of attitude measures in this area of research have involved simply asking people about their preferences. For example, one of Johnston's (1995) open-ended questions, asked in a group setting, was "what feelings best describe your mood after watching a slasher movie?" (p. 534). Even if the villain got the same fate, seeing people being killed, mutilated, tortured and traumatized is not something many people could admit to feeling delighted about, even if delight was truly one of their affective responses. Such self-presentation issues could also work in the opposite direction. Like independent watchers in Johnston's study, many people could report feeling fine after a horror film in order to appear brave and resilient.

Indeed, there can be tangible advantages to hiding one's true feelings about frightening situations. Zillmann and Gibson (1996) propose that telling horrifying tales, and controlling one's reaction to them, are deep-seated human needs, and have been around for as long as we have been able to tell stories. Ancient hunters telling tales of exaggerated—even supernatural—dangers were surely seen as more powerful than those who relayed straight truth, giving them more influence within the community. More relevant to the current discussion, among both the tellers of horrific tales and their audiences, people who do not show distress in response to the horror (either by being genuinely unaffected or by hiding their fear) gain control over the people who are distressed. The fearless are able to comfort the fearful, as well as demonstrate that they can deal with difficult situations, making them prime candidates for leadership positions. This may apply especially to males, as discussed in the section on gender differences below.

Most people would not consciously think to control their emotions in order to gain a leadership advantage. However, many do carry the knowledge that films are harmless. The events depicted on screen usually did not, and often could never, actually happen (Cantor & Oliver, 1996). Objectively, the danger that movie characters are in does not even indirectly translate into a danger for people watching the movie. Thus, there may be motivation to temper subjective reactions to match objective reality.

Various extrinsic factors, then, may mask both positive and negative affect when gathered using self-report measures. Furthermore, as King and Hourani (2007) point out, different people may have different interpretations of the same descriptions of affect. For

example, horror fans may interpret "distressing" as a positive feeling in the context of horror movies, while non-fans may not. Perhaps more importantly, people may not even be aware of how they are feeling when they watch horror movies. Although horror fans may explicitly hold a positive attitude toward horror films, they may have never attended to the affective origins or manifestations of their explicit attitude. Even if they do, such affective information may not be easily verbalized. Although many human mental functions are strongly connected to language, systems underlying arousal are not (Grodal, 2009). The validity of self-reported attitudes, especially in the context of horror movies, is questionable.

Another problem with much (but not all) past research is that affect *during* the movie is only asked about *after* the movie, relying on memory of past emotion. It has been demonstrated that judgments of past feelings are often inaccurate, and are especially affected by current feelings (see Gilbert, 2006). If, as aftermath-based models predict, positive affect is only present after the curtain has gone down on a horror film, it is plausible that post-hoc ratings of affect during the film may reflect the participants' current feelings more than their true feelings during the film. This is a crucial point, because the difference between intensity-based models and aftermath-based models is largely a matter of timing. Furthermore, even if ratings are collected in real-time as a movie is being watched, the act of directly rating one's feelings toward the movie may distract from the movie, or alter responses to it (Andrade & Cohen, 2007). The post-hoc timing often required by self-report measures, along with the distraction from directly and intentionally rating feelings toward the attitude object, further limit the data gained

from their use in the context of horror films.

Hoffner and Levine's (2005) meta-analysis exclusively examined self-reported enjoyment of horror, and was admittedly limited in its ability to illuminate the underlying processes involved. Fortunately, a new set of tools for assessing attitudes has emerged. Implicit measures of attitudes indirectly assess feelings about and associations with attitude objects, and have been shown to bypass many of the problems with self-report measures listed above. For example, they have had success in indexing even the most socially stigmatic associations that participants would be motivated to disguise (e.g., pedophilia; Gray, Brown, MacCulloch, Smith, & Snowden, 2005). Although such measures may have problems as definitive measures of stable underlying attitudes (De Houwer, 2006), they can, especially in the context of horror films, provide a unique insight into why people like what they like. The spontaneous evaluative responses that they tap into can provide information beyond that gained from self-report measures. To date, no studies on the topic of horror movie enjoyment have used implicit measures to assess reactions to these films.

The experiment described in this thesis uses a modified version of the Affect Misattribution Procedure (AMP). The AMP was created by Payne et al. (2005) to sidestep some psychometric and methodological issues with other indirect measures of attitudes (e.g., the Implicit Association Test—or IAT—can be hard to interpret, and can tap into associations that are acknowledged but not related to any personal affect; Payne, Govorun, & Arbuckle, 2008). The AMP is administered by showing participants prime pictures briefly but visibly. Following the prime picture, an ambiguous stimulus—usually

a Chinese pictograph—is flashed briefly. The participants are asked to rate the pictograph as pleasant or unpleasant (see Method section and Figure 1 for further details). Because the participants have no prior attitude toward the ambiguous pictograph, they tend to rely on residual affective responses to the prime picture on which to base their judgment. Thus, ratings of the pictographs are indirect measures of affect evoked by the primes. Participants are specifically told not to let the prime pictures influence their judgments. Any meaningful correspondence between the prime pictures and the pictograph rating, then, can be considered indirect, automatic, and uncontrolled.

The AMP has been validated in several different ways (Payne et al., 2005), and has been shown to meaningfully distinguish groups that would be expected to differ in their affective responses to stimuli (e.g., non-smokers, smokers going through withdrawal, and smokers not going through withdrawal respond differently to smoking imagery; Payne, McClernon, & Dobbines, 2007). The AMP is particularly relevant in the current context, as enjoyment of horror movies is closely tied to affective reactions, rather than to dispassionate associations or stereotypes that may be better assessed by measures like the IAT. The AMP is also particularly resistant to self-presentation concerns that can distort attitudes measured in more direct ways. In a study by Payne et al. (2008), the AMP was unaffected by both measured and manipulated social pressure to conceal attitudes. Horror movies, it could be argued, are susceptible to these pressures.

As explained in the Method section, a modified version of the AMP also allowed for precise control over the timing of exposure to stimuli and subsequent ratings, lending itself to testing predictions from competing theories that differ in issues of timing. The

AMP, then, was considered an ideal measure for the current study.

The study of horror movies provides a unique opportunity to contribute to the understanding of implicit cognition in general. Dissociations between implicit attitudes and explicit attitudes have long been a topic of interest in the implicit cognition literature (e.g., Greenwald & Nosek, 2008), and horror movies as an attitude object seem like a—pardon the pun—*prime* candidate for an area where explicit and implicit ratings diverge. Even among horror fans, it is plausible that their "gut reaction" toward horror films is negative, despite extremely positive explicit ratings. This category of stimuli, in which there is generally a negative implicit attitude but a positive explicit attitude, contains other examples that have been studied extensively. For example, many people who report no explicit prejudice nevertheless display implicit prejudice (see Dovidio, Kawakami, & Gaertner, 2002). A key difference between negativity toward minorities and negativity toward horror movies, however, is that people are often aware of, and actively seek out, exposure to horror movies despite purportedly negative affective reactions toward them. Reactions to horror films, then, may represent a previously unexamined subset of attitude objects that are explicitly loved despite implicit loathing (a category that may include other bittersweet media, such as sad movies, and phenomena such as bungie jumping, getting tattoos, sadomasochism, and enjoying extremely bitter or spicy foods).

Individual Differences in Reactions to Horror

Past research linking personality with preferences for and reactions to horror is rare (Johnston, 1995; Krcmar & Kean, 2005), with most media effects studies relegating

individual differences to error or noise variance. However, a rather haphazard assortment of individual differences have been associated with the genre over the years. Perhaps an obvious individual difference that should be associated with scary movies is the tendency to experience fear, or fearfulness. Johnston (1995) found that fearfulness was only related to gore watching (watching horror films to see death, blood and guts), with low tendency to experience fear associated with more gore watching. Oliver (1993) posited that reactions to horror may depend on what characters in the movie (e.g., female victims) are thought to deserve reward or punishment, which differs between viewers. In support of this assertion, she found that, overall, permissive sexual attitudes and low levels of punitiveness were associated with greater enjoyment of horror films (which often feature sexuality in addition to violence), and other individual motivations differed depending on attitudes toward the victim and toward sexuality.

Another variable often associated with horror viewing is empathy. Empathy—the capacity to react to the emotional experiences of others with the same emotion—has been linked with horror viewing such that people low in empathy enjoy horror more than do those high in empathy (Tamborini, Stiff, & Heidel, 1990). Non-empathic individuals may like frightening films because they lack negative empathic reactions to such stimuli. This relationship appears quite robust; Johnston (1995) found that empathy correlated negatively with three of her four motivations for viewing horror (gore watching, independent watching, and problem watching). However, thrill watchers, who watch these movies because they like being scared or "freaked out," were high in empathy. This observation encourages consideration of the reactions of a group of people who, among

other traits, lack empathy: psychopaths.

Psychopathy. The construct of psychopathy has common-sense connections with horror films. The antagonists in horror movies are often described as psychopaths, and it is sometimes suggested that people who enjoy such movies are, or will become, psychopaths themselves (e.g., NW Republican, 2006). Psychopathy has been defined as "a clinical construct defined by a pattern of interpersonal, affective, and behavioral characteristics, including egocentricity; deception; manipulation; irresponsibility; impulsivity; stimulation-seeking; poor behavioral controls; shallow affect; a lack of empathy, guilt, or remorse; and a range of unethical and antisocial behaviors, not necessarily criminal" (Neumann & Hare, 2008, p. 893).

Two types of psychopathy have been proposed (first by Karpman, 1948). Primary psychopaths are callous, manipulative, selfish, and lie often. Secondary psychopaths engage in similar antisocial behaviour, but do so because of emotional disorders, such as extreme impulsivity or intolerance for frustration.

Psychopathy is a continuous, normally distributed individual difference variable. Thus, study of psychopathy is not limited to criminal populations. Level of psychopathy varies within the normal population as well, and can predict behaviours such as violence, though clinically significant levels are rare (Neumann & Hare, 2008). It has been studied in relation to seemingly paradoxical behaviours that may fall into a similar category as horror film watching (e.g., tattoos and piercings, Tate & Shelton, 2008; extreme sports, Willig, 2008), but peer reviewed research on psychopathy and horror films has never, to my knowledge, been published. However, an unpublished honours thesis by Palmer

(2008) found weak relationships between some aspects of psychopathy and self-reported enjoyment of horror films.

Empathy, already mentioned as a correlate of horror enjoyment, is included in the definition of psychopathy. Both fans of horror and individuals high in psychopathy have been characterized as possessing low levels of empathy. It is reasonable to predict, then, that horror fandom is correlated with psychopathy. However, past research on similar topics has been inconsistent. Because psychopathy and the behaviours associated with it are socially undesirable, it is possible that the use of self-report measures has masked any underlying links. The current study included a measure of psychopathy to directly examine its relationship with both explicit and implicit reactions to horror films.

Sensation seeking. The idea that people seek out an optimal level of arousal, and find any deviation from this level unpleasant, goes back to Wundt (1893). If people are above this optimal arousal level, they will seek soothing activities to bring it down, and if they are below this optimal arousal level, they will seek stimulating activities to reach it. Though originally conceived as a universal human trait, Marvin Zuckerman (1979) developed the idea that each person's optimal level of arousal is different. The first tests of this idea came from studies of sensory deprivation (Zubeck, 1969), in which an early version of a scale measuring the tendency to engage in stimulating activities was able to predict reactions to being isolated from nearly all sensations. For example, people high in this new sensation-seeking scale became more restless over time (as measured by pressure detectors in a participant's mattress).

Zuckerman's sensation seeking scales have evolved over the years, and other scales

tapping into the same need for intense, novel stimuli have been developed (e.g., Cloninger's, 1987, novelty-seeking scale, and the Brief Sensation Seeking Scale; Hoyle, Stephenson, Palmgreen, Lorch, & Donohew, 2002). Based on such scale development, as well as empirical research on the construct's correlates, Zuckerman (1994) adopts the following definition of sensation seeking: "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."

Sensation seeking is important in determining the activities that people engage in, as demonstrated by its wide variety of behavioural correlates. People who are high in sensation seeking tend to volunteer for unusual activities (e.g., scientific experiments with bizarre or risque research topics, perhaps like the current study) and to choose stressful jobs. They engage in risky sex, do drugs, and listen to rock and roll. Interestingly, sensation seeking is one of only a few personality traits that tends to be correlated in spouses (see Zuckerman, 2008, for a brief summary of more phenomenal correlates).

It is not surprising, then, that sensation seeking also predicts media preferences. Even with simple two-dimensional drawings, Zuckerman (1972) found dramatic differences between the preferences of low and high sensation seekers. Low sensation seekers preferred simple and/or symmetrical shapes, whereas high sensation seekers preferred complex, asymmetrical figures that suggest movement (see Zuckerman, 2007, Figures 1.3 and 1.4, for the striking contrast). In an analysis of paintings (Tobacyk, Myers, & Bailey, 1981), sensation seekers were found to prefer complex, abstract

paintings like those of Jackson Pollock, and paintings with aggressive content. In another study (Zaleski, 1984), pictures were pre-classified based on their emotional content as negatively arousing, neutral, or positively arousing. Negatively arousing stimuli included scenes of torture, hanging, and corpses. When a group of participants were asked to choose the picture they liked the most, low sensation seekers almost always chose a positively arousing picture. High sensation seekers, however, chose the negatively arousing pictures as often as they chose the positively arousing pictures, and liked any sort of arousing pictures more than neutral pictures.

Trends in media preferences generalize to moving pictures. Zuckerman and Litle (1986) measured several personality traits, including sensation seeking, and asked about frequency of viewing X-rated and horror movies. Sensation seeking correlated with two newly created measures: one for curiosity about sexual events, and one for curiosity about morbid events (CASE and CAME, respectively, though perhaps the acronyms should have been reversed). Furthermore, sensation seeking predicted attendance of both sexual and horrific movies. A more recent replication (Aluja-Fabregat, 2000) with a modified version of the CAME also found that sensation seeking predicted curiosity about morbid events, and actual consumption of violent films.

In Tamborini and Stiff's (1989) study of people walking out of a horror movie, they found only a weak relationship between sensation seeking and exposure to horror movies. However, given the self-selected audience of horror film attendees, the range of both variables was likely truncated. Less easily explained away are results from a more neutral setting (Tamborini, Stiff, & Zillman, 1987), in which preference for graphic

horror was correlated with sensation seeking scales for males, but not for females. Other studies (e.g., Mundorf, Weaver, & Zillmann, 1989) have found no correlation at all. In Hoffner and Levine's (2005) meta-analysis on correlates of enjoyment of fright, six studies examining sensation seeking were included. Overall, a positive correlation was confirmed, though correlations were generally low, and ranged from .07 to .25. It is clear that sensation seeking plays a role in horror enjoyment, but it may be more complex than a simple correlation.

A study that demonstrates this complexity is an unpublished dissertation by Litle (1986, as described in Zuckerman, 1994), in which students were shown a 20-minute clip of the horror movie *Friday the Thirteenth* (Cunningham, 1980) while their skin conductance (a measure of arousal) was monitored. For most of the clip, high sensation seekers reacted similarly to low sensation seekers, with arousal increasing at disturbing or startling scenes. However, in the last scene, when the killer is gruesomely decapitated by the hero, low sensation seekers had their biggest increase in arousal, while high sensation seekers did not react at all.

Zuckerman (1994) explained this finding in terms of high sensation seekers habituating to disturbing stimuli more quickly than low sensation seekers (which is why they need to constantly search out new thrills). Thus, in the study, sensation seekers habituated to early scenes, so that by the time the final scene "rolls", they are so used to it that they do not react. This explanation seems inadequate for several reasons. First, it is unlikely that habituation would occur so suddenly. There is no indication that high sensation seekers reacted less and less with each startling scene; it was *only* the final

scene in which they reacted differently from low sensation seekers. Second, this explanation fails to acknowledge the qualitative difference separating the final scene from the other scenes: early scenes showed horrific things happening to the empathized-with heroes. The final scene showed the *villain* getting what she deserved.

An alternate explanation for Litle's (1986) findings is provided by aftermath-based models of horror enjoyment, which state that people enjoy horror because truly unpleasant stimuli are removed (either because the movie ends, or in this case, because the villain is decapitated), then the negative arousal from the horror is channelled into positive relief. Perhaps low sensation seekers conform to this model. Since they generally do not seek out the excitement of gore and chaos that make up most of the film, their biggest emotional reaction occurs when they can finally escape it. High sensation seekers, however, still react to the gore and chaos throughout the film (perhaps more positively), but have no reaction to its removal.

In a similar but simpler test of reactions over time, Ridgeway, Hare, Waters, and Russell (1984) exposed participants to blocks of increasingly loud startling sounds. They had physiological reactions measured, but also filled out affect scales of arousal and pleasure-displeasure.[1] It turned out that high sensation seekers did not differ from low

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[1] Note that although the concept of sensation seeking started with arousal (i.e., seeking an optimal level of arousal), researchers have shifted away from the focus on physiology. The modern definition of sensation seeking (see 2nd paragraph in this section) focuses on behaviour rather than arousal per se. Perhaps this is because empirical study of arousal has generally failed to find a clear relationship with sensation seeking. A chapter on sensation seeking and psychophysiology, Zuckerman (1994, chapter 12) reported mixed results with a variety of psychophysiological measures (e.g., relationships with baseline skin conductance, heart rate, and blood pressure were only found under very specific conditions, and then only sometimes). However, there was a general tendency for high sensation seekers to respond with an orienting pattern of responses to an initial presentation of a novel stimulus. Low sensation seekers respond with a defensive or startle response. Zuckerman concluded that high sensation seekers are more open to novel stimuli, being activated in response to them, whereas low sensation seekers inhibit reactions to them.

sensation seekers in either physiological reactions or on the arousal scale, but on the pleasure-displeasure scale, low sensation seekers had increasingly more unpleasant reactions as the sounds got louder, whereas high sensations seekers did not change over time. This again demonstrates that physiological reactions do not always lead directly to self-reported reactions, but in the measures that are affected, it is low sensation seekers that tend to have reactions to frightening situations that change over time.

These past studies generally have not examined affect over time *after* stimuli have ceased (rather, they have focused on habituation to multiple stimuli over time). I believe that timing, especially during and after relevant stimuli, is crucial to understanding affect's relation with personality. The current study, in addition to assessing both implicit and explicit affective measures of similar stimuli, includes a delay manipulation to better understand the effect of timing on the attitudes of high and low sensation seekers. This may help to explain the apparently complex nature of the relationship between sensation seeking and media preferences.

The Big Five. In recent years, it has been proposed that nearly all personality traits can be grouped into five overarching categories, or factors. The "Big Five" factors consist of Openness to Experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. This framework dominates modern personality theory (Del Barrio, Aluja, & Garcia, 2004).

No studies have been done examining the specific genre of horror and the Big Five model of personality. Hall (2005) found some relations between Big Five personality and film genre preferences, but grouped horror under the broad category of "action-oriented

films." Similarly, Krcmar and Kean (2005) linked violent media with the Big Five, but the violent media included not only horror films (e.g., *A Nightmare on Elm Street*; Craven, 1984), but completely different types of violent media as well (e.g., the animated comedy TV show *South Park*; Parker & Stone, 1997). They found no significant results for overall Openness to Experience or Conscientiousness. Extraversion was positively correlated with liking violent media. Agreeableness was negatively related with liking violent media. Finally, overall Neuroticism was positively related with seeking out violent media. These findings provide a direction for predictions about the Big Five's relation with horror, but the media included in those studies were not equivalent to horror. While action and violence may be present in many horror films, they are tangential to the defining feature of horror: to elicit fear. Thus, the personality profile of people who like action films may be quite different from the personality profile of people who like horror films.

A general connection between emotion and the Big Five has previously been made. Extraversion, Neuroticism, and Agreeableness in particular have implications for emotion, motivation, and affective processing (Elliot & Thrash, 2002). Reviewing several studies on the topic, Robinson (2007) concluded that personality does not play a role in the chronic accessibility of emotional thoughts, but does play a role in affective priming. Negative thoughts are not generally more accessible for neurotic people, but neurotic people do exhibit stronger connections between negative thoughts. Similarly, extraverted individuals exhibit stronger connections between positive thoughts. Agreeableness is not directly related to connections between emotional thoughts, but plays a role in their

control. Especially with hostility-related stimuli (which many horror stimuli certainly qualify as), agreeable people are better able to counter hostile thoughts brought on by exposure to hostile primes. These processes are proposed to take place at an affective level, before the fruition of any explicit emotional outcomes. Thus, the Big Five—but especially Extraversion, Neuroticism and Agreeableness—may play a role in the implicit processes examined in the current study.

Links exist between the previously mentioned construct of sensation seeking and the Big Five. For example, Ostendorf and Angleitner (1994) found that Zuckerman's (1992) Impulsivity / Sensation Seeking factor was related to high Extraversion and Openness to Experience, and low Conscientiousness and Agreeableness. It is reasonable to predict, then, that positive reactions to horror films, often found to correlate positively with sensation seeking, would correlate positively with Extraversion and Openness to Experience, and negatively with Conscientiousness and Agreeableness. However, given that Zuckerman's factor combined impulsivity with sensation seeking, and The Big Five may share different variance with horror films, these predictions are tentative.

A link between the construct of empathy and the Big Five has also been identified. Empathy correlates primarily with the Conscientiousness factor in the Big Five (Del Barrio et al., 2004). Because horror fandom has mostly been predicted by low levels of empathy (Johnston, 1995), it is reasonable to predict that horror fans will also be low in Conscientiousness.

The above speculation has provided hints about how the Big Five may relate to horror consumption and enjoyment, but the tentative nature of such guesses draws

attention to the need for a study specifically examining horror films.

Beyond the Big Five: The Supernumerary Personality Inventory and Machiavellianism. While the Big Five accounts for many of the ways in which human personality can vary, some doubt that its five dimensions offer a complete description of personality differences. Paunonen and Jackson (2000), building on research by Saucier and Goldberg (1998), identified nine clusters of adjectives that did not overlap enough with the Big Five to be considered part of its framework by reasonable standards; they also identified thrill seeking (discussed as sensation seeking above) as another "supernumerary" personality dimension. The Supernumerary Personality Inventory (SPI) was developed to measure these 10 traits.

The SPI traits tend to cluster into three factors: Machiavellian, Traditional, and Masculine-Feminine. Of the three, the Machiavellian factor, intuitively, has the most relation to horror. Although the concept of evil is difficult to define (Miller, 2004), Machiavellianism—coldly manipulating other people to promote self-interests—is certainly a trait that an evil person could possess. It is considered one of the *Dark Triad* of personality traits (Paulhus & Williams, 2002), along with narcissism and the previously discussed psychopathy. An evil personality is associated with horror for the same reasons that psychopathy is; the genre itself portrays evil people, and those who watch it can be perceived, or actively portray themselves as, villains (see Wilson, 2008).

Four traits make up the Machiavellian factor of the SPI: Egotism, Manipulativeness, Seductiveness, and low Thriftiness. Egotism is similar to narcissism (rounding out the Dark Triad); egotistical people think of themselves as superior to

others, who they may ignore or show contempt for. Manipulative people influence other people (often against their will) for selfish reasons. Seductive people use their personality, habits, and attitudes to excite sexual desire in others, for attention, sex, power, or favours. Thrifty people are careful with their resources and do not engage in extravagant spending (Thriftiness loads negatively on the Machiavellian factor, such that people high in Thriftiness are low in Machiavellianism). The SPI trait of Integrity is not part of the Machiavellian factor, but was included in the current study for its common-sense link to the darker side of personality; people low in Integrity tend to engage in and approve of lying, cheating, and stealing.

To my knowledge, no studies have yet linked the SPI with media preferences. However, it is reasonable to expect a positive relationship between self-reported horror enjoyment and the "dark" end of each SPI scale (as well as with the overall Machiavellian factor). The reasons for expecting this relationship are twofold. First, Machiavellian characteristics, such as a lack of empathy, may allow for a genuine enjoyment of dark entertainment. Second, a penchant for manipulating other people (and/or a willingness to admit to such a habit) may lead to a greater likelihood of admitting a liking for dark entertainment, with or without a genuine visceral enjoyment. That is, people who tend to control others' impressions could *say* they enjoy violent films in order to, for example, appear tough or rebellious (see the section on gender differences, below). If this second explanation predominates, a relationship between Machiavellianism and implicit reactions to horror imagery (which are less susceptible to such self-presentation biases than explicit reports) is unlikely to be found.

There is a need for more recent studies linking personality with horror enjoyment. The horror genre has changed since the 1980s, when many of the small number of existing studies were conducted. For example, victimization of women is less common in modern horror, and the formulae established in early horror movies are frequently twisted or overturned for dramatic effect. The kind of people who like horror movies may have changed. Furthermore, the study of personality has become more unified with the advent of the Big Five, and research has yet to link modern personality theory with enjoyment of fright. The inclusion of some SPI dimensions beyond the Big Five is further beyond this cutting edge. Thus, the current study attempted to put personality's link with horror within the modern framework and language of modern personality theory, in order to paint a more unified picture of what kinds of people enjoy horror. Previous research has also focused exclusively on self-report measures of genre preference; the current study will link personality with implicit reactions as well.

Gender differences. A male/female imbalance can be seen in many horror movies. The victims of the violence that defines such movies are disproportionately female, and more screen time is devoted to female deaths than to male deaths (Cantor & Oliver, 1996). Given that empathy with victims is assumed to be an important determinant of a horror movie's fright value, this implies that they are designed to scare females more than males. It is perhaps surprising, then, that the viewers of these movies are disproportionately male (Aluja-Fabregat, 2000; Oliver, 2000).

As mentioned earlier, even in humanity's ancient (perhaps evolutionary) history, there could have been advantages to being unfazed by tales of danger, such as being seen

as a candidate for positions of power. Zillmann and Gibson (1996) go on to propose that it is primarily men who were, and to some degree still are, rewarded by appearing fearless (see, e.g., Bem, 1981). Even as far back as ancient Rome, thinkers have acknowledged that men who remain fearless—in response to gladiatorial combat, for example—are bound to enjoy romantic benefits when fearful women cling to them for comfort. The genders are no longer so sharply divided, but this *snuggle theory of horror* (or less colloquially, gender role socialization theory) may still partly explain reactions to horror in today's world. Furthermore, horror films provide a much more convenient venue for appearing fearless than real-life fights to the death.

Zillman and Weaver (1996, p. 81) elaborate:

> Could it be, then, that the horror movie, by providing a forum for the exhibition of societally appropriate emotional maturation, serves as a rite of passage for modern times? Could it be that this genre provides male adolescents the forum for learning to master distress and for expressing their mastery? Analogously, might this genre provide the forum for female adolescents to hone their skills at play-acting dismay and signalling a need for protection?

Popular culture seems to answer *yes* to the above questions. There is a general insistence that boys don't cry (Peirce, 1999; The Cure, 1979), but even at a party, a girl can cry if she wants to (Gluck, Gold, & Weiner, 1963). A popular web site, CryingWife.com (Hollie & Parker, 2010), posts videos of a man giggling as his wife reacts with tears or terror to emotional movies. The site's appeal is no doubt due, in part, to an exaggeration of experiences that many people can relate to. In horror movies, the archetypal audience comprises male/female pairs, each with a woman openly displaying her distress while a man successfully masters his emotions. The little empirical research that has been done to verify these cultural stereotypes has generally supported their

existence.

For example, Zillmann, Weaver, Mundorf, and Aust (1986) showed participants a sequence from a horror movie (*Friday the 13th, Part III*; Miner, 1982), in a room with an opposite-gender confederate who acted fearless, indifferent, or fearful in reaction to the movie. The participant's enjoyment of the film and their reaction to the confederate were both affected by the confederate's reaction to the film, in line with the above gender stereotypes. When the confederate acted appropriately for their gender (i.e., men acting fearless or indifferent, and women acting fearful), the film was liked twice as much by male participants, and three times as much by female participants, compared to those who acted inappropriately for their gender. Zillmann et al. speculated that fulfilling gender roles is pleasurable, and this pleasure is misattributed to liking for the film itself. Furthermore, participants were more attracted (both physically and personality-wise) to those confederates who acted appropriately for their gender.

When viewing a horror movie, then, there is good reason to react appropriately for one's gender; it enhances enjoyment of the movie and increases the chances that viewers will like each other. However, presumably there are males who are genuinely frightened by horror movies, and females who are unaffected by them. In these cases, there should be motivation to hide or exaggerate internal emotions in a gender-appropriate way.

When asked directly about such motivations, there is little evidence that hiding and exaggerating of emotional reactions occurs. Brosius and Hartmann (1988; see also Brosius & Schmitt, 1990) surveyed adolescents about their motivations for viewing horror. From an exhaustive lists of possible motivations (e.g., plain curiosity, because the

forbidden is tempting), one of a small number of significant predictors of horror consumption was the desire to demonstrate courage; but contrary to the above speculation, proof of courage was *negatively* associated with horror consumption among male adolescents. Zillmann and Weaver (1996) suggest that this occurred because only novice males, with little consumption of horror, would admit to the courage-demonstration motives for viewing it. More experienced males, with some horror consumption under their belts, would deny such motivations, lest their demonstrations of courage become ineffective when made explicit. In other words, the more males fake courage while watching horror movies, the less likely they are to admit doing it. When explicitly asked about their motivations for viewing horror, males engage in a double cover-up; they fake their motivations, which are to fake their emotions.

The above speculation may appear to be reinterpreting evidence *against* gender role socialization as evidence *for* gender role socialization. However, in the time since Zillmann, Gibson and Weaver proposed these ideas, new tools have been developed that allow researchers to gauge reactions with less influence from attempts to cover them. Implicit measures of attitudes are more resistant to the kind of cover-ups that Zillmann and Weaver (1996) propose (Payne, 2008). Their use in the current study was able to reveal gender differences—or similarities—that were less altered by explicit self-presentation concerns.

Individual differences as moderators of media effects. Individual differences, such as personality and gender, may play a role beyond a direct relationship with the consumption or enjoyment of frightening media. Although personality is rarely

considered as a moderator of the effects of media on other variables, it may play an important part in how (or if) these effects occur (Oliver & Krakowiak, 2009).

For example, McKenzie-Mohr and Zanna (1990) found that viewing pornography caused males to treat a female experimenter in a more sexist manner. However, this effect was *only* due to males who were gender schematic (i.e., who focus on cross-sex interactions in sexual terms) to begin with. Zillmann and Weaver (2007) found a similar pattern when they studied the effects of viewing violent content on subsequent aggression. They found that violent film segments did increase aggression, but only for people already high in the trait of physical aggression.

The competing theories of horror enjoyment described above—intensity-based models and aftermath-based models—may be better framed and explained in the context of individual differences. Rather than trying to choose which theory explains enjoyment for all people, the focus can shift to which people conform to which theory. That is, some people may enjoy emotional media primarily due to intensity factors, while others may enjoy it due to aftermath factors. Still others may exemplify both or none of these explanations. For example, people high in sensation seeking may find the intensity of horror films to be positively arousing, and thus conform to the predictions of an intensity-based model. People high in empathy (and low in traits such as psychopathy and Machiavellianism) may find the intensity of seeing other people in peril negatively arousing, but experience vicarious relief when the peril is escaped, thus conforming to the predictions of an aftermath model.

Determining which theory (or theories) best explain the enjoyment of horror

movies is an important step in understanding the determinants and effects of media consumption. The current study examined such possibilities in an exploratory manner, as this area of research is hitherto uncharted territory. However, the current study also sought to answer some more general questions about the nature of emotions and attitudes, of which horror films are only one example of experiences that drive human behaviour. A discussion of more general theoretical considerations follows.

Theoretical Considerations

Theories of emotion. Barrett, Ochsner, and Gross (2007) summarized existing theories of emotion, and the role that automaticity plays in them. A common sense view is that emotions are triggered automatically, taking over those who experience them and causing them to act with behaviours expressive of the emotion. In this view, cognitive factors, such as prior experience, beliefs, and expectations, play little role in emotions, except to lessen their impact or regulate their expression after the automatic script of emotion has already been activated. Scientific theories of emotion often spring from this common sense view, clearly separating the processes of automatic emotional responses from the processes of controlled reasoning. Dual-process theories of emotion posit that an event triggers an automatic emotional response, which produces a complex set of changes in the brain and body. Conscious, controlled processing plays no role in the emotion itself, but can affect the extent to which these automatic changes are expressed in observable behaviour. Dual-process theories assume that there are distinct kinds of emotion that arise in response to certain stimuli (e.g., snakes elicit fear), and that emotion is dominated by automatic processing, with conscious regulation occurring after the fact.

Barrett et al. referred to the set of theories based on these assumptions as the modal model.

The modal model was criticized by Barrett et al. (2007) in several ways. First, they pointed out that there is little evidence for discrete patterns of subjective experience, physiological responses, neural patterns, or behavioural responses that correspond to specific emotions. Second, the common subjective experience of emotions being triggered automatically may not necessarily be evidence that they are *actually* triggered automatically, and there is little empirical evidence for the complete automaticity of specific emotions. Whereas valence (e.g., good or bad, pleasant or unpleasant) seems to be computed automatically in response to a stimulus, there is less reason to believe that specific emotions (e.g., fear) arise and proceed with no conscious involvement from the perceiver.

Several alternatives to the modal model exist. Barrett et al. (2007) preferred a constraint satisfaction model similar to that of Wager and Thagard (2004), involving both bottom-up (originating in the stimulus) and top-down (originating in the perceiver) processes that occur in a parallel processing network. Bottom-up processes include identification of the stimulus and the initial computation of its affective value. Constraints on affective evaluation can also be imposed, based on factors such as past experience and the context in which the stimulus is encountered. Top-down processes can come into play when a clear emotional response does not result from bottom-up processes, or when emotions are created internally without any external stimuli. Most importantly, this view posits that emotion is made up of more building blocks than just a

few categories of emotion. Emotions are heterogeneous mixtures of many responses, and any given emotional experience can involve either, or both, automatic or controlled processes to varying degrees. In short, it is not the case that a specific emotion is automatically triggered by certain stimuli, but rather, a complex emotional experience occurs in the presence of multiple external and internal factors.

Another goal of the current study was to make steps toward resolving the conflict between the modal model of emotion and more recent models. The modal model would have trouble explaining how implicit attitudes toward horror movies diverge from explicit attitudes, as they were expected to. If emotion is dominated by automatic processing, then there is little reason to believe that one's gut reaction to a stimulus would be unrelated to their self-reported reaction. Although automatically triggered emotions could be modulated by explicit processes according to the modal model, a model that involves simultaneous automatic and controlled processing would more elegantly accommodate dual reactions to the same stimuli, depending on which aspect is being measured. Personality correlates of implicit attitudes, too, would be better explained by a model that allows for top-down processes to play a role in the entire experience of an emotion.

Emotions are key components in attitudes, and a theory that clearly outlines the basis for affective reactions, and how they related with explicitly stated attitudes, will be discussed next.

The APE model of implicit attitudes. A recent explosion in research on implicit attitudes has caused psychologists to question the definition of attitude, and to create new

theories to explain the implicit / explicit distinction. One current model that summarizes and builds upon previous theory and empirical research is Gawronski and Bodenhausen's (2006a, 2006b) Associative-Propositional Evaluation Model (APE Model). The main premise of the model is that evaluations can originate in two different types of mental processes: associative processes and propositional processes. Associative processes are the pattern of associations that are activated in response to an attitude object, and are the basis of immediate affective reactions. They are not necessarily personally endorsed, and are independent of the truth value of the association (e.g., a member of a given race may be associated with racial stereotypes, even if a person does not believe the stereotypes are true). Propositional processes, however, are the basis for endorsed evaluative judgments, depending on logically assessing the validity of evaluations, and involve assigning truth values to any propositions considered while making the evaluation. Typically, indirect measures of attitudes (such as the AMP) tap into evaluations based on associative processes, while self-report measures of attitudes tap into evaluations based on propositional processes.

The APE Model can explain dissociations between implicit and explicit attitudes. Although affective reactions are often translated into endorsed propositions, the model lays out several scenarios in which they are not. Automatic affective reactions can be dismissed as the basis for assigning a truth value to an explicit proposition. Context and prior experience with attitude objects can affect associational processes, and determine when they are explicitly endorsed. As will be discussed later, context may be a key factor in the enjoyment of horror films.

Assuming that gut reactions to horror imagery are almost always negative in comparison to affectively neutral imagery, the question could be asked, "do people *really* enjoy horror movies?" The APE Model can help answer, or at least clarify, this question. Reactions can arise from two different types of processes (associative and propositional), and neither process is more "real" than the other. Rather, a more nuanced answer is required; people may have negative immediate affective reactions to horror films, but may (or may not) also evaluate them positively when explicitly thinking about them. Both reactions can coexist, interact, and drive behaviour, and may or may not be consistent with each other. The question, then, is obsolete. It should instead be, "in what ways does an individual enjoy horror movies?"

The current study made progress toward being able to answer this question. Elaborations of the problems under investigation, and hypotheses about their solutions, are presented next.

Summary and Hypotheses

The current study's goal was to address some of the many questions elicited by the research and theorizing described above. Horror fans and horror non-fans, as determined by self-report attitude measures, were exposed to horror film imagery in the context of the AMP. The AMP was also modified so that affect was measured either immediately after exposure to the imagery or after a small time delay. Relevant personality measures and demographic characteristics (primarily gender) were collected as well. Specific hypotheses based on past research and theory were as follows:

Explicit versus implicit reactions. Many past studies using implicit measures have

found that implicit indications of liking diverge from explicit indications. Thus, a strong correlation between the AMP liking proportions and self-reported liking of horror was not predicted. However, implicit liking was suspected to predict more objective, behavioural measures of horror fandom.

The magnitude of the difference between implicit and explicit liking was examined as well, by standardizing implicit scores and explicit scores, then calculating the difference. This value was compared with individual differences. This sort of analysis has not, to my knowledge, been performed before, so specific hypotheses could not be formulated.

Personality correlates of liking horror. Given past associations between a lack of empathy and horror fandom, along with lack of empathy being part of the definition of psychopathy, a positive relationship between psychopathy (both primary and secondary) and horror fandom was expected. A positive relationship between sensation seeking and horror fandom was also expected, replicating the general pattern of past results. Regarding the Big Five, horror fandom was hypothesized to correlate positively with Extraversion, Openness to Experience, and Neuroticism. Horror fandom was hypothesized to correlate negatively with Conscientiousness and Agreeableness. Horror fandom was expected to correlate positively with Machiavellianism, as well as with the "dark" end of each of its subscales and negatively with Integrity.

Gender differences. The gender role socialization theory of horror posits benefits for males hiding their negative affective reactions and females exaggerating their negative affective reactions to horror. It was predicted, then, that males would explicitly

report liking horror movies more than would females. There was less reason, however, to expect differences in implicit reactions.

More importantly, if implicit reactions are indeed a more direct measure of affective reactions, and less susceptible to post-hoc distortions of reported affect, then it was expected that males would have explicit reactions that were more positive relative to their implicit reactions, and females would have explicit reactions that were more negative relative to their implicit reactions.

The effects of fandom and delay on implicit reactions. Explicit attitude measures were used to divide participants into two groups: fans and non-fans of horror. Assuming that positive explicit measures correspond to a positive emotional reaction to the attitude object (though this is questionable, given the above prediction about explicit/implicit divergence), fans would be expected to differ from non-fans in how they react to a delay between the stimulus and the assessing of emotion. Exactly *how* they differ depends on which theory of horror enjoyment—intensity-based or relief-based—is closer to reality.

If an intensity-based model is correct then, for horror fans, positive affect should be highest immediately after a horrific stimulus (because even negative arousal is experienced as positive), then drop off over time. For non-fans, this effect should be less pronounced, or more likely, opposite. If a relief-based model is correct, then both fans and non-fans should have a negative affective reaction immediately after a horrific stimulus. For horror fans, affective ratings should get higher after the stimulus is gone (and relief takes over). For non-fans, this relief effect should be absent, or at least weaker.

The effects of content and delay on implicit liking. Even if explicit attitude

measures diverge from affective reactions, the general effects of delay depending on the content of the stimuli can provide information about why people have positive reactions to frightening imagery.

If an intensity-based model is correct, reactions to horror imagery would be most positive immediately after they are presented, then drop off after a delay. For neutral imagery, immediate reactions would be less positive than for horror imagery, and remain the same after a delay (or get slightly more negative, assuming even neutral imagery is more intense than nothing). If a relief-based model is correct, reactions to horror imagery should be most positive after a delay, when relief has been allowed to set in. Immediate reactions to neutral imagery should be more positive than to horror imagery, and remain the same after a delay.

Personality as moderator. It is possible that not every person conforms to a given theory equally. Perhaps some people enjoy horror because they find the chaos exciting (conforming to intensity-based models), whereas others enjoy it because they are prone to a sense of relief when it ends (conforming to aftermath-based models). Thus, the included personality measures will be examined as moderators of the effects of fandom, content, and delay outlined above. No specific predictions were formulated, however.

Method

Participants

A total of 133 participants completed the study. Of them, 44 were women, 18 were men, and gender information was unavailable for 71 (see below); most subjects were first-year psychology students, who are predominantly female. Because null results (e.g.,

a lack of a correlation between automatic and explicit attitudes) would be almost as important as significant results in this study, a high level of power was desired. Effect sizes for the main analyses of variance in past studies using similar tools and methods (e.g., Payne et al., 2007) have typically been medium in magnitude. Correlations involving affect and media preferences have generally been moderate (e.g., in the meta analysis by Hoffner & Levine, 2005, correlations between negative affect during viewing and enjoyment ranged from .24 to .42). Calculating power using a conservative estimated correlation of .25, a sample size of 133 was expected to achieve a power of approximately .90 for the intended analyses (calculations were performed using GPOWER; Faul & Erdfelder, 1992).

Some participants (see Procedure) were required to have already participated in an unrelated "mass testing" study from which Big Five and demographic variables were taken, earlier in the year. Because this previous study was the only source of Big Five and gender information, these variables are, unfortunately, not available for participants who did not complete it.

All participants were recruited from the University of Western Ontario's undergraduate participant pool. Participants who took part during the school year received course credit for their time, and participants who took part during the summer were paid $10.00. Undergraduate students were expected to have had recent experience with a variety of different genres of film, including horror, given that most fall in the peak movie-going age of 18 to 21 years old (Tamborini & Stiff, 1987), making them not only a convenient sample, but ideal for the purposes of the current research.

Materials

AMP stimuli. Repulsive imagery is perhaps the defining feature of horror films ("grotesque bloodshed and repulsive images are often said to epitomize the last two decades of horrid fiction," Tamborini & Weaver, 1996, p. 12). Thus, in the current study, horrific images captured from horror films were presented to participants in order to measure their implicit reactions to horror.

Horror primes for the AMP were taken from eight horror films. Each film was chosen due to fulfilling the following four criteria: (a) It was classified as fitting in the horror genre; (b) It contained several examples of iconic horror imagery, such as shots of gore, or depictions of the film's main villain; (c) It was popular enough that many of the participants had seen it; and (d) It was considered one of the "scariest" examples of horror films. Films from a variety of sub-genres, and released in a variety of time periods, were represented. The eight films chosen were: *Dawn of the Dead* (Snyder, 2004), *The Descent* (Marshall, 2005), *The Exorcist* (Friedkin, 1973), *Jaws* (Spielberg, 1975), *A Nightmare on Elm Street* (Craven, 1984), *The Ring* (Verbinski, 2002), *Suspiria* (Argento, 1977), and *The Texas Chain Saw Massacre* (Hooper, 1974). Each fulfilled the criteria, as demonstrated by appearing on several "top horror movie of all time" lists (e.g., IGN, 2005).

From each film, ten digital screenshots were extracted from the film's DVD to be used as prime stimuli. Five were designated as horror primes, and five were designated as control primes. Horror primes were chosen, based on the primary investigator's best judgment, to represent the key horror elements from each film (e.g., gore, corpses,

weapons, monsters, faces of people who are frightened or in pain). Control primes were chosen to represent relatively unemotional, but still interesting, scenes from the same movies (e.g., locations, vehicles, people with neutral expressions). A poster from each movie was also included as an additional stimulus. Across all eight movies, there was a total of 40 horror prime stimuli, 40 control prime stimuli, and 8 poster stimuli.

The targets to be evaluated were 160 Chinese pictographs, also used in previous AMP designs. They were intended to be neutral stimuli that participants had no previous attitudes about, thus relying solely (though unintentionally) on residual affect from the primes to base their judgements on. See Appendix A for examples of horror, control, and pictograph stimuli. The procedure for presenting the primes and targets follows.

AMP. A typical trial of the AMP begins with the presentation of a prime stimulus on a computer display. A focal point (a plus symbol) appears on the screen for 500 ms, indicating where the prime will appear, then the prime is presented for 200 ms. A blank screen appears for a brief delay (100 ms in the Short condition and 1000 ms in the Long condition), then a target pictograph for 100 ms. Immediately after the target is shown, a visual mask appears on the screen until a response is made. The mask reduces afterimages, maximizes ambiguity of the target, and limits perceptual processing (Payne et al., 2007). Participants are then asked to judge whether the target pictograph is more or less pleasant than the average pictograph, and to record their response by pressing a key labeled *pleasant* or a key labeled *unpleasant*. A blank screen was present for 1000 ms between trials. This procedure is illustrated in Figure 1.

Each trial of the AMP was designated as either a regular trial or a time-delay trial,

chosen randomly (without replacement, such that exactly half of the trails were regular and half were time-delay). In the regular trials, the blank screen between the prime andthe target was present for 100 ms; slightly shorter than most previous studies using the AMP (e.g., 125 ms in Payne et al., 2008). In time-delay trials, the blank screen was present for 1000 ms. Thus, in time-delay trials, the time between seeing the affect-arousing stimulus and making the affect rating was longer than in the regular AMP. Hofmann, Fries, and Roefs (2009) have previously used a time-delay variation of the AMP with fruitful results.

Before completing the AMP, instructions were provided, which included a warning to ignore the prime stimuli (making any influence implicit, though this instruction does not appear to be critical; Payne et al., 2005). Two practice trials preceded the main run of stimuli. Participants then completed 88 trials that include all of the horror, control, and poster primes, presented in random order, each paired with a random (without replacement) pictograph target. The procedure took approximately 10 minutes to complete.

As outlined by Payne et al. (2005), the AMP has several advantages over other implicit attitude measures. First, it is relatively easy to administer. It does not take long to complete, requires little or no deception, no special equipment other than a personal computer, and instructions are easy to grasp with little training required before completing the main task. Second, it has been demonstrated to produce large effect sizes when its output is compared with the strength of relevant attitudes. Third, it has high reliability (an average alpha of .88 across six studies in Payne et al.'s initial tests), and

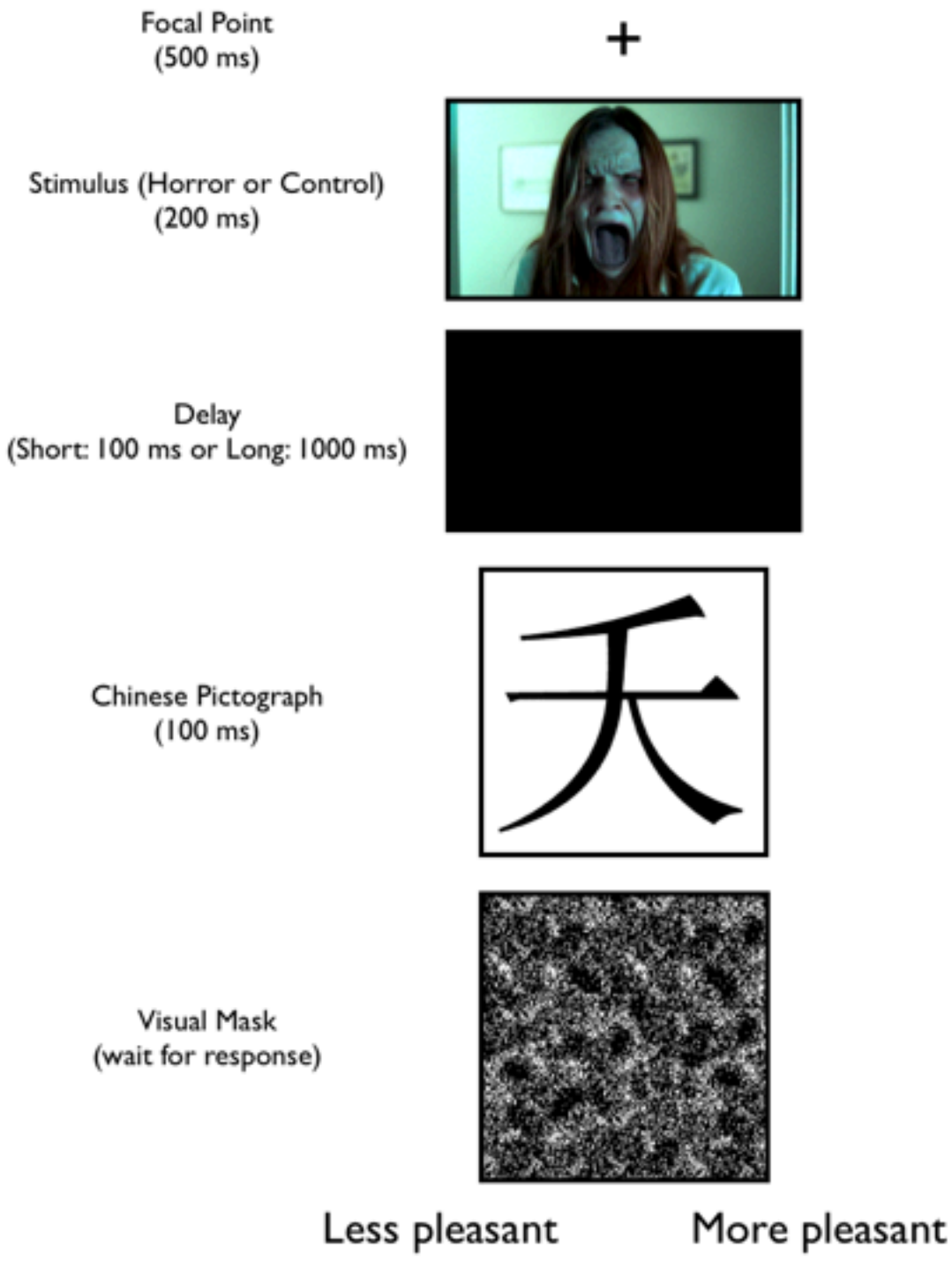

Figure 1. Illustration of the Affect Misattribution Procedure (AMP).

demonstrates substantial relationships with other variables without the need to statistically correct for unreliability; the AMP has been cited as one of the *only* implicit measures with acceptable reliability (along with the Implicit Association Test; Gawronski, 2009). And fourth, the ability to manipulate the timing of the task made it ideal for testing the current study's hypotheses.

The main output of the AMP is the number of "more pleasant" ratings divided by the total number of ratings in a given condition. In other words, it is the proportion of "more pleasant" ratings; subtracting this from 1.0 would give the proportion of "less pleasant" ratings. For some analyses, relative proportions were calculated; for example, by subtracting the proportion of "more pleasant" ratings in the control stimulus condition from the proportion of "more pleasant" ratings in the horror stimulus condition (as was done in a study by Payne et al., 2008).

Reliability of the AMP was calculated according to the procedures outlined in Payne et al. (2005). Briefly: each "more pleasant" response was coded as +1, and each "less pleasant" response was coded as 0. For each participant, twenty "items" were created by subtracting a random horror response from each control response, resulting in a score of +1, 0, or -1 (without replacement, so that each possible pairing occurred once per participant). Each item, then, represented the tendency to prefer a control response over a random horror response. Cronbach's alpha was calculated on the items. Separate reliability analyses were carried out for the traditional short trials of the AMP and for the modified long trials. This analysis revealed a moderate level of reliability. For short items, Cronbach's alpha was .639. For long items, it was .576.

Questionnaires. For all questionnaires, the order of items was the same for all participants, but pre-randomized (to avoid having items from subscales cluster together or follow a predictable pattern). The reliability of each questionnaire, as seen in past studies, is reported below as justification for their inclusion. Reliabilities for the current study are reported in Table 1.

Movie Genre Questionnaire (MGQ). To differentiate horror fans from horror non-fans according to explicit self-report criteria, a questionnaire assessing liking and frequency of attendance for 17 movie genres was created and administered. The genres included were: action, adventure, animation, biography/documentary, comedy, children's, crime/film-noir, disaster, drama, fantasy, horror, musical, science fiction, sport, thriller, war, and western. Written instructions clarified that any given movie could fit into more than one genre, and that participants were to give their best estimate if they were unfamiliar with a genre. The main items of interest were responses to the horror genre, but other genres were included for exploratory purposes, and to avoid making the focus of the study obvious.

For each genre, participants rated their liking for it on a 5-point scale, with 1 = "Do not like it," 3 = "Neither like nor dislike," and 5 = "Like it a lot." The next question asked about frequency of attendance for the same genre. The response options were "Never watch," "Watch at most one per year," "Watch more than one per year," "Watch about one per month," "Watch more than one per month," and "Watch one per week or more." The questionnaire was completed on personal computers, and participants completed it at their own pace. The MGQ is included in Appendix B.

Andrade and Cohen (2007) defined horror fans as people who watched horror movies at least once per month, and non-fans as people who watched them at most once per year. They found meaningful differences between these groups. Following this convention, three groups were created based on participants' responses to the horror genre question of the MGQ: fans, non-fans, and neutrals (who watch more than one per year but less than one per month).

Motivations for Viewing Horror. Measures of Johnston's (1995) motivations for viewing horror were also included, measuring four types of motivation: Gore Watching, Thrill Watching, Independent Watching, and Problem Watching. Items were created by Johnston after factor analyzing motivations identified in focus group transcripts. Johnston calculated reliability, using Cronbach's alpha, to be .80 for Gore Watching, .75 for Thrill Watching, .79 for Independent Watching, and .82 for Problem Watching.

The questionnaire contained 20 items, in which participants rated their agreement with statements as reasons for watching horror, on a 5-point Likert scale. Examples of statements include "To freak myself out" and "Because I like to see the killer get caught or killed." None of them were reverse-coded. The questionnaire was adapted for completion on personal computers, and participants filled it out at their own pace.

The Big Five. The Big Five personality traits were assessed using items from the International Personality Item Pool, a public domain collection of psychology questionnaires. The 10-item (per trait) version was used. This measure of the Big Five was designed to replicate the results of the NEO-PI-R (Goldberg, 1999; Goldberg et al., 2006).

The Big Five questionnaire measured five personality domains using five scales: Openness to Experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. The alpha coefficients for the scales were previously calculated to be .82, .81, .86, .77, and .86, respectively (Goldberg et al., 2006). Each scale contained 10 items, 5 of which were reverse-coded. Items consisted of statements that participants indicated agreement with on a five-point Likert scale (e.g., the Extraversion scale included the item "I am skilled in handling social situations"). The questionnaire was adapted for completion on personal computers. Participants filled it out at their own pace, in a separate session completed before the bulk of the current study.

The Supernumerary Personality Inventory (SPI). The SPI was designed to measure personality traits that have been proposed to lie beyond the Big Five (Paunonen & Jackson, 2000). In the current study, the four traits that make up the Machiavellian factor (Seductiveness, Manipulativeness, Thriftiness, and Egotism) were included, along with Integrity. Reliability, computed by Paunonen (2002) as alpha coefficients on the 15-item scales, was as follows: Seductiveness (.66), Manipulativeness (.73), Thriftiness (.78), Egotism (.80), and Integrity (.82).

Each SPI item consisted of a statement (e.g., "I like to tell jokes that have sexual overtones to people I am attracted to," from the Seductiveness scale), on which participants were asked to indicate their agreement with using a 5-point scale. Twenty-five items (total) were reverse-coded. For each participant, an average score for each trait was computed. An overall average of the four Machiavellian traits was also calculated. The SPI questionnaire was adapted for completion on personal computers, and

participants completed it at their own pace.

Sensation seeking. Although Zuckerman's Form V of the Sensation Seeking Scale (SSS-V; Zuckerman, Eysenck, & Eysenck, 1978) is the most widely used measure of sensation seeking, it suffers from some drawbacks (Hoyle et al., 2002). The forced-choice format could be cumbersome for some participants. It also refers to specific behaviours and outdated colloquial words and phrases that some participants may not be familiar with. It is also lengthy, making it difficult to include in studies that include many other questionnaires (like the current one) without significant time commitments and the possibility of participant boredom.

The sensation seeking scale available from the IPIP web site (Goldberg et al., 2006) avoids some of these limitations. It uses a more common five-point Likert-like scale, contains updated questions, and contains only 30 items (7 of which are reverse-coded). It is divided into three subscales: Dangerous Thrill Seeking (DTS), Impulsive Thrill Seeking (ITS), and Calculated Thrill Seeking (CTS). Goldberg et al. found that the DTS subscale had an alpha coefficient of .86, the ITS subscale an alpha coefficient of .84, and the CTS subscale an alpha coefficient of .78.

Participants rated the sensation seeking items on how accurate they were as self-descriptions, on a scale of 1 = "very inaccurate" to 3 = "neither inaccurate nor accurate" to 5 = "very accurate". For example, the Dangerous Thrill Seeking scale contained the item "Might enjoy the thrill of being lost at sea." The questionnaire was adapted for completion on computers. Participants completed it at their own pace.

Psychopathy. Psychopathy was assessed using Levenson, Kiehl, and Fitzpatrick's

(1995) Primary and Secondary Psychopathy Scales. The scales were designed to resemble the two factors of Hare's Psychopathy Checklist (the most widely used measure of psychopathy), except in an easily-administered self-report questionnaire that is appropriate for a general non-institutionalized sample (where base rates of true psychopathy are low). Items were phrased to avoid obvious disapproval or endorsement on the part of the scale creators, so that no item would seem so repulsive that no participants in a normal population could endorse it. Furthermore, items were specifically designed to refer to behaviours familiar to university students, making it an ideal measure for the current study.

The Primary Psychopathy Scale, designed to assess selfishness, an uncaring posture toward others, and manipulativeness, contains 16 self-statements (e.g., "Looking out for myself is my top priority"), 5 of which are reverse-coded, that participants rate their agreement with on a 4-point scale ("disagree strongly," "disagree somewhat," agree somewhat," or "agree strongly"). Reliability (standardized item alpha) was calculated by Levenson et al. (1995) as .82.

The Secondary Psychopathy Scale, designed to assess an impulsive and self-defeating lifestyle, contains 10 self-statements (e.g, "I find myself in the same kinds of trouble, time after time"), 2 of which are reverse-coded, that participants rate their agreement with on the same 4-point scale as above. Reliability in Levenson et al.'s (1995) study was .63, which they deemed acceptable for a 10-item scale. The two psychopathy scales were adapted for completion on personal computers, and participants completed them at their own pace.

Familiarity With Movies Questionnaire (FMQ). The FMQ, created for this study, asked participants about the movies that the AMP's prime stimuli were captured from. For each of the eight movies, participants were first asked how familiar they were with the movie, choosing one of five options: "Never heard of it"; "Heard of it, but have not seen it"; "Have seen it once"; "Have seen it more than once"; or "Not sure / can't remember / other". If the participant indicated having seeing the movie at least once, the next question asked how much he or she liked it on a 7-point scale (1 = "Disliked it a lot"; 4 = "Neither liked it nor disliked it"; 7 = "Liked it a lot"). If the participant indicated not having seen the movie (or being unsure), the liking question was skipped. The questionnaire was filled out on personal computers. The FMQ is included in Appendix C.

A measure called Total Horror Fandom was calculated by standardizing the FMQ's total number of movies seen, the FMQ's average familiarity with movies, the MGQ's horror genre liking, and the MGQ's horror genre watching, then calculating an average of these values for each participant.

Procedure

After informed consent was obtained, participants completed the modified AMP described above. Next they completed the self-report questionnaires, then were debriefed.

Note that three separate testing sessions were actually conducted: two during the school year, and one during the summer. For simplicity's sake, the methods and results have been collapsed in the current report. Only minor edits to verbal instructions differed between the two school-year sessions, but in the summer session, the other study from which Big Five and demographic data were being collected was not conducted.

Therefore, analyses involving these measures have smaller sample sizes than do other analyses.

Results

An alpha level of .05 was set for evaluating statistical significance. Some *p* values below .10 are described as approaching significance, as possible support for more established findings, but not discussed further. Analyses with results that were preceded by a directional hypotheses were one-tailed; others were two-tailed. A list of variables used in the study, along with their means, standard deviations, minimums, maximums, and reliabilities (where available) are listed alphabetically in Table 1.

The Relationship Between Explicit and Implicit Horror Liking

The main indicator of implicit horror reactions was Implicit Horror Liking Versus Control. Implicit Horror Versus Control was calculated as the proportion of AMP "more pleasant" responses to horror stimuli (Implicit Horror Liking) minus the proportion of "more pleasant" responses to control imagery (Implicit Control Liking). The raw horror and control proportions were also examined when analyzing the relationships between implicit and explicit liking [2]. The analyses below are one-tailed.

Table 2 lists the correlations of Implicit Horror Versus Control, Implicit Horror Liking, and Implicit Control Liking, with explicit measures of horror fandom. Implicit reactions generally did not correlate with overall explicit reactions. The only exception was a significant relationship between the FMQ's number of stimulus movies seen and

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[2] Implicit reactions to the movie posters were also included in analyses, but did not yield any important results. Generally, any effects that applied to horror stimuli also applied to poster stimuli, though with slightly weaker effects (e.g., posters were rated more negatively than control stimuli, but the difference was slightly less than for horror stimuli).

Table 1
Descriptive Statistics

Variable	Min	Max	Mean	*SD*	*N*	Rel.
Big 5 – Agreeableness	1.64	4.45	3.45	0.53	62	.73
Big 5 – Conscientiousness	2.14	4.56	3.24	0.58	62	.68
Big 5 – Extraversion	1.55	4.64	3.40	0.75	62	.89
Big 5 – Neuroticism	1.11	4.67	2.78	0.78	62	.85
Big 5 – Openness to Experience	2.20	4.50	3.52	0.64	62	.79
Explicit vs. Implicit	-3.83	3.94	0.00	1.36	129	NA
Explicit vs. Implicit (Absolute)	0.06	3.94	1.10	0.79	129	NA
FMQ – Average Liking	1.00	7.00	4.53	1.17	119	NA
FMQ – Number of Movies Seen	0.00	7.00	2.93	1.90	133	NA
Horror Fandom (Total)	-4.03	5.69	0.01	2.63	132	NA
Horror Genre Liking	1.00	5.00	2.86	1.55	132	NA
Horror Genre Watching	1.00	6.00	2.87	1.45	132	NA
Implicit Control Liking	0.25	0.90	0.59	0.13	130	NA
Implicit Horror Liking	0.05	0.98	0.48	0.17	130	NA
Implicit Horror Liking vs. Control	-0.72	0.73	-0.12	0.22	130	NA
MVH – Gore Watching	1.00	4.33	1.82	0.82	96	.60
MVH – Independent Watching	1.00	4.50	1.85	0.85	96	.45
MVH – Problem Watching	1.00	4.00	1.25	0.54	96	.57
MVH – Thrill Watching	1.00	5.00	3.39	0.94	96	.81
Psychopathy – Primary	1.06	3.00	1.98	0.40	132	.77
Psychopathy – Secondary	1.10	3.30	2.19	0.44	132	.83
SPI – Machiavellian Factor	2.28	3.97	3.07	0.37	132	.81
SPI – Egotism	1.40	4.53	3.30	0.48	132	.83
SPI – Manipulativeness	1.53	4.47	2.94	0.50	132	.76
SPI – Seductiveness	1.20	4.60	3.04	0.63	132	.87
SPI – Thriftiness	1.80	4.30	3.02	0.60	132	.80
SPI - Integrity	1.80	4.87	3.41	0.59	132	.80
Sensation Seeking (Total)	1.33	4.27	3.06	0.59	132	.89
Sensation Seeking – Calculated Thrill Seeking	2.00	4.90	3.48	0.59	132	.66
Sensation Seeking – Dangerous Thrill Seeking	1.00	4.40	2.52	0.72	132	.74
Sensation Seeking – Impulsive Thrill Seeking	1.00	4.70	3.17	0.77	132	.86

Note. Reliability is indicated by Cronbach's Alpha, where available. Sample sizes differ due to multiple testing sessions and screening questions (see Method section).

Table 2
Correlations Between Implicit Measures and Explicit Measures of Horror Liking

Explicit Measure	Implicit Control Liking	Implicit Horror Liking	Implicit Horror Vs. Control
Horror Fandom (Total)	-.032	.086	.085
Horror Genre Liking	-.012	.065	.057
Horror Genre Watching	.038	.024	-.006
FMQ—Number of Movies Seen	-.103	.156*	.184*
FMQ—Average Liking	.027	.118	.066

Note. ** Significant, $p < .01$. * Significant, $p < .05$. [a] Approaching significance, $p < .10$. $N = 129$

Implicit Horror Total, $r(128) = .156$, $p = .038$, and an even stronger relationship between the number of movies seen and Implicit Horror Versus Control, $r(128) = .184$, $p = .018$. Some correlations between the three implicit liking variables and liking for specific movies, and between implicit liking and familiarity with specific movies, also reached significance, as seen in Tables 3 and 4, respectively.

Explicit-implicit discrepancy and personality. The discrepancy between explicit and implicit reactions was calculated in order to examine its relationship with personality. Total Horror Fandom and Implicit Horror Total were standardized, then Implicit Horror Total was subtracted from Total Horror Fandom, resulting in Explicit Versus Implicit, a measure for which higher values represented higher explicit horror fandom compared to implicit horror liking. The absolute value of Explicit Versus Implicit was also calculated, representing the magnitude of the gap between explicit and implicit reactions, regardless of direction. I included this last variable as an exploration of consistency between explicit and implicit reactions (no matter which one is being "exaggerated"), and whether or not it could explain variance beyond the simple directional difference. This variable could, for example, identify if "inconsistent" people—whether due to exaggerated implicit attitudes or exaggerated explicit attitudes—are reliably higher in a certain personality trait. Table 5 lists the relationships between the personality measures and the Explicit Vs. Implicit variables. Seductiveness was correlated with both Explicit Versus Implicit, $r(127) = .183$, $p = .038$, and Explicit Versus Implicit (Absolute), $r(127) = .178$, $p = .043$. Thrill Watching was correlated with Explicit Versus Implicit, $r(91) = .465$, $p = .000$, but not with Explicit Versus Implicit (Absolute), $r(91) = .024$, $p = .819$. Independent Watching, however, was

Table 3
Correlations Between Implicit Reactions and Liking for Specific Movies

Liking for Movie	Implicit Control Liking	Implicit Horror Liking	Implicit Horror Vs. Control
The Descent	-.019	-.024	-.004
Dawn of the Dead	-.059	.022	-.026
The Ring	.001	.037	.024
Nightmare on Elm St.	-.003	.277[a]	.266[a]
Jaws	-.043	.037	.052
Texas Chain Saw Massacre	.293[*]	.177	-.048
The Exorcist	-.057	.287[**]	.233[*]

Note. [**] Significant, $p < .01$. [*] Significant, $p < .05$. [a] Approaching significance, $p < .10$. Sample sizes vary according to how many people had seen each movie.

Table 4
Correlations Between Implicit Reactions and Familiarity with Specific Movies

Familiarity With Movie	Implicit Control Liking	Implicit Horror Liking	Implicit Horror Vs. Control
The Descent	-.040	-.022	.008
Dawn of the Dead	-.006	.143[a]	.112
The Ring	.035	.098	.053
Nightmare on Elm St.	-.107	.222**	.236**
Jaws	.080	.189*	.094
Texas Chainsaw Massacre	-.041	.039	.055
The Exorcist	-.180*	.159*	.233**

Note. ** Significant, $p < .01$. * Significant, $p < .05$. [a] Approaching significance, $p < .10$. $N = 129$.

correlated with Explicit Versus Implicit (Absolute), $r(91) = -.234$, $p = .024$, but not with Explicit Versus Implicit, $r(91) = .039$, $p = .713$. Sensation Seeking (Total) was correlated with Explicit Versus Implicit, $r(127) = .174$, $p = .049$, but not Explicit Versus Implicit (Absolute), $r(127) = -.029$, $p = .741$. This appeared to be mostly due to the Dangerous Thrill Seeking subscale, which also correlated with Explicit Versus Implicit, $r(127) = .227$, $p = .010$, but not Explicit Versus Implicit (Absolute), $r(127) = -.083$, $p = .350$.

Personality Correlates of Implicit and Explicit Horror Fandom

Since there were specific predictions about the direction of correlations between most personality measures and horror fandom, the *p* values presented below are one-tailed.

The Big Five. No significant correlations between Big Five personality measures and implicit measures were detected. See Table 6 for a complete list of correlations.

There were, however, significant correlations between Big Five personality measures and explicit liking for horror. Openness to Experience approached a significant correlation with the number of movies seen, $r(60) = .186$, $p = .074$. Conscientiousness was negatively correlated with the FMQ's average liking scale, $r(60) = -.305$, $p = .010$. Extraversion was not correlated with any explicit fandom measures. Agreeableness was negatively correlated with Total Horror Fandom, $r(60) = -.255$, $p = .023$, Horror Genre Liking, $r(60) = -.227$, $p = .038$, & Horror Genre Watching, $r(60) = -.246$, $p = .027$, and approached significant negative correlations with Number of Movies Seen, $r(60) = -.185$,

Table 5
Correlations Between Personality and Discrepancy Between Explicit and Implicit Liking

Personality Measure	Explicit Versus Implicit	Explicit Versus Implicit (Absolute)
SPI—Machiavellianism Factor	.065	.083
SPI—Thriftiness	.021	.002
SPI—Manipulativeness	.066	-.095
SPI—Seductiveness	.183*	.178*
SPI—Egotism	-.082	.126
SPI—Integrity	.005	-.131
Primary Psychopathy	.095	.065
Secondary Psychopathy	-.085	.029
MVH—Gore Watching	.155	.024
MVH—Thrill Watching	.465**	.024
MVH—Problem Watching	.064	-.085
MVH—Independent Watching	.039	-.234*
Sensation Seeking (Total)	.174*	-.029
Calculated Thrill Seeking	.164[a]	-.004
Dangerous Thrill Seeking	.227**	-.083
Impulsive Thrill Seeking	.063	.013
Big 5—Openness to Experience	.082	-.123
Big 5—Conscientiousness	-.013	-.146
Big 5—Extraversion	-.064	.030
Big 5—Agreeableness	-.060	-.151
Big 5—Neuroticism	-.028	-.122

Note. ** Significant, $p < .01$. * Significant, $p < .05$. [a] Approaching significance, $p < .10$. $N = 129$, except for Big Five measures, in which $n = 62$.

Table 6
Correlations Between Big Five and Implicit Reactions

Big 5 Scale	Implicit Control Liking	Implicit Horror Liking	Implicit Horror Vs. Control
Big 5—Openness to Experience	-.075	-.031	.018
Big 5—Conscientiousness	.052	.010	-.021
Big 5—Extraversion	-.038	.014	.030
Big 5—Agreeableness	.125	-.133	-.157
Big 5—Neuroticism	-.153	.108	-.155

Note. ** Significant, $p < .01$. * Significant, $p < .05$. [a] Approaching significance, $p < .10$.
$n = 62$

p = .075. Neuroticism was not correlated with any explicit fandom measures. See Table 7 for a complete list of correlations.

Supernumerary Personality Inventory. Overall, the Machiavellianism factor did not correlate with implicit reactions. However, the subscale of Egotism was correlated with Implicit Horror Liking, $r(130) = .165$, $p = .031$, and with Implicit Horror Liking vs. Control, $r(130) = .184$, $p = .018$. The additional scale of Integrity was very nearly significantly correlated negatively with Implicit Horror Liking, $r(130) = -.145$, $p = .051$, and approached significance with Implicit Horror Liking vs. Control, $r(130) = -.125$, $p = .079$. There were no correlations with Seductiveness, Manipulativeness, or Thriftiness. See Table 8 for a complete list of correlations.

More correlations were found with explicit measures of horror liking. Overall Machiavellianism was correlated with Total Horror Fandom, $r(130) = .247$, $p = .002$, Horror Genre Liking, $r(130) = .231$, $p = .004$, Horror Genre Watching, $r(130) = .281$, $p = .001$, Average Liking, $r(130) = .158$, $p = .043$, and approached significance with Number of Movies Seen, $r(130) = .139$, $p = .056$. Seductiveness was correlated with Total Horror Fandom, $r(130) = .311$, $p = .000$, Horror Genre Liking, $r = .302$, $p = .000$, Horror Genre Watching, $r(130) = .355$, $p = .000$, Number of Movies Seen, $r(130) = .162$, $p = .031$, and approached significance with Average Liking, $r(130) = .131$, $p = .077$. Thriftiness, Manipulativeness, Egotism, and Integrity also had correlations with explicit horror fandom that approached significance. See Table 9 for further details.

Psychopathy. Implicit reactions generally did not correlate with Primary Psychopathy. However, Secondary Psychopathy and Implicit Horror Total were

Table 7
Correlations Between Big Five and Explicit Horror Fandom

Big 5 Scale	Total Horror Fandom	Horror Genre Liking	Horror Genre Watching	FMQ—Number of Movies Seen	FMQ—Average Liking
Big 5—Openness to Experience	.138	.044	.044	.186[a]	.123
Big 5—Conscientiousness	-.041	-.068	-.065	.031	-.305[*]
Big 5—Extraversion	-.060	-.054	-.137	.041	-.047
Big 5—Agreeableness	-.255[*]	-.227[*]	-.246[*]	-.185[a]	-.160
Big 5—Neuroticism	.126	.102	.121	.104	.152

Note. [**] Significant, $p < .01$. [*] Significant, $p < .05$. [a] Approaching significance, $p < .10$. $n = 62$.

Table 8
Correlations Between Supernumerary Personality Inventory Scales and Implicit Reactions

SPI Scale	Implicit Control Liking	Implicit Horror Liking	Implicit Horror Vs. Control
SPI—Machiavellianism Factor	-.050	.042	.063
SPI—Thriftiness	.085	-.114[a]	-.108
SPI—Manipulativeness	-.108	-.004	.064
SPI—Seductiveness	-.018	.064	.060
SPI—Egotism	-.093	.165[*]	.184[*]
SPI—Integrity	.024	-.145[a]	-.125[a]

Note. [**] Significant, $p < .01$. [*] Significant, $p < .05$. [a] Approaching significance, $p < .10$. $N = 129$.

Table 9
Correlations Between Supernumerary Personality Inventory Scales and Explicit Horror Fandom

SPI Scale	Total Horror Fandom	Horror Genre Liking	Horror Genre Watching	FMQ—Number of Movies Seen	FMQ—Average Liking
SPI—Machiavellianism Factor	.247**	.231**	.281**	.139[a]	.158*
SPI—Thriftiness	.119[a]	.122[a]	.130[a]	.062	.017
SPI—Manipulativeness	.140[a]	.106	.145*	.119	.164*
SPI—Seductiveness	.311**	.302**	.355**	.162*	.131[a]
SPI—Egotism	.066	.060	.095	.019	.137[a]
SPI—Integrity	-.112[a]	-.114[a]	-.049	-.133[a]	-.140[a]

Note. ** Significant, $p < .01$. * Significant, $p < .05$. [a] Approaching significance, $p < .10$. $N = 132$.

correlated, $r(127) = .154$, $p = .040$. The relationship between Secondary Psychopathy and Implicit Horror Liking Versus Control, however, only approached significance, $r(127) = .117$, $p = .093$. See Table 10 for the remaining correlations.

Primary Psychopathy was correlated with Total Horror Fandom, $r(130) = .164$, $p = .030$, Average Liking, $r(130) = .186$, $p = .022$, and Horror Genre Watching, $r(130) = .175$, $p = .022$, and approached significance with Number of Movies Seen, $r(130) = .118$, $p = .088$, and Horror Genre Liking, $r(130) = .139$, $p = .056$. Secondary Psychopathy did not correlate with any explicit horror fandom measures. See Table 11 for further details.

Sensation seeking. The only significant correlation between sensation seeking and implicit reactions was between Impulsive Thrill Seeking and Horror Liking, $r(127) = .162$, $p = .033$. However, Impulsive Thrill Seeking did not correlate with Horror Liking vs. Control, $r(127) = .087$, $p = .163$. See Table 12 for the rest of the correlations.

There were, however, robust correlations between the sensation seeking scales and explicit measures of horror fandom. Overall sensation seeking was correlated with all measures of horror fandom: Total Horror Fandom, $r(130) = .294$, $p = .000$, Horror Genre Liking, $r(130) = .241$, $p = .003$, Horror Genre Watching, $r(130) = .224$, $p = .005$, Number of Movies Seen, $r(130) = .310$, $p = .000$, and Average Liking, $r(130) = .201$, $p = .014$. All of the correlations between the sensation seeking subscales and explicit horror fandom measures were also significant or close to it; see Table 13 for details.

Gender Differences

Gender information was only available for participants in some stages of the study, so the sample size for gender analyses was smaller than other analyses. However, despite

Table 10
Correlations Between Psychopathy and Implicit Reactions

Psychopathy Scale	Implicit Control Liking	Implicit Horror Liking	Implicit Horror Vs. Control
Primary Psychopathy	-.029	.026	.038
Secondary Psychopathy	.001	.154*	.117[a]

Note. ** Significant, $p < .01$. * Significant, $p < .05$. [a] Approaching significance, $p < .10$. $N = 129$.

Table 11
Correlations Between Psychopathy and Explicit Horror Fandom

Psychopathy Scale	Total Horror Fandom	Horror Genre Liking	Horror Genre Watching	FMQ—Number of Movies Seen	FMQ—Average Liking
Primary Psychopathy	.164*	.139[a]	.175*	.118[a]	.186[a]
Secondary Psychopathy	.012	.029	.043	-.039	.074

Note. ** Significant, $p < .01$. * Significant, $p < .05$. [a] Approaching significance, $p < .10$. $N = 132$.

Table 12
Correlations Between Sensation Seeking Scales and Implicit Reactions

Sensation Seeking Scale	Implicit Control Liking	Implicit Horror Liking	Implicit Horror Vs. Control
Sensation Seeking (Total)	.066	.062	.027
Calculated Thrill Seeking	-.027	.035	.044
Dangerous Thrill Seeking	.021	.050	.026
Impulsive Thrill Seeking	.058	.162*	.087

Note. ** Significant, $p < .01$. * Significant, $p < .05$. [a] Approaching significance, $p < .10$. $N = 129$.

Table 13
Correlations Between Sensation Seeking Scales and Explicit Horror Fandom

Sensation Seeking Scale	Total Horror Fandom	Horror Genre Liking	Horror Genre Watching	FMQ—Number of Movies Seen	FMQ—Average Liking
Sensation Seeking (Total)	.285**	.243**	.224**	.308**	.238**
Calculated Thrill Seeking	.262**	.177*	.201*	.310**	.159*
Dangerous Thrill Seeking	.330**	.293**	.249**	.327**	.200*
Impulsive Thrill Seeking	.168*	.144*	.128[a]	.171*	.150[a]

Note. ** Significant, $p < .01$. * Significant, $p < .05$. [a] Approaching significance, $p < .10$. $N = 132$.

the small sample and very small number of males who participated (18), some interpretable differences emerged.

When asked for explicit ratings of horror movies and the horror genre, males reported higher ratings than did females on all variables, as expected. As seen in Table 14, this difference failed to reach significance for general questions about the genre (likely due to the small sample), but when asked about specific movies, average ratings for males ($M = 4.91$, $SD = 0.88$) were significantly higher than average ratings for females ($M = 4.08$, $SD = 1.31$), $t\ (56) = 2.38$, $p = .01$, one-tailed. Indeed, males reported higher liking than did females for each of the seven movies that participants had seen. (surprisingly, no participants had seen *Suspiria*; see Table 15 for details). Males did not differ from females in their implicit reactions. Liking ratios were essentially equal for males and females, not even approaching significance. Examining the difference between explicit and implicit reactions, however, males and females had opposite discrepancies. Based on standardized scores, males tended to have higher explicit reactions than implicit reactions (Explicit - Implicit Discrepancy $M = 0.319$, $SD = 1.25$), while females tended to have lower explicit reactions than implicit reactions (Explicit - Implicit Discrepancy $M = -0.298$, $SD = 1.27$). This difference was significant, $t\ (56) = 1.69$, $p = .049$, one-tailed. See Table 16 for further details. Gender did not moderate the more complex interactions involving implicit variables, described below.

The Effects of Fandom and Delay on Implicit Reactions to Horror Imagery

Each participant was classified as a fan of horror (watch horror movies once per month or more), a non-fan of horror (watch horror movies at most once per year), or

Table 14
Gender Differences in Explicit Horror Liking

Explicit Measure	Males	Females
Total Horror Fandom	1.17	0.09
Horror Genre Liking	3.44	2.89
Horror Genre Watching	3.50	2.98
FMQ—Number of Movies Seen	3.61	2.93
FMQ—Average Liking *	4.91	4.08

Note. * Male – Female difference significant, $p < .05$. n (Males) = 18, n (Females) = 44.

Table 15
Gender Differences in Liking for Specific Movies

Movie	Males	Females
Dawn of the Dead *	5.82	4.46
The Descent	6.50	6.00
The Exorcist	4.58	4.05
Jaws	5.18	4.73
A Nightmare on Elm Street	4.50	4.43
The Ring *	5.07	3.97
Suspiria	NA	NA
Texas Chain Saw Massacre	5.00	4.17

Note. * Male – Female difference significant, $p < .05$. Sample sizes vary depending on familiarity with movie. No participants indicated having seen *Suspiria*.

Table 16
Gender Differences in Implicit Reactions

	Males	Females
Implicit Control Liking	.617	.596
Implicit Horror Liking	.472	.453
Implicit Horror Vs. Control	-.144	-.143
Explicit Vs. Implicit *	.319	-.298
Explicit Vs. Implicit (Absolute)	.975	.978

Note. * Male – Female difference significant, $p < .05$. n (Males) = 18, n (Females) = 44.

neutral toward horror (watch horror movies between once per year and once per month), and after being exposed to horror imagery, there was either a short (100 ms) delay or a long (1000 ms) delay before rating ambiguous pictographs as either more pleasant than average or less pleasant than average.

A 3 (Fandom: fan, non-fan, or neutral) x 2 (Delay: short or long; repeated measures) ANOVA, with the proportion of "more pleasant" ratings after horror stimuli as the dependent variable, was performed. No interaction whatsoever between Fandom and Delay was found, $F(2, 126) = 0.001$, $p = .999$.

Surprisingly, no main effect of Fandom was found, $F(2, 126) = 0.22$, $p = .799$. All participants tended to respond with approximately equal "more pleasant" and "less pleasant" ratings after horror imagery (i.e., proportions close to .500), with no differences between horror fans ($M = .473$, $SD = .174$), non-fans ($M = .482$, $SD = .132$), and neutrals ($M = .497$, $SD = .185$). There was, however, a main effect of Delay that approached significance, $F(1, 126) = 3.58$, $p = .061$. A long delay ($M = .498$, $SD = .178$) lead to a larger proportion of "more pleasant" responses than did a short delay ($M = .467$, $SD = .197$).

The proportion of "more pleasant" ratings following horror imagery, corrected for the proportion of "more pleasant" ratings following control imagery in the same Delay condition, was expected to be a more sensitive measure of implicit reactions than was the raw proportion. Indeed, a 3 (Fandom: fan, non-fan, or neutral) x 2 (Delay: short or long; repeated measures) ANOVA with control proportion subtracted from the appropriate horror proportion as the dependent variable revealed a stronger main effect of Delay, *F*

(1, 126) = 10.07, p = .002. A long delay (M = -.085, SD = .235) led to a larger proportion of "more pleasant" ratings after horror imagery, relative to control imagery, than a short delay (M = -.146, SD = .248). However, there was still no interaction between Fandom and Delay, F(2, 126) = 0.11, p = .895, nor a main effect of Fandom, F(2, 126) = 0.28, p = .757. [3]

The Effects of Content and Delay on Implicit Reactions to Horror Imagery

Given the results above, it was clear that comparing the ratings following horror imagery to ratings following neutral imagery led to meaningful effects. To examine this in more detail, a 2 (Content: horror or control) x 2 (Delay: short or long) repeated measures ANOVA, with proportion of "more pleasant" ratings as the dependent variable, was performed. There was no main effect of Delay; overall, ratings were no more pleasant after a short delay (M = .538, SD = .130) than after a long delay (M = .540, SD = .118), F(1, 129) = 0.03, p = .867. There was a main effect of Content, with horror imagery (M = .480, SD = .165) causing less pleasant ratings than control imagery (M = .597, SD = .134), F(1, 129) = 38.31, p = .000. Participants rated the ambiguous pictographs as more pleasant after control imagery than after horror imagery.

More important than the main effects above, the interaction between Delay and

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[3] The same type of analysis was performed with different operationalizations of horror fandom: medians splits of MGQ Liking, MGQ Watching, Average Liking of Movies, Number of Movies Seen, and an average of all of these variables after standardizing. In all of these 2 (Fandom: fan or non-fan) x 2 (Delay: short or long; repeated measures) ANOVAs with proportion of "more pleasant" ratings relative to control as the dependent variable, the same pattern of results as above was found: a main effect of Delay, but no interaction effect, nor, surprisingly, main effect of Fandom. The same pattern was found when performing regression analyses with these continious measures of horror fandom. Although fans always reacted to the horror imagery slightly more positively than did non-fans, this effect only came close to significance for Number of Movies Seen (p = .069 in median split analysis). Furthermore, the mean rating following horror imagery was always negative (that is, rated lower than control imagery) regardless of Fandom. No matter how—and how much—participants explicitly expressed a liking for horror films, their implicit reactions were only slightly more positive (if at all), and they demonstrated a "relief" effect, giving more positive reactions after a delay.

Content was significant, $F(1, 129) = 10.70$, $p = .001$. As illustrated in Figure 2, for horror imagery, a long delay ($M = .497$, $SD = .177$) led to more pleasant ratings than did a short delay ($M = .464$, $SD = .199$), and this simple main effect was significant, $t(129) = 2.08$, $p = .04$. For control imagery, a long delay ($M = .583$, $SD = .154$) led to less pleasant ratings than did a short delay ($M = .612$, $SD = .158$), and this simple main effect was significant, $t(129) = -2.10$, $p = .04$. That is, a delay made people like the ambiguous pictograph less after control imagery, but a delay made people like the ambiguous pictograph more after horror imagery.

Personality Moderators of the Interaction Between Content and Delay

The Content x Delay interaction above suggested that most people implicitly react with a relief-like increase in affect after viewing horror stimuli. However, a central question was *who* experiences relief and who does not. Thus, the next step was to explore personality moderators of the interaction.

All personality measures were included. For each, a repeated measures ANOVA was conducted with Content (horror or control) and Delay (short or long) included as within-subjects categorical independent variables, the personality measure included as a between-subjects continuous independent variable, and the proportion of "more pleasant" ratings as the dependent variable. Of 17 such analyses, 3 significant moderator effects were found (plus one that nearly reached significance). For these significant regressions, median splits of the personality variable were performed to simplify interpretation and visualization of the effects. These analyses are described in the following sections.

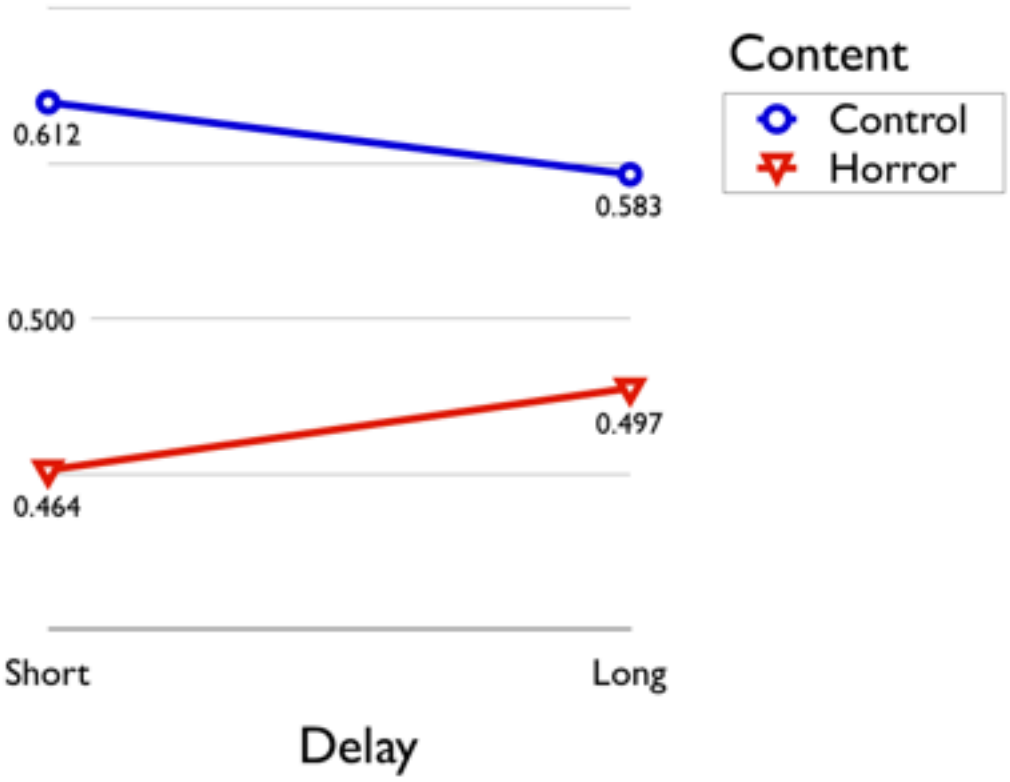

Figure 2. The effects of Content and Delay on Implicit Liking.

Agreeableness moderates the Content x Delay effect on liking. There was a significant Agreeableness x Content x Delay interaction, $F(1, 60) = 4.43$, $p = .040$. To explore the nature of this relationship, a median split of the Agreeableness variable was performed.[4] As shown in Figure 3, the effect of Delay depending on Content was different for people high in agreeableness than it was for people low in agreeableness. For those high in agreeableness, the pattern was similar to the overall Content x Delay effect shown in Figure 2: for control stimuli, a delay caused a decrease in liking from .661 to .583. For horror stimuli, a delay caused an increase in liking from .429 to .473. However, the pattern was weaker and in the opposite direction for people low in agreeableness: for control stimuli, a delay caused an increase (.571 to .588), and for horror stimuli, a delay caused a decrease (.471 to .464).

In sum, the overall relief-like pattern of the Content x Delay interaction was due exclusively to people high in agreeableness. The pattern was nullified (or slightly opposite) for people low in agreeableness.

Sensation seeking moderates the Content x Delay effect on liking. As predicted, sensation seeking also had an important role in reactions to horror imagery. There was a significant Sensation Seeking (Total) x Content x Delay interaction, $F(1, 127) = 4.02$, $p = .047$. Exploring the Sensation Seeking subscales in more depth, the Dangerous Thrill Seeking x Content x Delay interaction was not significant, $F(1, 127) = 1.11$, $p = .294$, but the Impulsive Thrill Seeking x Content x Delay interaction approached significance, $F(1, 127) = 3.68$, $p = .057$, and the Calculated Thrill Seeking x Content x Delay interaction

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[4] The Agreeableness x Content x Delay interaction remained significant with Agreeableness as a categorical variable, $F(1, 60) = 7.50$, $p = .008$.

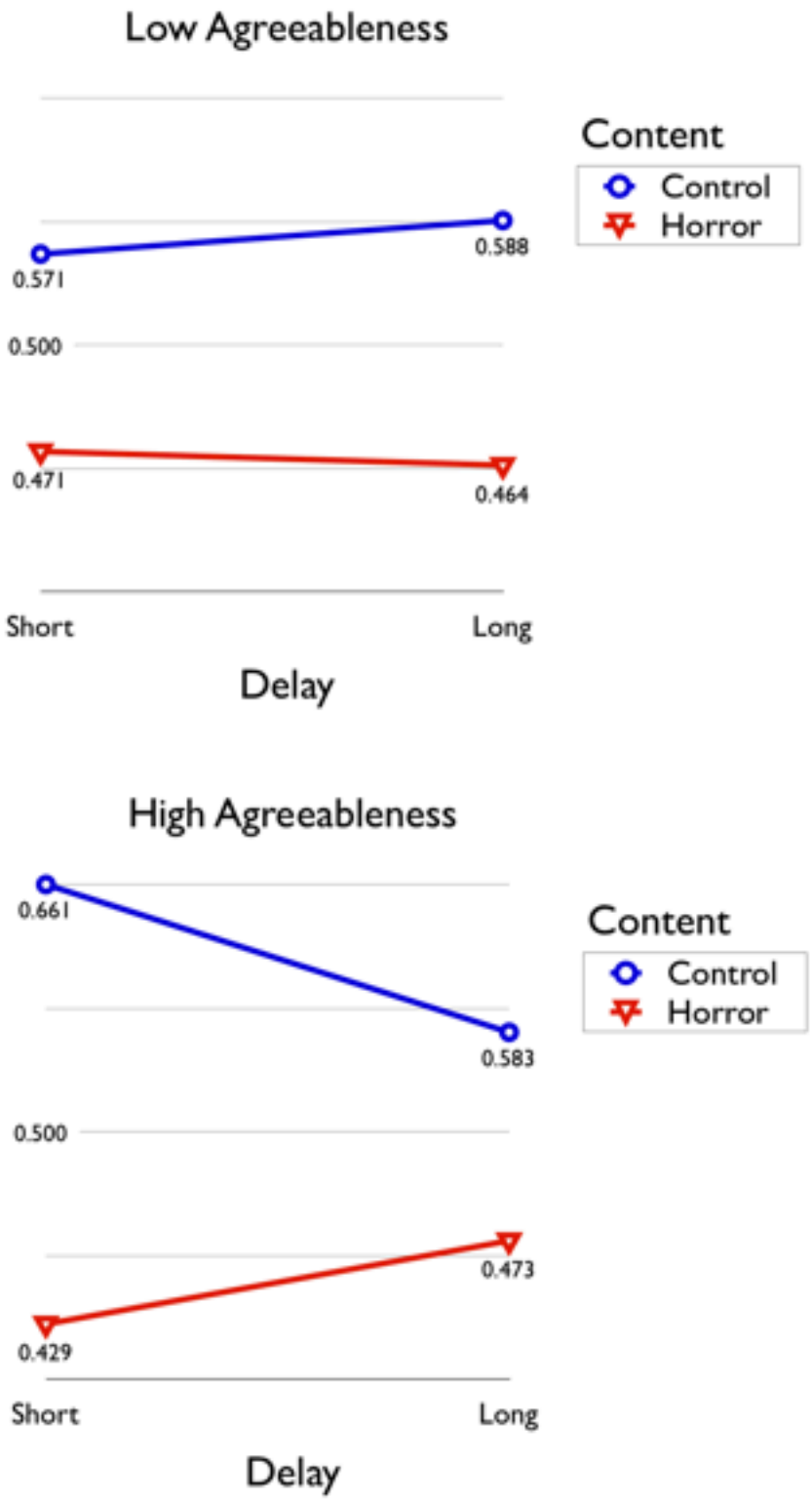

Figure 3. The effects of Agreeableness, Content, and Delay on Implicit Liking.

was clearly significant, F (1, 127) = 4.98, p = .027.

To elucidate the nature of this interaction, median splits of the Sensation Seeking subscales were created.[5] For people low in Impulsive Thrill Seeking, the interaction between Content and Delay (not illustrated) was similar to the overall Content x Delay effect shown in Figure 2: for Control stimuli, a delay caused a decrease from .613 to .568 (a difference of .045), while for Horror stimuli, a delay caused an increase from .444 to . 487 (a difference of .043). For people high in Impulsive Thrill Seeking, the interaction between Content and Delay was weaker: for Control stimuli, the decrease was from .612 to .597 (a difference of .015), while for Horror stimuli, the increase was from .489 to .508 (a difference of .019).

This pattern was even stronger for Calculated Thrill Seeking (illustrated in Figure 4).[6] For people low in Calculated Thrill Seeking, the opposite effect of Delay depending on Content was clear: for Control stimuli, a delay caused a decrease from .617 to .573 (a difference of .044), whereas for Horror Stimuli, a delay caused an increase from .456 to .523 (a difference of .067). For people high in Calculated Thrill Seeking, the effect of Delay was much weaker: for Control stimuli, a delay caused a decrease from .609 to .592 (a difference of .017); for Horror stimuli, there was actually a slight decrease as well, from .478 to .475 (a difference of .003, in the opposite direction as the other interaction).

In sum, the relief-like pattern was much stronger for people low in sensation seeking than for people high in sensation seeking. This was especially due to the

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[5] Note, however, that the Content x Delay x Impulsive Thrill Seeking (Split) interaction no longer approached significance with the categorical version of the variable, F(1, 127) = 2.01, p = .159.

[6] This three-way interaction effect remained significant when Calculated Sensation Seeking was reduced to a categorical variable, F(1, 127) = 6.62, p = .011.

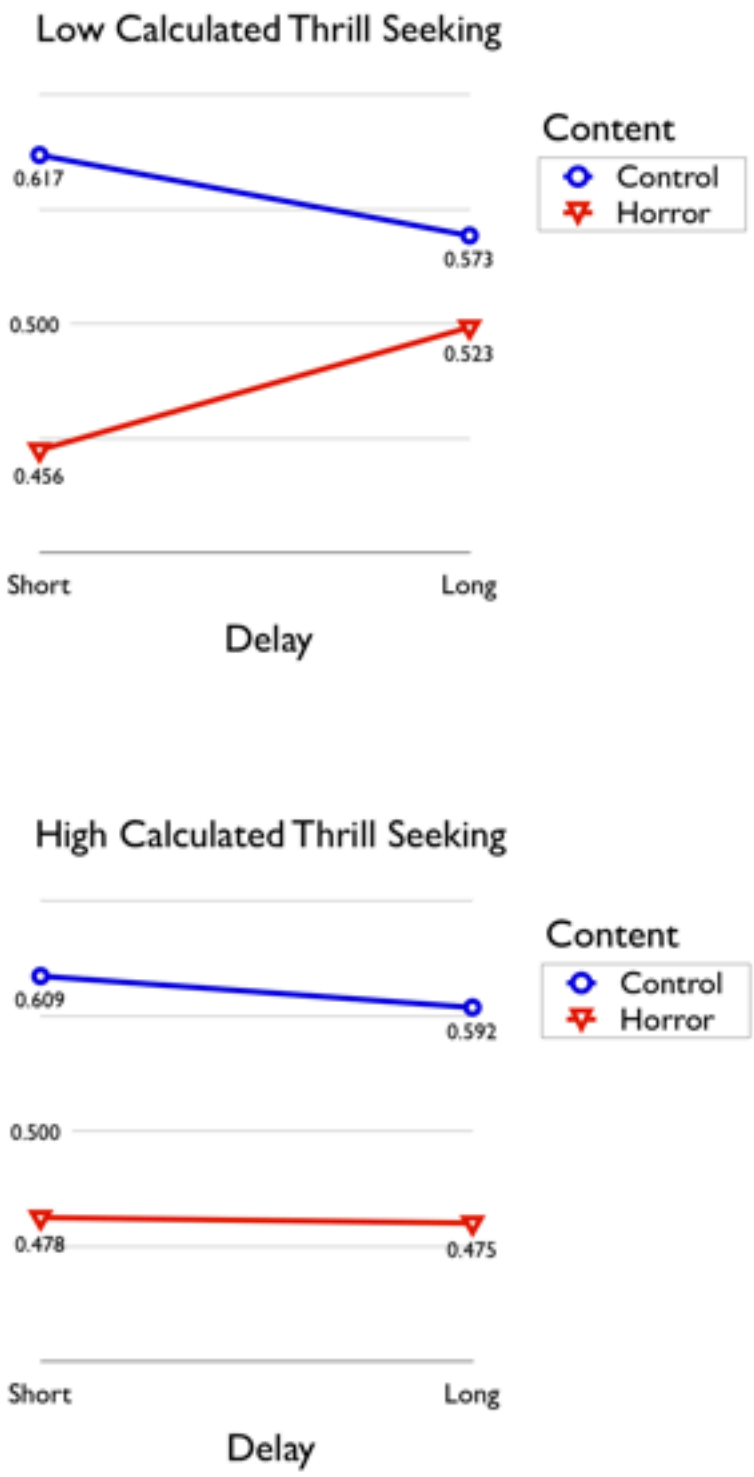

Figure 4. The effects of Calculated Thrill Seeking, Content, and Delay on Implicit Liking.

Calculated Thrill Seeking subscale (and to a lesser extent, the Impulsive Thrill Seeking subscale). In other words, the overall relief-like pattern was due almost exclusively to people scoring in the lower half of the sensation seeking scales.

Machiavellianism moderates the effect of Content on liking. The overall Machiavellianism x Content interaction approached significance, $F(1, 127) = 3.41$, $p = .067$, so the subscales were examined in more detail. It was found that the Egotism x Content interaction was the only one to reach significance, $F(1, 127) = 4.45$, $p = .037$. To explore the nature of these relationships, median splits of the Machiavellianism and Egotism variables were performed.

As shown in Figure 5, for people low in Machiavellianism, ratings were much higher after control stimuli (.607) than after horror stimuli (.449; a difference of .158).[7] For people high in Machiavellianism, ratings were only slightly higher after control stimuli (.589) than after horror stimuli (.515; a difference of .074). That is, horror imagery had over twice the aversive effect on people low in Machiavellianism.

A similar interaction was observed for Egotism.[8] For people low in egotism, ratings after control stimuli (.604) were higher than were ratings after horror stimuli (.456; a difference of .148). For people high in egotism, ratings after control stimuli (.592) were only slightly higher than ratings after horror stimuli (.507; a difference of .085). Horror films had almost twice the aversive effect on people low in egotism than on people high

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[7] This interaction effect reached significance when Machiavellianism was converted into a categorical variable, $F(1, 127) = 5.14$, $p = .025$.

[8] Curiously, this interaction was no longer significant when Egotism was converted into a categorical variable, $F(1, 127) = 2.77$, $p = .099$. This suggests that the overall Machiavellianism results were not due purely to the Egotism subscale, so both sets of results are discussed above.

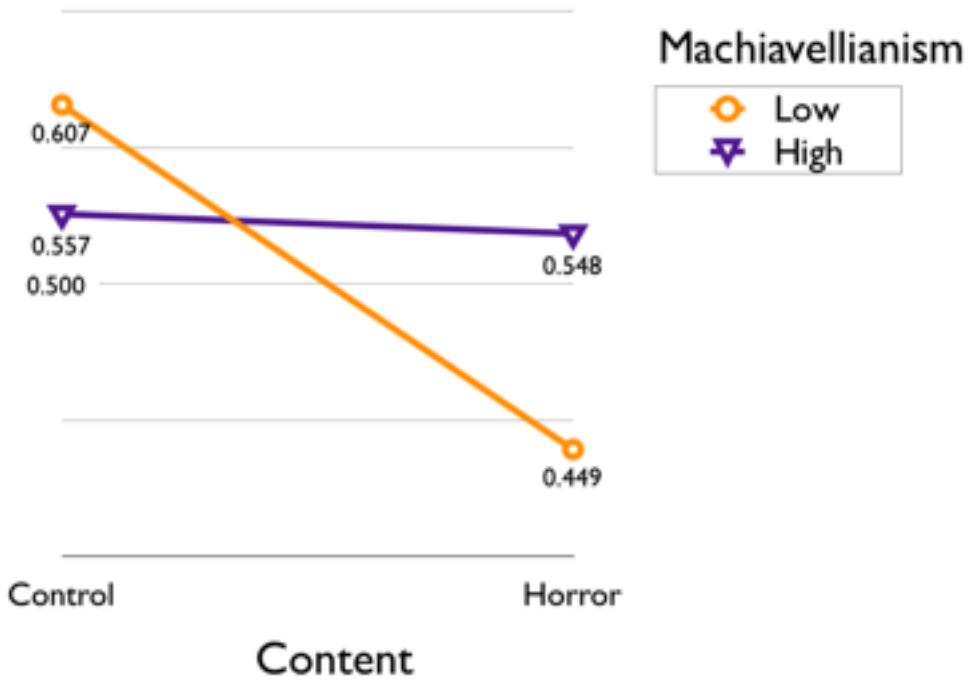

Figure 5. The effects of Machiavellianism and Content on Implicit Liking.

in egotism.

Familiarity with movies moderates the effect of Content on liking. The Number of Movies Seen x Content interaction was significant, $F(1, 128) = 4.46$, $p = .037$. A median split of Number of Movies Seen was performed to explore the nature of this interaction.[9] As shown in Figure 6, although both groups reacted more positively after control stimuli, there was a relatively large difference between Control ($M = .615$) and Horror ($M = .462$; a difference of .153) for people who were in the lower 50% of number of movies seen. For people in the upper 50%, the difference between Control ($M = .581$) and Horror ($M = .497$; a difference of .084) was smaller. In other words, content had less of an effect on people who were familiar with the movies in the study than it did on people who were not as familiar with the movies.

Discussion

Explicit Versus Implicit Reactions

The results of this study support the idea that explicit reactions to horror do not follow directly from implicit reactions. Stated liking for the horror genre did not correlate with implicit reactions to horror imagery. In other words, people who say they like horror movies do not necessarily have an immediate reaction to disturbing imagery that differs from people who say they do not like horror movies.

When asked about specific movies, however, there was a small but genuine correlation between explicit and implicit liking. This tendency for explicit-implicit correlations to become stronger as the explicit measures become more objective supports

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[9] The interaction only approached reached significance when Number of Movies Seen was converted to a categorical variable, $F(1, 128) = 3.35$, $p = .069$.

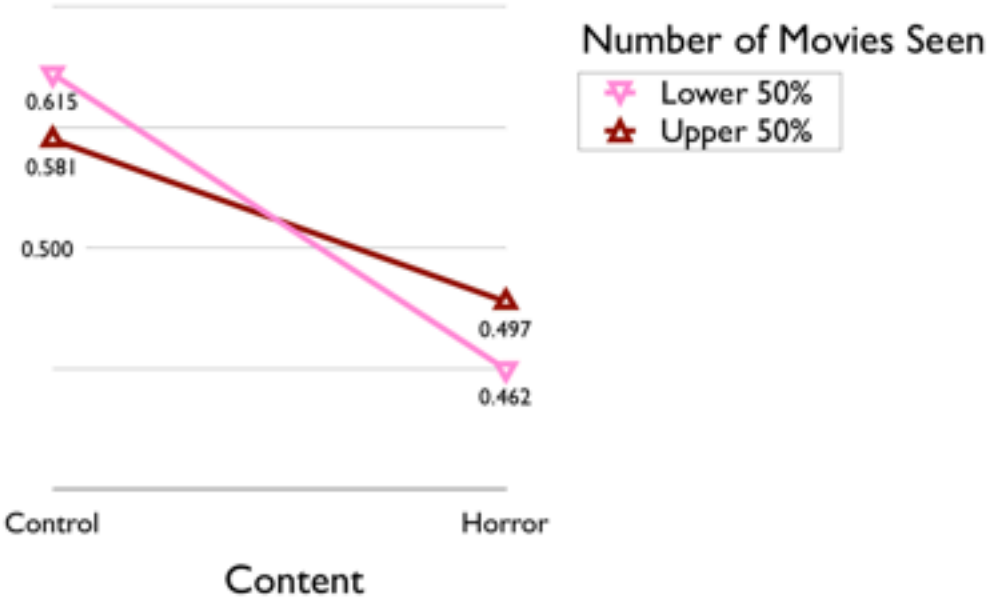

Figure 6. The effects of Number of Movies Seen and Content on Implicit Liking.

the supposition that implicit measures are less susceptible to self-presentation concerns. Like many drinkers in Payne et al.'s (2008) study, consumers of horror may be motivated to under- or over-report their attitudes. However, while it is easy for participants to avoid the upper end of a scale when asked how much they like horror in general, it is harder to outright lie about not having seen a movie. Furthermore, admitting to liking a specific movie may avoid some of the stigma attached to liking the entire genre the movie belongs to. These more objective and less controversial questions, then, are more likely to correspond to implicit reactions in the AMP (which, as demonstrated by Payne et al., are not very susceptible to self-presentation pressures).

This fact that horror movie fans do not generally have different gut reactions to horror than do non-fans is somewhat surprising, but not unprecedented. In Andrade and Cohen's (2007) study in which fear and happiness were rated during a movie, fans and non-fans reported being equally scared (though fans did report being more happy). The disconnect between implicit and explicit measures is also consistent with Hoffner and Levine's (2005) meta-analysis. Past studies consistently found that self-reported negative affect was correlated with self-reported enjoyment, but physiological measures of arousal did not consistently correlate with self-reported enjoyment (with a range of correlations from -.26 to .00 to .42). The current study's implicit measures could be considered closer to corresponding with physiological measures, in that they are largely uncontrolled and automatic. But given that they do require a behavioural response (choosing a key), perhaps these implicit measures tap into a final result of multiple physiological responses. That is, heterogeneous physiological responses lead to a single decision in the AMP. This

initial reaction can determine some behaviours (e.g., choosing to see a movie), but can be altered beyond recognition as explicit processes are given more freedom to operate (e.g., when self-reporting attitudes about the horror genre).

It was interesting to observe correlations between personality measures and the discrepancy between explicit and implicit measures. People high in Seductiveness, Thrill Watching, and Sensation Seeking tended to have higher explicit ratings than would be expected given their implicit reactions. Perhaps this is due to an exaggeration of their explicitly stated attitudes, though it could also be due to a lack of exaggeration when the rest of the sample exaggerated in the opposite direction (because these comparisons were standardized). In any case, future researchers should consider not only explanations for implicit attitudes or explicit attitudes themselves, but for the distance between them as well.

Payne et al. (2005) proposed a general tendency for explicit measures to diverge from implicit measures when pressure to consciously manipulate reported attitudes is high. Attitudes about horror movies are likely to be one area where this pressure is high (as expanded upon in the Introduction). This theme of explicit attitudes being distorted by self-presentation concerns (and implicit attitudes less so) will come up repeatedly as additional results are discussed.

Who Likes Horror Films?

One of the main questions of the study was "who likes horror films?" Perhaps a better question is "who *says* they like horror films?" Explicit reports of enjoyment are no less "real" than implicit reactions, but the explicit-implicit divide demands asking

questions that go beyond general liking.

The question of who says they like horror films (i.e., explicitly) is the more interesting one, because implicit reactions to horror imagery did not generally correlate with personality in this study. This could be because the current study's personality measures were all based on self-reports. Common method variance can boost the correlations with other self-report measures, but not with implicit measures. However, self-reported personality did moderate other effects on implicit measures, as discussed shortly, so this explanation is not entirely adequate. It is more likely that the personality measures included here simply did not have a reliable relationship with implicit reactions. Overall, everybody had a negative initial reaction to horror imagery, regardless of personality.

What is the personality of the *admitted* horror fan, then? From the Big Five, Agreeableness had one of the most reliable relationship with horror fandom, regardless of how it was measured, with horror fans generally being less agreeable than are non-fans. People who liked the specific movies in the study also tended to be less conscientious.

It was expected that horror fans would be less agreeable than non-fans. Agreeable people tend to be cooperative, valuing social harmony (e.g., Vincent & David, 2010). People who like violent movies—or at least who want to project themselves as people who do—often enjoy watching situations in which social harmony has broken down, as the chaos in such films can be the polar opposite of harmony. Agreeable people are optimistic about human nature (Graziano & Eisenberg, 1997). The horror film is predominated by situations in which human nature is at is worst (especially in the case of

a human killer, but victims are often portrayed as giving in to the darker side of human nature as well; see the *Saw* series, e.g., Wan, 2004). Describing oneself as agreeable can be antithetical to harbouring a penchant for disagreeable movies.

The Supernumerary Personality Inventory fared even better in predicting horror fandom. The Machiavellian factor was correlated with explicit horror fandom. Examining individual traits, Seduction was a major predictor, with horror fans being reliably more seductive than non-fans. Fans were also more manipulative, possibly more thrifty, and possibly lower in integrity. The SPI was also one of the few sets of scales that explained variance in implicit measures. Implicit liking ratios correlated with Egotism and (negatively) with Integrity. The ability of the SPI to predict variables that the Big Five could not highlights the importance of searching outside of the Big Five for a complete understanding of personality and its effects (Paunonen & Jackson, 2000).

The pattern with the SPI is not surprising. Machiavellianism and horror both revel in the darker side of human nature. In the Introduction section, I questioned whether self-admitted dark personalities genuinely reacted more positively to dark movies, or if both preferences sprang from a willingness to admit (or affect) a general rebellious image. The pattern of results supports both possibilities. Dark personalities—at least in the areas of Egotism and Integrity—do genuinely react more positively to disturbing imagery.[10] However, self-reported liking was related to a greater number of dark personality traits (all of the ones measured), and was more strongly correlated with them. Thus, while dark personalities do have a mild tendency to react more positively to horror imagery, they

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[10] Another way to frame these results—perhaps a more positive way—is that people *low* in Machiavellian traits tend to find horror disagreeable. Machiavellianism is discussed further as a moderator of implicit reactions in a later section.

have an even stronger tendency to self-report a liking for the genre. Once again, self-presentation may be playing a key role here, though in the case of the SPI measures, it does not tell the whole story.

It is interesting to note that Seductiveness had the highest correlations with explicit fandom (as high as .36, depending on the operationalization of fandom) out of all the personality variables in the study. Perhaps this is because horror films contain several characteristics that appeal to the seductive person. First, they show the dark side of human nature that other Machiavellian types report finding enjoyable. Second, they often contain sexuality, which seductive people in particular are characterized by (Paunonen, 2002). Third, both violence and sex are taboo topics to discuss openly, so self-presentation concerns (or a lack of them) may enhance the probability of endorsing both.

Primary psychopathy was correlated with explicit horror fandom. The same lack of concern for social harmony present in disagreeable people characterizes those high in this measure of psychopathy. Similarly, those high in psychopathy tend to be more manipulative and seductive, as the SPI measured (indeed, psychopathy was strongly correlated with the Machiavellian traits, and negatively with Agreeableness). This relationship, then, is consistent with the other personality correlates. Scoring high in psychopathy also requires some taboo admissions (e.g., agreeing to “I often admire a really clever scam”), as does scoring high in horror fandom (essentially agreeing to admiring really disturbing situations). Thus, some of the relationship may be due to willingness to admit to socially unacceptable desires or behaviours. Again, self-presentation may have been at work here.

Secondary Psychopathy was not correlated with horror fandom. Secondary Psychopathy is concerned with emotional and physiological predecessors of antisocial behaviour (e.g., getting bored easily). While a relationship with explicit horror fandom would not have been surprising, Secondary Psychopathy makes more sense as a predictor of implicit reactions. Indeed, it was one of the few personality correlates of implicit horror liking, indicating that people who are irritable or whose emotions easily fluctuate tended to have more positive immediate reactions to horror imagery.

Note that the scales used in the current study were designed to measure sub-clinical levels of psychopathy. It is unlikely that any participants (horror fans or not) would be considered "psychopaths" in either the clinical or everyday sense of the word. Indeed, the base-rate of agreement with items on the psychopathy scales was quite low (for Primary Psychopathy, the average agreement across all participants on all items was 1.98; below the mid-point of 2.5 on the scale of 1, 2, 3, or 4. For Secondary Psychopathy, average agreement was 2.19). High scores were not an indication of deviance, but were at the upper end of a range in which normal, healthy individuals vary. Participants with these scores are unlikely to end up as inspiration for the horror movies they tend to enjoy.

Past research on sensation seeking and media preferences has been equivocal (Hoffner & Levine, 2005), despite a common-sense connection with emotionally stimulating media. The results of the current study, however, were clear: regardless of operationalization, sensation seeking was moderately correlated with explicit horror enjoyment.

The reasons for sensation seekers seeking out horror are almost self-evident: horror

is defined by arousing strong sensations. Specifically, scary movies attempt to elicit fear in the viewer. It is no surprise that sensation seekers, who tend to agree with such items as "I like to do frightening things," and engage in other excitement-laden activities like risky sex and stressful jobs (Zuckerman, 2008), expose themselves to this fear. However, a relationship with affective reactions to horror imagery was not found. Self-presentation may, once again, be playing a role—affectation of a danger-seeking personality could boost self-reported sensation seeking and horror fandom—but as will be seen shortly, it may be more complex; the reason sensation seekers like emotional movies may have more to do with the timing of emotion than with overall affective reactions.

The typical horror fan. An overall profile of someone who says they like horror movies has emerged. People who say they like scary movies a lot tend to be high in thrill seeking, and thus enjoys intense experiences. They tend to be low in agreeableness, with no particular expectation or desire for social harmony. Finally, they tend to exemplify the Dark Triad of personality traits, being higher in psychopathy, egotism, and Machiavellianism. Of course, any given fan of the genre is unlikely to possess all of these traits, and is not guaranteed to possess any of them. Furthermore, although the results paint a rather negative picture of these people, it must be emphasized that, especially in this study, all are within normal ranges. Even the most extreme fan is unlikely to have a pathologically destructive personality.

Nevertheless, people who explicitly like horror movies do seem to have a tendency toward more negative, antisocial personality traits. Some of this is no doubt due to a genuine relationship. Those with a desire to see the breakdown of human nature may

possess (or come to possess) some of the chaotic side of human nature themselves. However, with a few exceptions, this only holds true for self-reported darkness. There are few clear linear relationships between indirectly measured reactions to horror. This may indicate a role for self-presentation bias; people who want to project an image of darkness may express it in both their personality and their media preferences.[11] [12] However, as will be discussed shortly, implicit reactions may be affected by personality in a less obvious manner. Before discussing this, however, I will turn to a prominent individual difference that played a major role in horror enjoyment: gender.

Gender Differences: Boys Say They Like to be Scared Because Girls Say They Don't

The gender role socialization theory (or, as I prefer, *snuggle theory*) of horror enjoyment, described in the Introduction, posits that males should be motivated to hide any negative emotional reactions to horrific stimuli, whereas females should be motivated to exaggerate such reactions. Assuming that the AMP measures are closer to gut emotional reactions, and that explicit measures of horror fandom are closer to deliberately controlled reactions, this is exactly what was found. Implicit reactions did not differ between males and females; males reacted just as negatively to disturbing

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[11] This speculation is supported by an analysis involving a social desirability measure. A small number of the participants who completed the mass testing study preceding the current study filled out the Balanced Inventory of Desirability Responding (BIDR, version 6, Paulhus, 1991). The Self Deceptive Enhancement (SDE) subscale, with items such as "I never regret my decisions" and "I am fully in control of my own fate", measures the tendency to respond in a socially desirable, rather than honest, manner. People high in this measure exaggerate their positive attributes. Based on data from 34 participants, the SDE scale was not correlated with any implicit measures, but was related with personality measures such as Manipulativeness ($r(34) = -.40$, $p = .02$), Seductiveness ($r(34) = -.47$, $p = .01$), Integrity ($r(34) = .53$, $p < .01$), Primary Psychopathy ($r(34) = -.50$, $p < .01$), Dangerous Thrill Seeking ($r(34) = -.42$, $p = .01$), Impulsive Thrill Seeking ($r(34) = -.43$, $p = .01$), Conscientiousness ($r(34) = .47$, $p = .01$), and Agreeableness ($r(34) = .42$, $p = .01$). This analysis was unplanned and based on a small number of participants, but given that many of these are the same measures that predicted explicit horror fandom, it lends support to the idea that self-presentation plays a significant role in an admitted preference for darkness.

[12] The idea of using preferences or self-reported liking in order to display a certain image to other people is also known as *signaling*. See Bloom (2010).

imagery as did females. However, males self-reported liking horror films more than did females. Looked at another way, the discrepancy between implicit and explicit reactions was flipped for males compared to females. Males reported liking movies more than would be expected given their implicit reactions, and females reported liking movies less than would be expected given their implicit reactions. Note that these results, and the conclusions below, must be taken with a grain of salt, given the small number of males in the gender analyses.

The snuggle theory was tentatively supported. Deliberate attitudes differed from automatic attitudes in the expected directions. However, it must again be noted that implicit reactions should not be considered "more real" than explicit reports, so to describe these results as evidence of falsifying or faking explicit attitudes would not be accurate. Rather, the results indicate that asking "do males enjoy horror movies more than females?" requires a more complicated answer than "yes" or "no." They do in some ways, but not in others. In the sense of deliberately expressing preferences, based on cogitating about the genre (or specific movies) and formulating a response based on memory, males tend to respond more positively than do females. In the sense of having an immediate affective reaction to the imagery in such films, there was no evidence of males responding differently from females. Thus, although they have the same initial negative reaction to the imagery in a horror film, when given time to deliberate, males report a more positive overall reaction to the films than do females.

With other individual differences' relationships with explicit horror fandom, above, I proposed that social desirability bias played a role. Both the measured personality traits

and a liking for horror films could spring from the desire to project a "rebel" image. However, there is no room for social desirability to affect gender, and although gender *was* self-reported, it is doubtful that any participants faked such an objectively verifiable response. The social desirability bias here, if it plays a role, springs from the social pressures as described by the gender role socialization theory (and verified by tangible benefits to falling in line with them, as in Zillmann et al.'s, 1986, study where confederates acting appropriately for their gender were better liked). Instead of a lack of concern for social norms affecting both measures, here, there were different social norms depending on gender, which were reflected in differential responses concerning explicit media preferences.

In Brosius and Hartmann's (1988) survey, adolescent males denied being motivated by a desire to demonstrate courage, to the point of this desire having an inverse relationship with horror consumption. In the Introduction, I criticized Zillmann and Weaver's (1996) interpretation of this failure to confirm the snuggle theory (at best) as evidence *for* the snuggle theory.

However, they may have been vindicated by the current results. With the use of implicit measures, it is clear that self-report measures do, in fact, differ from implicit reactions, allowing room for the covering up of emotions that Zillmann and Weaver (1996) propose. As with attitudes, it is conceivable that motivations may be implicit. The gender role socialization theory predicts that males desire to express a *genuine* interest in horror movies, resulting from the motivation of enjoying them, rather than a feigned interest, resulting from the motivation to appear brave. Since Brosius and Hartmann

(1988) used self-report measures of motivation, it is no surprise that they reflected this desire (and perhaps even overcompensation among the most avid horror consumers, who denied the bravery motivation more than anyone else). Perhaps if an implicit test of motivation for appearing brave were developed, it would reveal a higher motivation among horror fans. This would be a sort of double dissociation where, implicitly, fans react just as negatively to horror movies as do non-fans, but have a higher need to appear brave. Explicitly, they report reacting more positively to horror movies than do non-fans, and have no particular need to appear brave.

Regardless of underlying theoretical mechanisms, it is clear that males differ from females in their endorsement of horror. It is no longer gladiatorial combat that brings the sexes together by dividing their opinions, but horror films may be the modern equivalent.

Affective Reactions to Horror: Fandom, Content, Timing, and Personality

The effects of fandom and timing on reactions to horror. Examining reactions to horror movies alone, it was not surprising (given the lack of correlation between fandom and liking) that people categorized as fans did not react differently from people categorized as non-fans. However, it was expected that fans and non-fans would at least differ in their reaction to a delay between the presentation of the horror stimulus and the assessing of their implicit reaction. Reasoning from intensity-based models of horror enjoyment, it was predicted that fans would experience arousal as positive, thus having the best reaction immediately after the shocking imagery, then a less positive reaction after a delay. Non-fans, however, would experience the arousal as negative, having the worst reaction immediately after the shocking imagery, and a more positive reaction after

a delay. In reality, there was no such interaction; rather, all participants reacted as non-fans were predicted to: reactions were more positive after a delay than before a delay. Everybody experienced the shocking imagery as negative, and this negativity dissipated over time.

Reasoning from aftermath-based models, it was predicted that both fans and non-fans would react in this way, but the trend would be stronger for fans (that is, they would experience more relief over time). In reality, fans and non-fans experienced an equal amount of relief after an initial negative reaction to the imagery. Perhaps the flaw in this reasoning is that both aftermath-based and intensity-based theories assumed that horror fans would have a more positive implicit reaction to horror imagery than would non-fans, overall. This turned out to be false. Self-described horror fans did not react more positively to horror, so the theories attempting to explain *why* they should react more positively on an emotional level were irrelevant. To explain why self-described horror fans differ from self-described non-fans, something more than implicit emotional reactions must be examined.

This does not, however, imply that implicit measures do not correspond to genuine emotional reactions. Implicit reactions were far more useful when ignoring fandom and examining the difference between horror stimuli and neutral stimuli, and how timing affected each.

The effects of content and delay on reactions to horror. Implicit reactions differed depending on both content and timing. As would be expected, there were less pleasant reactions to horror imagery than to neutral imagery. This further proves the

validity of the AMP when measuring attitudes that vary independently from related explicit measures. Delay did not have an overall effect: ratings after a short delay were no different than ratings after a longer delay.

One of the most interesting findings in the current study was that delay did have a different effect depending on the content of the stimulus. After neutral imagery, a delay caused ratings to drop off, becoming less positive. After horror imagery, a delay caused ratings to increase in positivity.

The different effects of delay depending on content support aftermath-based models more than intensity-based models. Intensity-based models would predict that anyone who enjoys horror movies would react most positively immediately after horrific imagery, when arousal is highest. In fact, the opposite was found. Given that most of the participants had watched horror movies[13] (regardless of whether they admit to enjoying them or not), this opposite result goes some way toward falsifying intensity-based models. Another nail in the model's coffin—at least as a general model of horror enjoyment (see below for exceptions depending on personality)—is the result for neutral imagery. The neutral imagery here was far from arousing; many of the images were of inanimate objects, such as cars or houses. Intensity-based models would not predict a highly positive immediate reaction to them, followed by a drop-off over time.

An aftermath-based model is more successful in explaining this pattern. The longer horrific imagery had been absent, the more positive the emotional reaction was. This

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[13] Even when just considering the movies included in the study, only 10% of participants reported not having seen any of them. Interestingly, 21% claim to never watch movies in the horror genre, providing further evidence that there is, whether deliberate or not, deception going on when vague questions about the genre are asked.

defines relief. The opposite pattern for neutral imagery seems, on the surface, more puzzling. The lessening of positive emotion over time implies that the neutral imagery was actually seen as positive, with a happy initial reaction followed by a return to a neutral baseline over time. However, an aftermath-based model can explain this as well. The model predicts that excitation transfer can occur, such that the arousal from the horrific imagery can carry over to subsequent experiences, and be flipped in valence. The repeated measures nature of the current study meant that neutral imagery was always seen in close proximity to horrific imagery. The arousal from the horror may have, in accordance with aftermath-based models, flipped otherwise neutral imagery into a positive experience. For example, an otherwise affectively neutral picture of a car may have induced a sense of relief after seeing one or several negatively arousing scenes of violence.

This can explain the appeal of horror in a more natural setting. During the film itself, even mundane moments of relief between scenes of terror can be experienced as positive. A happy ending can be even happier due to the preceding horror. I would go further and propose that even after the movie ends, activities such as interacting with friends could be enhanced by the relief of, minimally, the screen no longer inducing terror. This is speculation at the moment; the very short time differences used in the current study are suggestive of, but not definitive evidence of, these relief effects on a longer time scale.

An alternative explanation is that the positivity of the neutral stimuli in this experiment was due to a response-mapping effect rather than an excitation-transfer effect.

Scherer and Lambert (2009) found results similar to those presented here: neutral stimuli in the AMP were rated positively when presented in the context of negative stimuli. They proposed that this occurred because participants "used up" negative responses on the targets preceded by unambiguously negative primes, so that the only other available response, positive, was used after the less extreme primes. They use the example of a mouse being rated as "large" when the "small" option has already been used on single-cell organisms. This explanation proposes that responses are contingent on the response options available, and focuses less on underlying emotions. Further research is needed to determine if this more cognitive approach is a better explanation for contrast effects in implicit responses than the more affective aftermath model I have proposed.

Before declaring intensity-based models dead, I must turn to more complex analyses involving personality. As will be seen shortly, the relief pattern above may only have been present in half of the participants. While still valid for that half, there are other people who fail to conform to aftermath models, and in fact fall in line with an intensity-based model.

Personality moderators of the effects of content and delay on implicit reactions. The effect of delay depending on content was different for people high in Agreeableness than it was for people low in Agreeableness (Figure 3 makes this complex interaction easier to grasp). The overall pattern described in the section above was due primarily to people who were highly agreeable. That is, agreeable people experienced relief when horrific imagery had been gone for longer, and a drop off in positive affect when neutral imagery had been gone for longer. Disagreeable people, however, did not

show this pattern; they actually had a slight tendency to respond to a delay in the opposite direction as agreeable people.

In other words, agreeable people conformed to an aftermath-based model. Disagreeable people showed a slight tendency toward conforming to an intensity-based model (with positive affect higher immediately after horror stimuli than after a delay), but it is more accurate to propose that they simply failed to experience aftermath effects. Disagreeable people reacted to horror imagery more negatively than to neutral imagery (just like everybody else, on average), but this negative affect did not become more positive over time as it did for agreeable people.

A similar pattern was found for sensation seeking. Generally, low sensation seekers were responsible for the overall interaction; their ratings for horror stimuli increased after a delay, and their ratings for neutral stimuli decreased after a delay. People high in sensation seeking were not affected by a delay. This pattern held true for impulsive thrill seeking, but was especially strong for calculated thrill seeking.

Although no specific predictions were made about personality moderators, this does seem counterintuitive. If disagreeable people and sensation seekers tend to like horror movies, as they claim to, then they should be *more* susceptible to the relief effects. The opposite was found. Perhaps it is not relief, then, that explains why people high in sensation seeking or low in agreeableness explicitly enjoy horror films, but something closer to the predictions of intensity-based models. The ability of sensation seeking and disagreeable people to hold onto emotions—good or bad—for longer than other people could contribute to their increased liking for horror. However, there are, of course, both

fans and non-fans among people both low and high in each variable. To the extent that they are related, explicit reactions may spring from different implicit antecedents depending on personality.

These findings also contribute to knowledge about sensation seeking and agreeableness themselves. These traits have measurable emotional consequences, even when examined on an implicit level. The emotion of high sensation seekers and disagreeable people was less affected by timing, whereas for low sensation seekers and agreeable people, emotion changed even after a very short delay.

For sensation seeking, these results are consistent with some past research on its relation with affect. Zuckerman (1994) proposed that the brains of high sensation seekers are activated in response to intense stimuli, whereas the brains of low sensation seekers inhibit arousal. Here, high sensation seekers had an immediate unpleasant reaction to the intense horror stimuli, and this reaction remained activated over time. Low sensation seekers, too, had an immediate unpleasant reaction, but even after a short delay, their reaction was already inhibited, returning to baseline. If my speculation that neutral stimuli were seen as positive is correct, then the same principal applies to them, though in the opposite direction.

The results are also consistent with Ridgeway et al.'s (1984) finding that only low sensation seekers had malleable reactions to startling sounds. Both Ridgeway's study and the current study used a pleasure-displeasure rating scale (though theirs was closer to a traditional self-report than was the implicit scale used here), and both found that high sensation seekers maintained a steady pleasure rating over time, while low sensation

seekers changed over time.

Similarly, Litle (1986) found that only low sensation seekers experienced an increase in general arousal near the end of a horror movie, when the main villain was killed. Again, high sensation seekers were the ones who failed to react emotionally. Zuckerman's (1994) speculation that this effect was due to high sensation seekers habituating to horrific stimuli seems even more inadequate in light of the current results. If they habituated while low sensation seekers did not, a main effect of sensation seeking would have been expected (with only high sensation seekers experiencing more neutral reactions over the course of the task); no such effect was found. Furthermore, the killing off of the film's villain could be interpreted as an extreme way to remove a threatening stimulus from the screen. The current study shows that removal of threatening stimuli leads to more positive affect. I believe this relief effect in low sensation seekers better explains the reactions of participants in Litle's study, rather than a habituation effect in high sensation seekers. High sensation seekers appear to simply have less malleability in their reactions over time and repeated exposures. There is no need to invoke habituation to explain these results.

Ridgeway et al.'s (1984) study used a self-report measure of affect, whereas Litle's (1986) directly measured arousal through skin conductance. Perhaps the current implicit measure could be considered something in between the two, and thus showed effects comparable to both studies (though this does not explain why Ridgeway et al. failed to find differences when they used physiological and arousal measures).

The Agreeableness results are similarly consistent with past research. Robinson

(2007) specifically proposed that of the Big Five, Agreeableness (and only Agreeableness) should affect reactions to hostile stimuli; agreeable people, compared to disagreeable people, should be better able to control activated hostile thoughts, by recruiting positive thoughts. Negative hostile thoughts were surely activated by the horror primes in the current study. Agreeable people had more extreme negative thoughts in response to horror primes than disagreeable people, and more importantly, agreeable people were able to, within a matter of milliseconds, bounce back to a more positive reaction. This lends support to Robinson's assertion that Agreeableness is related to the self-regulation of negative thoughts. However, participants in the current study also showed a reverse pattern for positive stimuli. Agreeable people showed increasingly negative implicit reactions after neutral (though likely seen as positive) stimuli. Perhaps the emotional regulation of agreeable people works both ways, such that agreeable people are prone to, after reacting strongly to stimuli, controlling the valence of their thoughts to return to a neutral baseline from either direction.

Overall, the current results support the proposition that low sensation seekers and agreeable people have malleable affective reactions. Sensation seeking and agreeableness affect the speed with which they regulate their affect after being exposed to a provocative stimulus, returning to a neutral baseline. To the extent that they later report enjoying the stimulus, they may be enjoying it for different reasons: malleable people enjoy the sense of relief, while less malleable people enjoy the maintained intensity.

The effects of Machiavellianism and familiarity on reactions to horror content. Personality also affected the overall impact of content, regardless of timing. The negative

effect of horror stimuli on implicit reactions was nearly twice as strong for people low in Machiavellianism as it was for people high in Machiavellianism. This effect was particularly strong for the Egotism subscale. Similarly, the aversive effect of horror stimuli was strongest for the people who had seen the fewest movies in the study. In other words, horror had the strongest effect on implicit reactions for non-Machiavellians and people unfamiliar with the stimuli.

Machiavellians self-reported enjoying horror films more than did non-Machiavellians, and unlike with many other personality traits, this liking corresponded with a more positive implicit reaction, especially in the area of Egotism. This is not to say that the self-presentation concerns proposed earlier do not play a role in their self-reported liking, but there is at least some basis for a genuine emotional reaction as well. The selfishness that characterizes most of the Machiavellian traits, and Egotism in particular, may explain this. Having less of an emotional reaction to violent imagery—which often depicts other people in distress—would certainly make self-serving behaviour easier to endorse. The concern for others that non-Machiavellians endorse may be reflected in their negative affective reactions to seeing others suffer.

It must again be noted that even the most Machiavellian participants still reacted more negatively to horror stimuli than to control stimuli. The slight tendency to react less strongly is not indicative of pathologically antisocial personalities among the participants, nor among fans of the horror genre in general. It also bears repeating that Machiavellianism was the only included personality variable to moderate the effect of stimulus content, further highlighting the importance of searching beyond the Big Five

for personality determinants of behaviour.

The same pattern was found for familiarity with the specific movies that the stimuli were taken from. People who had seen the fewest movies were more affected by horror stimuli, relative to control stimuli, than were people who had seen the most movies. This makes intuitive sense. Surely much of the shock of horror stimuli is due to their unexpected and novel nature. For people who had seen many of the movies, they were probably able to identify them early in the task, and anticipate the iconic frightening imagery that was forthcoming. This anticipation must have lessened the aversive impact.

It could be proposed that more experience with disturbing media in general may have made these participants desensitized to the disturbing stimuli. However, the number of *specific* movies seen was the only variable that moderated the effect of horror. Liking of the movies, liking of the horror genre in general, and how often horror movies in general were watched did not affect implicit reactions. Thus, the results are more consistent with a novelty effect of the specific stimuli, rather than a general desensitization to the type of imagery.

Why do people like horror? Conclusions. When this section started by examining the overall effects of content and delay on implicit liking, a relief effect seemed apparent. However, deeper digging was necessary to discover *who* conformed to this pattern and who did not. Surprisingly, it was not stated fandom of the genre that determined this, but rather more deep-seated personality traits. The truth is this: different people react to terror in different ways, and to the extent that they willingly expose themselves to such terror, they do it for different reasons. A single theory cannot explain how all people react to

disturbing media.

Specifically, people high in sensation seeking and low in agreeableness tended to hold onto affective reactions longest. This is closer to an intensity effect than to the relief effect of the overall sample. Furthermore, these were the people who tended to self-report enjoying scary media the most. Whereas both aftermath effects and intensity effects can occur, intensity (or at least lack of relief) may be a more efficient route between positive implicit reactions and self-reported enjoyment. People who experience relief—perhaps because of a better ability to regulate their emotions—may enjoy horror too, but it is slightly less likely.

This still does not explain *how* predominantly negative implicit reactions, whether they dissipate over time or not, are flipped into positive explicit reactions. However, given the lack of a simple correlation between implicit and explicit attitudes, and the personality correlates and gender differences discussed in the previous section, I suspect self-presentation plays a large role. Some people may be more *willing* to interpret their relief or excitement as enjoyment.

Emotions are evidently complex experiences, involving both automatic and controlled processes. The next section delves further into what the current study can contribute to understanding emotion.

Theoretical Issues

Horror and emotion. Two models of emotion were described in the Introduction. The traditional modal model posits that emotions are triggered automatically, with conscious regulation occurring after the fact. At an extreme, this implies that all people

immediately and automatically engage in a pre-defined emotional script in response to a specific type of stimulus. In light of the current results, this model is not defendable. Even on very short time scales after a stimulus, different people reacted differently to the same stimuli. For example, in response to frightening stimuli, low sensation seekers had a negative affective response that dissipated over time, while high sensation seekers maintained their negative affective response. Different people have different emotional scripts.

The constraint satisfaction model that Barrett et al. (2007) prefer is a more tenable explanation of the data. It is clear that bottom-up processes, which originate in the stimulus, can be constrained by past experience (e.g., the emotional impact of frightening stimuli was dampened by prior experience with the stimuli) and personality (e.g., the timing of emotional scripts was affected by sensation seeking). Top down processes, which originate in the perceiver, also play a role; I propose that self-presentation concerns, such as a male wishing to appear brave in front of a female, are top-down processes that plays a particularly strong role as initial emotions lead to explicitly stated attitudes.

Again, I do not mean to imply that these attitudes are more or less "real" than the initial emotions. Whatever affective reactions trickle through the filters of past experience and personality (which themselves can give rise to relief or enhanced intensity) may be genuinely flipped around by top-down processes, with real affective consequences. The high sensation seeker who sees a movie with a date may genuinely misattribute his racing heart to the experience of spending time with her, and therefore genuinely be

experiencing positive emotion, leading to a report of enjoying the movie. His date, a low sensation seeker, may be so relieved when the movie is over, and so happy to have fulfilled her gender role as a frightened female, that she, too, reports a positive experience, albeit arriving there from a different affective trajectory than her date.

Emotions—and especially the *consequences* of emotions—are not automatic responses to stimuli, but complex experiences made up of both implicit and explicit building blocks.

Validation of the APE model of implicit attitudes. The AMP was designed to tap into the associative processes of Gawronski and Bodenhausen's (2006a) Associative-Propositional Evaluation (APE) model of attitudes. The model proposes that patterns of association, activated in response to an attitude object, are the basis of affective reactions. In the current study, affective reactions to horrific stimuli were almost always negative (in comparison to control stimuli), as would be expected. After all, associations with imagery such as dangerous antagonists and terrified victims are surely negative, even for the most avid fan of violent movies. If there were any groups of participants that had positive associations, either the APE model or the validity of the AMP as a measure of associational processes would be in question. Fortunately (for the model and for humanity), this was not the case.

Propositional processes in the APE model are the basis for endorsed evaluative judgements, such as the self-report measures in the current study. Although associational processes can be translated into endorsed propositions, the APE model lays out conditions in which they do not. An affective reaction can be dismissed as a valid basis

for assigning a truth value to a proposition. In fictional horror films, the idea of truth value is crucial. For example, the strong association between a bloody knife and danger is bound to lead to a negative affective reaction in response to a bloody knife. However, the additional knowledge that the knife is a movie prop, and that images on a screen are unable to inflict danger, negates the truth value of this association. Thus, in the context of watching a movie, an automatic association between the bloody knife and danger leads to a negative affective reaction, but the propositional processes that deny the truth of the association may lead to rejection of the affective reaction as a basis for an endorsed explicit attitude toward the movie.

Additional endorsed propositions (e.g., I like the excitement of simulated danger; I need to appear brave in front of my date) may even lead to explicit attitudes that do accept the association, but flip its valence, especially among people who are self-described horror fans. That is, negative associations may be used as the basis for positive propositions.

There are a variety of reasons, then, to ignore or flip the valence of associational processes as a basis for endorsed attitudes, especially in the context of horror films. This explains the lack of a correlation between implicit reactions and explicit attitudes in the current study.

Prior experience with attitude objects is also accounted for in the APE model. It proposes that new experiences do not override past associations, but do add new associations that could influence affective reactions. In the present study, participants who had prior experience with the stimuli (i.e., had seen many of the movies) displayed

less negative affective reactions than those who did not have as much experience. If the default associations with the horror stimuli were primarily negative (e.g., danger, death, suffering), then adding additional associations from having previously seen the stimuli in a movie context (e.g., friends, laughter, popcorn) would indeed make affective reactions less negative.

Although the APE model does not specifically deal with personality or other individual differences, it is certainly consistent with a relationship between personality and both implicit and explicit processes. As others have pointed out (Oliver & Krakowiak, 2009; Bushman, 1995), there are individual differences in cognitive networks (resulting from genetic differences, experience, or an interaction between the two), and thus differences in what associations will be primed by a type of stimulus. Individual preferences and habits can also affect the contexts in which specific attitude objects have been encountered in the past, affecting the formation of associations as described above. Such differences can also affect proclivities to accept or reject existing associations. Furthermore, individual differences can influence associational or propositional processes to differing degrees, or even in opposite directions, so they need not be consistent with each other (and indeed, in this case, they often were not).

Based on some of the current results, I propose that the relationship between personality and attitudes goes even further. It was apparent that individual differences were related not only to raw implicit and explicit attitudes themselves (though primarily explicit), but with the time-scale of affective reactions, and the relationship *between* implicit and explicit attitudes. For example, high sensation seekers demonstrated negative

associations with horror stimuli (just like everybody else), but their affective reaction did not dissipate over time as fast as it did for low sensation seekers. Also, high sensation seekers tended to have explicit reactions that were more positive than their implicit reactions, compared to other people. Perhaps, reasoning from the APE model, this is because they were more willing to endorse their affective reactions as a basis for their self-reported attitudes than others.

In sum, the APE model has stood up to scrutiny in this previously unexplored area of implicit attitude research. All findings were consistent with the existing suppositions of the model, and hint at extensions to the model that could take into account personality differences and the timing of affective reactions. Furthermore, it provides a useful framework for understanding the variety of results obtained. The complex interplay between implicit and explicit processes in the current study can be explained by the associational / propositional distinction better than other theories (e.g., theories that insist implicit reactions are culturally based, which would take more steps to explain personality differences). There is much work to be done, however, in order to fully understand implicit attitudes, explicit attitudes, and the relationship between them. The next section specifies some limitations of the current research, and some potential directions for future research.

Limitations and Future Directions

On null effects. I would like to address some possible objections to the methodology and results of this experiment that I do not believe are genuine problems. First, it could be argued that the lack of a correlation between the implicit measures and

most other measures was due to the invalidity of the AMP as a measure of anything meaningful (i.e., it was essentially random data). However, not only does the AMP already have a solid string of past studies demonstrating its validity (e.g., Payne et al., 2010), but it did reveal several meaningful relationships in the current study. Most of these relationships required looking beyond simple correlations, highlighting the importance of considering additional factors such as personality moderators in implicit attitude research. Furthermore, the null correlations between implicit and explicit attitudes were expected based on many other studies that have not found a relationship between the two, especially with sensitive topics (see Greenwald, Poehlman, Uhlmann, & Banaji, 2009). The statistical power of the current study was also high enough that a moderately strong effect would have likely been detected if it were there. There is a good chance that the null correlations were due to a genuine lack of a relationship. A possible exception occurs with effects involving gender and the Big Five, which had a smaller sample size (62) than the bulk of the effects. In those analyses, it must be acknowledged that null effects could have been due to a lack of experimental power.

A second—and more valid—concern is that the stimuli rated implicitly were not directly comparable to the stimuli rated explicitly. It is true that the AMP assessed reactions to *imagery* from horror films, while the questionnaires asked about either the films themselves or the horror genre in general. It could be argued that this mismatch is responsible for the null results. However, movie posters were included as stimuli in the AMP, as the closest implicit analogue to asking about movies. These failed to yield any meaningful results aside from acting as weak horror stimuli (and thus were excluded

from any substantial discussion). More importantly, the question under examination was about the intuitive (though at least partially false) assumption that stated attitudes about movies result directly from experiences during the movie. Shifts in affective reactions during the defining visual moments of horror films (i.e., the horror), measured by the AMP, were a way of assessing these reactions and comparing them to self-reported attitudes toward the films and the genre. Thus the pattern of effects, and lack of effects, provided meaningful information about real-world attitudes.

A third concern is that the neutral images were not truly neutral. Images from the same movies as the horror imagery were a departure from the neutral imagery used in past studies (such as a grey rectangle or photos of everyday objects). However, I did not want to confound affective content with the type of content; a scary screenshot from a movie and a photo of a fruit basket differ in more than just their emotional impact. It would have been impossible to tell if any effects were due to the affective impact of the imagery or to the jarring transition between stimulus types. Also, as discussed above, the hypotheses under investigation concerned emotional shifts during a movie. Other types of neutral stimuli would be a less direct test of these hypotheses. In any case, the difference in affective reactions between the neutral and horror conditions was one of the most robust of the results, so the manipulation had the expected effect. Future research including a "true neutral" condition would be interesting, but I believe it would be less meaningful and less interpretable.

In contrast to concerns about null effects, it is possible that the large number of analyses allowed for chance deviations to be misinterpreted as genuine effects. No

correction (such as the Bonferroni) was performed for multiple comparisons. While capitalization on chance may have played a role in some significant effects, as it does in any study, a correction would have been inappropriate here. The current study could be properly interpreted as a series of studies exploring the same topic, rather than one massive set of variables, so a study-wide correction would make little sense. Furthermore, each analysis was pre-planned based on past research, limiting the opportunity for inflation of the number of comparisons and thus the number of chance dips below the alpha level. Most importantly, null effects were expected for some comparisons. Any advantage gained from being conservative with significant effects would have been lost in being liberal with null effects.

Room for improvement. One important limitation of the current research is that the implicit measure presented only still images of horror imagery. While horrific imagery is the defining characteristic of a horror film, other features such as directing style, sound effects, and music play a role in their effectiveness as well. More complex properties such as character development, pacing, and plot may be even more important. The current study's conclusions are limited to visual scares, but future research may illuminate how reactions to horror films (and films in general) are affected by other characteristics, either in isolation or in combination.

The within-subjects design of the experimentally manipulated variables also put some limits on what could be learned. The pattern of results for "neutral" stimuli was consistent with these stimuli actually being seen as positive. Above, I speculated that this may have been due to the same misattribution processes that underlie the AMP and

aftermath-based models of horror enjoyment. The neutral stimuli received the leftover emotional impact of the frightening stimuli, but flipped in valence. Because each participant saw both types of stimuli, it is impossible (or at least difficult) to know how they would have reacted to one content type without the presence of the other. An interesting follow-up would be to study these conditions with a between-subjects design, and/or control the order of conditions (versus randomizing it), to specifically test these speculations. The same principle applies to the delay conditions: would long delays have had an effect if they were not surrounded by short delays?

The reliability of the AMP was lower than it has been in past research. Past studies (e.g., Payne, 2005) have found substantially higher reliability using university student samples. It is possible that the shocking subject matter of some of the stimuli reduced participants' ability to concentrate on the task. Perhaps more likely, implicit attitudes towards horrific stimuli may be fundamentally more multifaceted and less consistent than attitudes towards simpler stimuli. Evidence presented here has revealed that reactions to horror are quite complicated indeed, and this complexity may apply even when confined to implicit reactions, reducing reliability.

The reliability of long AMP trials was slightly lower than the reliability of short trials. This difference opens the possibility that differences between long and short trials were due to regression to random responding rather than genuine differences in attitude. This could indeed explain the overall Content by Delay pattern. However, it less easily explains the moderating role of personality in the Content / Delay interaction. For example, there was no a priori reason to suspect that people low in thrill seeking would

respond less reliably after a delay than people high in thrill seeking. The explanation above, invoking relief and sustained affect, is thus more plausible. Nonetheless, replication of the same or similar effects using different measures with varying reliability would strengthen this interpretation over one that involves methodological artifacts.

There were only two delay conditions included: short (100 ms) and long (1000 ms). Even this small difference proved to cause meaningful effects, especially in relation to individual differences. However, it would be informative to include more delay conditions over longer time periods in order to reveal more detail about changes in affect over time, and the duration of affect. Some of the proposed explanations for horror enjoyment assume long-term delay effects (e.g., heightened affect after leaving the theatre); to evaluate these, it would be fruitful to test effects on a time scale of minutes rather than milliseconds, though this would require a technique other than the AMP.

The AMP is also limited in that it only measures one bipolar dimension: pleasant or unpleasant. This is exactly what was needed in the current study, and has proven to be a dimension predictive of many behaviours and attitudes (e.g., election behaviour; Payne et al., 2010). Some theories of emotion even argue that good/bad is the only true affective reaction, with more complex feelings developing due to cognitive elaborations that take place after the fact (Barrett et al., 2007). Examining these media effects with other implicit measures, such as the Implicit Association Test (IAT), however, could reveal additional information about the effects discovered here. It would be particularly interesting to examine implicit associations between violent imagery and categories other than positive and negative, such as self / not self, or male / female.

One of the most interesting studies of affect during movies was Andrade and Cohen's (2007) study in which fear and happiness were *both* rated simultaneously during a movie. This more nuanced view of affect could prove useful in understanding reactions to unpleasant media and other seemingly paradoxical preferences, especially if there were a way to obtain affect ratings implicitly rather than using self-report. Perhaps a more complex version of the IAT could accomplish this.

Future shock: New research directions. The current study yielded some strong results that provided some fascinating information, but much of it was necessarily exploratory. After the success of using some new techniques to explore this territory, the door has been opened for a plethora of possible extensions. I will identify a few new questions that have been brought up, and possible ways to answer them.

A gap between implicit and explicit attitudes has been confirmed, but further research could identify what, exactly, is going on in that gap. Some recent research has focused on meta-emotions: evaluative thoughts and feelings about emotions. Bartsch et al. (2010) propose that meta-emotions motivate individuals to maintain or change their primary affective reactions. Meta-emotions can be positive in valence even as the primary emotions they change are negative. This solves the apparent conflict between unpleasant media and the assumption that people are hedonistic. Bartsch et al. asked participants coming out of emotional movies about both their emotions, and how they felt about their emotions (e.g., "It was a pleasure to experience these feelings"). They found that people high in Need for Affect (conceptually similar, though not equivalent to, sensation seeking) experienced more intense emotions in response to movies, and also perceived

these emotions to be more enjoyable. However, the researchers exclusively used post-hoc self-reports of emotion. The use of implicit measures could more accurately examine primary emotions, how they are flipped around by meta-emotions, and the role of personality in doing so.

Individual differences related to, but not equivalent to, the variables included here could be studied in order to confirm the patterns found. For example, the above-mentioned construct of Need for Affect would be expected to be similar to sensation seeking in how it interacts with other variables. A measure of sadism would be expected to fill a similar role as Machiavellianism.

Other variables could also be experimentally manipulated in order to shed light on media effects, and more general theories of emotion and implicit attitudes. Andrade and Cohen (2007) demonstrated that horror enjoyment is heavily dependent on contextual variables. Controlling emotional detachment (as in Andrade & Cohen's study) could further explain under which conditions a person will gain enjoyment from fright, even on an implicit level. A manipulation of cognitive elaboration (e.g., by having participants perform a demanding cognitive task after or during exposure to horror) could test the degree to which cognition plays a role in emotion, further distinguishing the modal model of emotion from more complex theories.

It is reasonable to assume that, except in extreme cases, even the most ardent fans of movie horror would gain no pleasure from real-world horror. However, would they have *less* of a negative reaction than non-fans, due to desensitization? Or a stronger reaction, because enhanced intensity is what was responsible for their fandom? Future

research could include a "reality" condition, such that the same frightening stimuli are described as either scenes from a horror film or scenes from a real-life documentary. I suspect that, at least for some people, there would be opposite reactions (explicit, but also implicit) to the same stimuli depending on the context in which they are encountered. This would further boost confidence in the prominent role of context in the APE model of implicit attitudes.

The APE model also posits that people may or may not use their affective reactions as a basis for propositional judgments. Are there individual differences in the tendency to rely on affective reactions? In the current study, sensation seeking, seductiveness, and motivation for viewing horror correlated with the gap between implicit and explicit reactions. Considering this gap as its own individual difference could have important implications for understanding the formation and manipulation of attitudes.

The issues brought up by the current research could also be studied at a deeper level by examining the brain regions that regulate emotion. Barrett et al. (2007) specify regions that they believe are responsible for certain aspects of emotional reactions. For example, the hippocampus is involved in suppressing automatic affective reactions. Would this region be more active when reacting to stimuli in which explicit reactions diverge radically from implicit reactions, versus stimuli toward which both types of reaction are consistent? Or for people who tend to suppress emotions (e.g., agreeable people)? This could be studied directly with brain imaging, or indirectly through further task-based measures derived from consideration of brain structure.

The behavioural implications of attitudes are also ripe for exploration. Previous

research (e.g., Asendorpf, Banse, & Mucke, 2002; Friese, Hofman, & Wanke, 2008) has suggested that explicit attitude measures predict controlled behaviour, while implicit attitude measures predict spontaneous behaviour, or behaviour while working with limited cognitive resources. Given that implicit reactions to horrific imagery were almost universally negative, it could be argued that willingly exposing oneself to this imagery is almost always a reasoned, explicit choice. Manipulating time or cognitive resources while making choices about such media could further support these ideas and explain seemingly paradoxical behaviours.

Finally, it is unlikely that the current findings apply only to the specific topic of horror movies. As mentioned earlier, there are many behaviours that are sought out despite presumed negative affective reactions (or even negative consequences). One obvious example is sad movies. Would the pattern of implicit reactions and personality correlates found for fright-inducing movies also hold true for sorrow-inducing movies? I suspect that similar patterns would be present, though moderated by different variables. For example, perhaps neuroticism would have the same moderating effect on implicit reactions to sad movies as agreeableness did on scary movies. Gender differences would also be fascinating to explore here. The same desire to withhold and exaggerate emotional reactions for males and females, respectively, may be present in both types of movies. However, whereas males tend to seek out and enjoy horror movies, it is females who tend to seek out and report enjoyment of sad movies (Oliver, 1993). Studying sad movies could be an opportunity to observe self-presentation and cultural factors causing males and females to cross over to opposite sides of the implicit/explicit divide,

compared with horror movies.

However, movies are only one form of stimulation that people seek out, and are perhaps only an indirect analogue for real-life thrills. The same results found here may apply to these other behaviours, and future research would do well to specifically examine their generalizability. Other stimuli that fall into the same basic category of horror films (i.e., that are actively sought out and explicitly enjoyed despite probable negative implicit reactions) may include: riding roller-coasters, sadomasochism, getting multiple tattoos or piercings (perhaps becoming addicted to it; Luker, 2001), suspension (intentionally hanging one's body from hooks pierced through the skin), dangerous sports, eating extremely spicy foods, and "polar bear dips" (swimming naked in extremely cold water). The same principles may apply to serious problems, such as risky sex, cutting, or other forms of self-injury. Even putting oneself in danger for seemingly good reasons, such as joining the military, or becoming a police officer (or for less good reasons, like looting and rioting[14]), may rely on some of the same processes described here.

Especially when it comes to these serious issues, understanding who engages in these behaviours for what reasons is not only interesting, but can have some practical applications. With the caveat that more research is needed before putting ideas into practice, some of these applications will be discussed next.

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[14] At the time of writing this section (late June of 2010), protests against the 2010 G20 summit in Toronto have turned violent, with smashed windows, burned cars, and accusations of police brutality. I have no doubt that some of the violence from both protestors and police officers stems from the dark thrill of violence, rather than any explicitly stated political or peacekeeping goals.

Practical Applications

The most obvious application of this study is in the entertainment industry. Both marketing of films and films themselves could benefit from the information gained here. For marketing, the most relevant results are the personality correlates of explicit horror fandom. It is likely that explicit attitudes dictate decisions to pay for a movie, and marketers could benefit from targeting advertising at the types of personalities that tend to enjoy the advertised movie. For example, Donohew, Lorch, and Palmgreen (1991) tested the effects of video messages on high and low sensation seekers. High sensation seekers preferred factors such as intense music, extreme close-ups, and open-ended conclusions, and were more influenced by videos designed with these factors in mind. Since high sensation seekers tend to be horror fans, including these factors in advertising for horror films would make them statistically more likely to see the films they enjoy. Similar preference profiles could be developed for the other horror fandom correlates in the study: low agreeableness (and to a lesser extent, openness to experience and low conscientiousness), Machiavellianism (and most of its subscales), and primary psychopathy.

The creation of films could also benefit from knowing the personality of their target audience. However, more interesting are the implications of the implicit attitude results. Although more research is needed to gain a detailed understanding of the time course of affective reactions during a film, it is clear that although it depends on the person, affective reactions do change over time. If the misattribution processes proposed earlier are indeed responsible for many of the current results (e.g., neutral stimuli experienced as

positive due to residual misattributed negative affect), then movies should be structured with this in mind. Ideally, horrific imagery should be ordered in a way that maximizes its positive aftermath. As great filmmakers already know, an effective horror movie is about moments of tension and release, with the release being proportional to the tension. The current results show that this release need not even be positive; minimally, a neutral break from the tension is enough to experience the rush of a horror film.

Of course, there is no formula for the perfect movie, and the importance of novelty and surprise in film means that becoming too comfortable with any principals could render them ineffective (indeed, in the current study, people who had seen the films before tended to have a dulled affective reaction to their imagery; see Figure 6). Advertisers may also wish to know who enjoys horror films in order to reach out to *new* audiences who would previously have ignored them. Still, knowing who currently enjoys a movie genre for what reasons can highlight the existence of rules, which can then be tactically broken.

A deeper understanding of horror films can also be an asset in the rare cases in which the films are associated with negative behaviour. Turley and Derdeyn (1990) issued a case report of a 13-year-old boy committed to a psychiatric facility because he became intoxicated then damaged his guardians' home with an axe. He complained that he was prohibited from watching horror films, and became preoccupied with them, even during therapy. Instead of identifying them as a bad influence, the child's therapist agreed to let him watch some horror films, provided he talk about his thoughts and feelings afterwards. He discussed his feelings about both the villains and the victims, and how

they related to his life at home. After several sessions, the boy was discharged, and although he watched horror films, he was no longer obsessed with them.

The authors speculated that horror films serve the same purpose for adolescents as fairy tales do for younger children: they initially increase anxiety, but then, if viewed in a healthy manner, ease the struggle with anxiety by depicting characters overcoming their own. This is consistent with an aftermath-based theory of horror enjoyment, and the current study provided limited support for it. More empirical support for the mechanisms underlying reactions to horror can further enhance the use of film in therapy. For example, many of the current study's results implied that self-reported horror enjoyment is as much a matter of signaling a certain image (e.g., of masculinity) as it is of having genuine affective reactions to the films. Thus, problems with children (or adults) who obsess over horror may often be a sign of self-image issues, rather than emotional issues.

I have emphasized that the current results generalize to areas beyond horror films themselves. The intentional consumption of misery is but one example of behaviour mismatching emotion, and perhaps one of the least harmful ones. If a deeper understanding of such behaviours can enhance their enjoyment, it can also suppress it, which may be desirable in certain cases. For example, it is clear that context plays a role in extracting enjoyment from dangerous situations. It may be desirable to minimize contextual enhancement of positive affect for people who are putting themselves in truly dangerous positions for the thrill of it (e.g., by removing it from a social context).

The proposition that potentially antisocial personality traits, such as psychopathy, may be largely a matter of self-presentation rather than deep-seated emotional

differences, is reason for hope in being able to treat extreme cases. Although implicit attitudes are susceptible to influence as well (Gawronski & Bodenhausen, 2006a), explicit change can be effected through traditional methods, such as rationally addressing problematic or inconsistent cognitive propositions. Perhaps that is why cognitive behavioural therapy is such an effective psychotherapeutic approach. Of course, extreme cases of psychopathy may have underlying emotional dysfunctions beyond the scope of this study, and/or be qualitatively different from those in the normal range, but an examination of explicit self-presentation in any intervention may be fruitful nevertheless.

Conclusions

This experiment has been—to use a term appropriate for the horror genre—on the *cutting edge* of media psychology. It was a successful first attempt at integrating existing theories of horror enjoyment with the discoveries and techniques of modern attitude research, while acknowledging that individuals differ in which principles they conform to and which they do not.

Watching a horror movie involves a complex dance between the various mental processes that make us human. There are visceral ups and downs, but there are also delicate social factors to consider. More importantly, each person dances it in their own way. Some choose not to participate at all. Others use it as a way to bridge the gender gap. For others, it is a natural extension of their dark personality.

Does anyone *really* like horror movies? Yes. Especially among certain personalities, many people report liking horror movies. Although gut reactions are almost universally negative, immediate affect does not have a monopoly on the concept of liking.

Furthermore, the pattern of gut reactions discovered here hints at ways in which disgust at the depravity on screen can be revamped into delight, if the timing is right. People like horror movies, and although there is much work to be done, the dark paradox of their appeal has been partially dragged into the light of understanding.

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Appendix A

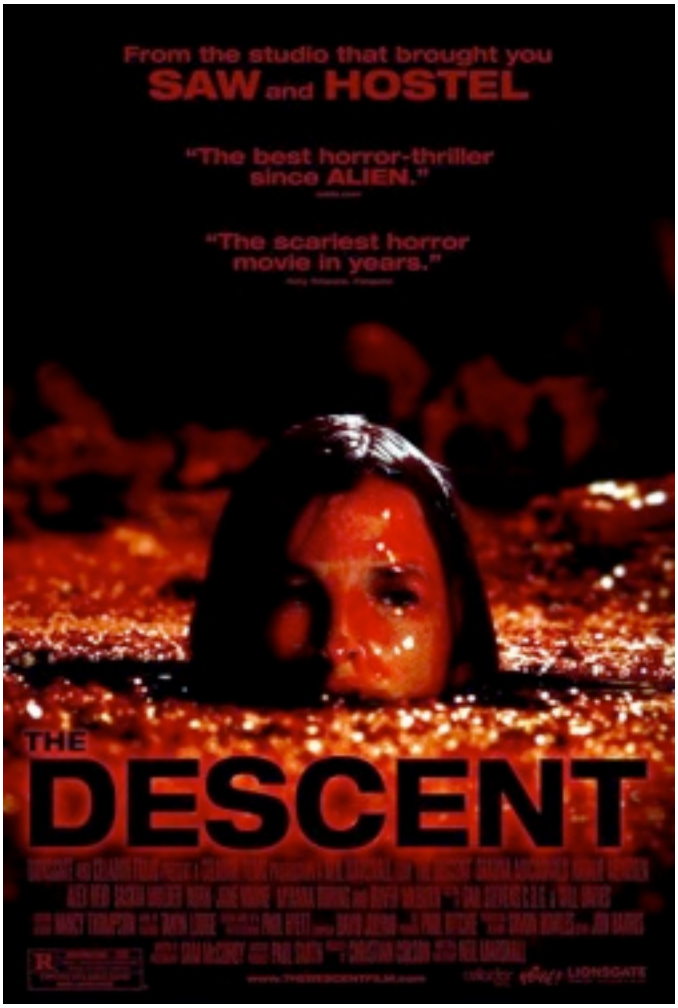
Stimuli

Dawn of the Dead: Poster

Dawn of the Dead: Control Stimuli

Dawn of the Dead: Horror Stimuli

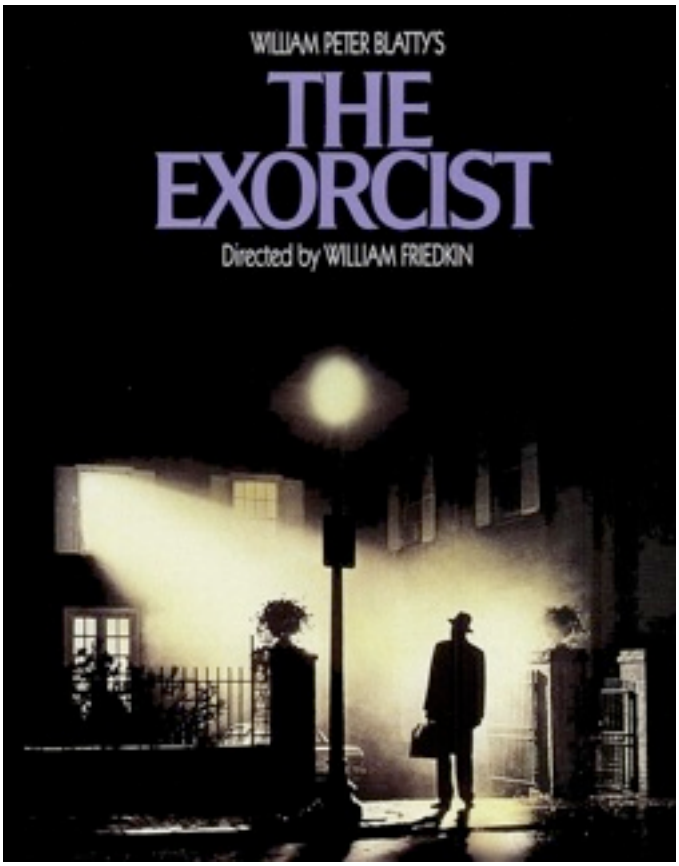
The Descent: Poster



The Descent: Control Stimuli

The Descent: Horror Stimuli

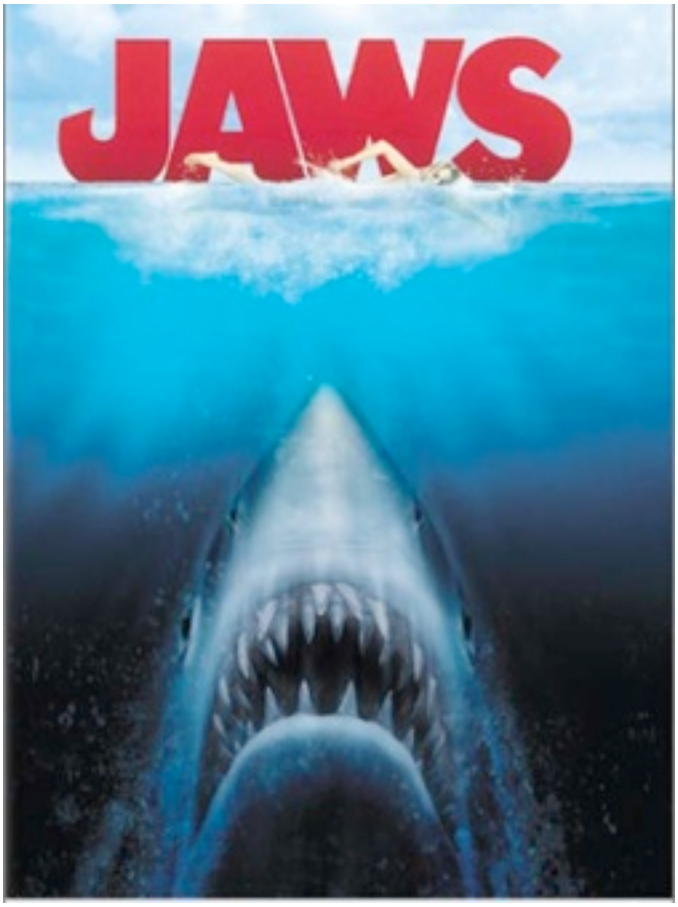
The Exorcist: Poster



The Exorcist: Control Stimuli

The Exorcist: Horror Stimuli

Jaws: Poster



Jaws: Control Stimuli

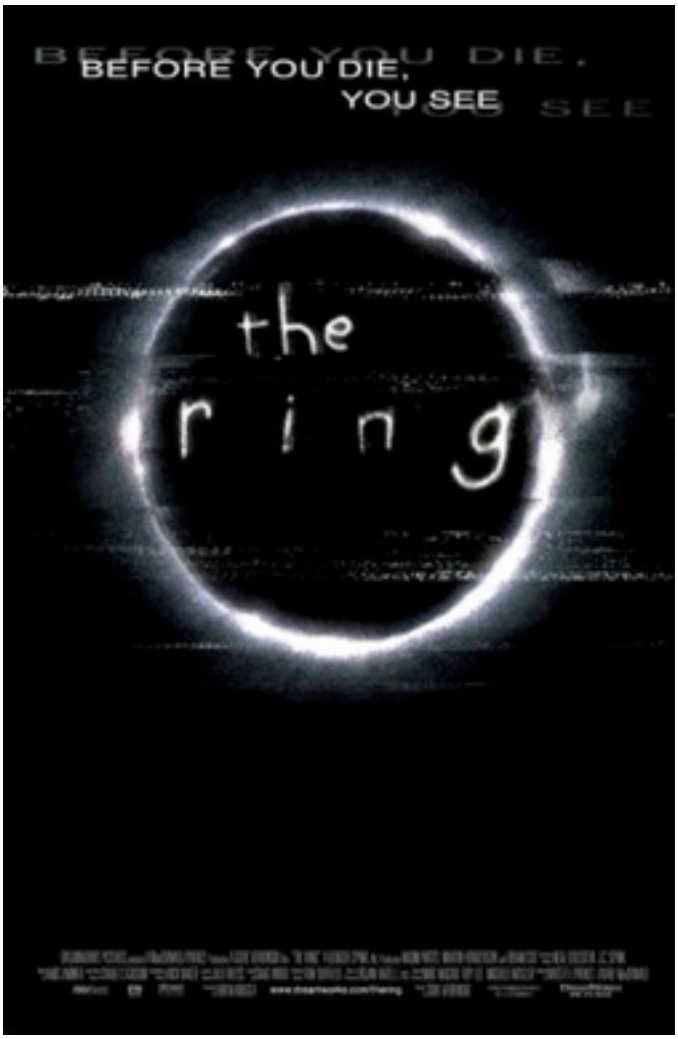
Jaws: Horror Stimuli

A Nightmare on Elm Street: Poster

A Nightmare on Elm Street: Control Stimuli

A Nightmare on Elm Street: Horror Stimuli

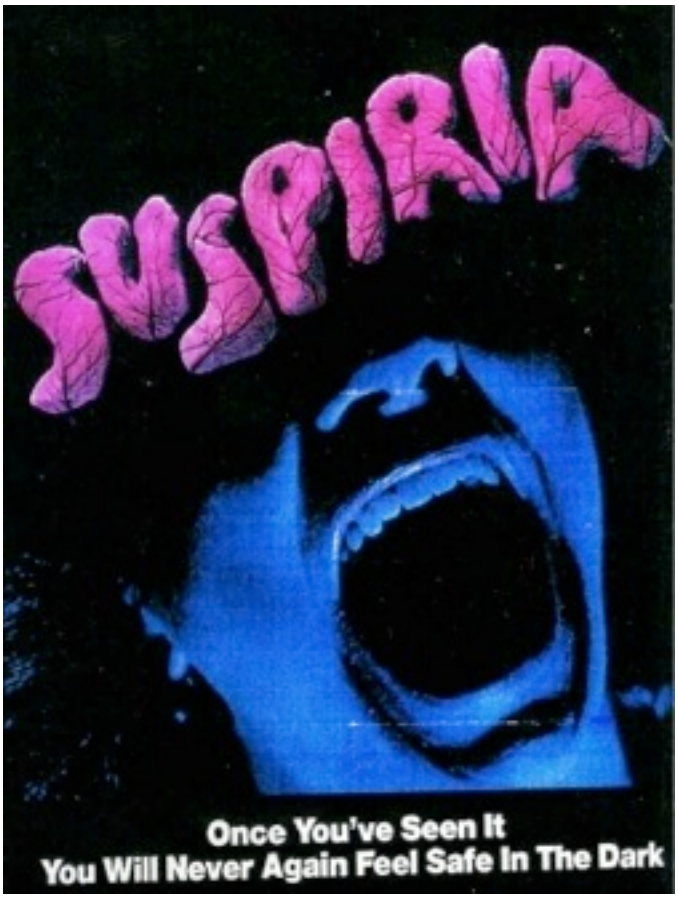
The Ring: Poster



The Ring: Control Stimuli

The Ring: Horror Stimuli

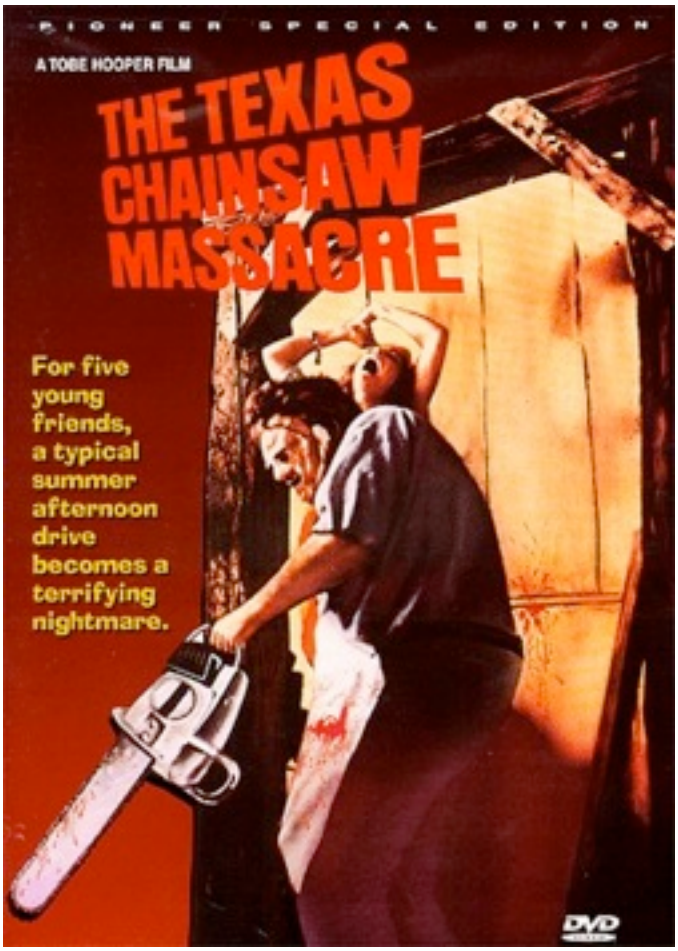
Suspiria: Poster



Suspiria: Control Stimuli

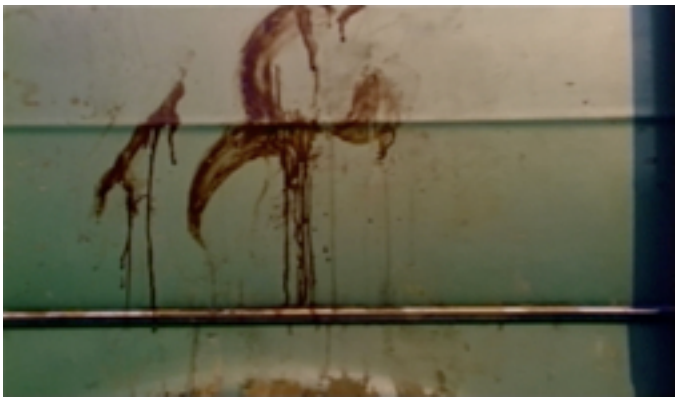
Suspiria: Horror Stimuli

The Texas Chain Saw Massacre: Poster

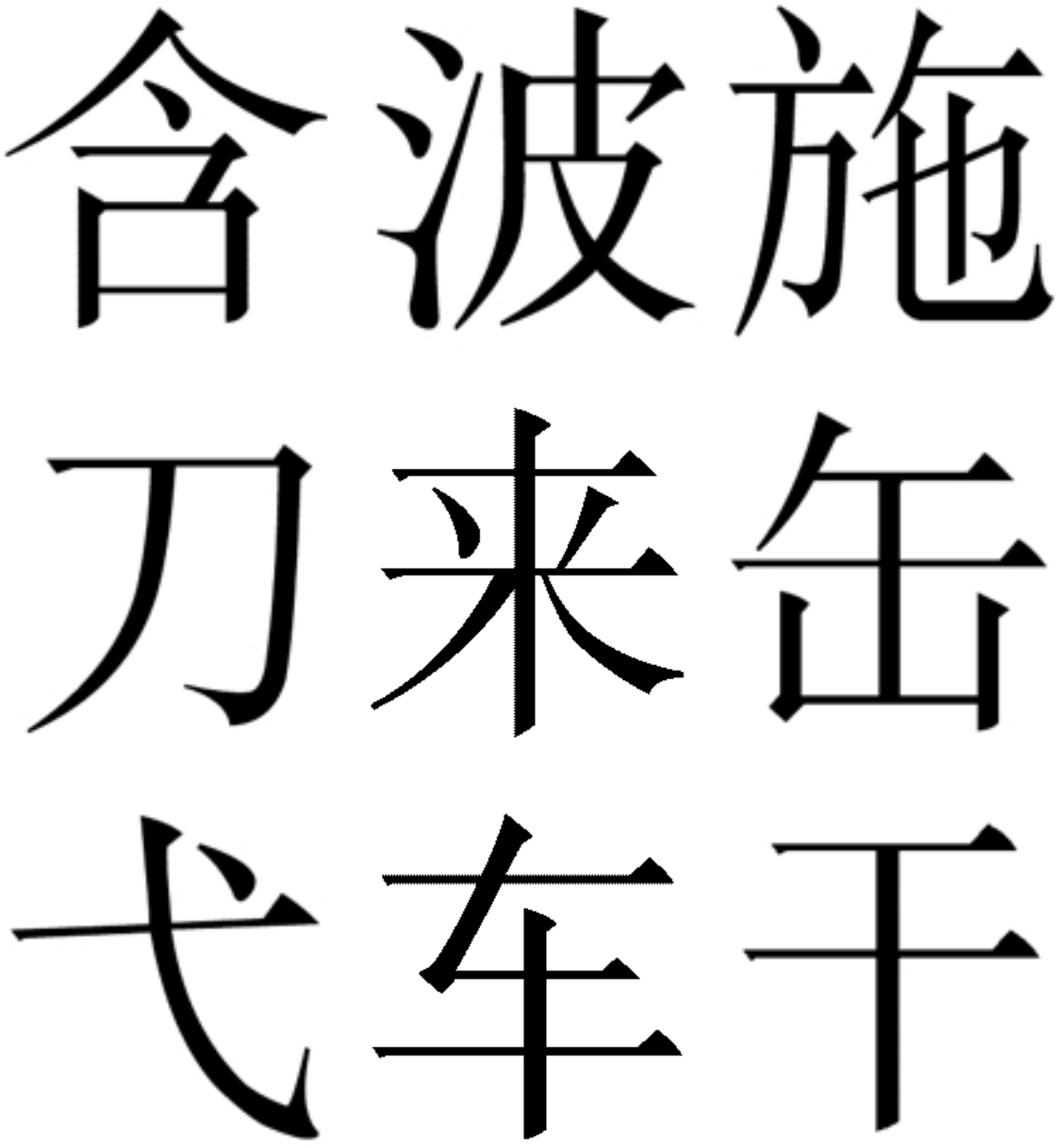


The Texas Chain Saw Massacre: Control Stimuli

The Texas Chain Saw Massacre: Horror Stimuli



Pictograph Stimulus Examples



Appendix B

Movie Genre Questionnaire

Movie Attendance Questionnaire

Instructions:

Please answer the following questions about movie genres. Keep in mind that a movie can often be categorized in more than one genre.

Response options:

How much do you generally like movies that fit this genre?

1 = dislike a lot
2
3
4 = neither like nor dislike
5
6
7 = like a lot

How often do you watch movies in this genre, either in the theatre, on DVD, on a computer, or on television?

a) Never watch movies in this genre
b) Watch at most one per year.
c) Watch more than one per year but less than one per month.
d) Watch about one per month.
e) Watch more than one per month but less than one per week.
f) Watch one per week or more.

Genres:

Action, Adventure, Animation, Biography / Documentary, Comedy, Children's, Crime / Film-Noir, Disaster, Drama, Fantasy, Horror, Musical, Science Fiction, Sport, Thriller, War, Western

Appendix C

Familiarity With Movies Questionnaire

Familiarity With Movies Questionnaire

Please indicate how familiar you are with the following movies, and if applicable, how much you like them, by circling the response that applies to you the most.

Dawn of the Dead (2004 Remake)

a) Never heard of it.
b) Heard of it, but have not seen it.
c) Have seen it once.
d) Have seen it more than once.
e) Not sure / can't remember / other.

If you have seen Dawn of the Dead (2004 Remake), how much did you like it?

1 – Disliked it a lot
2
3
4 – Neither liked it nor disliked it
5
6
7 – Liked it a lot

Repeat for:

The Descent (2005)
The Ring (2002)
A Nightmare on Elm Street (1984)
Suspiria (1977)
Jaws (1975)
The Texas Chainsaw Massacre (1974)
The Exorcist (1973)

Appendix D

Ethical Approval

Department of Psychology The University of Western Ontario
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Telephone: (519) 661-2067Fax: (519) 661-3961

Use of Human Subjects - Ethics Approval Notice

Review Number	**09 01 05**	**Approval Date**	**09 01 14**
Principal Investigator	**Tony Vernon/Mike Battista**	**End Date**	**09 12 30**
Protocol Title	**Opinions about movies and personality**		
Sponsor	**n/a**		

This is to notify you that The University of Western Ontario Department of Psychology Research Ethics Board (PREB) has granted expedited ethics approval to the above named research study on the date noted above.

The PREB is a sub-REB of The University of Western Ontario's Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement and the applicable laws and regulations of Ontario. (See Office of Research Ethics web site: http://www.uwo.ca/research/ethics/)

This approval shall remain valid until end date noted above assuming timely and acceptable responses to the University's periodic requests for surveillance and monitoring information.

During the course of the research, no deviations from, or changes to, the protocol or consent form may be initiated without prior written approval from the PREB except when necessary to eliminate immediate hazards to the subject or when the change(s) involve only logistical or administrative aspects of the study (e.g. change of research assistant, telephone number etc). Subjects must receive a copy of the information/consent documentation.

Investigators must promptly also report to the PREB:
a) changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
b) all adverse and unexpected experiences or events that are both serious and unexpected;
c) new information that may adversely affect the safety of the subjects or the conduct of the study.

If these changes/adverse events require a change to the information/consent documentation, and/or recruitment advertisement, the newly revised information/consent documentation, and/or advertisement, must be submitted to the PREB for approval.

Members of the PREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the PREB.

Clive Seligman Ph.D.

Chair, Psychology Expedited Research Ethics Board (PREB)

The other members of the 2008-2009 PREB are: David Dozois, Bill Fisher, Riley Hinson and Steve Lupker

CC: UWO Office of Research Ethics

This is an official document. Please retain the original in your files

Curriculum Vitae

Michael E. Battista

Education

Current position: Ph.D. in Personality Psychology, The University of Western Ontario
Advisor: Dr. P. A. Vernon

M.Sc. in Personality Psychology, 2006, The University of Western Ontario
Advisor: Dr. P. A. Vernon

B.A. (Honours), With Distinction, 2002, The University of Western Ontario
Thesis Advisor: Dr. R. M. Sorrentino

Ontario Secondary School Diploma, 1998, A. B. Lucas Secondary School
Favourite Teacher: Mrs. Taylor

Publications

Sorrentino, R. M., Seligman, C., & Battista, M. E. (2007). Optimal distinctiveness, values, and uncertainty orientation: Individual differences on perceptions of self and group identity. *Self and Identity, 6,* 322-339.

Sorrentino, R. M., Blascovich, J., Seery, M., and Battista, M. E. *Physiological responses to uncertainty: Threat, challenge, or overmotivation?* Manuscript in preparation.

Senior Honours Thesis: Battista, M. E. (2002). *The effect of uncertainty orientation and self-focused attention on rational thought*. Unpublished honours thesis, University of Western Ontario, London, Ontario, Canada.

Conference Presentations

Battista, M. E. (2010, June). *Does anyone really like horror films?* Presented at Ignite London, London, Ontario, Canada.

Battista, M. E. (2008, June). *The relationship between geomagnetic activity and human performance*. Poster presented at the annual convention of the Canadian Psychological Association, Halifax, NS.

Battista, M. E. (2002, April). *The effect of uncertainty orientation and self-focused attention on rational thought.* Senior honours thesis presented at annual UWO thesis poster session, London, ON.

Non-Scholarly Publications and Presentations

Battista, M. (2011, February). *"I'm famous on the internet": How to turn one stupid idea into 15 minutes of online fame.* Presented at Podcamp Toronto 2011, Toronto, Ontario, Canada.

Battista, M. (2010, November). *Fonts don't matter*. Presented at SMarts London 2010, London, Ontario, Canada.

Battista, M. (2010, May). *"I'm famous on the internet": How to turn one stupid idea into 15 minutes of online fame.* Presented at Podcamp London 2010, London, Ontario, Canada.

Battista, M. (2009, May 8). Thinking about polar bears. *Pseudopod, 141 (Flash on the Borderlands I, Story 2)* [Audio podcast].

Work / Research Experience

Research Analyst at Info-Tech Research Group, 2010 — present

Teaching Assistant for Psychology 4850E, Honours Thesis Course, 2008 — present
Marking of written and oral projects, help with research questions, and some lectures.

Teaching Assistant for Psychology 280E, Research Methods, 2007
Taught the lab portion of the course.

Teaching Assistant for Psychology 282E, Research Methods and Statistics, 2004, 2005, and 2006
Taught the lab portion of the course.

Research Assistant for Dr. Suzanne Kearns, The University of Western Ontario, 2008 – 2009
Organized, summarized, and analyzed large set of data concerning automobile accidents among the Ontario Provincial Police.

Research Assistant for Dr. Richard Sorrentino, The University of Western Ontario, 2002 – 2006

Responsible for many aspects of designing, running, analyzing, and publishing experimental psychology research.

Research Assistant for Dr. Clive Seligman, The University of Western Ontario, 2002 — 2003

Researched hiring practices of university administration, performed literature searches, and assisted with research.

Co-Creator of Study Guide for McGraw-Hill Psychology Textbook

Awards

SSHRC Doctoral Fellowship, 2008

Recommended but not awarded.

Ontario Graduate Scholarship, Master's, 2006, The University of Western Ontario

SSHRC Canadian Graduate Scholarship, Master's, 2005 , The University of Western Ontario

Graduate Student Teaching Award Nomination (for Psychology 282E), 2004

Faculty Dependent Scholarship, 2004 - 2007

Academic Scholarship, The University of Western Ontario, 1999

Awarded for high marks in previous year.

Entrance Scholarship, The University of Western Ontario, 1998

Awarded for high marks in high school.

Principal's Honour List, A.B. Lucas Secondary School, 1994, 1995, 1996, 1997 and 1998

Awarded for attaining and maintaining an average mark of 80% or higher.

Volunteer Experience

Board Member, London Short Film Showcase, 2010 — present

Event planning and marketing for London's short film festival.

Reviewer, Personality and Individual Differences, 2006 — present
Provide reviews and recommendations for publication in PAID on articles under my area of expertise.

London Regional Cancer Centre, Library Assistant
Created database of historical archives.

The Gazette Student Newspaper, The University of Western Ontario
Wrote review for school paper.

Workshops and Miscellaneous Accomplishments

Leadership Skills Seminar, The University of Western Ontario

London Chamber of Commerce "Partners in Education" Logo Design Workshop
Selected to represent A. B. Lucas Secondary School.

London International Snowfest
Represented A. B. Lucas Secondary School in snow sculpting competition.

Campaign Advisor, University Student Council, The University of Western Ontario, 2002 and 2003
Advised Chris Sinal during campaign for USC Vice President (2002) and USC President (2003), both winning campaigns.

Association Memberships

Canadian Psychological Association

Society for Personality and Social Psychology

CV Updated April 17 2011