

Horror, Personality, and Threat Simulation:

A Survey on the Psychology of Scary Media

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### Abstract

Horror entertainment is a thriving and paradoxical industry. Who are the consumers of horror, and why do they seek out frightening media? We provide support for the threat simulation theory of horror, according to which horror media provides a form of benign masochism that offers negative emotional stimulation through simulation of threat scenarios. Through an online survey of genre use and preference as well as personality traits and paranormal beliefs (n=1070), we find that sensation seeking and the fifth of the Big-Five factors, intellect/imagination, predict liking of horror and frequency of use. Gender, educational level, and age are also correlated with horror liking and frequency of use (males show higher liking and more frequent use, whereas liking and use frequency are negatively correlated with educational level and age). People with stronger beliefs in the paranormal tend to seek out horror media with supernatural content, whereas those with weaker beliefs in the paranormal gravitate toward horror media with natural content, suggesting that people seek out horror media with threatening stimuli that they perceive to be plausible. While frightening media may be initially aversive, people high in sensation seeking and intellect/imagination, in particular, like intellectual stimulation and challenge and expect not just negative but also positive emotions from horror consumption. They brave the initially aversive response to simulate threats and so enter a positive feedback loop by which they attain adaptive mastery through coping with virtual simulated danger.

*Keywords:* horror media, media psychology, benign masochism, sensation seeking, Big Five personality traits

*Public significance*

The horror genre is paradoxically popular: why do people willingly seek out negative emotional stimulation from such entertainment? One way to get a handle on this question is to ask what type of person seeks out horror media, so we conduct a survey of personality traits, paranormal beliefs, and horror preference and usage patterns. Our findings support the hypothesis that horror can function as adaptive threat simulation, which may be particularly attractive to individuals who desire emotional and intellectual stimulation.

### Horror, Personality, and Threat Simulation: A Survey of the Psychology of Scary Media

Horror entertainment is a thriving and paradoxical industry. People flock to horror films, buy horror novels, immerse themselves in horror video games, and visit haunted attractions to be scared witless (Clasen, 2017; Follows, 2017; Gunter, 2018). The paradox of horror entertainment is that people are willingly exposing themselves to media that they know will trigger unpleasant emotions such as fear, shock, and terror (Carroll, 1990). Why do they do it, and who are the consumers of horror?

The so-called paradox of horror has been approached from a variety of theoretical perspectives. For example, researchers have applied Aristotle's notion of catharsis to hypothesize that consumers of horror cleanse themselves of negative emotion through exposure to horror (Weaver & Tamborini, 1996). Others have adopted Freudian psychoanalytic theory to suggest that horror allows consumers to face repressed psychological material in disguise (Dumas, 2014; Schneider, 2004). We suggest that none of these ideas can dissolve the paradox of horror. Catharsis does not in fact seem to occur (as we show below, consumers of horror tend to become *more* anxious after exposure to horror, not less so), and key aspects of Freudian psychoanalytic theory have been argued to be scientifically questionable (Clasen, 2017; Daly & Wilson, 1990; Erwin, 1996).

If we want to understand the appeal of horror, it is reasonable to ask who enjoys the genre. Despite some early studies into the personality characteristics of horror consumers (reviewed in Hoffner & Levine, 2005)—mainly focusing on thrill-seeking, age, and gender differences in response—the personality profile of horror fans has not yet been adequately investigated. Nobody has rigorously investigated horror media consumption from the perspective of Big-Five personality traits, and researchers have neglected to integrate their findings within the powerfully explanatory matrix of evolutionary social science. Hence, this study has a dual objective: First, we delineate who horror users are, and second, we integrate this characterization with an evolutionary theory of the function of horror.

We conducted a survey of horror preference and personality on a North American sample population (n=1070). In what follows, we analyze the proportion of horror fans to non-fans, the social context of horror, differences between audiences for supernatural and non-supernatural horror, and personality characteristics of horror consumers. We discuss the results of the survey

within a framework informed by evolutionary social science, suggesting that the paradoxical appeal of horror is best explained as a form of benign masochism that may serve the adaptive function of threat simulation. According to the theory of benign masochism, pioneered by the psychologist Paul Rozin (Rozin, Guillot, Fincher, Rozin, & Tsukayama, 2013; Rozin & Schiller, 1980), initially aversive activities may through hedonic reversal become pleasurable. Examples are ingesting chili peppers and listening to sad music. Steven Pinker has suggested a functional underpinning for the “paradoxical pleasures” of benign masochism:

These paradoxical pleasures include consuming hot chili peppers, strong cheese, and dry wine, and partaking in extreme experiences like saunas, skydiving, car racing, and rock climbing. All of them are adult tastes, in which a neophyte must overcome a first reaction of pain, disgust, or fear on the way to becoming a connoisseur. And all are acquired by controlling one’s exposure to the stressor in gradually increasing doses. What they have in common is a coupling of high potential gains (nutrition, medicinal benefits, speed, knowledge of new environments) with high potential dangers (poisoning, exposure, accidents). The pleasure in acquiring one of these tastes is the pleasure of pushing the outside of the envelope: of probing, in calibrated steps, how high, hot, strong, fast, or far one can go without bringing on disaster. The ultimate advantage is to open up beneficial regions in the space of local experiences that are closed off by default by innate fears and cautions (Pinker, 2011, p. 555).

We agree with the adaptive logic proposed by Pinker. In the case of horror media, we argue that the attraction of horror is explicable in terms of an evolved pleasure response to threat simulations. Horror media tend to imaginatively transport consumers into fictional universes that brim with danger, e.g. in the form of simulated monsters or fictional villains. Through such

imaginative absorption, people get to experience strong, predominantly negative emotions within a safe context. This experience, which serves as a way of preparing for real-world threat situations, may be biologically adaptive in terms of improving the odds of survival in a potentially hostile world (Clasen, 2017). Moreover, such vicarious experience is likely to be especially attractive to individuals with a certain personality profile—conceivably, those high in sensation seeking and openness to experience.

Based on these theoretical reflections and on existing research literature, we predict that our study will replicate previous findings of a positive correlation between sensation seeking and horror enjoyment. We also predict correlations between horror liking and age and gender, with younger individuals and males showing higher preference for horror than older individuals and females, given that sensation seeking—a proximal mechanism for horror enjoyment—shows that pattern. Our investigation of personality variables and horror preference is exploratory, but we predict that extraversion will be related to a preference for experiencing horror with others. Gregarious individuals presumably find joy in sharing the emotional stimulation that horror provides. We predict that the fifth of the Big-Five personality factors, Intellect/Imagination (also sometimes called Openness to Experience), will correlate with use of and preference for horror media, based on the assumption that horror provides emotional as well as intellectual stimulation. We also predict that higher paranormal beliefs will correlate with a preference for, and greater fright in response to, supernatural horror, given that the threat depicted in such horror will be perceived as more relevant by believers in the paranormal. Finally, whereas a catharsis model would predict reduced negative affect after exposure to horror, we predict lingering fear after horror as well as elicitation of positive emotions. Based on benign masochism theory, we expect to find a co-activation of positive and negative emotion which should get increasingly

lopsided over time: Those who like horror media most should also experience the least fright from it, and prefer more extreme forms of horror to compensate.

### **Method**

We used Amazon's Mechanical Turk crowdsourcing technology, which has been extensively validated in cognitive science (Stewart, Chandler, & Paolacci, 2017), to recruit an adequately representative sample of American users and nonusers of horror media for our survey. Respondents accepted a survey with the title "Answer a survey about yourself and your relationship with horror media (15-20 minutes)," described as follows: "This is an academic survey about different people's use of horror media. You need to be 18 years old or more to take this survey, and you need a Google account. You do not need to use or enjoy horror media to take this survey." The last sentence was included to avoid a biased sample of predominantly horror users, and as our results suggest, we did recruit non-users as well as users.

This method gave us 1187 respondents. The survey covered:

- Personal details (e.g., sex, age, number of children, level of education)
- Tobacyk's (2004) Paranormal Belief Scale (revised according to Lindeman & Svedholm, 2012)
- Brief Sensation Seeking Scale (Hoyle, Stephenson, Palmgreen, Lorch, & Donohew, 2002)
- Big-Five personality traits (50-item IPIP version of the Big-Five Factor Markers; Johnson, 2015)
- Items on respondents' horror media uses, preferences, and experiences (dependent variables):

- Horror Enjoyment
  - I tend to enjoy horror media: 1 strongly disagree – 5 strongly agree
- Easily Scared
  - I am generally easily scared by horror media: 1 very inaccurate – 5 very accurate
- Horror Frequency
  - In the past year, about how often have you used horror media (e.g., horror literature, film, and video games) for entertainment?: 0 never, 1 once, 2 several times, 3 once a month, 4 several times a month, 5 once a week, 6 several times a week
- Intensity Preference
  - I generally prefer horror media that I find: 1 not at all frightening – 5 extremely frightening
- Supernatural Preference
  - I generally prefer horror media that deal with: 1 the natural, 2 no preference, 3 the supernatural
- Scared by Supernatural
  - I am generally more easily scared by horror media that deal with: 1 the natural, 2 natural and supernatural scare me equally, 3 the supernatural
- Scared After
  - In the hours after I have used horror media, I am generally \_\_\_\_ than if I had used another type of medium: 1 less scared, 2 neither more nor less scared, 3 more scared



- Use with Others
  - When I use visual horror media, such as horror film, I am usually: 1 alone, 2 with one other person, 3 with several people
- Enjoy with Others
  - I generally enjoy visual horror media, such as horror film, more when I am: 1 alone, 2 no difference, 3 with one or more others
- Scared with Others
  - I am generally more easily scared by visual horror media, such as horror film, when I am: 1 alone, 2 no difference, 3 with one other person, 4 with several people
- Expected Emotions from Horror Media
  - Joy, Sadness, Disgust, Trust, Fear, Anger, Anticipation, Surprise: 1 very inaccurate – 5 very accurate

Data was collected via an online form linked to the Mechanical Turk facility.

### **Data clean-up**

1187 respondents completed the survey, but 117 protocols were eliminated from the sample. The elimination of suspicious protocols was made largely on the basis of Jackson's Individual Reliability Coefficient (JIR; Johnson, 2005), an index of response consistency within a protocol. Ordinarily, researchers use 20 to 30 scores to calculate JIR, but the Big Five measure—a central component of our survey—yields only five scores. In line with Johnson's (2005) cautions against misidentifying the responses of genuinely inconsistent persons as unreliable, instead of using Jackson's suggested cutoff of .30 (Jackson, 1977), we used a more

liberal cutoff of zero. Removing 15 protocols with JIRs less than zero reduced the N from 1187 to 1072. Protocols from two other respondents were judged to have used the same response category too many times in a row (Johnson, 2005), bringing the final number of respondents to 1070 (538 males, 532 females).

### **Scale reliability estimates**

Cronbach alpha reliability estimates were computed for all scale scores. Alphas for the Paranormal Beliefs Scales were as follows: Psi (.81), Witchcraft (.93), Superstition (.88), Spiritualism (.89), Extraordinary Life Forms (.59), Precognition (.86), and Total Paranormal Beliefs (.95). Except for Extraordinary Life Forms, whose reliability was below usual standards for acceptability, these alphas are excellent. For the Brief Sensation-Seeking Scales, the values were as follows: Experience-Seeking (.75), Boredom Susceptibility (.50), Thrill and Adventure Seeking (.70), Disinhibition (.72), and Total Sensation-Seeking (.83). The alphas were remarkably high for the two-item subscales and excellent for Total Sensation-Seeking, which speaks to the integrity of the data. Finally, alphas for the Big-Five scales were Extraversion (.93), Agreeableness (.89), Conscientiousness (.88), Emotional Stability (.93), and Intellect/Openness to Experience (.84), again, all very high.

### **Analyses**

Analyses began with basic descriptive statistics on the frequency of horror media use, emotional reactions to horror media, and preferences regarding the consumption of horror media. Then, we performed multivariate analyses. The horror use and experience variables were subjected to a principal component factor analysis followed by regression analyses. Next, relationships between horror variables and demographic variables were analyzed with

correlations and t-tests. Finally, we examined the degree to which paranormal beliefs, sensation seeking, and the Big Five personality variables explained variance in horror media users' reactions to horror media, and preferences about horror media. Based on previous research and the theory of benign masochism, we predicted that an appreciable number of respondents would report using horror media, that respondents would report both positive and negative affect following the use of horror media, and that the greatest frequency and enjoyment of horror media would be found in individuals with higher levels of sensation seeking and openness to experience.

## **Results**

### **General findings**

First, we asked respondents to indicate the degree to which they agree with the statement "I tend to enjoy horror media." Most of our respondents (54.5%) answered in the affirmative, indicating either 4 or 5 (27.9% indicated 5, 26.6% indicated 4). 17% of respondents answered in the median category (3). Another 14.4% indicated 2, and the remaining 14.2% indicated 1. Insofar as our sample is representative of the North American population, this initial finding suggests that the majority of this population claims to tend to enjoy horror media. A liking of horror, in other words, is not an anomaly or a niche phenomenon, but a majority phenomenon in need of serious investigation.

To assess frequency of horror consumption, we asked respondents the following question: "In the past year, about how often have you used horror media (e.g., horror literature, film, and video games) for entertainment?" 11.3% said "Never," 7.5% "Once," 28.9% "Several times," 14.1% "Once a month," 20.8% "Several times a month," 7.3% "Once a week," and

10.2% “Several times a week.” Evidently, then, most respondents (81.3%) claimed to use horror media several times a year or more often. Unsurprisingly, there is a strong correlation between liking and frequency of use ( $r=.79, p<.0001$ ).

Next, we asked respondents to indicate how frightening they want their horror media to be. This question was intended partly as a control measure to see whether the fear evoked by horror media is an unwanted byproduct, as some Freudians have claimed (Freud, 2003; Schneider, 2004; Wood, 1979), or a primary and irreducible attraction of the genre, as our threat simulation hypothesis would predict (for the simulation to possess adaptive value, it would have to recruit ecologically appropriate emotions). The responses indicate that people do indeed want their horror media to be frightening. In response to the statement “I generally prefer horror media that I find ...,” respondents answered as follows: 3.9% “Not at all frightening,” 17.2% “Mildly frightening,” 37.7 “Moderately frightening,” 25.2% “Highly frightening,” and 16% “Extremely frightening.” The bulk of responses (78.9%), then, were in the moderately-to-highly frightening range.

We asked respondents to indicate whether they are generally more or less scared in the hours after using horror media. This question was intended to test the catharsis effect hypothesis. If the catharsis hypothesis had been correct, most respondents would presumably have reported being less scared after horror exposure, but we found the opposite result. A small majority (52.2%) reported being more scared after having used horror media, and 42.2% reported no change in state anxiety level. Only 5.6% reported being less scared.

### **Multivariate analyses**

Statistical analyses proceeded along two lines. The relatively large number of variables in the study and the likelihood of relations among the horror use and experience variables (e.g., horror enjoyment and frequency of horror use were, *prima facie*, likely to be related) called for some multivariate analyses. Table 1, which contains all pairwise correlations among the variables in the study, confirms a high degree of interrelatedness among the ten horror use and experience variables. Consequently, these variables were subjected to a principal component factor analysis to see if a smaller number of factor scores could account for variance in horror use and experience. Regression analyses were then conducted to identify among the many demographic, personality, and other individual difference measures, sets of variables that best explained variance in the factor scores.

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Insert Table 1 about here

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Although these multivariate analyses were expected to give some insight into the psychological characteristics associated with using horror, we thought that a more fine-grained understanding might be gained by a closer look at some of the individual variables in the study. We therefore report the results of both multivariate analyses and then focus in on relationships between variables of particular interest.

A scree test from the principal component analysis with varimax rotation produced four clear factors that accounted for 64.15% of the variance among the horror use and experience

variables (see Table 2). The following are descriptions of the four factors, with the defining factor loadings in parentheses. The factors are further clarified by describing profiles of persons scoring high on each factor (statistically significant correlations with predictor variables are in parentheses).

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Insert Table 2 about here

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The Enthusiastic Horror Use factor is defined primarily by high enjoyment of horror media (.86), frequent use of horror media (.80), and preference for intense horror (.76). Horror enthusiasm is also marked by a tendency to be not easily scared by horror (-.37).

The profile of an Enthusiastic Horror User (someone scoring relatively high on the factor) is turning to horror to experience joy (.29), anticipation (.25), and surprise (.21); tending to be imaginative (.17), sensation-seeking (.22), and believing in the paranormal (.13). They also have a slight tendency to be less educated (-.08).

The Social Horror Use factor is defined primarily by a preference to use horror with others (.86) and a tendency to enjoy horror with others (.83). This factor is also marked by a tendency to be more scared when using horror with others (.42).

The profile of the Social Horror User is extraverted (.14), agreeable (.12), and tending to believe in the paranormal (.12). They are more likely to be female (.17) and somewhat more educated (.08).

The Supernatural Horror Use factor is defined by a preference of supernatural over natural horror (.78) and a tendency to be scared more by supernatural than natural horror (.78).

The profile of the Supernatural Horror User is not using horror to experience disgust (-.12) or anger (-.12) and a tendency to believe in the supernatural (.15).

The Fearful Horror Use factor is defined by being easily scared by horror media (.60) and being scared after using horror media (.86). This factor is also marked by a tendency to be more scared alone than with others (-.27).

The profile of the Fearful Horror User is not using horror to experience joy (-.13) but using horror to experience fear (.25), being agreeable (.14) and emotionally unstable (-.19). They are more likely to be female (.22).

Table 3 summarizes four forward-stepwise regression analyses, where each member of a set of predictor variables contributes toward explaining statistically significant and unique variance in the four horror use factors. The full list of potential predictors for the analyses were as follows: the demographic variables of age, sex (1=male; 2=female), and education level; the five major personality domains, Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Intellect/Imagination; and total scores on Sensation-Seeking and Paranormal Beliefs. The facets of these last two inventories were not entered into the regression analyses due to multicollinearity. Neither were expected emotions entered into the regressions, simply to limit the potential predictors to a reasonable number.

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Insert Table 3 about here

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Regression analyses showed that each horror use/experience factor was associated with a distinctive set of demographic and individual difference variables. In some cases these variables were associated with different factors in the same direction, and in some cases, different directions. For example, Enthusiastic Horror Use and Supernatural Horror Use were both associated with higher Paranormal Beliefs. Social Horror Use and Fearful Horror Use were both associated with higher levels of Agreeableness and with being female. In contrast, Enthusiastic Horror Use was associated with higher levels of Intellect/Imagination and lower levels of education, while Social Horror Use was associated with lower levels of Intellect/Imagination and higher levels of education.

The broad outlines of the results of the multivariate analyses can be summarized as follows: Four independent, uncorrelated factors can account for a significant proportion of the variance of horror use and experience. The first, Enthusiastic Horror Use, describes enjoyment and frequent use of horror media, a preference for intense horror because the horror enthusiast is not easily scared, and expectation of positive feelings from using horror. The Enthusiastic Horror User tends to be higher in Sensation-Seeking, Paranormal Beliefs, and Intellect/Imagination while being lower in educational level. The second factor, Social Horror Use, describes a preference for using horror with others. Interestingly, this preference is accompanied by both a tendency to enjoy horror with others and to be more scared when using horror with others. The Social Horror User tends to be female, extraverted, agreeable, younger, better-educated, believing in the paranormal, and lower in Intellect/Imagination. The third factor, Supernatural Horror Use, represents both a preference for supernatural over natural horror and a tendency to be more scared by supernatural horror. No other demographic or individual difference variables



account for variance in preference for supernatural horror beyond paranormal beliefs. And the fourth factor, Fearful Horror Use, indicates a proclivity toward being easily scared, especially when alone, and to be more scared after using horror. Persons high on this factor tend to be female, agreeable, and lower in Emotional Stability.

While the above results describe relations between four broad themes in horror use and demographic, personality, and paranormal beliefs, the following sections attempt to provide a more fine-grained analysis of relationships between individual variables that advance a theoretical understanding of horror use.

### **Age and horror consumption**

Is there a meaningful relation between age and horror consumption? On the face of it, yes—neither kindergartens nor nursing homes hold horror film screenings. On the other hand, children tend to find pleasure in play activities that involve apprehension, anxiety, even fear, such as hide-and-seek (Bjorklund & Pellegrini, 2002; Steen & Owens, 2001). Moreover, children universally are fascinated with monsters (Boyer & Bergstrom, 2011). At the same time, research from media psychology suggests that frightening media presentations can have long-term negative psychological effects on especially younger viewers (Cantor, 2002, 2004). We would suggest that the appetite for threat simulations emerges early in ontogeny, but that the appetite tends to be satisfied through play activities and moderately scary stories, not *bona fide* horror films, novels, and video games. With cognitive maturation, individuals seek out more frightening media material. With old age, the appetite begins to dwindle.

We found a very small, but statistically significant negative correlation between age and enjoyment of horror media ( $r=-.10, p=001$ ) and frequency of horror use ( $r=-.11, p<.001$ ).

(However, our sample clustered around age 35, artificially reducing all of our age trends.) The average age of those who strongly agreed with the statement “I tend to enjoy horror media” was lower (about 33.5 years) than the average age of those who strongly disagreed with the statement (about 36.5 years). The appetite for horror, then, following an initial increase in adolescence, does seem to decrease with age, as previous research has indicated (Lawrence & Palmgreen, 1996; Tamborini & Stiff, 1987). Hoffner and Levine (2005), in a meta-review, find some evidence for “a curvilinear relationship ... between age and liking for violence and fright, with an increase during childhood, a peak in adolescence, and a decline thereafter” (Hoffner & Levine, 2005, p. 214). (Our study had no respondents under the age of 18, so because of this restriction of range in the age variable, we could not look for such a peak effect.) On a proximal level, the decrease of horror liking with age may be due to a decrease in sensation seeking with age (Zuckerman, Eysenck, & Eysenck, 1978). Previous research has documented a curvilinear pattern in the relationship between age and sensation seeking. Sensation seeking tends to increase from age 10 to 15 and then declines or remains stable thereafter (Steinberg et al., 2008). From an evolutionary perspective, we might expect the appetite for horror to peak during the teenage years when individuals typically confront the world on their own, which is indeed what the data show. In our study, age did correlate ( $r = -.19$ ) with Total Sensation-Seeking. However, age did not correlate significantly with how easily a person was scared by horror media or with preference for fright intensity. It is not because elderly people are less (or more) sensitive to frightening media that they tend not to seek it out, then; it could be that the older one gets, the less fitness-enhancing potential a threat simulation has and thus the less rewarding it becomes.

### **Educational level and horror consumption**

Does educational level predict horror preference? We did not expect to find a correlation, and to our knowledge no other studies have found or looked for such a relationship, but surprisingly, we found a small negative correlation ( $r=-.14$ ) between educational level and horror liking. This may be an effect of the horror genre's lack of cultural capital. Historically, horror has been seen as a low-brow genre (Jancovich, 1992), perhaps because a distinguishing characteristic of the genre is its elicitation of strong, "primitive" emotions. Well-educated people may tend to gravitate toward genres with more cultural capital (Dimaggio & Useem, 1978) because such genres enjoy more respect in those people's cultural circles.

### **Sex and horror consumption**

Are there systematic gender differences in patterns of horror consumption? Previous research has suggested that slasher films, specifically, are a primarily male genre—produced for, and consumed by, males (Clover, 1992; Tamborini & Stiff, 1987). Other research, however, has contested that assertion (Dika, 1987; Nowell, 2011). The scientific consensus seems to be that there are gender differences (whatever the cause of those differences) in horror liking and in the intensity of fear responses to frightening media (Cantor & Oliver, 1996; Hoffner & Levine, 2005). Our results indicated that females are well represented among horror consumers, but that there are gender differences in liking, frequency of use, and preference for horror intensity, as revealed by t-tests.

First, males enjoyed horror media more than females, means of 3.50 vs. 3.29,  $t(1039) = 2.48$ ,  $p=.013$ . Females were more easily scared by horror media, means of 2.87 vs. 2.23,  $t(885) = -7.9$ ,  $p<.001$ . Males reported greater frequency of horror media use, means of 2.90 vs. 2.67,

$t(1052) = 2.41, p = .016$ . And males showed a greater preference for more frightening material, means of 3.39 vs. 3.25,  $t(948) = 2.08, p = .038$ .

For scared feelings after using horror media, females tended to be more scared, and males, less scared,  $\chi^2(2) = 22.9, p < .001$ . For using horror with others, females reported using with one other person more often than expected by chance, while males reported using alone more often than expected by chance,  $\chi^2(2) = 38.30, p < .001$ . This exact pattern was found for enjoying horror media with others,  $\chi^2(2) = 29.58, p < .001$ . There were no significant sex differences in reporting being more scared alone or with others.

For horror type preference (supernatural/natural), there were no significant sex differences. The same was true for being scared by supernatural/natural horror media.

The sex differences in horror preference and reactivity, small as they are, may ultimately reflect evolved sex differences. Males may ancestrally have faced increased risk of predation (intra- as well as inter-specific) (Kruger & Nesse, 2004) and so may have evolved a stronger need and thus appetite for threat simulation. On the proximal level, however, the differences may be explicable in terms of a systematic difference in sensation seeking, which correlates with age (see above), with a preference for horror (see below), and on which males tend to score higher than females (Cross, Cyrenne, & Brown, 2013). In the current sample, a t-test showed males scoring higher than females on Total Sensation-Seeking (males, 22.8, female, 20.6,  $t(1068) = 5.23, p < .0001$ ). Other studies have shown that females tend to experience fear at higher intensity and frequency than do males (Cross & Campbell, 2011). In the current sample, when asked about expectations of experiencing different emotions with horror media, females gave for fear a mean rating of 4.06 on the five-point scale, whereas males gave a mean rating of 3.90,

$t(946) = 2.23, p < .0001$ . With, on average, a lower threshold for fear and a lower degree of sensation seeking, females may be predictably less attracted to horror than males.

### **Horror as social experience**

While reading a horror novel by Stephen King is a solitary experience, many other horror experiences are social in nature—getting together for a horror film on Netflix, say, or visiting a haunted attraction in a group, or playing a scary video game together. Before the advent of printing, when storytelling was predominantly oral, horror stories may have been enacted by performers to the frightful delight of listeners. Watching a horror film with others may lessen one's fear through perceived safety in numbers, but it may also augment that fear through emotional contagion (Hatfield, Cacioppo, & Rapson, 1993). If one's co-watchers are trembling with fear, it may be hard to keep a cool head (Shteynberg et al., 2014). So what do our results say about the social dimension of horror?

Chi-square tests indicated that females are more likely than males to experience horror media with other people as opposed to alone,  $\chi^2(2) = 38.3, p < .001$  and that they enjoy horror with other people more than males do,  $\chi^2(2) = 29.6, p < .001$ . But most respondents, regardless of gender, reported feeling more scared when they watch a horror film alone than when they watch it with other people. This finding provides additional support for the threat simulation hypothesis. If horror works by stimulating the evolved fear system (Clasen, 2017), and if the fear system evolved to increase vigilance and feelings of anxiety and vulnerability when one is alone (Hawley & Cacioppo, 2010), then watching a horror film alone should increase fear and anxiety, even though one is in no real danger.

We find, then, that the variables of age and sex correlate with patterns of horror consumption, as predicted by our model. Next we turn to personality as a variable for predicting horror consumption.

### **Personality and Horror**

**Sensation seeking.** Previous research has found a robust relationship between preference for horror film and the personality trait known as sensation seeking (Edwards, 1991; Greene & Krcmar, 2005; Hoffner & Levine, 2005; Tamborini & Stiff, 1987; Weaver & Tamborini, 1996; Zuckerman, 1979), defined as a desire for “varied, novel, complex and intense” feelings and experiences (Zuckerman, 1994, p. 27). Very little research has looked at horror in other media, but one study found a positive correlation between sensation seeking and enjoyment of horror video games (Lynch & Martins, 2015), and another found a negative correlation between sensation seeking and magnitude of fear response to horror in virtual reality (Lin, 2017). One meta-review (Hoffner & Levine, 2005) found a significant positive correlation between sensation seeking and enjoyment of movie fright and violence, with consistent correlation coefficients ( $r=.20$ ) across studies. We replicated this result, finding that the sensation seeking (SS) scales were the strongest predictors of the continuous horror media variables. All of the SS subscales and total SS correlated significantly at the  $p<.01$  level or better (two-tailed test) with the scales defining the Horror Enthusiasm factor: enjoyment of horror media ( $r$ s between .12 for Boredom Susceptibility and .28 for Thrill and Adventure Seeking and Total SS), frequency of use ( $r$ s between .12 for Boredom Susceptibility and .26 for total SS), and preference for high-intensity horror ( $r$ s between .07 for Boredom Susceptibility and .20 for Thrill and Adventure Seeking).

Significant negative correlations ( $p < .01$  level or better, two-tailed test) were found between being easily scared by horror and Experience-Seeking ( $r = .22$ ), Thrill and Adventure Seeking ( $r = -.13$ ), Disinhibition ( $r = -.08$ ), and total SS ( $r = -.11$ ).

SS scales were mostly unassociated with the remaining dependent variables. There was a slight tendency for respondents high in Experience-Seeking to be scared more by the natural than the supernatural in horror, and for respondents high on Boredom Susceptibility to use horror with others and enjoy horror with others.

**Big Five traits and horror consumption.** On the assumption that personality traits other than sensation seeking may predict horror consumption, we used the IPIP Big-Five Factor Markers to get a picture of respondents' personality profiles on the so-called "Big Five" traits of Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Intellect/Imagination.

Our results show that Intellect/Imagination is the strongest Big-Five predictor of horror consumption, showing correlations of about the same magnitude as Sensation Seeking. Intellect/Imagination designates a tendency and proclivity for imaginative activity, including cognitive exploration and intellectual stimulation. The factor generally describes people who are intelligent, sophisticated, cultured, imaginative, and creative. Intellect/Imagination correlates ( $r = .20$ ) with enjoyment of horror, ( $r = .13$ ) with being easily scared, ( $r = .21$ ) with frequency of horror use, and ( $r = .10$ ) with preference for more frightening material (all significant at the  $p = .01$  level or lower).

As for the other Big Five traits, Extraversion showed very small but statistically significant correlations with frequency of horror use ( $r = .08$ ), using horror with others ( $r = .10$ ), enjoying horror with others ( $r = .09$ ), and being more scared with others ( $r = .06$ ). Agreeableness

correlated positively with being easily scared by horror media ( $r=.13$ ), using horror with others ( $r=.14$ ), enjoying horror with others ( $r=.16$ ), and negatively with being more scared with others ( $r=-.11$ ). Conscientious people tend to be less scared after using horror, ( $r=.11$ ). People with high Emotional Stability tend to be less easily scared (Reynaud, El Khoury-Malhame, Rossier, Blin, & Khalfa, 2012; Tamborini, 1991) ( $r=-.23$ ), and tend to be less scared after using horror ( $r=-.17$ ).

As for horror as a social experience, one might predict that going to a horror movie with one or more people would be associated with higher levels of the two Big-Five dimensions more associated with sociality, Extraversion and Agreeableness. As indicated above, this prediction was confirmed. The same positive association was found with enjoying horror media alone vs. with others. In contrast, individuals high on Intellect/Imagination tended to enjoy using horror media alone rather than with others. Respondents who reported feeling more scared alone had statistically significant higher levels of Agreeableness.

**Paranormal beliefs and preference for natural vs. supernatural horror.** Some horror critics divide the horror genre into two main subgenres: supernatural and psychological horror (Cherry, 2009). Supernatural horror involves some kind of violation of physical law, such as metaphysical forces, physically implausible monsters, or the like. Psychological horror involves no such violation but tends to focus on pathological psychological states and behavior, e.g. in the depiction of scary mass murderers. The supernatural has been part of literary horror since its inception, and in the cinema, supernatural horror films have dominated the genre for several decades (Follows, 2017; Platts & Clasen, 2017).

Are there systematic differences between people who prefer supernatural horror films over non-supernatural horror films and vice versa? Do such differences track gender, personality,



or belief? T-tests indicated no differences between males and females on preference for supernatural horror or being scared by supernatural horror. Moreover, no personality variables were associated with preferring or being scared more by supernatural vs. natural horror. However, as hypothesized, those who preferred supernatural over natural horror scored higher on Paranormal Beliefs. Correlations between supernatural preference and all the Paranormal Belief subscales and total Paranormal Beliefs ranged from  $r=.08$  to  $.15$ , all statistically significant at the  $p<.01$  level or better (two-tailed test). Higher Paranormal Belief scores were also found for those indicating they were more scared by the supernatural than the natural, with correlations ranging from  $r=.09$  to  $.13$ , again significant at the  $p<.01$  level or better (two-tailed test).

We correlated Paranormal Belief scores with the continuous horror variables. Small, but statistically significant correlations were found between enjoying horror media and all the Paranormal Belief scales except Traditional Religious Beliefs. Being easily scared by horror media had small but statistically significant correlations with Traditional Religious Beliefs, Superstition, Spiritualism, Precognition, and Total Paranormal Beliefs. Frequency of horror media use showed small but significant correlations with all of the Paranormal Belief scales except Traditional Religious Beliefs and Precognition. Preference for more frightening material showed small but significant correlations with Psi Beliefs, Witchcraft, Spiritualism, and Total Paranormal Beliefs.

The positive correlation between preference for supernatural horror and paranormal beliefs is not surprising, if one assumes that people seek out horror media in order to be scared and if people tend to respond more strongly to depictions of threats that they believe to be plausible (Cantor & Hoffner, 1990). All else being equal, people who believe that dangerous demons exist in the real world are likely to find depictions of dangerous demons more disturbing

than are people who hold no such belief. Moreover, malevolent paranormal phenomena are by their very nature difficult, if not impossible, to battle. Depictions of such phenomena, however unrealistic, may affect even skeptics and atheists because they resonate with ancient cognitive structures for agency detection and hazard-precaution (Boyer, 2001; Clasen, 2017)—but apparently not quite as strongly as they affect believers.

**Expected emotions from horror use.** The final item in the survey asked respondents which emotions they expected to experience from using horror media: joy, sadness, disgust, trust, fear, anger, anticipation, and surprise—the eight primary emotions as delineated by Robert Plutchik (2001). Our results indicate that, for the entire sample, respondents most expected to experience fear, anticipation, and surprise (the means for each of the expected emotions on the 1-5 scale were: joy 2.15; sadness 1.85; disgust 2.52; trust 1.72; fear 3.98; anger 1.97; anticipation 4.17; surprise 4.24).

However, as general enjoyment of horror media increases, correlations indicate a statistically significant increase in expected joy ( $r=.33$ ), trust ( $r=.17$ ), anticipation ( $r=.22$ ), and surprise ( $r=.18$ ), and a statistically significant decrease in sadness ( $r=-.15$ ), disgust ( $r=-.11$ ), and anger ( $r=-.15$ ).

Noteworthy, the level of expected fear was the same across all five levels of horror media enjoyment ( $r=.02$ , ns). So, even though the expected level of fear was rather high (about 4 on the 1-5 scale) regardless of level of horror media enjoyment, those who reported high levels of enjoyment expected higher levels of several types of positive emotions (joy, trust, anticipation, and surprise) and lower levels of three other negative emotions (sadness, disgust, and anger) than those who did not enjoy horror media. The expected higher levels of positive emotions and lower

levels of the other negative emotions apparently more than compensated for the high level of expected fear.

### **Discussion**

We opened this paper by invoking the so-called paradox of horror, the strange fact that people seek out entertainment designed to elicit negative emotion. The benign masochism hypothesis helps us make sense of the apparent paradox. There is adaptive value in exposing oneself to negative stimuli in order to identify and push one's limits and achieve a sense of mastery. Moreover, on a proximal level, the positive affect engendered by horror media seems to compensate for the negative affect (Andrade & Cohen, 2007).

We find that horror liking is not a niche phenomenon. Moreover, it is relatively age-dependent, with slightly decreased liking with age. We also find a small gender difference in that males tend to enjoy horror more so than females, use horror more frequently, prefer more frightening material, and be less scared than females after exposure to horror. Males, moreover, use visual horror media alone more often than do females, who are more likely to consume audiovisual horror in groups. We also find a positive correlation between sensation seeking and horror preference and use, and we find a positive correlation between the Big-Five personality dimension of Intellect/Imagination and use, suggesting that people who seek out horror tend to desire intellectual, imaginative stimulation. Finally, we find that people with stronger beliefs in the paranormal tend to seek out horror media with supernatural content, whereas those with weaker beliefs in the paranormal gravitate toward horror media with natural content, suggesting that people seek out horror media with threatening stimuli that they perceive to be plausible.

People who seek out horror, then, expect a high level of fear from using horror media, but people high on Sensation-Seeking and Intellect/Imagination, in particular, also expect to experience positive emotions, such as joy and anticipation. While most people hope to experience a high level of fear from using horror media, those who consider themselves hardest to scare claim to like horror media most (recall that the correlation between the Enthusiastic Horror Use factor and being easily scared was  $r=-.37$ ). These people use horror media more often, and they prefer more extreme forms of horror, which supports the benign masochism account of horror media. Such media provide a stimulus for gradual mastery of initially aversive situations. With exposure, one builds up a certain level of coping competence. This effect is likely moderated by other variables, such as age, gender, sensation seeking, and intellect/imagination.

Our results thus support an evolutionary conception of horror media use and the threat simulation hypothesis. People find pleasure in imaginative simulations of threat scenarios as a form of benign masochism, whether in literature, film, or video games. Through such simulations, individuals can expand their behavioral and emotional repertoire through enduring an initially (partly) aversive stimulus. Such horror simulations may thus serve the adaptive function of preparation for real-world encounters with negative emotions and/or hostile others.

### **Conclusion**

Our results together support the evolutionary threat-simulation hypothesis of the function of horror. According to this hypothesis, people tend to find pleasure in imaginative experience with threat scenarios because such experience serves the adaptive function of preparation for real-world threat situations. Individuals who desire intellectual stimulation, in particular, find horror

use gratifying. Such mediated experience with threat scenarios opens up a vast simulatory space for emotional and cognitive play, for behavior regulation and norm exploration, and for building and displaying mastery. Horror media provide a context for gradually acquiring vicarious experience with fear-, anxiety-, and dread-evoking stimuli, thus, in Steven Pinker's words, opening up "beneficial regions in the space of local experiences."

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