

ELICITATION OF EMPATHIC EMOTIONS USING FILM: DEVELOPMENT OF A
STIMULUS SET

BY

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THESIS

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ABSTRACT

Empathy is a complex, multi-component construct broadly defined as the ability to understand and share another person's emotional state (Davis, 1996). Empathy is intimately engrained in social interactions (Hoffman, 2008), and the understanding of empathic emotions is integral to the advancement of our conceptualization of human behavior. Furthermore, there is increasing interest in the elicitation and induction of empathic emotions, particularly in the context of specific psychopathologies that are characterized by dysfunction in both affective (e.g., psychopathy; Blair, 1995) and cognitive (e.g., autism; Hill & Frith, 2003) aspects of empathic responsiveness. The use of emotional film clips provides several advantages compared to other methods of emotion elicitation, including ease of standardization and a high degree of ecological validity. Furthermore, given the complex nature of empathy, film clips allow for presentations of more emotional and complex stimuli in relatively short periods of time compared to other methods (e.g., static images). To date, research on the validation of film stimuli has primarily focused on the elicitation of discrete emotions (e.g., happiness, anger), and a standardized database available to all researchers is needed that considers the elicitation of more complex emotions, such as empathy.

The primary goal of the current study was to validate a new set of short film clips for use in research attempting to elicit empathic emotions. Several components were considered in validation, including comparison of empathy film clips to both neutral film clips consisting of nature scenes and persons in conversation, as well as control negative, non-empathy emotional films consisting of both horror and people in distress. Additionally, we made comparisons across various participant ratings, including general

negative affect, positive affect, valence, arousal, intensity, and discreteness, which have been used in prior studies validating film clip stimuli (e.g., Gross & Levenson, 1995).

Overall, the results suggest that all of the Empathy film clips assessed in the current study elicited higher ratings of empathic concern compared to Non-Empathy unpleasant and Neutral film clips. However, Empathy film clips differed slightly on ratings of other emotion dimensions (e.g., general negative and positive affect, arousal) and whether empathy was elicited with discreteness relative to the other film categories. The use of several methods to validate these film clips allow the current film set to be employed in research that approaches the elicitation and measurement of empathic emotion. Additionally, recommendations are discussed that control for certain aspects of empathy, such as the presence of general affect as opposed to measuring empathy as a whole. These recommendations may be considered when selecting specific film stimuli for the development of experimental paradigms focusing on the elicitation and assessment of empathy.

Keywords: Empathy; Emotion; Films; Validation

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CHAPTER 1

INTRODUCTION

There is increasing interest in understanding emotion in the context of cognitive and behavioral functioning. In an effort to examine emotional processes under experimental conditions, researchers have utilized a variety of methods to elicit specific emotions experienced by individuals, including, but not limited to, the use of static images (Bradley & Lang, 2000), vignettes (Weiner, 1985; Pollak, Cicchetti, Hornung, & Reed, 2000), interactions with confederates (Ax, 1953; Roberts, Tsai, & Coan, 2007), and films (Philippot, 1993, Gross & Levenson, 1995, Schaefer, Nils, Sanchez, & Philippot, 2010). The use of emotional films in particular has been a popular method of eliciting discrete emotions (e.g., happiness, sadness, fear, anger), in part because they offer the unique advantage of providing more dynamic, emotionally intense, and ecologically-relevant stimuli. The use of film clips in research involving emotion elicitation is considered superior to alternative methods (e.g., static images, confederates) in inducing both positive and negative emotions (Westermann, Spies, Stahl, & Hesse, 1996). For one, film clips contain more contextual information compared to static images, which allows the researcher to examine complex emotions that may not be achieved using discrete stimuli. Furthermore, film clips integrate visual and auditory information, which has the potential to communicate information across sensory modalities in a meaningful way (Schaefer et al., 2010). Lastly, film clips are more likely to be perceived by the viewer as an enjoyable and familiar activity, and therefore less likely to be observed as manipulative compared to experimental and laboratory-like paradigms (Gross & Levenson, 1995). Despite the fact that the goal is to

elicit intense emotional responses, sometimes positive and often negative, movie-viewing as emotion elicitation allows for the elicitation of strong emotions in an experimental setting while maintaining ethical guidelines (Rottenberg, Ray, & Gross, 2007).

The study of empathy as a complex emotional construct has also gained momentum in psychology (Decety, Skelly, & Kiehl, 2013; Schreier et al., 2013; Gillespie, McCleery, & Oberman, 2014). The study of empathy is important due to propositions in the literature that a major role of empathy is to promote positive social bonding and interactions, such that the ability to empathize with others is innate and present in children from early infancy (Zahn-Waxler & Radke-Yarrow, 1990). Similarly, social psychologists view empathy as important in motivating prosocial behavior (Davis, 1994) and developmental psychology portrays empathy as aiding in the inhibition of aggressive and violent behavior, perhaps through the development of a conscience (Hoffman, 2001). Given the interest in studying empathy, and some limitations associated with current methods of eliciting this complex emotion (discussed below), the present study sought to validate a set of films for the elicitation and assessment of empathy in the laboratory. These stimuli could then be used to distinguish individuals varying on personality traits or pathological symptoms (e.g., psychopathy, autism) that have been implicated in prosocial and helping behaviors.

Definition of and Distinctions in Empathy

Despite the growing interest, or maybe because of it, empathy has been operationalized in a variety of ways, resulting in various meanings in the literature. Definitions of empathy range from being able to imagine oneself in another person's

mental state (i.e., perspective-taking; Toi & Batson, 1982), to having an affective response that stems from the apprehension of seeing another individual in a distressing emotional state (Decety, 2009; Pouw et al., 2013). This awareness of and response toward another individual's emotional experience may occur as a cognitive understanding of an emotional state or as a vicarious affective response toward another (Davis, 1994). Cognitive empathy has been conceptualized as the ability to understand the thoughts, feelings, and emotions of others (Davis, 1983). Alternatively, affective empathy has been defined as the ability to observe the emotional response of another and generate an appropriate emotional reaction (Feshbach, 1987). Although both cognitive and affective empathy are associated with the generation of altruistic behavior (Rubin & Schneider, 1973; Penner, Dovidio, Piliavin, & Schroeder, 2005), some research suggests that affective empathy results in more empathic arousal on the part of the observer, and therefore an overall increased propensity toward altruism (Hoffman, 1984). Although cognitive empathy likely plays an important role in altruistic behavior, it is may be the interaction of affective empathy with cognitive components that plays a larger role in altruistic responding (Hoffman, 1984). The use of film stimuli in research allows for the elicitation of vicarious affective responses through the depiction of others' in distress, thus affective aspects of empathy.

A common thread throughout most definitions of empathy is the idea that empathic experiences are more congruent with the other individual's situation than with one's own (Hoffman, 2000). These other-focused emotions that result from witnessing another person in distress have similarly been conceptualized as sympathy or compassion (Wispé, 1986). Other-focused sympathetic emotions have been associated

with prosocial and altruistic behavior in moral philosophy (Batson et al., 1991), from which the individual “derives nothing from it except the pleasure of seeing it.” (Smith, 2005). However, this altruistic theory of empathy has been challenged by others, who suggest that a willingness to help another may be achieved through self-oriented motivations, such as personal distress or anxiety reduction (Maner et al., 2002). For example, feelings of negative affect experienced when observing another in distress may often lead one to assist another with the concurrent goal of relieving one’s own distress (Davis, 1994; Piliavin & Charng, 1990). One suggestion that may serve to alleviate the empathy-altruism dilemma is that altruistic empathy may still include one’s own need, so long as the *ultimate* goal driving motivation to help is the reduction of the others’ distress, whereas relieving one’s own aversive arousal remains a *proximate* goal (Batson et al., 1987). This suggests that when empathic emotion is elicited, co-occurring aversive feelings of personal distress or anxiety may influence the extent to which one experiences empathic emotions directed toward another individual in distress, as well as motivation to help.

Indeed, it is important to consider distinct manifestations of empathic response when engaging in research that aims to elicit or assess empathic behavior. Research suggests that the means by which individuals adopt another person’s point of view, such as imagining how the other person feels as opposed to how they themselves would feel in an identical situation, paves the way by which individuals will respond cognitively and behaviorally. Specifically, Batson, Early, and Salvarani (1997) suggest that when a person adopts an other-oriented view by focusing specifically on the individual in distress, the observer is more apt to feel sympathy and compassion (i.e.,

empathic concern), resulting in prosocial behavior. This form of empathy has been a focus in research on physician training and well-being, where one goal of health professionals (e.g., doctors, nurses) in the context of patient interaction is to express compassion and empathy, while at the same time maintaining composure and avoiding a focus on their own distress (Klimecki, Leiberg, Ricard, & Singer, 2013). Alternatively, if an individual experiences significant emotional distress themselves when observing a person in distress, they may be more likely to adopt a self-oriented “personal distress” response, which results in aversive emotional discomfort (e.g., anxiety), and increased propensity for egoistic, or self-oriented, behavior and motivation to withdraw from the aversive situation (as a primary, or ultimate goal). From a prosocial standpoint, feelings of self-oriented, egoistical personal distress may result in the individual being more likely to primarily focus on goals of relieving their own stress, rather than focusing primarily on helping the other individual (Batson et al., 1983). In the example of health-care professionals, this type of orientation is concerning in that it is more likely to result in increased stress and burnout for the physician, ultimately resulting in decreased quality of care for patients (Lamothe, Boujut, Zenasni, & Sultan, 2014). Additionally, these distinctions in empathy-related emotions (empathic concern versus personal distress) are likely to be associated with different types of general emotionality. For example, given that personal distress appears to tap into feelings of self-oriented anxiety and discomfort, it has been suggested that this construct may be more congruent with general feelings of negative affect (Fernandez, Dufey, & Kramp, 2011) compared to empathic concern. This distinction between empathic concern and personal distress highlights the importance of considering divergent patterns of

empathic behavior and motivation when analyzing how individuals engage in social interactions.

Elicitation of Empathic Emotion

When engaging in emotion and behavioral research, it is important to consider the process by which individuals come to experience empathic emotions. Historically, assessments of empathic capacity have primarily relied on self-report measures of dispositional empathy and/or behavioral ratings of prosocial responsiveness in distressing situations. For example, the majority of Batson's seminal paradigms assessing empathic motivation (see Batson, 1991, for a review) involve providing participants with a "need" situation consisting of short stories or confederate interactions where someone is in distress. These stories or scenarios vary on the ease by which the participant can choose to assist the "other" or escape (i.e., easy versus difficult escape). These paradigms have concluded that individuals who endorse high trait levels of empathic concern, as defined by adjective ratings (e.g., compassion, warmth), are more likely to help even when escape is easy, compared to individuals high on personal distress (e.g., uneasiness, grieved). This approach to understanding empathy focuses specifically on general trait, rather than state, levels of empathy. The present study attempts to develop laboratory film stimuli that reliably elicit empathic responses, which would eventually allow researchers to assess responsiveness and orientation toward empathic stimuli without relying solely on trait-level measures of general empathic orientation.

Laboratory research in the elicitation of empathy has relied largely on either abstract vignettes (e.g., Batson paradigms) for which participants simply listen to or read a story,

or static images and extremely short, 1-2 second video clips consisting of limited context (e.g., depiction a man making a painful facial expression triggered by some aversive sound; Jackson, Meltzoff, & Decety, 2005; Costantini, Galati, Romani, & Aglioti, 2008; Akitsuki & Decety, 2009; Osborn & Derbyshire, 2009). The use of these stimuli (e.g., Lamm, Batson, & Decety, 2007; de Wied, Boxtel, Matthys, & Meeus, 2012) often do not contain considerable context that may be required to elicit a complex emotion such as empathy. Additionally, these methods do not allow for differentiation of the variety of emotions that may overlap with empathic emotions, such as personal distress and anxiety. Thus, a focus on the use and validation of longer film clips that convey a larger amount of information for the elicitation of complex emotions (such as empathy) may provide a viable alternative to eliciting empathic emotion. As noted before, film clips have the ability to employ particularly complex stimuli in a short amount of time (Rottenberg, Ray, & Gross, 2007; Schaefer, Nils, Sanchez, & Philippot, 2010). As an example, the film clip taken from *The Champ* (for scene descriptions, see **Table 1**), allows the viewer to see both the boy's emotion and pain of losing a loved one, as well as experience first-hand the situation that caused his pain—the death itself. Also included within the context of film clips is sound and dialogue (e.g., crying, emotional music) that increases the potency of the stimuli and conveys emotional information in a way that static images cannot achieve.

Prior research examining the elicitation of discrete emotions has focused on distinguishing individual film clips on criteria such as valence (i.e., pleasantness), arousal (i.e., intensity), and discreteness of the emotion elicited (e.g., Gross & Levenson, 1995). Although some research on empathy elicitation distinguishes

between distinct types of empathy—such as self versus other-oriented (Batson et al., 1991) and affective versus cognitive (Hoffman, 2008)—no methods of empathy elicitation to date consider differences between video clips on several criteria, including ratings of valence, arousal, discreteness, or while explicitly considering other discrete emotions (e.g., anxiety).

CHAPTER 2

PRESENT STUDY

The current study aimed to create and validate a set of film clips that focus explicitly on the elicitation of empathic emotions. Specifically, we aimed to test various film clips on their ability to produce experiences of emotion that are specific to the *affective* components of empathy, including empathic concern and personal distress, as well as distinguishing these feelings from more general feelings of positive and negative affect across film clips selected for content reflecting empathy, non-empathy unpleasant, and neutral or relaxing. As discussed previously, empathic concern and personal distress are largely distinguished by other- versus self-focused emotions. We therefore sought to discriminate film clips on both elicitation of differential state emotions related to empathy (e.g., personal distress versus empathic concern), as well as on elicitation of more general positive and negative affect dimensions. In addition, we sought to discriminate film clips on measures of valence (pleasantness), arousal (intensity), and discreteness of the emotion elicited, which have been previously used as key criteria in film validation studies (e.g., Gross & Levenson, 1995; Schaefer et al., 2010). This allowed us to further differentiate film stimuli across several dimensions.

CHAPTER 3

MEASURES AND METHOD

Participants

A total of 191 undergraduate students (mean age 19.43, $SD = 1.53$) from an Introductory Psychology course participated in the study and received course credit as compensation. The participants included 129 females and 62 males. Four participants chose not to specify their racial/ethnic background. Of the remaining 187 participants, 45% identified as Asian, 37.7% as White, 9.4% as Hispanic, and 5.8% as Black or African American. Additionally, 47.1% of the participants were Freshmen (1st year) undergraduate students, followed by 24.6% Sophomores (2nd year), 15.2% Juniors (3rd year), and 12.6% Seniors (4th year).

The study was divided into two phases involving a *pilot* phase ($N = 59$) and a *validation* phase ($N = 132$), as described below. Participants in the two phases were similar in demographic characteristics, with two exceptions. An independent samples *t*-test revealed significant differences between participants in the two phases in age, $t(160.23) = 3.71$, $p < .001$, and year in school, $t(189) = 2.03$, $p = .04$. Participants in the pilot phase were younger ($M = 18.92$, $SD = 1.10$), and enrolled in a lower year in college ($M = 1.71$, $SD = .97$), than participants in the validation phase (Age: $M = 19.67$, $SD = 1.64$; Year in school: $M = 2.05$, $SD = 1.12$).

Study Design

Film clips were selected for inclusion prior to the beginning of the study by viewing a large number of movies that were considered appropriate in content for the needs of the study, especially those that included clips that would elicit empathic concern. Film clip options were obtained from (1) prior research, particularly studies that investigated the elicitation of discrete emotions (e.g., happiness, sadness; Rottenberg, Ray, & Gross, 2007) and (2) suggestions solicited from the local clinical psychology community (e.g., lab members). Ultimately, 19 film clips were chosen for inclusion across the two phases of the study that were expected to elicit specific emotions (6 empathy clips, 4 non-empathy unpleasant clips, and 9 neutral clips). Selection of these film clips were determined on the basis of several factors: (1) length, as all film clips had to be relatively short for purposes of validation and elicitation of emotions; (2) plot complexity, as film content had to be intelligible in a short period of time; and (3) discreteness—based on our judgment, we selected films that were likely to elicit a specific emotional state of either empathy for other’s distress, non-empathy unpleasant (negative affect), or neutral.

These film clips were divided into two phases in a sequential fashion to first pilot an initial set of film clips and then validate a final set with a larger number of participants. All analyses were conducted within each phase. The pilot phase included five film clips in the *Empathy* category that aimed to elicit feelings of empathic concern for others’ distress, two negative film clips in a *Non-Empathy* unpleasant category that would elicit feelings of horror and disgust (unpleasant control films), and five *Neutral* film clips that included scenes of nature, the latter based on suggestions from previous film

validation studies (Bartolini, 2011). See **Table 1** for information about film clips in each phase, including target emotion, run times, and scene descriptions. Upon completion of the pilot phase, we adjusted the film clips included in the protocol in order to provide more appropriate comparisons to the elicitation of empathic emotions.

In the validation phase, we replaced the two film clips in the Non-Empathy unpleasant category to focus on scenes that involved people in distress, as a more appropriate comparison to the Empathy films, but involving more impersonal scenes of catastrophe and adversity to large groups of people (less likely to elicit empathic concern). As well, within the Neutral film category, we replaced three of the six nature scenes with three neutral film clips that focused specifically on people (e.g., two people conversing about neutral topic), again as a more appropriate comparison to the people-focused empathy films. Finally, we removed *Requiem for a Dream* and substituted *Up* in the Empathy category, as the former film did not reach an adequate Intensity score (see Results section) and several participants reported feelings of confusion during the film.

The film clips ranged from 48 -179 seconds in length. Start and end times were determined based on the specific details of the scene, including length compared to other video clips within each category and plot details, in order to provide a thorough and understandable plot that would be most likely to elicit emotion in a short amount of time. For film clips that were validated as emotion-inducing in prior research studies (e.g., *The Champ*, *My Girl*), we used published recommendations for start and end times (Bartolini, 2001; Rottenberg et al., 2007). No two film clips were from the same film, and all films are commercially available.

Procedure

Participants came into the laboratory in subgroups of up to 5 people. After signing an informed consent form, each participant completed a brief set of questionnaires intended to assess (1) demographic information and (2) baseline mood. The baseline mood scale involved a modified version of the *Positive and Negative Affect Schedule* (PANAS; Watson et al., 1988), wherein participants rated 47 adjectives according to their current mood at the beginning of the session (not discussed in the current paper). Then, lights were dimmed in the room before beginning the film clip sequence. All participants viewed all the films within each phase. The film clips of emotional content within both the pilot and validation phase were randomized and each emotion-eliciting film clip was always followed by a neutral film clip, in order to reduce carry-over effects of emotional ratings. Participants were instructed that they would view several film clips, and that they would report their emotional reactions to each film by completing a questionnaire after each viewing. Questionnaires were placed face-down in front of each participant, and they were instructed not to turn over the sheet until the end of each film clip. Participants were also instructed to report what they actually felt during each clip, and not how they believed people should react, as well as to report how they felt at the time they were viewing each specific clip, and not on their general mood (Philippot, 1993).

Measure of Emotion Elicitation

To assess the elicitation of empathic and other emotions as well as discrete emotions (e.g., happiness, disgust, anger), we used a modified version of the Post Film Questionnaire (PFQ; Rottenberg, Ray, & Gross, 2007). This questionnaire includes several adjectives from the *Differential Emotions Scale* (DES; Izard et al., 1974), one of the most widely used self-report scales of discrete emotional dimensions (Youngstrom & Green, 2003). For the purposes of the present study, the PFQ was expanded to include empathy adjectives suggested by Batson (1987), which have been used to evaluate empathic concern (e.g., sympathetic, warm) versus personal distress (e.g., worried, grieved) in discrete settings. The PFQ also included negative affect and positive affect-related emotion adjectives taken from the *Positive and Negative Affect Schedule* (PANAS; Watson et al., 1988). Thus, we attempted to capture the following 4 emotion rating dimensions with our PFQ: negative affect, positive affect, empathic concern and personal distress. Participants rated these 24 adjectives after each film clip according to how they felt while viewing each one.

In order to determine whether the PFQ captured our hypothesized emotion dimensions (i.e., empathic concern, personal distress, negative affect, positive affect), we performed a principal components analysis with promax rotation ($k = 4$) on all post-film adjective ratings. Factor loadings for the subscales were considered notable if they loaded .30 or greater on the extracted factors (Costello & Osborne, 2005). On the basis of standard scree plot and eigenvalue (> 1) criteria, we extracted three factors involving (1) Negative Affect (e.g., anxiety, upset, disturbed), (2) Empathic Concern (e.g., warm, sympathetic, grieved), and (3) Positive Affect (e.g., interested, happy); capturing 51, 13,

and 6% of variance, respectively. The factors extracted were similar regardless of whether baseline ratings or post-film emotion ratings were used in factor analysis. For the purpose of analyses, we reverse-scored positive affect ratings to provide clarity when comparing between rating groups, such that levels of empathic concern could be compared to both high negative affect and low positive affect simultaneously. Also, given that adjectives that were meant to assess Batson's concept of Personal Distress loaded on Negative Affect, we maintained only the three scales that included Negative Affect (overlapping with Personal Distress), Empathic Concern, and Low Positive Affect in subsequent analyses, which were defined by computing the mean scores of adjectives attributable to each scale.

Lastly, we included two non-pictorial scales in the PFQ that are similar to the *Self-Assessment Manikin* (SAM; Bradley & Lang, 1994) in order to directly measure experienced pleasantness (valence) and intensity (arousal) of their emotions during the film on a Likert scale of 0 (unpleasant; not at all intense) to 8 (pleasant; extremely intense). Inclusion of these scales allowed for a measurement of perceived pleasantness and arousal in response to individual film clips as an additional method of comparing what was elicited by empathy clips compared to other film groups (i.e., non-empathy negative and neutral).

CHAPTER 4

RESULTS

See **Table 2** for mean ratings for each film type category in both pilot (top panel) and validation (bottom panel) phases.

1. Do the empathy film clips elicit expected emotional ratings relative to other film types?

A repeated measures film type (Empathy, Neutral, Non-Empathy) x emotion rating (Empathic Concern, Negative Affect, low Positive Affect) ANOVA was conducted separately within each phase in order to determine whether film clips aimed to elicit *Empathy* as a target rating were significantly different on emotion ratings compared to film clips that were considered *Non-Empathy* or *Neutral* clips. Additionally, to further extrapolate differences between film types, a repeated measures ANOVA was conducted separately within each phase to test the effect of film type on both the arousal and valence scales. Preliminary analyses indicated that Mauchly's test of sphericity had been violated for several analyses. Therefore, degrees of freedom were corrected for all effects in subsequent analyses using Greenhouse-Geisser estimates of sphericity ($\epsilon = .80$). Given that follow-up analyses included nine total contrasts, we used a Bonferroni correction to determine significance of follow ups ($p < .006$), in order to maintain a conservative approach and reduce the possibility for Type 1 error.

Pilot phase. In the pilot phase, *Non-Empathy* film clips included those that aimed to elicit feelings of horror and disgust (e.g., *The Fly*) and *Neutral* film clips included scenes of nature (see Table 1, top panel, for video descriptions). The Film Type

(Empathy, Neutral, Non-Empathy) x Emotion Rating (Empathic Concern, Negative Affect, low Positive Affect) ANOVA revealed a significant main effect of film type, $F(1.86, 106.16) = 101.49, p < .001, \eta_p^2 = .64$ and emotion rating type, $F(1.60, 91.16) = 326.87, p < .001, \eta_p^2 = .85$. These effects were modified by a significant film type by emotion rating type interaction $F(3.33, 189.99) = 131.68, p < .001, \eta_p^2 = .70$.

This interaction was decomposed by conducting follow-up analyses of film type separately for each emotion rating. There were significant main effects of film type separately for empathic concern, $F(1.83, 104.36) = 218.66, p < .001, \eta_p^2 = .79$, negative affect, $F(1.59, 90.36) = 115.82, p < .001, \eta_p^2 = .67$, and low positive affect, $F(1.76, 100.48) = 16.77, p < .001, \eta_p^2 = .23$. Table 2 (top panel) summarizes the differences observed. For the empathic concern ratings, follow-up individual contrasts using Bonferroni correction indicated that the Empathy film clips were rated significantly higher on empathic concern than those in the Neutral, $t(58) = 14.97, p < .001$, and Non-Empathy, $t(57) = 18.86, p < .001$, categories, whereas the Neutral and Non-Empathy film clips showed only marginally significant differences on empathic concern ($p = .04$). For the negative affect ratings, the Empathy film clips were rated significantly higher on negative affect than Neutral film clips, $t(57) = 13.13, p < .001$, as were the Non-Empathy film clips, $t(57) = 12.62, p < .001$. However, the Empathy film clips were rated significantly lower on negative affect compared to Non-Empathy film clips, $t(57) = -5.30, p < .001$. For the low positive affect ratings, the Empathy film clips were rated significantly higher on low positive affect than those in the Non-Empathy category, $t(57) = 3.83, p < .001$, but did not significantly vary from the Neutral film clips ($p = .03$). Overall, these results suggest that film clips in the Empathy category were successful in

eliciting emotions of empathic concern compared to other film clips. Also, the Empathy film clips elicited higher levels of low positive affect, but lower levels of negative affect compared to Non-Empathy unpleasant film clips.

Next, we conducted two repeated measures ANOVAs to test the effects of film type (Empathy vs. Neutral vs. Non-Empathy) separately on the valence (pleasantness) and arousal (intensity) scales. A main effect of film type was observed for both emotional valence, $F(1.6, 92.79) = 85.37, p < .001, \eta_p^2 = .60$, and arousal $F(1.92, 111.57) = 194.08, p < .001, \eta_p^2 = .77$. First, participants rated Empathy film clips as significantly less pleasant than Neutral film clips, $t(58) = -8.87, p < .001$, but slightly more pleasant than Non-Empathy film clips, $t(58) = 5.57, p < .001$. Second, Empathy film clips elicited significantly higher arousal ratings than Neutral film clips, $t(58) = 15.55, p < .001$, and lower arousal ratings than Non-Empathy film clips, $t(58) = -4.15, p < .001$. It should be noted that, although the Empathy film clips were rated less arousing and more pleasant than the Non-Empathy film clips, the mean ratings on valence and arousal were much more similar between these two film categories compared to Neutral film clips (see Table 2).

Validation phase. In this phase, Non-Empathy film clips included those involving groups of individuals experiencing distress (e.g., catastrophe) from an impersonal stand point by the viewer, and Neutral film clips included both some nature scenes as well as scenes of persons engaged in neutral dialogue (see Table 1, bottom panel). Finally, *Requiem for a Dream* was replaced by *Up* in this phase for the Empathy film clips. Film Type x Emotion Rating analyses revealed a significant main effect of film type, $F(1.89, 247.17) = 288.55, p < .001, \eta_p^2 = .69$, and emotion rating, $F(1.35, 176.47) = 561.67, p <$

.001, $\eta_p^2 = .81$. These effects were modified by a significant film type by emotion rating interaction, $F(2.95, 386.17) = 298.85, p < .001, \eta_p^2 = .70$.

Follow up analyses within each type of emotion rating revealed significant main effects of film type separately for empathic concern, $F(1.98, 259.61) = 502.51, p < .001, \eta_p^2 = .79$, negative affect, $F(1.54, 201.58) = 258.59, p < .001, \eta_p^2 = .66$, and low positive affect, $F(1.91, 249.80) = 118.69, p < .001, \eta_p^2 = .48$. Individual contrasts using Bonferroni correction ($p < .006$) were similar to the results outlined in the pilot phase, indicating that the Empathy film clips were rated significantly higher on empathic concern than Neutral, $t(131) = 29.41, p < .001$, and Non-Empathy, $t(131) = 22.48, p < .001$, film clips (see Table 2 bottom panel for means). They were also rated significantly higher on negative affect than Neutral film clips, $t(131) = 16.68, p < .001$, and lower on negative affect compared to Non-Empathy film clips, $t(131) = -7.93, p < .001$. As well, the Empathy film clips were rated significantly lower on low positive affect than Neutral, $t(131) = -7.19, p < .001$, and higher on low positive affect than the Non-Empathy category, $t(131) = 9.15, p < .001$.

As before, two other repeated measures ANOVAs were conducted to test the effect of film type (Empathy vs. Non-empathy vs. Neutral) separately on the valence (pleasantness) and arousal (intensity) scales. A main effect of film type was again observed for both emotional valence, $F(1.54, 201.45) = 55.75, p < .001, \eta_p^2 = .30$, and arousal, $F(1.81, 236.54) = 411.38, p < .001, \eta_p^2 = .76$. Follow up contrasts revealed that Empathy film clips were rated as significantly less pleasant than Neutral film clips, $t(131) = -6.79, p < .001$, and more pleasant than Non-Empathy film clips, $t(131) = 4.79, p < .001$. In terms of arousal ratings, Empathy film clips elicited significantly higher

arousal than Neutral film clips, $t(131) = 22.29$, $p < .001$, and lower arousal than Non-Empathy film clips, $t(131) = -6.05$, $p < .001$.

These results are consistent with those from the pilot phase, and suggest that film clips in the Empathy category were successful in eliciting emotions of empathic concern compared to other film clips, even when we adjusted the non-empathic negative and neutral films to be more comparable in content (e.g., neutral film clips involving people conversing, negative film clips involving distress to groups of people). Additionally, results for the valence and arousal scales suggest that the film clips aimed to elicit empathic emotions may be effective in eliciting both increased arousal compared to neutral stimuli, while still avoiding excessive negative affect of a more general nature, as compared to film clips aimed to elicit negative, non-empathic emotions.

2. Evaluation of individual empathy clips

Next, it was important to evaluate the empathy film clips individually to evaluate which were optimally eliciting the expected emotion, as determined by emotional ratings (empathic concern, low positive affect, negative affect; valence, arousal). To do this we first conducted repeated measures ANOVAs comparing each individual film clip separately from the Empathy category to the mean of the Non-Empathy and Neutral film categories. Preliminary analyses indicated that Mauchly's test of sphericity had been violated for several analyses. Therefore, degrees of freedom were again corrected for all effects in subsequent analyses using Greenhouse-Geisser estimates of sphericity ($\epsilon = .80$). For follow-up analyses, we compared each individual Empathy film clip (five

total within each phase) to Neutral and Non-Empathy film types across the three emotion rating types (empathic concern, low positive affect, negative affect), resulting in a total of 30 follow-up individual contrasts. As before, in order to reduce the possibility for Type 1 error, we used a Bonferroni correction ($p < .002$) to determine significance for all follow-up analyses within the current hypothesis. See **Table 3** for descriptives of individual film clips within each category for both pilot (top panel) and validation (bottom panel) phases.

Pilot Phase. In the pilot phase, a significant main effect of film type was observed separately comparing each Empathy film clip to Non-Empathy and Neutral film clip means on empathic concern, low positive affect, and negative affect (See **Table 4, top panel**, for F and t values of each analysis). For empathic concern ratings, follow-up individual contrasts indicated that all five individual Empathy film clips were rated significantly higher on empathic concern than the mean of the Neutral and Non-Empathy categories. In addition, each individual Empathy film clip was rated significantly higher on negative affect than Neutral film clips and lower on negative affect compared to Non-Empathy film clips, except for *The Color Purple* and *The Champ*, which did not differ from Non-Empathy film clips on negative affect ($ps = .173$ and $.004$, respectively). In terms of low positive affect, none of the film clips significantly varied from the Neutral film clips ($ps = .005 - .8$). Finally, *My Girl* and *Requiem for a Dream* were the only two rated significantly higher on low positive affect compared to the Non-Empathy category.

Next, we conducted two repeated measures ANOVAs for each individual Empathy film clip to test the effects of film type separately on the valence

(pleasantness) and arousal (intensity) scales. A main effect of film type was observed for both emotional valence and arousal (see **Table 4, top panel**). First, participants rated each individual Empathy film clip as significantly less pleasant than Neutral film clips, but more pleasant than Non-Empathy film clips, except for *The Champ* and *The Color Purple*. For these two film clips, participants did not significantly differ on ratings of pleasantness compared to Non-Empathy film clips (p 's = .02 and .08, respectively). Second, each individual film clip elicited significantly higher arousal ratings than Neutral film clips. Finally, *Requiem for a Dream* was the only one rated significantly lower on arousal ratings compared to the Non-Empathy category.

Overall, these results suggest that each individual Empathy film clip was successful in eliciting the expected emotional rating of empathic concern compared to Non-Empathy and Neutral film clips, with some variability across them in terms of negative affect and low positive affect elicitation relative to Neutral or Non-Empathy films.

Validation Phase. A significant main effect of film type was observed separately comparing each Empathy film clip to Non-Empathy and Neutral film clips on empathic concern, low positive affect, and negative affect (See **Table 4, bottom panel** for F and t values of each analysis). Follow-up individual contrasts using Bonferroni correction ($p < .002$) indicated that all five Empathy film clips were rated significantly higher on empathic concern than those in the Neutral and Non-Empathy categories, while each was rated significantly higher and lower on negative affect than Neutral and Non-Empathy film clips, respectively. However, *The Color Purple* was not significantly different on negative affect ratings compared to Non-Empathy film clips ($p = .17$). For

the low positive affect ratings, each Empathy film clip was rated significantly lower on low positive affect than the Neutral film clips, except for *The Champ*, which was only rated marginally lower on low positive affect compared to Neutral film clips ($p = .006$). Furthermore, each Empathy film clip was rated higher on low positive affect compared to the Non-Empathy category, except for *Up* ($p = .19$).

As before, a main effect of film type was observed for both emotional valence and arousal. First, participants rated each individual Empathy film clip as significantly less pleasant than Neutral film clips, but more pleasant than Non-Empathy film clips, except for *The Champ* and *My Girl*, which did not significantly differ on ratings of pleasantness compared to Non-Empathy film clips ($p = .14$ and $.60$, respectively). Second, each individual film clip elicited significantly higher arousal ratings than Neutral film clips, and lower arousal ratings than Non-Empathy film clips, except for *The Champ* and *The Color Purple*. For these two film clips, ratings of arousal did not significantly differ from Non-Empathy film clips ($p = .13$ and $.10$, respectively).

Again, these results suggest that each individual Empathy film clip was successful in eliciting the expected emotional rating of empathic concern compared to Non-Empathy and Neutral film clips, but that some film clips, such as *The Color Purple*, *The Champ*, and *My Girl* may also elicit general negative affect or unpleasantness (valence) comparable to the Non-Empathy film category.

3. What discrete emotions are elicited by the film clips?

In line with previous research focusing on discrete emotionality, we sought to determine whether each individual emotional film clip elicited expected “discrete”

emotions, as indicated by adjective ratings (Rottenberg, Ray, & Gross, 2007). Although empathy is considered a more complex emotion (Chakrabarti, Bullmore, & Baron-Cohen, 2006), for the subsequent analyses we utilized a single adjective rating of *sympathy* taken from the PFQ to characterize a discrete emotion that should be reliably elicited by each Empathy film clip. This allowed us to use a construct of empathy on par with other “discrete” ratings established by the PFQ, and commonly observed in emotion research, as opposed to using computed scores of empathy from previous analyses (Schaefer et al., 2010). For each film separately, repeated measures discrete emotion rating ANOVAs (anger, unhappiness, disgust, anxiety, sympathy) and follow-up paired *t*-tests were conducted to verify if “sympathy” was the emotion rated highest for Empathy film clips. Preliminary analyses indicated that Mauchly’s test of sphericity had been violated for several analyses. Therefore, degrees of freedom were corrected for all effects in subsequent analyses using Greenhouse-Geisser estimates of sphericity ($\epsilon = .86$). For follow-up analyses, we compared each individual Empathy film clip (five total within each phase) to emotion rating scores (anger, unhappy, disgust, anxiety, sympathy), resulting in a total of 25 follow-up individual contrasts. As before, in order to reduce the possibility for Type 1 error, we used a Bonferroni correction ($p < .002$) to determine significance for all follow-up analyses within the current hypothesis. Finally, consistent with prior research (Gross & Levenson, 1995), we computed two additional factors to determine whether each emotional film clip elicited a specific emotion and to what intensity. An *intensity* score for each film clip was computed by averaging participants’ ratings of the target emotion (i.e., sympathy for the Empathy films). A *discreteness* score was also computed for each film clip by subtracting the second

highest mean emotional rating from the target emotional rating. For inclusion in the final set of Empathy film stimuli, each film clip must reach a mean target intensity of at least five (on a 0-8 scale) and a discreteness score of at least one.

Pilot Phase.

See **Table 5 (top panel)** for F and t values for each analysis. Within *Empathy* film clips, there was a significant main effect of emotion rating (anger, unhappy, disgust, anxiety, sympathy) for each individual film clip, $F(3.43, 195.63) = 14.94 - 130.87, p < .001, \eta_p^2 = .21 - .70$. Follow-up contrasts using Bonferroni correction ($p < .002$) indicated that all *Empathy* film clips were rated highest on sympathy compared to all other discrete emotion ratings, $t(57) = 14.13 - 32.24, all ps < .001$.

Pursuit of Happyness elicited the most intense level of sympathy out of all of the Empathy film clips, with a mean intensity score of 6.44 (SD = 1.53) and a discreteness score of 2.97. This was followed by *The Champ* (Intensity = 6.33, Discreteness = 1.77), *My Girl* (Intensity = 5.95, Discreteness = 1.57), and *The Color Purple* (Intensity = 5.24, Discreteness = 1.22). Although sympathy was rated as the most significant emotion experienced for *Requiem for a Dream* compared to all other discrete emotions, it did not reach a necessary Intensity score (4.56), although the Discreteness rating was adequate (1.91).

Validation Phase.

See **Table 5 (bottom panel)** for F and t values for each analysis. There was a significant main effect of discrete emotion rating (anger, unhappy, disgust, anxiety, sympathy) for each individual Empathy film clip, $F(3.44, 447.15) = 12.38 - 214.35, p < .001, \eta_p^2 = .09 - .63$. Follow-up contrasts using Bonferroni correction ($p < .002$)

indicated that all *Empathy* film clips were rated highest on sympathy compared to all other discrete emotion ratings, $t(131) = 22.38 - 33.96, p < .001$.

Pursuit of Happyness again elicited the most intense level of sympathy out of all of the *Empathy* film clips, with a mean rating of 5.72 (SD = 1.94) and a discreteness score of 2.18. This was followed by *My Girl* (Intensity = 5.62, Discreteness = 1.93), *The Champ* (Intensity = 5.58, Discreteness = 1.64), and *Up* (Intensity = 5.05, Discreteness = 2.27). Although sympathy was rated as the most significant emotion experienced for *The Color Purple* compared to all other discrete emotions, it did not reach a necessary Intensity (4.5) or Discreteness (0.61) score. Together with the previous results, this suggests that *Pursuit of Happyness* and *The Champ* may be sufficient in eliciting empathic concern compared to other film clips in the current study. In addition to eliciting higher levels of sympathy compared to other discrete emotions (i.e., anger, unhappiness, disgust, anxiety), these film clips also elicited sympathetic emotions discretely and intensely.

CHAPTER 5

DISCUSSION

The current study sought to create and validate a set of film clips that may be used as stimuli to effectively elicit empathic concern independently from other emotions (e.g., unhappiness, anxiety). Overall, the results of the current study provide suggestions for specific film clips aimed to elicit empathic emotions that may be utilized in future research. Furthermore, consideration for specific variables that often overlap or co-occur with empathic emotion, such as general negative affect and arousal, may allow researchers to select film stimuli that control for these variables or take them into consideration in their analyses. Lastly, the current study examined the discreteness of individual film clips, comparing expected emotion ratings to other emotions. This provides evidence that specific film clips elicit the expected emotion (e.g., sympathy), without overlapping with other, non-target emotions, including anger, unhappiness, disgust, and anxiety.

Importance of Findings and Recommendations for Future Research

Overall, all of the Empathy film clips analyzed in this experiment across two phases elicited significantly higher ratings of empathic concern compared to Non-Empathy unpleasant and Neutral film clips, whereas Non-Empathy negative film clips elicited higher ratings of general negative affect. For these more general affect dimensions, the Empathy film clips seemed to elicit low positive affect more than high negative affect, at least compared to Non-Empathy film clips, and did not differ from the Neutral film clips on low positive affect. This makes sense in that at least two of our Empathy film clips, *The Champ* and *My Girl*, have been used previously to elicit

sadness (Rottenberg, Ray, & Gross, 2007), typically characterized by low positive affect instead of high negative affect (Watson, Clark, & Tellegen, 1988). However, our discreteness analyses suggested that even these two film clips elicited sympathy more than unhappiness, although unhappiness was the second highest rated discrete emotion in those analyses.

When selecting film stimuli for inclusion in research, one option would be to select film stimuli solely on their ability to elicit adequate levels of empathic concern. In this regard, all empathic film clips in the current film set appear to sufficiently elicit the expected emotion of empathy. Another option is for the researcher to choose empathy clips that are more discretely eliciting empathy versus other related emotions (e.g., anxiety, sadness). In that case, *Pursuit of Happyness* elicited both the highest level of empathy and met criteria for discreteness and intensity on levels of sympathy (assessed by adjective rating). Of note however, when assessing film clips based on intensity and discreteness scores on the adjective of sympathy, *The Color Purple* and *Requiem for a Dream* tended to not reach sufficient intensity (4.5) and/or discreteness (.61) scores compared to other discrete emotions (e.g., unhappiness). This suggests that although these two clips elicit significant amounts of empathy, it is possible that the emotions elicited by this film clip in particular may overlap with other emotions associated with general positive or negative affect.

Alternatively, if a researcher were interested in eliciting empathy but without the confound of empathy clips being less arousing or unpleasant than other negative film clips, we did find that at least two film clips—*The Color Purple* and *The Champ*—elicited comparable levels of valence and arousal ratings to the general Non-Empathy

unpleasant clips. However, within the pilot phase *My Girl* and *Pursuit of Happyness* were also comparable to Non-Empathy film clips on arousal ratings. Given that the two phases of the study (pilot and validation) employed different types of comparison films, it is possible that film clips depicting scenes of horror may be more arousing compared to scenes of catastrophe and impersonal scenes of distress. Additionally, *The Color Purple* and *The Champ* elicited adjective ratings of negative affect that were not significantly different from Non-Empathy film clips. Depending on the requirements of the researcher, choosing these videos provides the ability to match empathy-inducing film clips with other emotional film stimuli on ratings of negative affect, valence, and arousal. This is important to consider when conducting research in empathic motivation, as theory suggests that feelings of one's own distress and anxiety may often confound motivations toward helping behavior (Batson & Shaw, 1991).

The ability to focus on specific types of film clips aimed to elicit empathic responsiveness, while controlling for other variables, provides utility in future research in examining particular psychopathologies. For example, some research suggests affective/interpersonal components of psychopathy (e.g., callousness, shallow affect, lack of guilt; Hare, 2003) may be characterized by deficits in affective empathy (Fernandez & Marshall, 2003). Furthermore, individuals high on psychopathy have been found to exhibit hyporeactivity toward emotional stimuli more generally, as assessed via fear-potentiated startle responsivity (Patrick, Bradley, & Lang, 1993). This deficit in emotional reactivity has been explained as a general “temperamental deficit in the capacity for negative affect” (Lynam & Derefinko, 2007). Given research that these findings may confound interpretation of empathy-specific deficits, certain considerations

should be taken when selecting film stimuli with an aim of eliciting or assessing empathic responsiveness in particular. Specifically, film clips should be selected that control for levels of negative affect, and comparison negative emotional films may also be used to assess the effects of empathy-eliciting film stimuli compared to those that aim to focus on general negative or low positive emotion.

Limitations and Future Research

As with the development of any new methodology, the current study included some limitations that should be considered when interpreting the findings and employing these stimuli in future research. First, this study was conducted among undergraduate students enrolled in a midwestern university, and may not reliably elicit comparable levels of empathy in other cultural contexts or among other populations. Future research will be required to validate these, and other potential film clips, to other populations in an effort to expand among geographic location, age, socioeconomic background, and race/ethnicity, as well as within various psychopathologies (e.g., psychopathy, depression). Second, consistent with other studies, the extent to which individuals responded to film clips with specific emotions (e.g., empathy) was determined by self-report measures. This is problematic, as self-report measures are subject to biases in social desirability and require high levels of emotional insight (Podsakoff & Organ, 1986). Future research, including a goal of the current researcher, should focus on the assessment of empathic responsiveness using psychophysiological criteria (e.g., EEG, EMG), particularly when examining empathic orientation and dysfunction among other populations (e.g., psychopathy).

Despite these limitations, the present study evaluated and created a database of film clips suitable for the elicitation of empathic emotions. This research expands upon current film stimuli that exists by focusing specifically on the elicitation of empathy while considering ratings of general emotionality. Although further expansion is required in future endeavors, this validated set of film clip stimuli may be employed by researchers to reliably elicit intense and discrete emotional states of empathy among individuals, particularly among an undergraduate sample of adults.

CHAPTER 6

TABLES

Table 1. Film Clip Information

Title	Emotion Category	Year	Phase	Time Stamps*	Total Time	Description
The Champ	Empathy	1979	Pilot, Validation	Begin at the title, "Metro-Goldwyn-Mayer Presents": 1:54:24 - 1:54:41; 1:55:48 - 1:56:25; 1:57:26 - 1:59:11.	2:39	As a boxer is laying on a table about to die, a little boy gets the chance to speak to him for the last time. The boy is crying and begging the boxer not to die.
My Girl	Empathy	1991	Pilot, Validation	Begin at "Columbia Pictures": 1:19:54 – 1:22:20.	2:26	A girl is crying at a funeral over the body of a dead best friend
The Pursuit of Happyness	Empathy	2006	Pilot, Validation	Begin at "Columbia Pictures": 1:24:24 – 1:24:42; 1:24:46 – 1:24:52; 1:25:03 – 1:25:09; 1:25:18 – 1:25:25; 1:25:40 – 1:25:50; 1:25:57 - 1:26:23; 1:26:30 – 1:26:35; 1:26:46 – 1:28:25.	2:57	A homeless father is in a subway with his young son, and tells him stories as he plans for them to spend the night in a public bathroom. Scene ends with fearful and sad father huddled in corner with sleeping son as someone is banging on the bathroom door
The Color Purple	Empathy	1985	Pilot, Validation	Begin at "Warner Bros. Pictures" logo: 25:42 – 26:35; 26:39 – 27:28;	1:47	Two young sisters are being forcibly separated by an abusive man

TABLE 1 (cont.)

Title	Emotion Category	Year	Phase	Time Stamps*	Total Time	Description
Requiem for a Dream	Empathy	2000	Pilot	Begin at "Artisan Entertainment": 42:21 – 45:18	2:57	A woman talks to young man about wanting to be liked by others; she sounds delusional discussing wearing a red dress and being famous, and then talks about the dress giving her reason to live; the man looks heartbroken as he hears the woman speaking so irrationally
Up	Empathy	2009	Validation	Begin at "Disney" introduction: 7:15 – 7:44; 8:12 – 10:06; 10:16 – 11:23	2:30	Animated story of a couple throughout their life. Starts happily, with meeting and marriage, and then shifts to sad scenes of losing chance for children, regrets, and finally the death of the wife.
The Ring	Non-Empathy	1992	Pilot	Begin at "Dreamworks": 1:39:43 – 1:40:18; 1:40:33 – 1:41:14; 1:41:34 – 1:42:13.	1:55	Scene starts on a man working. His TV turns itself on, a ghostly girl crawls out of the TV as she pulls her hair away from her face as she comes upon him to attack. Ends on static.
The Fly	Non-Empathy	1986	Pilot	Begin at "20 th Century Fox": 1:21:39 – 1:22:52.	1:13	Cut in on a man on the ground with a gun. Fly-man vomits digestive enzymes onto the human man. Ends as fly-man looks at the passed-out body, and looks as if he is going to start eating the man.

TABLE 1 (cont.)

Title	Emotion Category	Year	Phase	Time Stamps*	Total Time	Description
Hotel Rwanda	Non-Empathy	2004	Validation	Begin at "For Your Consideration": 1:29:46 – 1:30:09; 1:30:37 – 1:31:59; 1:32:36 – 1:32:50; 1:32:56 – 1:33:04; 1:33:08 – 1:33:57	1:56	Scene starts with convoy moving through town and radio broadcasting news. Cuts onto a man begging over phone for trucks to stop, warning about an ambush. Scene moves into attack on convoy, with several people being attacked and shot
The Day After Tomorrow	Non-Empathy	2004	Validation	Begin at "20 th Century Fox": 44:19 – 44:24; 44:59 – 45:20; 45:33 – 45:37; 46:12 – 46:36; 46:53 – 47:53; 48: 37 – 49:08	2:25	Natural disaster scene of tsunami flood. Crowds in street start to panic as water flows into city, and rush to find shelter
Planet Earth: Jungles 1	Neutral	2007	Pilot, Validation	1:02 – 2:00	:58	Dark, mysterious scene of tropical rain forest. Narrator is speaking about how many species live in the area, and ends on image of a bird.
Planet Earth: Jungles 2	Neutral	2007	Pilot, Validation	3:54 – 4:48	:54	Image of the top of a tree in a forest canopy, with narrator talking about animal life
Planet Earth: Great Plains	Neutral	2007	Pilot, Validation	:08 – 1:06	:58	Scene of African savannahs, with narrator speaking about the immensity of the area. Ends on video of grass.
Baraka	Neutral	1992	Pilot	1:00 – 2:00	1:00	Calm scene of monkey bathing in a river, with serene music playing in background; https://www.youtube.com/watch?v=5OliaeMp7ao

TABLE 1 (cont.)

Title	Emotion Category	Year	Phase	Time Stamps*	Total Time	Description
Planet Earth: Forest	Neutral	2007	Pilot	2:34 – 3:34	1:00	Scene of redwood and fir trees in foggy location. Narrator talking about the sun and water being plentiful in the forest, and giving stats about the lifespan of trees
Planet Earth: Shallow Seas	Neutral	2007	Pilot	:05 - :52	:47	Scene of coral reefs, with narrator speaking broadly about marine life. Ends on zoomed out image of Great Barrier Reef.
Dialectical Behavior Therapy: The State of the Art and Science. Essential Characteristics and Clinical Outcomes Q&A	Neutral	2012	Validation	:38 - :59; 1:19 – 1:23; 1:45 – 2:19	1:00	Q&A session with M. Linehan speaking, regarding the current status and clinical utility of DBT; https://www.youtube.com/watch?v=qVVwQqjNVbs
Steven Pinker: The Genius of Charles Darwin	Neutral	2009	Validation	:39 - :59; 1:48 - 2:19	1:04	Part of a documentary series, where R. Dawkins interviews S. Pinker about Darwinism; https://www.youtube.com/watch?v=yIMReUsxTt4
About Schmidt	Neutral	2002	Validation	Begin at “New Line Cinema”: :32 - :35; 1:16 – 1:20; 1:29 – 1:32; 18:13 – 18:21; 18:33 – 18:36; 18:53 – 18:56; 19:12 – 19:23; :40 - :50; 1:41 – 1:56.	1:06	Short scene cuts in on city scene, then shows man sitting, and writing letter about average life. Ends with man exiting bare room.

*All Time Stamps are in Hour:Minute:Second format.

Table 2. Means Table of Emotion ratings for each film category, and comparisons across film categories

Pilot Phase						
	N	Empathic Concern	Negative Affect	Low Positive Affect	Valence	Arousal
Empathy	59	3.90 (1.31) _a	2.21 (1.27) _a	6.17 (1.02) _a	2.18 (1.26) _a	4.74 (1.58) _a
Non-Empathy	59	.61 (1.10) _b	3.27 (1.83) _b	5.62 (1.29) _b	1.08 (1.57) _b	5.83 (1.36) _b
Neutral	59	1.06 (1.17) _b	.32 (.74) _c	6.51 (1.15) _a	4.29 (1.54) _c	1.26 (1.09) _c
Validation Phase						
	N	Empathic Concern	Negative Affect	Low Positive Affect	Valence	Arousal
Empathy	132	4.07 (1.45) _a	2.09 (1.34) _a	5.83 (1.17) _a	2.67 (1.17) _a	4.77 (1.56) _a
Non-Empathy	132	1.58 (1.37) _b	2.77 (1.70) _b	4.93 (1.32) _b	2.17 (1.51) _b	5.60 (1.62) _b
Neutral	132	.69 (.84) _c	.27 (.46) _c	6.59 (1.12) _c	3.70 (1.50) _c	1.29 (1.31) _c

**Subscripts are present to indicate a significant variation of film type within emotional rating scores at $p < .01$ within *columns*. Specifically, different subscripts within a column (e.g., a, b) indicate that emotional rating scores are significantly different from one another across film categories. Alternatively, identical subscripts within a column (e.g., a, a) indicate that that emotional ratings did not significantly differ from one another across film category (e.g., Non-Empathy and Neutral films do not differ on Empathic concern in Pilot Phase).

Table 3. Means Table of Emotion ratings for Individual film clips

Pilot Phase								
	N	Empathic Concern	Negative Affect	Low Positive Affect	Valence	Arousal	Discreteness	Intensity
<i>Empathy</i>								
Champ	58	4.34 (1.57)	2.6 (1.43)	6.17 (1.25)	1.71 (1.72)	5.22 (1.88)	1.77	6.33
Requiem	55	3.09 (1.75)	1.31 (1.33)	6.67 (1.06)	2.57 (1.47)	3.4 (1.99)	1.91	4.56
Pursuit	59	4.68 (1.35)	2.19 (1.69)	5.70 (1.43)	3.14 (1.59)	4.83 (1.99)	2.97	6.44
Purple	59	3.01 (1.76)	2.84 (1.89)	6.09 (1.08)	1.42 (1.38)	5.15 (1.87)	1.22	5.24
MyGirl	59	4.26 (1.76)	2.11 (1.36)	6.27 (1.18)	2.05 (1.61)	4.93 (1.96)	1.57	5.95
Overall Empathy	59	3.90 (1.31)	2.21 (1.27)	6.17 (1.02)	2.18 (1.26)	4.74 (1.58)		
<i>Non-Empathy</i>								
Fly	55	.67 (1.16)	3.16 (2.03)	6.16 (1.36)	.71 (1.51)	5.84 (1.87)		
Ring	59	.59 (1.16)	3.49 (2.00)	5.18 (1.49)	1.29 (1.66)	5.85 (1.36)		
Overall Non-Empathy	59	.61 (1.10)	3.27 (1.83)	5.62 (1.29)	1.08 (1.57)	5.83 (1.36)		
<i>Neutral</i>								
ShallSeas	59	1.21 (1.41)	.42 (1.09)	5.70 (1.85)	5.12 (2.10)	1.69 (1.43)		
Jungles1	59	1.04 (1.30)	.28 (.76)	6.25 (1.48)	4.63 (2.01)	1.47 (1.51)		
Jungles2	59	.55 (.76)	.31 (.79)	6.97 (1.21)	3.92 (1.98)	.88 (1.20)		
Monkey	59	1.42 (1.44)	.45 (.88)	6.56 (1.52)	3.98 (1.81)	1.53 (1.55)		
GrtPlains	59	.83 (1.09)	.27 (.70)	6.85 (1.15)	3.98 (1.82)	1.00 (1.36)		
Forest	59	.97 (1.38)	.22 (.71)	6.92 (1.07)	4.12 (2.15)	1.00 (1.44)		
Overall Neutral	59	1.06 (1.17)	.32 (.74)	6.51 (1.15)	4.29 (1.54)	1.26 (1.09)		

TABLE 3 (cont.)

Validation Phase								
	N	Empathic Concern	Negative Affect	Low Positive Affect	Valence	Arousal	Discreteness	Intensity
<i>Empathy</i>								
Champ	131	4.01 (1.87)	2.16 (1.55)	6.24 (1.21)	1.98 (1.81)	5.34 (1.96)	1.64	5.58
Up	136	5.11 (1.65)	1.52 (1.48)	5.12 (1.70)	5.01 (1.92)	4.00 (2.28)	2.27	5.05
Pursuit	132	4.46 (1.71)	2.07 (1.60)	5.72 (1.42)	2.92 (1.80)	4.66 (2.09)	2.18	5.72
Purple	132	2.64 (1.70)	2.92 (1.86)	5.84 (1.37)	1.34 (1.33)	5.41 (1.89)	0.61	4.5
MyGirl	131	4.11 (1.75)	1.77 (1.46)	6.22 (1.22)	2.10 (1.51)	4.45 (1.97)	1.93	5.62
Overall Empathy	132	4.07 (1.45)	2.09 (1.34)	5.83 (1.17)	2.67 (1.17)	4.77 (1.56)		
<i>Non-Empathy</i>								
Day After	136	1.55 (1.38)	2.59 (1.88)	4.91 (1.40)	2.52 (1.72)	5.33 (1.85)		
Rwanda	132	1.61 (1.54)	2.95 (1.85)	4.96 (1.55)	1.82 (1.69)	5.88 (1.68)		
Overall Non-Empathy	132	1.58 (1.37)	2.77 (1.70)	4.93 (1.32)	2.17 (1.51)	5.60 (1.62)		
<i>Neutral</i>								
Jungles1	132	1.05 (1.31)	.25 (.56)	5.90 (1.67)	4.77 (2.03)	1.51 (1.76)		
Jungles2	126	.57 (1.11)	.25 (.65)	6.56 (1.57)	4.02 (2.14)	1.29 (1.79)		
GrtPlains	132	.70 (1.19)	.15 (.42)	6.52 (1.52)	4.27 (2.08)	1.36 (1.78)		
Schmidt	128	1.31 (1.64)	.51 (.88)	6.61 (1.31)	3.39 (1.55)	1.57 (1.67)		
Pinker	132	.344 (.73)	.24 (.55)	6.57 (1.52)	3.32 (1.82)	1.20 (1.52)		
DBT	132	.16 (.45)	.21 (.53)	7.36 (.89)	2.45 (1.85)	.81 (1.45)		
Overall Neutral	132	.69 (.84)	.27 (.46)	6.59 (1.12)	3.70 (1.50)	1.29 (1.31)		

Table 4. Parameter estimates of repeated measures ANOVAs comparing each individual film clip separately from the Empathy category to the mean of the Non-Empathy and Neutral film categories, within each emotion rating type.

Pilot Phase (top panel)					
	df	F value	η_p^2	Paired Samples T-tests	
				Non-Empathy	Neutral
EMPATHIC CONCERN					
The Champ	1.62, 90.55	215.41	.79***	$t(56) = 17.85^{***}$	$t(56) = 14.55^{***}$
My Girl	1.60, 91.01	193.89	.77***	$t(57) = 16.52^{***}$	$t(57) = 13.98^{***}$
Pursuit	1.72, 98.05	283.36	.83***	$t(57) = 19.28^{***}$	$t(58) = 18.05^{***}$
Purple	1.58, 90.21	77.11	.58***	$t(57) = 11.05^{***}$	$t(58) = 8.35^{***}$
Requiem	1.56, 82.54	69.59	.57***	$t(53) = 10.24^{***}$	$t(54) = 7.77^{***}$
NEGATIVE AFFECT					
The Champ	1.77, 99.14	104.79	.65***	$t(56) = -3.01^{**}$	$t(56) = 13.22^{***}$
My Girl	1.69, 96.58	82.79	.59***	$t(57) = -4.33^{***}$	$t(57) = 9.81^{***}$
Pursuit	1.91, 108.90	92.83	.62***	$t(57) = -4.75^{***}$	$t(57) = 9.63^{***}$
Purple	2, 113.71	95.15	.63***	$t(57) = -1.94$	$t(57) = 10.75^{***}$
Requiem	1.50, 79.38	121.94	.70***	$t(53) = -9.90^{***}$	$t(53) = 7.15^{***}$
LOW POSITIVE AFFECT					
The Champ	1.94, 108.69	12.66	.18***	$t(56) = 3.07^{**}$	$t(56) = -2.15^*$
My Girl	1.96, 111.57	13.74	.19***	$t(57) = 3.70^{***}$	$t(57) = -1.67$
Pursuit	1.98, 112.95	16.13	.22***	$t(57) = 0.24$	$t(57) = -4.63$
Purple	1.94, 110.31	14.66	.21***	$t(57) = 2.70^*$	$t(57) = -2.96^{**}$
Requiem	1.76, 93.28	22.19	.30***	$t(53) = 6.96^{***}$	$t(53) = 0.70$

TABLE 4 (cont.)

Pilot Phase (top panel)					
				Paired Samples T-tests	
	df	F value	η_p^2	Non-Empathy	Neutral
VALENCE					
The Champ	1.93, 109.99	77.06	.58***	$t(57) = 2.42^*$	$t(57) = -9.58^{***}$
My Girl	1.74, 101.05	76.03	.57***	$t(58) = 4.55^{***}$	$t(58) = -8.08^{***}$
Pursuit	1.90, 110.46	69.58	.55***	$t(58) = 8.21^{***}$	$t(58) = -4.26^{***}$
Purple	1.60, 92.85	96.40	.62***	$t(58) = 1.79$	$t(58) = -11.18^{***}$
Requiem	1.94, 102.93	92.00	.63***	$t(53) = 6.98^{***}$	$t(53) = -7.10^{***}$
AROUSAL					
The Champ	1.90, 108.11	175.70	.76***	$t(57) = -2.15^*$	$t(57) = 15.21^{***}$
My Girl	1.86, 107.71	157.88	.73***	$t(58) = -2.96^{**}$	$t(58) = 13.45^{***}$
Pursuit	1.69, 98.01	148.42	.72***	$t(58) = -3.01^{**}$	$t(58) = 13.85^{***}$
Purple	1.87, 108.65	167.57	.74***	$t(58) = -2.52^*$	$t(58) = 13.05^{***}$
Requiem	1.77, 95.55	135.85	.72***	$t(54) = -7.58^{***}$	$t(54) = 8.43^{***}$

* $p < .05$ ** $p < .005$ *** $p < .001$

TABLE 4 (cont.)

Validation Phase (bottom panel)					
				Paired Samples T-tests	
	df	F value	η_p^2	Non-Empathy	Neutral
EMPATHIC CONCERN					
The Champ	1.73, 225.39	322.52	.71***	$t(130) = 16.87^{***}$	$t(130) = 21.94^{***}$
My Girl	1.75, 227.29	346.4	.73***	$t(130) = 17.13^{***}$	$t(130) = 23.38^{***}$
Pursuit	1.79, 233.84	455.19	.78***	$t(131) = 20.51^{***}$	$t(131) = 26.44^{***}$
Purple	1.82, 238.89	144.91	.53***	$t(131) = 10.05^{***}$	$t(131) = 14.85^{***}$
Up	1.77, 231.61	642.36	.83***	$t(131) = 23.99^{***}$	$t(131) = 32.72^{***}$
NEGATIVE AFFECT					
The Champ	1.87, 243.21	206.51	.61***	$t(130) = -5.38^{***}$	$t(130) = 14.46^{***}$
My Girl	1.89, 245.17	198.84	.61***	$t(130) = -8.57^{***}$	$t(130) = 12.47^{***}$
Pursuit	1.76, 230.16	213.80	.62***	$t(131) = -7.05^{***}$	$t(131) = 13.69^{***}$
Purple	1.69, 221.18	240.48	.65***	$t(131) = 1.39$	$t(131) = 16.86^{***}$
Up	1.94, 254.03	178.7	.58***	$t(131) = -9.17^{***}$	$t(131) = 10.42^{***}$
POSITIVE AFFECT (reverse coded)					
The Champ	1.98, 257.67	109.54	.46***	$t(130) = 11.68^{***}$	$t(130) = -2.78^*$
My Girl	1.99, 258.45	114.11	.47***	$t(130) = 11.58^{***}$	$t(130) = -3.17^{***}$
Pursuit	1.95, 256.03	96.33	.42***	$t(131) = 7.09^{***}$	$t(131) = -6.77^{***}$
Purple	1.97, 258.03	105.25	.45***	$t(131) = 8.54^{***}$	$t(131) = -6.32^{***}$
Up	1.88, 245.65	87.59	.40***	$t(131) = 1.31$	$t(131) = -10.26^{***}$

TABLE 4 (cont.)

Validation Phase (bottom panel)					
				Paired Samples T-tests	
	df	F value	η^2	Non-Empathy	Neutral
VALENCE					
The Champ	1.62, 209.96	62.56	.33***	$t(130) = -1.49$	$t(130) = -8.70^{***}$
My Girl	1.85, 240.62	64.98	.33***	$t(130) = -.52$	$t(130) = -9.88^{***}$
Pursuit	1.83, 240.12	37.92	.22***	$t(131) = 4.97^{***}$	$t(131) = -4.00^{***}$
Purple	1.61, 210.46	126.54	.48***	$t(131) = 7.48^{***}$	$t(131) = -14.24^{***}$
Up	1.96, 256.14	110.05	.46***	$t(131) = 13.96^{***}$	$t(131) = -6.79^{***}$
AROUSAL					
The Champ	1.95, 253.39	356.59	.73***	$t(130) = -1.53$	$t(130) = 21.11^{***}$
My Girl	2.00, 259.76	300.65	.70***	$t(130) = -6.42^{***}$	$t(130) = 17.22^{***}$
Pursuit	1.99, 260.95	299.70	.70***	$t(131) = -5.19^{***}$	$t(130) = 17.63^{***}$
Purple	1.56, 203.83	405.09	.76***	$t(131) = -1.64$	$t(130) = 20.46^{***}$
Up	1.86, 243.84	224.38	.63***	$t(131) = -6.97^{***}$	$t(130) = 13.39^{***}$

* $p < .05$
 ** $p < .005$
 *** $p < .001$

Table 5. Parameter estimates of omnibus repeated measures ANOVAs comparing each individual film clip separately on ratings of discrete emotion adjectives (sympathy, anger, unhappiness, disgust, anxiety)

Pilot Phase							
				Paired Samples T-test comparisons to sympathy			
	df	F value	η_p^2	Anger	Unhappiness	Disgust	Anxiety
The Champ	3.56, 199.44	130.87	.70	$t(56) = 16.48$	$t(56) = 5.08$	$t(56) = 18.32$	$t(56) = 13.75$
My Girl	2.86, 163.14	101.40	.64	$t(57) = 13.23$	$t(57) = 5.26$	$t(57) = 17.10$	$t(57) = 10.58$
Pursuit	3.43, 195.63	110.62	.66	$t(57) = 17.51$	$t(57) = 9.95$	$t(57) = 18.86$	$t(57) = 10.77$
Purple	3.38, 189.43	14.94	.21	$t(57) = 5.18$	$t(57) = 3.58$	$t(57) = 7.22$	$t(57) = 5.46$
Requiem	3.0, 159.07	66.52	.56	$t(53) = 11.52$	$t(53) = 5.55$	$t(53) = 11.06$	$t(53) = 10.09$
Validation Phase							
				Paired Samples T-tests comparisons to sympathy			
	df	F value	η_p^2	Anger	Unhappiness	Disgust	Anxiety
SYMPATHY							
The Champ	3.65, 475.05	163.70	.56	$t(130) = 20.72$	$t(130) = 6.93$	$t(130) = 20.73$	$t(130) = 14.81$
My Girl	3.44, 447.15	214.09	.62	$t(130) = 23.27$	$t(130) = 9.01$	$t(130) = 25.75$	$t(130) = 17.17$
Pursuit	3.33, 426.06	214.35	.63	$t(131) = 26.63$	$t(129) = 10.97$	$t(131) = 25.63$	$t(130) = 13.59$
Purple	3.84, 498.49	12.38	.09	$t(131) = 3.65$	$t(131) = 2.60$	$t(131) = 4.15$	$t(131) = 6.19$
Up	2.80, 367.30	202.96	.61	$t(131) = 21.43$	$t(131) = 8.56$	$t(131) = 22.25$	$t(131) = 17.01$

* All tests are significant at $p < .001$

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