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Aneyn M. O'Grady April 14 2015

Embodied Fictions: Accessing Narratives of the Face

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Abstract

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The present study developed a methodology to record the display of facial expressions while engaging in fiction to examine the relationship between empathy and the embodied processing of narratives. Five hypotheses were tested: (1) Exposure to fiction (e.g., short-story, short film, spoken story) elicits facial expression displays (FED). (2) Higher levels of empathy predict a higher number of FED while engaging in fiction. (3) Emotional contagion is correlated with empathy level. (4) Lifetime exposure to fiction (LEF) is correlated with absorption and empathy ratings. (5) The frequency of FED while engaging in fiction is correlated with emotional contagion and absorption ratings. Video recordings confirmed participants physically process fiction stimuli. A simple linear regression to test hypothesis 2 found no significant relationship. Bivariate correlations were run to test hypotheses 3, 4, and 5. Emotional contagion was positively correlated with empathy level ($p < .01$). The experience of engaging in fiction and its potential relationship with improving social skill still merit future research.

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Introduction

"I live in the facial expression of the other, as I feel him living in mine."
- Maurice Merleau Ponty

To what extent is the way we understand ourselves a story told and embodied? How do we interpret the embodied 'stories' of others? Autobiographical memory plays an integral role in the construal of individual identity (Ross & Wilson, 2003). Narrative links memory and emotion, two fundamental aspects of personality (Salovey & Singer, 1993), and contributes to the representation of social knowledge (Adaval, Colcombe, & Wyer, 2002). Many psychological understandings of the 'self' adopt an interpersonal perspective that implicates a larger social network when considering individual behavior (John, Kramer, & Tyler, 2014; Tajfel & Turner, 1989). The role of collective narrative in strengthening social bonds in this network and its interplay with autobiographical memory has been extensively studied (Bell, 2003; Elam & Gedi, 1996; Haden & Fivush, 2003; Hinchman & Hinchman, 1997; Nelson, 2003). The importance of narrative as it relates to social intelligence in the human experience has even been incorporated into the design of artificial intelligence (Dautenhahn, 1998).

Recent cognitive research has drawn parallels between social interaction and the experience of engaging in fiction (Hoorn & Konijn, 2003; Mar & Oatley, 2008), with a specific focus on the individual capacity to empathize with fictional characters (Brock, Green, & Kaufman, 2004; Coplan, 2004; Cohen, 2013; Keen, 2006). The implications of such findings for social interaction and ability outside of fictional worlds is under current debate (Derrick, Gabriel, & Hugenberg, 2009; Gerrig, 1993). Other studies have focused on the impact of fictional works on brain activity (Altmann, Bohrn, Lubrich, Menninghaus, & Jacobs, 2014; Berns, Blaine, Prietula, & Pye, 2013; Conrad, Hsu, & Jacobs, 2014). Much research in this area has concluded that

engaging in fiction directly increases social skill (Castano & Kidd, 2013), however the empirical data supporting such a clear causal relationship is not overwhelmingly persuasive.

Furthermore, certain assumptions need to be revisited in order to advance future research in this area, namely that the conditions under which we engage with fictional characters match those that regulate actual social interaction. The main caveat to consider is that engaging in fiction and social interaction are still multifaceted phenomena even though they involve the same processes, notably empathy that is in itself defined by a wide range of disciplines. This paper will focus on the role of embodiment when engaging in social interaction and fiction, and restrict its scope of empathy to the concepts of motor mimicry and emotional contagion to analyze the experience of fiction in different media.

The Many Faces of Empathy

The term 'empathy' stems from the notion of *Einfühlung* found in German romantic theory of the late 19th century. Vischer (1873) coined the term *Einfühlung* to describe the experience of 'feeling into' art forms in the process aesthetic appreciation. Von Herder (Wispé, 1987) a German philosopher, extended the experience of empathy to a 'feeling into' the experience of another's history. Lipps (Depew, 2005) opted for *empatheia* as the Greek cognate to the German term, meaning 'to experience strong feeling or passion.'

In philosophy empathy was strongly used by phenomenologists to characterize the structures of consciousness from a first person perspective and of interpersonal interaction. Philosophical definitions of empathy also find their roots in the Scottish Enlightenment in the works of Adam Smith and David Hume, however they employed the term 'sympathy.' Hume (1738; 1751) described empathy as involving a process of 'emotional contagion' whereby individuals spontaneously 'catch' the emotional states of others in their immediate environment.

Smith (1759) emphasized empathy as more of an imaginative process whereby an individual comes to understand the internal state of another by projecting what they believe another person is experiencing.

These conceptions of empathy and their importance to characterizing the interpersonal experience found throughout philosophy and aesthetic theory resonate with psychological definitions of empathy today. Current social and developmental psychologists have used empathy to explain social and altruistic behavior in animal species. Batson (2009) gives eight accounts to define the various aspects of empathy addressed through current psychological research:

1. To know the internal states of others.
2. To adopt the posture or neural responses of another, a process termed 'motor mimicry.'
3. To come to feel as another feels, a process of emotion matching or 'emotional contagion.'
4. Intuiting and projecting yourself into another.
5. Perspective taking.
6. The "what it would be like in their shoes" perspective.
7. To feel distress as witness to someone else's suffering.
8. To feel for a person suffering.

As mentioned earlier, this current study is most interested in the second and third accounts as they involve the body more directly in the process of empathy.

De Waal (2009) advances the primacy of emotions in the foundation of empathy. We are able to convey our emotions to others either through vocal or physical displays, or a combination of both. From an evolutionary perspective, de Waal and Preston (2002) posit the proximate base of empathy as the direct mapping of the emotional state of another onto an individual's behavioral representations that activates responses. The ultimate base of empathy is emotional linkage in a

larger social network that supports group alarm, the vicariousness of emotions, mother-infant response, and behavior modeling of competitors and predators so as to ensure a group's survival (de Waal & Preston, 2002). Young (2002) traced the evolution of empathy throughout other mammalian species, and argues that empathy developed as the need arose to represent the consciousness of others to coordinate social activity. The social life of a species would be untenable if its members could not successfully predict the behavior of other members.

Empathy and Mimicry in Social Interaction

Empathy is understood as a type of 'social glue' that is observable in the physical dispositions of those experiencing it, also known as the 'chameleon effect' (Chartrand, Cheng, Jefferis, & Lakin, 2003). Motor mimicry, whereby one member of a species spontaneously adopts the physical disposition of another, has been defined as the most 'primitive' form of empathy (Allport, 1968) that supports social interaction as non-verbal behavior. Motor mimicry can be spontaneous or intentional, but is tied to pro-social behavior in either instance. Bavelas, Black, Chovil, & Mullett (1988) advance that elementary motor mimicry (e.g., wincing when witnessing violence or another's pain) is an interpersonal event in that it constitutes a nonverbal communication intended to be seen by the one being mimicked.

In effect, imitation in the context of social interaction can even lead to positive benefits for the mimicker. Holland, Steenaert, van Baaren, & van Knippenberg (2003) conducted a study wherein waitresses consciously mimicked half their customers by repeating orders back to them, and did not mimic the other half. Holland et al. (2003) found that waitresses received larger tips from customers they mimicked as compared to the tips from customers who were in the non-mimicry condition. Holland et al. (2003) concluded that being mimicked could lead to greater

generosity as it incurs a process of identification between the person being mimicked and the mimicker.

The appearance of facial expressions that match those of another person can also be construed as a sign of empathy. The tendency to mimic the expressions of others appears to not be learned (Doherty, 1997) and occurs without deliberate processing (Dublin & O'Toole, 1968). Nonverbal communication plays an equally important role in dialogue to convey information, establishing mutuality between two individuals in an immediate and 'unconscious' way (Foppa, Graumann, & Markove, 1995). The immediacy or the automaticity that characterizes an instance of motor mimicry relates to the concept of emotional contagion defined by Carlson, Chemtob, Hatfield and Hsee (1990) as the "tendency to mimic the verbal, physiological, and/or behavioural aspects of another person's emotional experience/expression, and thus to experience/express the same emotions oneself." We encounter instances of emotional contagion in daily life whether it is the 'spread' of laughter or of a yawn.

Motor mimicry finds its utility as a communicative act to other members of a species in that one member understands the internal state of another (Bavelas, Black, Chovil, & Mullett, 1988). Bavelas et al. (1988) propose that an instance of motor mimicry is a 'relationship message' about the similarity between the observer producing the mimicking behavior and the observed. Motor mimicry has been shown to be sensitive to the level of familiarity between the observer and the observed (de Waal, 2012; Hasegawa, Konno, & Romero, 2013; Gutsell & Inzlicht, 2013). For example, one study by Hasegawa et al. (2013) found that other species like dogs have exhibited a bias in contagious yawning that favors members of the same breed.

Perceiving facial expressions of strong internal states, such as pain, can trigger empathic mimicry responses (Decety & Yamada, 2009). However, individual attitude towards others, that

is to say estimation of character of the other, can still influence the likelihood that facial mimicry will arise (Likowski, Mülhberger, Pauli, Seibt, & Weyers, 2011). For example, Likowski et al. (2011) found that participants were more likely to mimic the happy and sad facial expressions of individuals who were perceived to have positive characters. An individual's capacity to empathize with another is then sensitive to their ability to identify with this other.

High levels of empathy appear to be a high predictor of a tendency to mimic. In fact, one study by Sonnby–Borgström (2002) found that high-empathy subjects had a higher degree of mimicking behavior when presented photographs of faces that showed angry and happy faces than low-empathy subjects. The low-empathy subjects even showed inverse facial expressions to the stimuli (e.g., beginning to smile when shown an angry face). It is important to note that there was no difference between the verbal reports of either high or low-empathy subjects when describing the emotional states of the faces in the stimuli, supporting that the variance in mimicking facial expression was not related to an incorrect construal of the emotional state presented in the stimuli.

De Waal (2009) writes that "with impoverished facial expression comes impoverished empathic understanding." This suggests that perhaps individual empathic level can be related to a frequency in the display of facial expressions, but also that the less 'information' present on a face as a social cue affects the level of empathy generated in response. Based on the relationship between high levels of empathy and a high tendency to mimic (Jönsson, Sonnby-Borgstörm, & Svensson, 2003), it seems plausible to conjecture that high levels of empathy is also related to a higher frequency of spontaneous facial expression displays.

Accessing Other Minds

How does one know the consciousness of another? Emotional displays whether physical or vocal are our way of communicating internal states to others. Adolphs (2006) notes how social

cognition differs from general cognition due to an individual's interaction with the social environment. In the social world, we constantly 'probe' other individuals to access their internal states whether directly, by asking questions for example, or indirectly by engaging them non-verbally (e.g., staring) (Adolphs, 2006).

Spoken language aside, the body presents itself as the most immediate mode of representation of internal states and of communication for sharing these states with others. Facial expressions, as a salient non-verbal guide to what another person is thinking and feeling, are effectively interpreted on average (Ekman, 1979; 1993; 1999). How then to account for this ability? The role of facial expressions to communicate messages in social interaction has been extensively studied (Amir, Foa, & Gilboa-Schechtman, 1999; Bargh & Chartrand, 1999; Bradley, Garner, & Mogg, 2006; Chovil, 1991; Dimberg,, 1982; Ekman & Oster, 1979; Gonso, Gottman, & Rasmussen, 1975).

Shared representation and joint-action are understood as basic mechanisms of social interaction (Bekkering, Knoblich, & Sebanz, 2006). Decety & Grèzes (2006) advanced the importance of simulation in cognitive neuroscience studies for the construal of personal behavior and that of others. "We understand what others feel by a mechanism of action representation that allows empathy and modulates our emotional content" (Carr, Dubeau, Iacoboni, Lenzi, & Maziotta, 2003). How this mechanism is established is still under investigation, namely with research on mirror neurons, however the process of simulation still presents itself as key. Jeannerod (2001) found that the neural simulation of action was essential to the functioning of the motor system whether in shaping the motor system in anticipation of executing an action or providing information as to the feasibility and import of performing an action. However, this does not imply that the representation of another's experience is identical between two individuals as

this would eliminate the distinction between a self and an 'other' with whom to identify (Decety & Sommerville, 2003; Lamm & Singer, 2009).

Baumeister & Masicampo (2010) go so far as to state that the purpose of conscious thought is not input and output, but rather internal processing that facilitates interaction with the social and cultural environment. They characterize thought as sequential and compare human consciousness to thought sequences that "resemble short films that the brain makes for itself" (Baumeister & Masicampo, 2010). The process of simulation is then important for understanding the perspectives of others, exploring options in decision-making, and 'reliving' past experiences to enhance learning and influence future behavior (Baumeister & Masicampo, 2010; Bekkering et al., 2006; Gallese, Keysers, & Rizzolatti, 2004; Kaplan & Iacoboni 2006; Meltzoff, 2002).

Fiction as a Simulation of Social Interaction

Much research in cognitive literary studies claims that engaging in fiction generates a simulation of social experience (Oatley, 1999), and furthermore engages our empathy directed at fictional characters (Djikic, Moldoveanua, & Oatley, 2013). Fiction can be conceived of as a simulation of human interaction in that narratives present their audiences, whether readers or viewers, with fictional characters that express themselves and interact in recognizable patterns. In other words, the behavior of a fictional character generally conforms to our expectations of human behavior and social convention. A personality or at the very least traits are attributed to fictional characters. Engaging in fiction can even establish affective relationships with fictional characters (Konijn & Hoorn, 2005), as well as incur a process of identification with them, at times 'wishful' (Buchanan & Hoffner, 2005; Lonial & Van Auken, 1986). A reader or viewer can only draw on their knowledge of human traits to understand the fictional characters with which they are presented.

Simulations have the purpose of providing information via a representation or model, and furthermore promote a way of thinking about the content being presented. Imagery plays an integral role in the greater understanding of a narrative (Bridge, Long, & Winograd, 1989). There are three processes by which fiction acts as a model of the social world: abstraction, simplification, and compression (Mar & Oatley, 2008). Narratives in their construction abstract ideas into larger cohesive systems understood as 'fictional worlds' for us to access and can lead to deeper understanding of these ideas. Simplification describes how narratives can simplify general principles that underlie human action much in the way that a formula simplifies mathematical information. Finally compression refers to how narratives 'package' or reduce information in such a way that it is easily apprehended. Fictional worlds as simulations of human experience present information about social interaction and draw on mechanisms to explain the causes for specific events (e.g., plot, character motivation, tropes).

How engaged an individual is a work of fiction affects their individual experience of it. Zillmann (1995) found that emotional involvement in a drama depended on individual levels of dispositionally controlled empathy and counter-empathy. This suggests that emotional involvement in works of fiction varies from person to person based on individual levels of empathy. Igartuá (2010) found that participants were more likely to identify with characters that they liked in feature films versus those that they did not like. Based on these findings, it is plausible to predict that individuals are more likely to empathize with fictional characters in works in which they are emotionally engaged and that the level of empathy experienced is affected by individual identification with said characters. The likelihood to identify with fictional characters parallels the familiarity bias on the experience of empathy with actual people. However, the parameters shaping

how much an individual likes a fictional character may be different from those shaping interpersonal affection.

Despite these important parallels between the experiences of engaging in social interaction and in fiction, there are still significant differences that need to be taken into account before equating the two experiences. Clearly defining the ways in which engaging in fiction and engaging socially are similar and the ways in which they are not will help to identify the conditions under which skills associated with social interaction are actually engaged. The first significant difference between actual social interaction and the way our 'social brain' is engaged in fiction is the level of construction of an 'other' and the resulting model in which they are assessed. Simply put, engaging in face-to-face interaction gives concrete information that is external and then processed internally. The representation we have of another person is not static, unlike that of a fictional character. Constructing the representation of fictional characters depends more on an imaginative act. Information regarding fictional characters can be in the form of visceral stimuli such as representations in film. However, the resulting representation of this character still dependent on individual interpretation without directly engaging the character the same way you would engage a person.

Furthermore social interaction differs from engaging in fiction regarding how the information accrued can be revisited. Should a misunderstanding arise in the representation of an individual in fiction, a chapter can always be reread or a film segment replayed, for example. An actual conversation can be 'replayed' through memory, but this retrieval of the conversation will never be an identical representation of the conversation that transpired. In contrast, the content of a chapter in a novel or a scene of a film does not alter no matter how much it is replayed and revisited, even though the individual subjective experience of the narrative might. These

differences that contrast the experiences of engaging in fiction and socially need to be kept in mind when considering how exposure to fiction relates to and/or affects social skill.

Social Ability and Exposure to Fiction

The notion that individual empathy or theory of mind can be enhanced has been addressed mainly in the context of improving intergroup relations, racial attitudes (Bruneau, Cikara, & Saxe, 2011; Finlay & Stephan, 2000, 2002) and relationships between physicians and patients (Bailey, Gray, Kelley, Konowitz, & Riess, 2011; Calabrese, Hojat, Hull, Isaacson, Kohn, Misra-Hebert, & Papp, 2012). Given the significant parallels between engaging with fictional characters and actual social interaction, namely the importance of perspective-taking, some researchers have suggested that exposure to fiction can improve social skill (Coulson, Dodell-Feder, Hooker, & Lincoln, 2013; Mar & Oatley, 2008). One study by Goldstein & Winner (2012) found that engaging in acting, as an activity that requires projecting the self into the mindset of another (i.e., a character), enhanced both empathy and theory of mind in children and adolescents. Coulson et al. (2013) used fiction to develop a new task, the Short Story Task (SST) to assess theory of mind (ToM) levels in adults.

The argumentation to support the claim that fiction specifically can improve social skills is as follows: the more one engages with fiction, the more opportunities one has to activate both affective empathy (e.g., feelings of compassion or concern for another) and cognitive empathy (e.g., taking the perspective of another). Empathy is understood as a key to pro-social behavior (Decety & Jackson, 2006; Eisenberg & Miller, 1987). Increased opportunities to engage one's empathy then make one better suited to use empathy in actual social interaction. Consequently, the frequency with which an individual engages in fiction on a regular basis (e.g., watching films every week) would have a direct effect on their level of social skill. Mar, Oatley, & Peterson (2009) found that fiction exposure predicted ability on an empathy task when controlling for personality

traits such as openness. Accepting the statement that fiction exposure has a direct effect on social skill implies that the conditions under which we engage in fiction activate the skills used in actual social interaction in the same way. It is then important to consider how the social information presented in actual interaction and that in narratives is processed by the individual. As discussed earlier, physical displays are essential to establishing the experience of empathy and intuiting the internal states of others.

Embodied Cognition and Embodied Transparency

Embodied cognition is the theory that much of our cognitive processing is rooted in the body's physical experience of the world (Barsalou, 2010). Specifically, there has been extensive research on how the processes involved in language and memory are grounded in the same systems used for perception and action (Barsalou, 1999; Barsalou, Wilson, Santos, & Simmons, 2008; Borghi & Pecher, 2011; Glenberg, 1997; Pulvermüller, 1999; Radvansky & Zwaan, 1998). Wilson (2002) identifies six main claims that support the importance of the body's interaction with the world in cognitive processing:

1. *Cognition is situated* in that there are specific contexts and situations in which mental activity is grounded in sensory-motor processes.
2. *Cognition is time-pressured.* The study of cognition requires the consideration of how the brain actually interacts with the environment in real-time situations.
3. *We off-load cognitive work onto our surrounding environment.* Given the limitations of our internal processing (e.g., attention, short-term memory), we use the environment to reduce our cognitive processing 'workload.'

4. *The cognitive system encompasses the surrounding environment.* The flux of information between the mind and the environment is so substantial that distinguishing the mind outside of the environment is not a fruitful avenue to understanding larger cognition.
5. *Cognition is for action.* The primary function of the brain is to guide action or behavior and as such its mechanisms (i.e., cognitive processes) need to be analyzed and understood in terms of their relationship to situated behavior.
6. *Offline cognition is body-based.* Even when not engaged directly in the surrounding environment, the brain relies on cognitive processes originally tied to interacting with the environment (i.e., mechanisms for motor control and sensory processing).

Wilson (2002) in her theoretical review of articles on embodied cognition argues that claims one to three and five have persuasive empirical support, the fourth is problematic, and the sixth is the best documented yet least studied in research related to embodied cognition. All of these claims however support a conceptualization of the brain in stark contrast with that of other branches of cognitive science: the brain as an abstract information processor; a computer of symbols in the form of stimulus input from the environment. For embodied cognition, the body remains central in the functioning and development of the human mind.

Of interest to this study are the implications of embodied cognition on social behavior. The Social Simon effect is a theory (like those of motor mimicry and emotional contagion tied to the earlier discussion on empathy) that describes how we represent the actions of another in order to understand them. Whether this representation of another's experience is a co-representation dependent on online information from another person or an individual's simple awareness of this other person in space remains to be seen (Colzato, Dolk, Hommel, Liepelt, Prinz, & Schütz-

Bosbach, 2011; Colzato, Hommel, Liepelt, Prinz, & Vlainic, 2010). Kessler and Rutherford (2010) found that whether the experience of another is 'embodied' depends on how difficult it is to take the perspective of that 'other.'

Facial expressions, understood as cues to the internal states of others, facilitate the task of perspective-taking (Cacioppo, Decety, Lamm, & Porges, 2008). Research in embodied cognition supports the notion, also suggested by work on mirror neurons, that the brain areas activated to process a facial expression are the same as those used if we were to adopt the facial expression ourselves. What is the threshold then between simulating a facial expression cognitively, in order to process it, to actually producing a facial expression to mimic the one we observe? The answer to this question is valuable to the larger discussion of how empathic feeling or concern emerges.

The concept of e*mbodied transparency* (Zunshine, 2008; 2012) connects the purported empathy individuals experience with fictional characters and facial expressions. Zunshine argues that fictional characters are transparent in that their physicality (e.g., facial expressions, body orientation) can be assumed to be a true representation of their internal states. The involvement of the body to signal internal states supports the claim that the character's affective state is embodied (Zunshine, 2012). For example, seeing a character hunched over with rounded shoulders and crying or reading a physical description of this sort is taken as a confirmation that the fictional character is sad. The physical state of a fictional character can be directly represented on a screen or through written description whereby the reader generates a mental image of the character's physicality.

Although the same can be said of how we interpret the internal states of others in daily life, our assumptions about the internal states of others are not always correct. A consistent match between a specific physical state and specific internal state is not necessary. For example, an

individual could have experienced a significant loss but still greet their friend without signaling a negative internal state through a physical display (e.g., crying, downturned lips). Zunshine (2012) asserts that individuals as a result are not as transparent to one another in interpersonal interaction.

However, Zunshine (2012) continues to explain that individuals who engage in fiction adopt a level of embodied transparency in doing so. In other words, the physicality and/or facial expressions of an individual engaging in fiction are taken to be accurate embodied representations of their internal states. The level of accuracy is supported in part by the notion that individual self-awareness of physical displays is lessened the more they are absorbed or engage in a narrative. Simply put, we generally do not expect to be watched as we read a book or watch a movie, and are thus more likely to physically react to narratives in a more spontaneous way.

Given the research on experiences of empathy with fictional characters and embodied cognitive processing, it follows that the more an individual empathizes with a character, the more likely they are to display this empathy physically. It is plausible that individuals who engage in fiction would process the narrative in an embodied way (e.g., through facial expressions, changes in posture), but this has yet to be confirmed empirically. Furthermore, if we are to take fiction as a simulation of social experience, the level of identification with fictional characters would affect levels of motor mimicry the same way familiarity bias affects the level of motor mimicry exhibited between two people discussed earlier. Individuals who engage in fiction would adopt the facial expression or physicality of the fictional characters they are exposed to in an act of unconscious mimicking construed as evidence of an empathic experience. However, the relationship between engaging in fiction and the display of facial expressions has yet to be established and is thus the concern of the present study.

Statement of the Problem

Research suggests that engaging in fiction (e.g., through film, reading, or listening to a story) establishes an action of representation that allows individuals to empathize with fictional characters. Is it misleading to equate the type of empathy engaged in during social interaction with that while reading, watching a film, or hearing a story (i.e., between audience and character)? Does lifelong exposure to fiction affect social behavior through reinforced activation of empathy? Is there a way to measure and verify quantitatively the engagement of individual empathy in the moment we engage in fiction?

Although stimulating theoretically, *embodied transparency* has yet to be confirmed as an observable phenomena in the current cognitive literary sciences literature. Furthermore, there is no study to date that looked at the production of facial expressions exclusively in participants as they were exposed to fiction stimuli. This is problematic given the trend of claims depicting engaging in fiction as a tool to enhance social performance. In essence, certain assumptions about behavior have been made regarding individual engagement with fiction and its beneficial effect on pro-social behavior without clear measures of the theoretical concepts used to support them.

As such, this current study aims to 1) fill the empirical gap described by establishing that engaging in fiction does indeed provoke a display of facial expressions, and 2) potentially establish a methodological precedent to test *embodied transparency* for future research on the relationship between empathy, pro-social behavior, and engagement with fiction. In addition, this present study is also concerned with the relationship between individual differences in lifetime exposure to fiction, empathy level, and likelihood to be absorbed in fictional worlds as they relate to the display of facial expressions while engaging in fiction.

For the purposes of this study, ‘fiction’ will be defined as any form of narrative whether a film, novel, or short-story. Level of social ability will be understood as the combination of

individual ratings on tasks that assess the following aspects of empathic skill: emotional contagion, motor mimicry, and the ability to identify emotions in facial expressions and tones of voice. Lifetime exposure to fiction will be operationally defined by the rating LEF that combines ability to recognize fictional characters and authors of fiction in popular culture, yearly engagement in fiction (e.g., watching films, TV, and reading books), and a self-report measure of fiction engagement.

The hypotheses to be tested in this study are as follows:

1) Engaging in fiction provokes physical displays (e.g., facial expressions).
2) Empathy levels are correlated with the frequency of facial expression displays while engaging in fiction. Specifically, higher levels of empathy skill predict a higher number of facial expression displays (FED).
3) Level of emotional contagion is correlated with individual empathy levels.
4) Lifetime exposure to fiction (LEF) is correlated with individual absorption ratings and empathy level.
5) The frequency of facial expression displays (FED) while engaging in fiction is correlated with individual ratings of emotional contagion and absorption.

Method

Participants

The participants in this study were 66 Emory University undergraduates of the College of Arts and Sciences enrolled in introductory psychology courses: either PSYC110: Psychobiology and Cognition or PSYC111: Introduction to Psychology II. Students participated in this study as part of a requirement to complete credit hours for their respective introductory courses. The sample

included 48 females (72.7%) and 18 males (27.3%). 76% of participants had English as their first language and 26.5% did not. The racial make-up of the sample was 28.8% White/Caucasian, 3% African American, 7.6% South Asian, 4.5% Hispanic/Latin American, 33.3% East Asian & 22.7% Mixed Race. The mean age of the sample was 19.11 years and the standard deviation was 1.2.

A subpopulation P_2 of the participant pool described above ($P_{1)}$, was also used in this study. Of the original participant pool of 66 undergraduate students, 4 had incomplete sets of recordings of their facial expressions. Specifically, there was no data for facial expression displays (FED) during the short film and spoken story fiction stimuli. Consequently, the measures and ratings of these participants regarding FED were not included in later analysis. A subpopulation P_2 that included participants with a full set of recordings was identified. P_2 had 48 females (77.4%) and 14 males (22.6%); the mean age was 19 years of age; 72.6% reported English as their first language.

Procedure

Design Strategy

This study used a within groups design to examine whether there was a relationship between individual empathy level and the frequency of facial expression displays (FED) to fiction stimuli. The advantages of this design strategy were that each participant served as their own baseline and eliminated the possibility that fundamental differences between participants in two different conditions could affect results. Whether the type of fiction stimuli produced a greater response as compared to another type of fiction stimuli (e.g., short-story vs. short film) was not the focus of the study, but rather whether any type of facial expression was produced while engaging in fiction. Consequently, it was necessary that all participants be exposed to all three types of fiction stimuli (e.g., short-story, short film, spoken story). To partially counter-balance order effects of the type

of fiction stimuli on the display of facial expressions, participants were randomly assigned to one of six possible orderings via a random number generator in Excel. 11 participants were assigned to each ordering. The six possible orderings are listed in the following table:

	ORDERINGS		
1	Film	Short Story	Spoken
2	Film	Spoken	Short Story
3	Spoken	Short Story	Film
4	Spoken	Film	Short Story
5	Short Story	Film	Spoken
6	Short Story	Spoken	Film

The independent variable in this study was individual empathy level. The dependent variable was the frequency of facial expressions (FED).

To conduct the experiment, participants first completed the Author-Recognition Test-Revised (ART). This was due to the fact that the short-story used as a stimulus was written by Vladimir Nabokov, one of the authors listed on the ART. Participants then completed the demographic survey on the researcher's personal laptop in the form of a Word Document. As participants filled out the demographic survey, the webcam on the laptop was turned on to record participant facial expressions. The light located next to the camera was covered by a black binder clip clipped onto the frame of the computer. Participants were not aware that their facial expressions were being recorded at this time. Upon completion of the survey, participants flagged over the researcher to begin the next phase of the study: the exposure to three fiction stimuli.

Participants were instructed to keep their focus maintained on the screen during all exposures to fiction stimuli. The webcam continued to record all subsequent events until the participant had been exposed to all fiction stimuli. It should be noted that even though the order in which participants were exposed to the 'short film,' 'short-story,' and 'spoken story' stimuli differed, the way in which a specific type of fiction stimulus was presented remained the same for all participants. As such, only the procedure used for participants subject to Ordering 1 will be described here to avoid redundancy. Participants were first exposed to the short film and were instructed to use their earphones. At the conclusion of the video at 7 minutes, the researcher returned with a set of 7 questions related to the short film's content. Afterwards, participants listened to the 'spoken story' stimulus and then completed the relevant question set. Finally, participants read the short-story stimulus and then completed the related question set. Participants were instructed to remove their earphones while reading.

Participants then completed the fictional characters recognition task and the following three self-report measures on paper: the Emotional Contagion (EC) scale, the Empathy Quotient (EQ), and the Tellegen Absorption Scale (TAS). The final task participants engaged in was the Cambridge Mind-reading Face-Voice Battery Task. Participants used earphones to complete the Voices Task of the CAM and then moved onto the second task: the Faces task. Participants were instructed to remain on the page that listed their results after finishing both parts of the battery task so that the research could take note of their score. This concluded the experiment and participants were then debriefed.

Materials and Measures

The Empathy Quotient (EQ) (Baron-Cohen & Wheelwright, 2004) was used as a measure of participant empathy level (See Appendix A). The EQ contains 60 items: 40 scored empathy

items and 20 control items aimed to distract the participant from the topic of empathy. For each item, the participant can circle one of four responses: 'Strongly Agree,' 'Slightly Agree,' 'Slightly Disagree,' 'Strongly Disagree.' Selections of 'Strongly Disagree' and 'Strongly Agree were scored for a value of 2 points and selections of 'Slightly Agree' and 'Slightly Disagree' were scored for a value of 1 point. Of the 40 empathy items, there are two types: positive items and negative items. If a choice of "agree" is not selected on a positive item, no points are awarded; the same applies to negative items where no "disagree" option is selected. There is a maximum score of 80 points on the EQ and a minimum of 0. The average score on the EQ is 46, with an average score of 50 (*SD* = 9.2) for females and 41 (*SD* = 10.1) for males. The EQ is a valid, reliable scale with (Baker, Baron-Cohen, David, Lawrence, & Shaw, 2004).

The frequency of participant facial expression displays (FED) was calculated manually by the researcher. Before establishing a frequency of facial expression displays to fiction stimuli, a baseline frequency of facial expression displays (BFED) (i.e., the number of facial expressions produced in a minute) to a neutral stimulus was calculated for each participant. The neutral stimulus used in this study was the completion of the demographic survey. To establish the BFED for each participant, the researcher first replayed the recording of the participant's face while they completed the survey and noted the amount of time taken by the participant to complete the survey. This duration of time was converted into seconds. Completion of the survey was signaled in the recording by the moment the participant flagged over the researcher to signal that they had finished.

There were two steps to establishing a baseline for how many facial expressions participants showed in a one minute period. First, a screenshot was taken of a participant's facial expression that was maintained for 30 seconds. This maintained facial expression was labelled the

participant's 'neutral' or resting facial expression. Facial expression displays were recorded as any facial expression (e.g., reconfiguration of the facial muscles) that deviated from this resting facial expression. While watching the recording of the participant completing the survey, the researcher noted each time such a facial expression manifested. The total number of facial expressions produced during the time it took to complete the survey was recorded. The researcher then cross-multiplied to establish how many facial expressions a participant would produce on average in 60 seconds or 1 minute. This final product was noted as the participant's BFED and a projection was made regarding how many facial expressions a participant would produce in a 21 minute long time frame. This was due to the fact that engaging in all three forms of fiction stimuli lasted a total of 21 minutes (it took 7 minutes for participants to complete each type of fiction stimulus). The researcher then replayed the recordings of the participant's engagement in the three fiction stimuli to note the number of FED for each.

In order to account for possible individual differences in the frequency of facial expression displays (FED) when exposed to fiction stimuli and address other research questions of interest to this study, three other measures of empathy were included to provide a comprehensive account of individual empathy skill (i.e., Cambridge Face-Voice Battery Task, Empathy Quotient, Emotional Contagion Scale) as well as one rating of individual likelihood to be absorbed in fictional worlds (i.e., the Tellegen Absorption Scale).

The Cambridge Mind-reading (CAM) Face-Voice Battery task (Baron-Cohen, Golan, & Hill, 2006) accessed online was used as another measure of empathy skill, but not as the independent variable of empathy level in this study. The CAM battery evaluates 20 emotion concepts (positive and negative), in themselves clusters of 412 separate emotions ordered in a

taxonomy developed by Baron-Cohen, Golan, Hill, & Wheelright (2004). These concepts were taken from the adult emotional repertoire.

There are two tasks in the CAM: voice recognition and face recognition. Both tasks begin with an instructional slide followed by two practice slides to ensure understanding of the task. The Voice task of the CAM comprises 50 segments of human speech. After listening to a speech clip, participants select one word from a list of four that they believe best describes the emotional tone of the person they just heard. If a participant finds that two words describe the tone of voice from the speech clip, they are instructed to choose the one they find most suitable. The Face task of the CAM comprises 50 silent clips of actors displaying particular facial expressions. Participants are instructed to select the emotion that best describes what they saw in the recording of the facial expression.

The Emotional Contagion (EC) scale (Doherty, 1997) was the final rating used to assess participant empathy skill. The EC (see Appendix B) comprises 15 items ($\alpha = .90$) to assess mimetic tendency to five basic emotions: love, happiness, fear, anger, and sadness. For each item, participants have the option to select one response on a 4-item Likert Scale: Never, Rarely, Often, Always. The EC has a maximum score of 60 and a minimum score of 15. Items 2, 3, 11 are 'Happiness Items'; items 6, 9, & 12 are 'Love' items; items 8, 13, & 15 are 'Fear' items; items 5, 7, 10 are 'Anger' items; items 1, 4, & 14 are 'Sadness' items. The EC has an internal positive subscale consisting of love and happiness items ($\alpha = .82$) and a negative subscale consisting of fear, anger, and sadness items ($\alpha = .80$). The mean EC Scale internal consistency score is 3.62 (*SD* = .54). Females are found to be more susceptible to emotional contagion than males, $p < .001$.

This study used the modified version of the **Author-Recognition Test-Revised** (de la Paz et al., 2006) to measure one aspect of participant lifetime exposure to fiction (LEF) rating. The

Author-Recognition Test comprises three columns of authors, fifty of which are real and forty of which are foils (See Appendix C). Participants are instructed to make a check mark next to the authors they recognize and are notified that some of the names listed are not real authors as a way to discourage misreporting participant knowledge of authors. The number of authors and characters from fiction that participants recognize is then used a measure to assess life-long reading habits and exposure to fiction.

The Tellegen Absorption Scale (TAS) (McConckey & Roche, 1990), taken from Tellegen's Multidimensional Personality Questionnaire (Tellegen, 1981; Atkinson & Tellegen, 1974) assessed participant openness to be absorbed in fiction (See Appendix E). The TAS comprises 34 self-descriptive items to which participants mark "T" or "F" to denote "True," that the statement applies to them, or "False," that the statement does not apply to them (See Appendix D). The internal reliability coefficient is alpha is .88 (Tellegen, 1981; McConckey & Roche, 1990), and the test-retest reliability is .91 (Kihlstrom, 1989; McConckey & Roche, 1990). The average score on the TAS is 20.

Other materials used to conduct this study were a demographic survey, three types of fiction stimuli, questions sets related to the content of the fiction stimuli, and a list of fictional characters. The **demographic survey** asked participants their age, gender, English-language proficiency (e.g., years spent speaking/reading English in an English-speaking environment), and occupation (e.g., student, professional) (See Appendix F). Participants accessed the survey as a Word document via the researcher's personal laptop that was also used to access the fiction stimuli. Participants could edit the Word document directly to enter their responses. Each survey had already been saved with the relevant identification number given to participants at the start of the study.

The **fiction stimuli** consisted of a short story, a video of a short film, and a spoken story that each took 7 minutes to engage in. The short story used is titled "Signs and Symbols" written by Vladimir Nabokov and is 2,228 words in length and was selected from a list of short stories presented in a Huffington Post article (These Stories are so short… 2013) because it was listed as taking 7 minutes to finish reading (see Appendix G). The two videos were accessed via YouTube. The short film (Prada, 2013) was directed by Wes Anderson as part of a commercial for the fashion brand Prada and stars Jason Schwartzman. This short film was selected from an online list of short-films featured on YouTube (Short, 2014) once more due to its length. The spoken story stimulus (The Moth, 2013) was a video of a recorded storytelling competition: Brad Lawrence's performance of the story "Let Me Sleep On It" as part of the "The Moth" story-telling competition series. This particular video was selected from The Moth's YouTube channel once more because of its duration. All three stimuli engaged the participants for seven minutes each. A set of questions related to the content of each fiction stimulus (See Appendices H.1, H.2, & H.3) was created by the researchers to determine participant comprehension of the fiction stimuli narratives and to gauge the participant affective reaction to fiction stimuli. These questions sets were also used as a way to give participants a break between the three fiction stimuli exposures.

The **list of fictional characters** from popular culture was taken from a TIME magazine article (TIME 2013) that cited 50 fictional characters from the book *The TIME 100 Most Influential People Who Never Lived* as most influential (See Appendix D). Participants were instructed to make a tick mark next to fictional characters they recognized. A tally was made of how many characters in total participants recognized. This number was used as one aspect of participant's overall LEF rating to note a differential in participant awareness of fictional characters in popular culture.

In order to test the fourth hypothesis of the relationship between lifetime exposure to fiction, absorption levels, and empathy levels, a new measure called the lifetime exposure to fiction (LEF) rating was developed for this study. Self-report measures of fiction engagement and scores on recognition tasks of both fictional characters and ART were used in combination to generate an overall lifetime exposure to fiction rating for each participant. It was of interest to assess whether participants engaged in fiction regularly in relation to the total number of facial expressions presented during the three exposures to fiction overall. The maximum LEF rating possible was 104 (e.g., recognition of all 50 characters, all 50 fiction authors, and a self-report rating of "4" for fiction engagement, labelled "Often").

Apparatus

Two computers were used in this study. The first computer was the researcher's personal laptop that had an integrated webcam used to record participant facial expressions during the completion of the demographic survey and the exposure to fiction stimuli. The second computer was used so that participants could access the CAM online and multiple participants could undergo the experiment simultaneously.

Results

Analyses focused on potential relationships between participant frequency of facial expressions displays (FED) while engaging in fiction stimuli, absorption level (TAS), empathic skill (EQ), emotional contagion level (EC), and lifetime engagement with fiction. The hypotheses specifically tested in this study, as stated in the introduction, were as follows:

(1) Engaging in fiction provokes physical displays (e.g., facial expressions).

(2) Empathy levels are correlated with the frequency of physical displays while engaging in fiction. Specifically, higher levels of empathy skill predict a higher number of physical displays.

(3) Level of emotional contagion is correlated with individual empathy levels.

(4) Lifetime exposure to fiction (LEF) is correlated with individual absorption ratings and empathy level.

(5) The frequency of facial expression displays (FED) while engaging in fiction is correlated with individual ratings of emotional contagion and absorption.

Ratings of all 66 participants in *P* were used to test hypotheses 3 and 4. The population P_1 (n = 62) that had a complete set of recordings for each fiction stimulus was used to test hypotheses involving FED: hypotheses 1, 2, and 5.

The first hypothesis tested in this experiment was that engaging in fiction in any form (e.g., written, film) provokes facial expression displays. The findings of this study do not disprove this hypothesis. The average number of FED for *P* during the short story stimulus was 22. The average frequency of FED for *P* when exposed to a neutral stimulus (i.e., completing the demographic survey) was 2 expressions per minute. However, it is important to note that this rate does assume that there is an equal amount of time between each display of facial expression and as such remains an estimate. P_1 displayed, on average, a total of 83 facial expressions across engagement with the three fiction stimuli. The average number of FED for engaging with the short story, short-film, and spoken story were 26, 24, and 30 respectively (See Table 1).

Hypothesis 2: Empathy Level & Facial Expression Displays (FED)

Participants with high levels of individual empathic skill were predicted to have a higher frequency of facial expressions while engaging in fiction than individuals with low empathic skill.

A simple linear regression was calculated to predict FED while engaging in fiction based on empathy level (i.e., participant rating on Empathy Quotient). No significant regression was found for the population P_1 (See Table 2).

Hypothesis 5: FED, Emotional Contagion, & Absorption

Bivariate correlation was used to the test whether the frequency of facial expression displays (FED) while engaging in fiction was correlated with individual ratings of emotional contagion (EC) and absorption (TAS). No significant relationship was found between emotional contagion and FED, nor between FED and absorption (See Table 3).

Hypothesis 3: Empathy Level & Emotional Contagion

A bivariate correlation was run to test the relationship between participant levels of empathy (EQ) and emotional contagion (EC). Empathy level and emotional contagion level were strongly correlated, $r(66) = .532$, $p < .01$.

Hypothesis 4: Absorption, Empathy Level, & Exposure to Fiction

Bivariate correlations were run to analyze the relationships between levels of absorption (TAS), empathy (EQ), and participant lifetime exposure to Fiction (LEF). No significant relationship was found between TAS and LEF ($r = -.051$), neither between EQ and LEF ($r = -.119$), nor between TAS and EQ ($r = .086$) (See Table 4).

Supplemental Analyses

The first supplementary analysis conducted was a bivariate correlation, using P_1, to test the relationship between facial expression displays (FED), fiction engager (FE) score (the sum of LEF and average number of books and films engaged in per year), and self-reported fiction engagement. A positive correlation was found between FED and FE ($r = .299$, $p < .05$), as well as between self-reported fiction engagement and FE ($r = .334$, $p < 0.01$) (See Table 5).

Other supplementary analyses consisted of bivariate correlations using the *P* population (*n* = 66) on self-reported reactions to the three fiction stimuli (e.g., how much participants reported 'liking' the short film on a Likert Scale), LEF, EQ, EC, and FE score. A positive correlation was found between FE and EQ (r = -.395, $p < .01^{**}$), LEF and FE (r = .356, $p < .01$), participant reactions to the spoken story and the short film (r = .261, $p < .05^{*}$), EC and FE (r = -.368, $p <$ .01), EC and participant reaction to the short story (r = .301*, $p < .05$), EC and participant reaction to the short film (r = .330, $p < .01$), and finally between EC and EQ (r = .532, $p < .01$) as recorded in the initial test of hypothesis 3 (See Table 6).

For the final analyses, P_1 (n = 62) was split into two groups: "high-engagers" and "low-engagers." This distinction was based on FE score. The average FE score was 100; high-engagers were noted as those with a score equal to and/or higher than 100; low-engagers were noted as those with an FE below 100 (See Table 7).

An independent Samples T-Test was run to analyze potential differences between the high-engagers group and low-engagers group on the number of facial expression displays (FED), ratings of empathy level (EQ), absorption (TAS), and emotional contagion (EC). No significant differences between the two groups were found: for emotional contagion (F = .32, sig. 8.58), FED (F = .67, sig. = .417), EQ (F = 0.018, sig = .894), nor TAS (F = .87, sig = .35) (See Table 8).

Discussion

Interpretation of Findings

As predicted with the first hypothesis, this study confirmed that engaging in fiction stimuli incites the display of facial expressions. This finding connects to larger discussions of cognitive processing being combined with the experience of the body. Participant fiction engager (FE) score was also found to be correlated with the frequency of facial expression displays. The FE score took

into account how many works of fiction in the form of films and books participants consumed in a year, a self-report measure of how much they engaged in fiction, and their ability to recognize fictional characters and authors of fiction, connecting to a larger measure of their overall lifetime exposure to fiction. The correlation was positive suggesting that the higher an FE score, the more facial expressions participants displayed while engaging with the fiction stimuli. This suggests that participants who already were actively engaged with fiction beforehand were possibly more invested in the fictional worlds they were exposed to or at the very least more comfortable with displaying facial reactions to fiction stimuli.

However, the other hypotheses related to facial expression displays after further analysis did not yield conclusive results. Specifically, the results of the simple linear regression did not support the hypothesis that empathy level predicts the number of facial expression displays participants exhibited during the exposures to fiction stimuli. Further results of bivariate correlations between FED, individual empathy, absorption, and emotional contagion levels also did not support a positive relationship between these factors. This suggests that perhaps the way in which we characterize the experience of engaging in fiction at present ignores certain factors that allow us to stake fiction as a clear simulation of social experience.

The finding that individual empathy bared a strong correlation with emotional contagion level, in other words our susceptibility to spontaneously ‘catch’ the affective state of others is in line with previous research. The supplemental analyses yielded interesting correlations between emotional contagion and other variables, pointing to relationships not considered at the start of this study. Specifically, emotional contagion was positively correlated to the self-reported participant reaction to the short story and the short film, but not to the spoken story. Emotional contagion describes how easily we take on the affective states of others. In this instance participant levels of

emotional contagion related only to their affective experience of fictional characters presented in the narrative and not to the spoken story which, in contrast to the short story and film, presented a 'real' person whose story was assumed to be true. Finally, the self-reported reaction to the short film and spoken story were found to be positively correlated. This suggests the potential difference in emotional engagement in fiction presented in filmed form versus written.

It is also worth noting that the independent samples t-test yielded no significant results regarding the reported means between the group labelled "high-engagers" and the group labelled "low-engagers." The population P_1 for whom there was a complete set of recordings was divided into two separate groups based on their level of active engagement in fiction. It is telling that there was no significant difference between the two concerning their mean ratings on empathy level (EQ), emotional contagion (EC), absorption (TAS), and number of facial expressions displays (FED) while engaging in fiction. The null hypothesis that the means of both groups on these ratings were equal was not rejected. Although this finding provides additional evidence against the second hypothesis (e.g., individuals with high levels of empathy produce more facial expressions while engaging with fiction than individuals with low empathic level), it sheds more light on the question of whether engaging in fiction makes you 'better' socially. The causal relationship between engaging in fiction and social skill defined by empathy level is still unclear.

Contributions of Findings to Psychology

The most important finding of this study was to establish that facial expression displays accompany the experience of fiction whether it is in written or cinematic form. Although perhaps assumed, an empirical basis for this conclusion is required before future research on the relationship between fiction, facial expressions, and empathy and concepts such as *embodied transparency* can be pursued. This study also combined multiple ratings and measures as it was

exploratory in nature so that relationships between variables were not assumed to be inherently causal. New ratings to measure and consider the effect of lifetime exposure to fiction and engagement level in fiction were developed in this study to enrich how we conceive of what affects an individual's experience of a fictional work. As such, the concepts at play and measures used in this study may promote new avenues of inquiry for future experimental research by inspiring new connections between personality factors, behavior, and exposure to fiction.

Limitations

The main limitation to this study was the methodology by which the frequency of facial expressions displays were collected and recorded. Although the video recording of said facial expressions while participants engaged in fiction was a success, there are multiple ways on which the method of analyzing these facial expressions could have been improved upon. First, other researchers could have been included in noting which expressions consisted as a facial expression displays (FED) for each participant so as to have a greater objective consensus. Facial recognition software could have been another option to analyze the facial expression data to increase the reliability of what constituted a 'true' facial expression as well as provide interesting information regarding the affective category to which the facial expressions belonged. Given the limited time frame to analyze data and financial resources for this project as well as the over 27 hours of recording data collected, including more sophisticated methods of collecting FED data was unfortunately not feasible. Another consideration to take into account is that perhaps the length of each fiction stimuli (7 minutes) may have been too limited an amount of time to fully engage and absorb participants into the fictional worlds in a manner similar to their experience of fiction in real life.

Implications

The access to the internal states of fictional characters is a key factor in distinguishing how social interaction differs in real life versus how social skills are called upon when individuals engage in fiction. Concern for how the object we react to will react to us after we display emotional states, whether physically or vocally, is different. For example, one may feel disgust while conversing, but hide this through 'neutral' facial expression and small talk to obey norms of polite conversation. Social convention is not readily applicable when engaging with fictional characters. There are expectations of engaging in fiction in public spaces (e.g., laughing when reading a book in public, decorum in a movie theater), but this level of social sensitivity is not directed towards the work of fiction itself. We are also not as concerned about betraying our own internal states as we engage in fiction. Rarely do we expect someone to be watching us as we watch a movie or read a book. Yet even if an individual is recorded as they watch a short film or read a short story as they were in this present study, we cannot readily confirm that the facial expressions exhibited are a direct manifestation of the experience of empathy or rather the result of a memory triggered by the content of the narrative, for example. It is also unclear as to what about engaging in fiction is shaping and provoking the display of facial expressions.

Future Directions

We anchor reality and our understanding of it through narratives that incorporate "changing felt meanings of the other person" (Rogers, 1975). This study promotes future study of the embodied experience of fiction as its methodology did not discredit the potential merit of focusing on the physical reaction individuals have as they experience narratives. One potential topic to explore would be to identify which aspects of fictional content elicit facial expression displays. Is it solely affective content? At which moment does an individual become fully immersed in a fictional world, and does that experience differ from interacting with 'actual' people? Is it

necessary to have a fictional character with whom individuals identify to elicit empathy, or can the connection be with the narrative as a whole? This study connects to the larger discussion of to what extent identity is an embodied narrative that adapts with each new experience whether of a person, place, or event, as well as considers the relationship between fiction, and by extension that of art, and social development (Ravenscroft, 2012; Boyd, 2009). "There is a generically dramatic character of all experience upon which such various manifestations as actual theater, dialect, and religious ritual depend." (Levi, 1962). The question still remains whether narrative is a core mechanism to describe the way individuals construct conscious thought.

Conclusions

Levinas (2000) emphasizes the importance of the repetition of the "face-to-face encounter" to describe human interaction and how the individual conceives of their own self in relation to others. The intersubjective relation established by the recognition of an 'other' to respond to and of one's self in an 'other' is facilitated first by seeing the face of another. This is a simple paraphrasing of Levinas's concepts, but what is key is the essential nature of an individual's face that allows for ethical relations and behavior to exist. Ethics at its most fundamental conception is concerned with the behavior of an individual or group directed at other individuals. As mentioned at the start of this paper, even our sense of self automatically assumed to be sacredly individualistic requires considering other individuals (and not just their influence) in its construction. The face allows for our own self-realization as existing as a self, but also an identification with the other selves that come into our perception whether in fiction or real life.

Ethical behavior requires as its basis an understanding of the behavior of another. Once more facial expressions are our most salient bridge to accessing these internal states of other people, codified by conscious experience as we associate physical displays with particular emotional states and cognitive processes. We constantly look to interaction with another in order

to understand them through speech whether it is, for example, asking “What was your thought process here?” or “What did you mean by this?” There is an implicit consent that other individuals are capable of and deserving of their own interpretation of the environment we share. Yet looking at the face of another transcends this pragmatic broaching on utilitarian interaction between individuals so that we can begin to enact our humanity. Levinas (2000) writes that “every face says, “I am other to you.” Every face says, “I am not you.” Every face says: “Don’t kill me, don’t absorb me into your world, don’t obliterate me by making me the same as you. I am other.”” Beginning to ignore this leads us in the opposite direction of alienation towards the ‘other,’ an illusion that of course has dire consequences in the realm of ethics as it allows for the potential to undermine our own humanity by failing to recognize that of another.

The role of empathy still calls for more nuanced study, but it can be agreed upon that it links the consciousness of one person to that of an ‘other,’ whether it is an object as described by the German Romantics or another member of our species to coordinate social activity as advanced by evolutionary psychologists. The importance of facial expressions to allow for this recognition is paramount. The experience of fiction is purported to simulate that of actual interaction. This study supports that engaging in fiction does give rise to facial expressions, suggesting that the understanding and experience of narratives can resonate on emotional, cognitive and physical levels—three core aspects to our daily functioning and interaction with other people. The question still remains, however, to what extent conscious embodied experience is an act of unfolding one’s own narrative by embodying those of others, real, fictional, or otherwise.

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Tables and Figures

Table 1.

Reported Ratings & Facial Expression Displays (FED) Means for P and P_1

	n	EQ	EC	TAS	Short Story	Short Film	Spoken Story	Total FED
P	66	49	44	21	22			
P_1	62	49	44	21	26	24	30	83

Table 2.

Simple Linear Regression Analysis of Empathy Level on Facial Expression Displays (FED)

R	*F*	R^2	*p*
.153	1.440	.023	.235

Table 3.

Correlations between FED, Emotional Contagion (EC), & Absorption (TAS)

Measure	Emotional Contagion (EC)	Absorption (TAS)
FED	-0.32	-.014

Table 4.

Correlations between empathy level, absorption level, and lifetime exposure to fiction (LEF)

Measure	LEF	Absorption
Empathy (EQ)	-.119	.086
Absorption (TAS)	-.051	1

Table 5.

Correlations between facial expressions displays (FED), fiction engager score (FE), & self-reported fiction engagement

Measure	FE	Fiction Engagement
FED	.299*	.334**

*$p < .05$, **$p < .01$

Table 6.

Correlations between participants reactions to fiction stimuli, FE, LEF, EQ, & TAS

Measure	Reaction to Short Story	Reaction to Short Film	Reaction to Spoken Story	EQ	FE
FE	-.070	-.225	-.086	-.395**	1
LEF	.127	.356	.114	-.111	.356**
EQ	.211	.212	.159	1	-.395**
TAS	-.121	.050	-.038	.076	.194
EC	.301*	.330**	.040	.532**	-.368**
Reaction to Spoken Story	.175	.261*	1	.212	-.225

**$p < .01$, *$p < 0.05$

Table 7.

P_1 Ratings based on level of fiction engagement

Engagement Level	N	EQ	EC	TAS	FED
Low-engagers (LE)	45	51	19	45	82
High-engagers (HE)	17	46	24	44	87

Table 8.

Independent Group T-Test between Fiction Engagement Level, Empathy, Absorption, FED, & Emotional Contagion (EC)

	Low-engagers		High-engagers		
	M	SD	M	SD	t-test
EC	45.13	6.63	42.06	6.97	1.61
FED	81	41.53	79.12	29.54	.17
EQ	50.51	12.37	45.53	11.02	1.46
TAS	21.76	5.96	18.76	7.57	1.63

n = 62, Low-engagers *n* = 45, High-engagers *n* = 17

Appendices

Appendix A: The Empathy Quotient (EQ)

How to fill out this questionnaire: Below are a list of statements. Please read each statement very carefully and rate how you agree or disagree with it by circling ONE answer. There are no right or wrong answers, or trick questions.

IN ORDER FOR THE SCALE TO BE VALID, YOU MUST ANSWER EVERY QUESTION. THANK YOU.

Examples

E1. I would be very upset if I couldn't listen to music every day.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
E2. I prefer to speak to my friends on the phone rather than write letters to them.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
1. I can easily tell if someone else wants to enter a conversation.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
2. I prefer animals to humans.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
3. I try to keep up with the current trends and fashions.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
4. I find it difficult to explain to others things that I understand easily, when they don't understand it the first time.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
5. I dream most nights.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
6. I really enjoy caring for other people.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
7. I try to solve my own problems rather than discussing them with others.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
8. I find it hard to know what to do in a social situation.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
9. I am at my best first thing in the morning.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
10. People often tell me that I went too far in driving my point home in a discussion.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
11. It doesn't bother me too much if I am late meeting a friend.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**

12. Friendships and relationships are just too difficult, so I tend not to bother with them.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
13. I would never break a law, no matter how minor.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
14. I often find it difficult to judge if something is rude or polite.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
15. In a conversation, I tend to focus on my own thoughts rather than on what my listener might be thinking.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
16. I prefer practical jokes to verbal humor.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
17. I live life for today rather than the future.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
18. When I was a child, I enjoyed cutting up worms to see what would happen.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
19. I can pick up quickly if someone says one thing but means another.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
20. I tend to have very strong opinions about morality.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
21. It is hard for me to see why some things upset people so much.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
22. I find it easy to put myself in somebody else's shoes.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
23. I think that good manners are the most important thing a parent can teach their child.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
24. I like to do things on the spur of the moment.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
25. I am good at predicting how someone will feel.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
26. I am quick to spot when someone in a group is feeling awkward or uncomfortable.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
27. If I say something that someone else is offended by, I think that that's their problem, not mine.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
28. If anyone asked me if I liked their haircut, I would reply truthfully, even if I didn't like it.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
29. I can't always see why someone should have felt offended by a remark.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
30. People often tell me that I am very unpredictable.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
31. I enjoy being the centre of attention at any social gathering.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**

32. Seeing people cry doesn't really upset me.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
33. I enjoy having discussions about politics.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
34. I am very blunt, which some people take to be rudeness, even though this is unintentional.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
35. I don't tend to find social situations confusing.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
36. Other people tell me I am good at understanding how they are feeling and what they are thinking.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
37. When I talk to people, I tend to talk about their experiences rather than my own.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
38. It upsets me to see an animal in pain.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
39. I am able to make decisions without being influenced by people's feelings.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
40. I can't relax until I have done everything I had planned to do that day.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
41. I can easily tell if someone else is interested or bored with what I am saying.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
42. I get upset if I see people suffering on news programmes.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
43. Friends usually talk to me about their problems as they say that I am very understanding.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
44. I can sense if I am intruding, even if the other person doesn't tell me.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
45. I often start new hobbies but quickly become bored with them and move on to something else.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
46. People sometimes tell me that I have gone too far with teasing.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
47. I would be too nervous to go on a big rollercoaster.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
48. Other people often say that I am insensitive, though I don't always see why.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
49. If I see a stranger in a group, I think that it is up to them to make an effort to join in.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
50. I usually stay emotionally detached when watching a film.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
51. I like to be very organised in day to day life and often make lists of the chores I have to do.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
52. I can tune into how someone else feels rapidly and intuitively.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**

53. I don't like to take risks.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
54. I can easily work out what another person might want to talk about.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
55. I can tell if someone is making their true emotion.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
56. Before making a decision I always weigh the pros and cons.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
57. I don't consciously work out the rules of social situations.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
58. I am good at predicting what someone will do.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
59. I tend to get emotionally involved with a friend's problems.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**
60. I can usually appreciate the other person's viewpoint, even if I don't agree with it.	**Strongly agree**	**Slightly agree**	**Slightly disagree**	**Strongly disagree**

Thank you for filling this questionnaire in.

Appendix B: The Emotional Contagion Scale.

1.	If someone I'm talking with begins to cry, I get teary-eyed.	4 Always	3 Often	2 Rarely	1 Never
2.	Being with a happy person picks me up when I'm feeling down.	4 Always	3 Often	2 Rarely	1 Never
3.	When someone smiles warmly at me, I smile back and feel warm inside.	4 Always	3 Often	2 Rarely	1 Never
4.	I get filled with sorrow when people talk about the death of their loved ones.	4 Alwavs	3 Often	2 Rarelv	1 Never
5.	I clench my jaws and my shoulders get tight when I see angry faces on the news.	4 Always	3 Often	2 Rarely	1 Never
6.	When I look into the eyes of the one I love, my mind is filled with thoughts of romance.	4 Alwavs	3 Often	2 Rarelv	1 Never
7.	It irritates me to be around angry people.	4 Always	3 Often	2 Rarely	1 Never
8.	Watching the fearful faces of victims on the news makes me try to imagine how they might be feeling.	4 Alwavs	3 Often	2 Rarelv	1 Never
9.	I melt when the one I love holds me close.	4 Alwavs	3 Often	2 Rarelv	1 Never
10.	I tense when overhearing an angry quarrel.	4 Alwavs	3 Often	2 Rarelv	1 Never
11.	Being around happy people fills my mind with happy thoughts.	4 Alwavs	3 Often	2 Rarelv	1 Never

12.	I sense my body responding when the one I love touches me.	4 Always	3 Often	2 Rarely	1 Never
13.	I notice myself getting tense when I'm around people who are stressed out.	4 Always	3 Often	2 Rarely	1 Never
14.	I cry at sad movies.	4 Always	3 Often	2 Rarely	1 Never
15.	Listening to the shrill screams of a terrified child in a dentist's waiting room makes me feel nervous.	4 Always	3 Often	2 Rarely	1 Never

Appendix C: The Author-Recognition Test Revised.

Subject Number:_____ Score: C_____I_____C-I_____

Below is a list of names. Some of them are authors of books, and some of them are not. Please put a check mark next to the ones that you know for sure are authors. There is a penalty for guessing, so you should check only those names about which you are absolutely certain. Thank you.

___Patrick Banville	___Harry Coltheart	___Virginia Woolf	___Tony Hillerman
___Kristen Steinke	___Gary Curwen	___John Landau	___Amy R. Baskin
___Ernest Hemingway	___Herman Wouk	___Toni Morrison	___James Clavell
___Clive Cussler	___Geoffrey Pritchett	___Harriet Troudeau	___Salman Rushdie
___Hiroyuki Oshita	___Ray Bradbury	___Roswell Strong	___Maryann Phillips
___Kurt Vonnegut	___Jay Peter Holmes	___J.R.R. Tolkien	___Scott Alexander
___Anne McCaffrey	___Christina Johnson	___Margaret Atwood	___Ayn Rand
___Elinor Harring	___Jean M. Auel	___Seamus Huneven	___Alex D. Miles
___Sue Grafton	___Judith Stanley	___Harper Lee	___Margaret Mitchell
___Lisa Woodward	___Gloria McCumber	___Chris Schwartz	___Leslie Kraus
___David Harper Townsend	___James Joyce	___Walter LeMour	___Ralph Ellison
___Anna Tsing	___Robert Ludlum	___Alice Walker	___Sidney Sheldon
___T.C. Boyle	___Larry Applegate	___Elizabeth Engle	___ Brian Herbert
___Jonathan Kellerman	___Keith Cartwright	___T.S. Elliot	___Sue Hammond
___Cameron McGrath	___Jackie Collins	___Marvin Benoit	___Jared Gibbons
___F. Scott Fitzgerald	___Umberto Eco	___Joyce Carol Oates	___Michael Ondaatje
___A.C. Kelly	___David Ashley	___Jessica Ann Lewis	___Thomas Wolfe
___Peter Flaegerty	___Jack London	___Nelson Demille	___Jeremy Weissman
___Kazuo Ishiguro	___Seth Bakis	___Arturo Garcia Perez	___Willa Cather
___Jane Smiley	___Padraig O'seaghdha	___S.L. Holloway	___J.D. Salinger
___James Patterson	___E.B. White	___John Irving	___ Antonia Cialdini
___Martha Farah	___Giles Mallon	___Stephen Houston	___ Lisa Hong Chan

EMBODIED FICTIONS: ACCESSING NARRATIVES OF THE FACE

___Craig DeLord	___Raymond Chandler	___Marcus Lecherou	___Samuel Beckett
___Nora Ephron	___Isabel Allende	___Valerie Cooper	___Beatrice Dobkin
___Ann Beattie	___Amy Graham	___Tom Clancy	___Wally Lamb
___Stewart Simon	___Marion Coles Snow	___Vladimir Nabokov	___Katherine Kreutz
___Danielle Steel	___George Orwell	___Pamela Lovejoy	___James Michener
___Dick Francis	___Maya Angelou	___Vikram Roy	___William Faulkner
___Ted Mantel	___Bernard Malamud	___Saul Bellow	___Isaac Asimov
___I.K. Nachbar	___John Grisham	___Stephen King	___Lindsay Carter
___Judith Krantz	___Erich Fagles	___Elizabeth May Kenyon	___Paul Theroux
___Thomas Pynchon	___Walter Dorris	___Frederick Mundow	___Francine Preston
___Wayne Fillback	___Gabriel Garcia Marquez		

Appendix D: List of Fictional Characters

Robin Hood	Homer Simpson	Holden Caulfield	Darth Vader	Dorothy Gale
Harry Potter	Santa Claus	The Dude	Cinderella	Jay Gatsby
Sherlock Holmes	Superman	Tarzan	Uncle Tom	Willy Loman
John Galt	Buffy the Vampire Slayer	Wonder Woman	Big Brother	Rosie the Riveter
Anna Karenina	Odysseus	King Lear	Cassandra	Josef K
James Bond	Lara Croft	Captain Ahab	Raskolnikov	Walter Mitty
Hamlet	HAL 9000	The Marlboro Man	King Arthur	Oedipus
The Good Samaritan	Dr. Frankenstein and Monster	Don Quixote	Ebenezer Scrooge	Pollyanna
Uncle Sam	Romeo and Juliet	Count Dracula	The Prodigal Son and His Father	Leopold and Molly Bloom
Kunta Kinte	Barbie	Oliver Twist	Dr. Faust	

Appendix E: The Tellegen Absorption Scale.

Below you will find a series of statements a person might use to describe his/her attitudes, opinions, interests and other characteristics. Read each statement and decide which choice (TRUE or FALSE) best describes you.

If you think the statement is TRUE, write the letter T next to that statement

If you think the statement is FALSE, write the letter F next to that statement.

Please respond to each statement. If you do not mark "T" or "F" for each statement, the entire survey will be void. Please read every statement carefully, but do not spend too much time deciding on the answer. Thank you for your cooperation.

---

1. Sometimes I feel and experience things as I did when I was a child.

2. I can be greatly moved by eloquent or poetic language.

3. While watching a movie, a TV show, or a play, I may become so involved that I forget about myself and my surroundings and experience the story as if it were real and as if I were taking part in it.

4. If I stare at a picture and then look away from it, I can sometimes "see" an image of the picture, almost as if I were still looking at it.

5. Sometimes I feel as if my mind could envelop the whole earth.

6. I like to watch cloud shapes change in the sky.

7. If I wish, I can imagine (or daydream) some things so vividly that they hold my attention as a good movie or story does.

8. I think I really know what some people mean when they talk about mystical experiences.

9. I sometimes "step outside" my usual self and experience an entirely different state of being.

10. Textures -- such as wool, sand, wood -- sometimes remind me of colors or music.

11. Sometimes I experience things as if they were doubly real.

12. When I listen to music, I can get so caught up in it that I don't notice anything else.

13. If I wish, I can imagine that my body is so heavy that I could not move it if I wanted to.

14. I can often somehow sense the presence of another person before I actually see or hear her/him.

15. The crackle and flames of a wood fire stimulates my imagination.

16. It is sometimes possible of me to be completely immersed in nature or art and to feel as if my whole state of consciousness has somehow been temporarily altered.

17. Different colors have distinctive and special meanings for me.

18. I am able to wander off into my own thought while doing a routine task and actually forget that I am doing the task, and then find a few minutes later that I have completed it.

19. I can sometimes recollect certain past experiences in my life with such clarity and vividness that it is like living them again or almost so.

20. Things that might seem meaningless to others often make sense to me.

21. While acting in a play, I think I would really feel the emotions of the character and "become" her/him for the time being, forgetting both myself and the audience.

22. My thoughts often do not occur as words but as visual images.

23. I often take delight in small things (like the five pointed star shape that appears when you cut an apple across the core or the colors in soap bubbles).

24. When listening to organ music or other powerful music, I sometimes feel as if I am being lifted into the air.

25. Sometimes I can change noise into music by the way I listen to it.

26. Some of my most vivid memories are called up by scents and smells.

27. Certain pieces of music remind me of pictures or moving patterns of color.

28. I often know what someone is going to say before he or she says it.

29. I often have "physical memories"; for example, after I have been swimming I may still feel as if I am in the water.

30. The sound of a voice can be so fascinating to me that I can just go on listening to it.

31. At times I somehow feel the presence of someone who is not physically there.

32. Sometimes thoughts and images come to me without the slightest effort on my part.

33. I find that different odors have different colors.

34. I can be deeply moved by a sunset.

Appendix F: Demographic Survey

Background Characteristics

1. What is your age? _____
2. What is your sex? _____ Male _____ Female
3. What is your home town?
4. What is your ancestry or ethnic origin? List as many as apply. [For example, Italian, Jamaican, African American, Cambodian, Cape Verdean, Norwegian, Dominican, French Canadian, Haitian, Korean, Lebanese, Polish, Nigerian, Mexican, Taiwanese, Ukrainian, and so on.]
5. Are you a student or a professional?
   a) If a student, what is/are your major(s)? If you have not decided on a major, list those that you may be considering.
   b) If a professional, what is your profession?
6. Is English your first language? (Please select one) Yes No
7. Do you know any other languages? (Please list)
8. How long have you spent in a dominantly English-speaking environment?

   _____ years _____ months
9. How long have you been:
   a) Reading books in English?
   b) Watching films in English?
10. How often do you engage in fiction (e.g., watch a TV show, read a story, go to a movie, see a play)?

1	2	3	4	5
Never	Rarely	Occasionally	Frequently	Very Frequently

11. On average, in **one year** how many (please write a numerical answer):
    a. Books do you read? _____
    b. Movies do you watch? _____

12. On average, in **one week** how many:

    a. TV Shows episodes do you watch? _____

    b. Movies do you watch? _____

    c. Books do you read? _____

Appendix G: "Signs and Symbols" by Vladimir Nabokov

SYMBOLS AND SIGNS

BY VLADIMIR NABOKOV

For the fourth time in as many years, they were confronted with the problem of what birthday present to take to a young man who was incurably deranged in his mind. Desires he had none. Man-made objects were to him either hives of evil, vibrant with a malignant activity that he alone could perceive, or gross comforts for which no use could be found in his abstract world. After eliminating a number of articles that might offend him or frighten him (anything in the gadget line, for instance, was taboo), his parents chose a dainty and innocent trifle—a basket with ten different fruit jellies in ten little jars.

At the time of his birth, they had already been married for a long time; a score of years had elapsed, and now they were quite old. Her drab gray hair was pinned up carelessly. She wore cheap black dresses. Unlike other women of her age (such as Mrs. Sol, their next-door neighbor, whose face was all pink and mauve with paint and whose hat was a cluster of brookside flowers), she presented a naked white countenance to the faultfinding light of spring. Her husband, who in the old country had been a fairly successful businessman, was now, in New York, wholly dependent on his brother Isaac, a real American of almost forty years' standing. They seldom saw Isaac and had nicknamed him the Prince.

That Friday, their son's birthday, everything went wrong. The subway train lost its life current between two stations and for a quarter of an hour they could hear nothing but the dutiful beating of their hearts and the rustling of newspapers. The bus they had to take next was late and kept them waiting a long time on a street corner, and when it did come, it was crammed with garrulous high-school children. It began to rain as they walked up the brown path leading to the sanitarium. There they waited again, and instead of their boy, shuffling into the room, as he usually did (his poor face sullen, confused, ill-shaven, and blotched with acne), a nurse they knew and did not care for appeared at last and brightly explained that he had again attempted to take his life. He was all right, she said, but a visit from his parents might disturb him. The place was so miserably understaffed, and things got mislaid or mixed up so easily, that they decided not to leave their present in the office but to bring it to him next time they came.

Outside the building, she waited for her husband to open his umbrella and then took his arm. He kept clearing his throat, as he always did when he was upset. They reached the bus-stop shelter on the other side of the street and he closed his umbrella. A few feet away, under a swaying and dripping tree, a tiny unfledged bird was helplessly twitching in a puddle.

During the long ride to the subway station, she and her husband did not exchange a word, and every time she glanced at his old hands, clasped and twitching upon the handle of his umbrella, and saw their swollen veins and brown-spotted skin, she felt the mounting pressure of tears. As she looked around, trying to hook her mind onto something, it gave her a kind of soft shock, a mixture of compassion and wonder, to notice that one of the passengers—a girl with dark hair and grubby red toenails—was weeping on the shoulder of an older woman. Whom did that woman resemble? She resembled Rebecca Borisovna, whose daughter had married one of the Soloveichiks—in Minsk, years ago.

The last time the boy had tried to do it, his method had been, in the doctor's words, a masterpiece of inventiveness; he would have succeeded had not an envious fellow-patient thought

he was learning to fly and stopped him just in time. What he had really wanted to do was to tear a hole in his world and escape.

The system of his delusions had been the subject of an elaborate paper in a scientific monthly, which the doctor at the sanitarium had given to them to read. But long before that, she and her husband had puzzled it out for themselves. "Referential mania," the article had called it. In these very rare cases, the patient imagines that everything happening around him is a veiled reference to his personality and existence. He excludes real people from the conspiracy, because he considers himself to be so much more intelligent than other men. Phenomenal nature shadows him wherever he goes. Clouds in the staring sky transmit to each other, by means of slow signs, incredibly detailed information regarding him. His in- most thoughts are discussed at nightfall, in manual alphabet, by darkly gesticulating trees. Pebbles or stains or sun flecks form patterns representing, in some awful way, messages that he must intercept. Everything is a cipher and of everything he is the theme. All around him, there are spies. Some of them are detached observers, like glass surfaces and still pools; others, such as coats in store windows, are prejudiced witnesses, lynchers at heart; others, again (running water, storms), are hysterical to the point of insanity, have a distorted opinion of him, and grotesquely misinterpret his actions. He must be always on his guard and devote every minute and module of life to the decoding of the undulation of things. The very air he exhales is indexed and filed away. If only the interest he provokes were limited to his immediate surroundings, but, alas, it is not! With distance, the torrents of wild scandal increase in volume and volubility. The silhouettes of his blood corpuscles, magnified a million times, flit over vast plains; and still farther away, great mountains of unbearable solidity and height sum up, in terms of granite and groaning firs, the ultimate truth of his being.

When they emerged from the thunder and foul air of the subway, the last dregs of the day were mixed with the street lights. She wanted to buy some fish for supper, so she handed him the basket of jelly jars, telling him to go home. Accordingly, he returned to their tenement house, walked up to the third landing, and then remembered he had given her his keys earlier in the day.

In silence he sat down on the steps and in silence rose when, some ten minutes later, she came trudging heavily up the stairs, smiling wanly and shaking her head in deprecation of her silliness. They entered their two-room flat and he at once went to the mirror. Straining the corners of his mouth apart by means of his thumbs, with a horrible, mask-like grimace, he removed his new, hopelessly uncomfortable dental plate. He read his Russian-language newspaper while she laid the table. Still reading, he ate the pale victuals that needed no teeth. She knew his moods and was also silent.

When he had gone to bed, she remained in the living room with her pack of soiled playing cards and her old photograph albums. Across the narrow courtyard, where the rain tinkled in the dark against some ash cans, windows were blandly alight, and in one of them a black-trousered man, with his hands clasped under his head and his elbows raised, could he seen lying supine on an untidy bed. She pulled the blind down and examined the photographs. As a baby, he looked more surprised than most babies. A photograph of a German maid they had had in Leipzig and her fat-faced fiancé fell out of a fold of the album. She turned the pages of the book: Minsk, the Revolution, Leipzig, Berlin, Leipzig again, a slanting house front, badly out of focus. Here was the boy when he was four years old, in a park, shyly, with puckered forehead, looking away from an eager squirrel, as he would have from any other stranger. Here was Aunt Rosa, a fussy, angular, wild-eyed old lady, who had lived in a tremulous world of bad news, bankruptcies, train accidents, and cancerous growths until the Germans put her to death, together with all the people she had worried about. The boy, aged six—that was when he drew wonderful birds with human hands and

feet, and suffered from insomnia like a grown-up man. His cousin, now a famous chess player. The boy again, aged about eight, already hard to understand, afraid of the wallpaper in the passage, afraid of a certain picture in a book, which merely showed an idyllic landscape with rocks on a hillside and an old cart wheel hanging from the one branch of a leafless tree. Here he was at ten—the year they left Europe. She remembered the shame, the pity, the humiliating difficulties of the journey, and the ugly, vicious, backward children he was with in the special school where he had been placed after they arrived in America. And then came a time in his life, coinciding with a long convalescence after pneumonia, when those little phobias of his, which his parents had stubbornly regarded as the eccentricities of a prodigiously gifted child, hardened, as it were, into a dense tangle of logically interacting illusions, making them totally inaccessible to normal minds.

All this, and much more, she had accepted, for, after all, living does mean accepting the loss of one joy after another, not even joys in her case, mere possibilities of improvement. She thought of the recurrent waves of pain that for some reason or other she and her husband had had to endure; of the in visible giants hurting her boy in some unimaginable fashion; of the incalculable amount of tenderness contained in the world; of the fate of this tenderness, which is either crushed or wasted, or transformed into madness; of neglected children humming to themselves in unswept corners; of beautiful weeds that cannot hide from the farmer.

It was nearly midnight when, from the living room, she heard her husband moan, and presently he staggered in, wearing over his nightgown the old overcoat with the astrakhan collar that he much preferred to his nice blue bathrobe.

“I can’t sleep!” he cried.

“Why can’t you sleep?” she asked. “You were so tired.”

“I can’t sleep because I am dying,” he said, and lay down on the couch.

“Is it your stomach? Do you want me to call Dr. Solov?”

“No doctors, no doctors,” he moaned. “To the devil with doctors! We must get him out of there quick. Otherwise, we’ll be responsible…. Responsible!” He hurled himself into a sitting position, both feet on the floor, thumping his forehead with his clenched fist.

“All right,” she said quietly. “We will bring him home tomorrow morning.”

“I would like some tea,” said her husband and went out to the bathroom.

Bending with difficulty, she retrieved some playing cards and a photograph or two that had slipped to the floor—the knave of hearts, the nine of spades, the ace of spades, the maid Elsa and her bestial beau. He returned in high spirits, saying in a loud voice, “I have it all figured out. We will give him the bedroom. Each of us will spend part of the night near him and the other part on this couch. We will have the doctor see him at least twice a week. It does not matter what the Prince says. He won’t have much to say anyway, because it will come out cheaper.”

The telephone rang. It was an unusual hour for it to ring. He stood in the middle of the room, groping with his foot for one slipper that had come off, and childishly, toothlessly, gaped at his wife. Since she knew more English than he, she always attended to the calls.

”Can I speak to Charlie?” a girl’s dull little voice said to her now.

“What number do you want? . . . No. You have the wrong number.”

She put the receiver down gently and her hand went to her heart. “It frightened me,” she said. He smiled a quick smile and immediately resumed his excited monologue. They would fetch him as soon as it was day. For his own protection, they would keep all the knives in a locked drawer. Even at his worst, he presented no danger to other people.

The telephone rang a second time.

The same toneless, anxious young voice asked for Charlie.

“You have the incorrect number. I will tell you what you are doing. You are turning the letter ‘o’ instead of the zero.” She hung up again.

They sat down to their unexpected, festive midnight tea. He sipped noisily; his face was flushed; every now and then he raised his glass with a circular motion, so as to make the sugar dissolve more thoroughly. The vein on the side of his bald head stood out conspicuously, and silvery bristles showed on his chin. The birthday present stood on the table. While she poured him another glass of tea, he put on his spectacles and reëxamined with pleasure the luminous yellow, green, and red little jars. His clumsy, moist lips spelled out their eloquent labels—apricot, grape, beach plum, quince. He had got to crab apple when the telephone rang again. ♦

Appendix H.1: Question set for Short-Story

1. Have you read this story before? Yes No
2. Which adjective best describes this story? (You may circle more than one answer)

   Confusing Sad Happy Funny Sweet Other: _____
3. Who was the main character? _____
4. Did you feel connected with a character or the story?

   _____
5. Have you read anything by Vladimir Nabokov before? Yes No
6. Have you ever heard of Vladimir Nabokov? Yes No
7. Did you like the story? (please circle one)

   5 4 3 2

   Very much Somewhat Undecided Not Really

Appendix H.2: Question set for Short Film

1. Have you seen this short film before? Yes No
2. Which adjective best describes this short film? (Circle all that apply)

   Confusing Funny Happy Sad Sweet

   Other:_____
3. Who was the main character? _____
4. Did you feel connected with the film's plot or a character? _____
5. Do you like Jason Schwartzman (the actor in the short film)? Yes No
6. Have you seen any Wes Anderson films before? Yes No
7. If yes, how many? _____
8. Did you like the short film you just watched?

   5 4 3 2

   Very much Somewhat Undecided Not Really

Appendix H. 3: Questions set for Spoken Story

1. Have you heard this story before? Yes No
2. Which adjective best describes the story you just heard? (Circle all that apply)

   Funny Sweet Happy Sad Confusing Other: _____
3. What was this story about?
4. Did you like the story teller?
5. Did you feel connected with the story or the story-teller?
6. Do you enjoy people telling you stories?
7. Did you enjoy the story you just heard?

5	4	3	2
Very much	Somewhat	Undecided	Not Really