The Experience of Psychological Transportation: 
The Role of Cognitive Energy Exertion and Focus during Exposure to Narratives

Dissertation

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By

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ABSTRACT

Narratives vicariously take people to new places, introduce them to new people, and provide them with new experiences. When exposed to narratives, people may become immersed in these narrative worlds, an experience that Green and Brock (2000, 2002) called psychological transportation. While they provided three domains of antecedents for transportation in their transportation-imagery model (i.e., individual characteristics, narrative characteristics, and context characteristics), it is not clear why such antecedents may contribute to transportation. Thus, the current set of studies takes multiple approaches to demonstrate two critical elements of the transportation experience. First, based on Green and Brock’s (2000) own operationalization of transportation, I propose that one key element of the experience is the expenditure of cognitive energy. Such cognitive resources are directed towards attending to the narrative, developing mental images relevant to the narrative, and intensifying emotional responses. Consequently, variables that influence the amount of energy that people use during narrative exposure can impact transportation; in the current set of studies, I examine variables such as task difficulty, ego-depletion, and uncertainty reduction. However, considering previous distinctions between transportation and elaboration, described by Green and Brock (2000), I also suggest that the level of energy alone does not explain the phenomenological experience of transportation. Thus, the second key element of the transportation experience is the focus of energy expended. Based on previous work in
emotions and motivation (e.g., Gable & Harmon-Jones, 2008), under an approach
motivation, positive affect may narrow attention. From such previous work, I suggest that
a motivation which makes the expenditure of effort desirable takes that exerted energy
and focuses it on the activity, or in the case of transportation, the narrative. As I explore
in the current set of studies, when expending effort is desirable (as in the case of those
high in need for cognition; Cacioppo & Petty, 1982) or when it is in the service of
growth, such as for self-expansion or learning goals. Together the six studies presented
provide preliminary evidence for the roles of energy exertion and focus in the experience
of transportation.
DEDICATION

Dedicated to those who taught me the value of

hard work and passion in everything I do:

Cindy Shedlosky, Pete Shedlosky, Lucille Bendickson,

Donald Kuster, Tim Brock, and Matthew Shoemaker.
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CHAPTER 1

INTRODUCTION: THE EXPERIENCE OF
PSYCHOLOGICAL TRANSPORTATION

Narratives offer people a means for exploring, vicariously. Stories can take people to new places, introduce them to new people, and provide them with new experiences. Socially, narrative has been used for generations to pass along knowledge and experiences, such as in the case of folklore. They provide a safe, non-threatening experience (Nell, 2002), and according to Freud (1980/1957), indulge the ego. Stories have the power to shape people’s beliefs (Green & Brock, 2000, 2002). But before the consequences of being exposed to narratives can be felt, people need to experience the narrative. In becoming immersed in a narrative world, people walk through that door to absorb a new experience or revisit an old one. The current set of studies aims to consider why people become immersed in narratives. In doing so, I propose two basic antecedents that drive the experience of psychological transportation.

Defining Psychological Transportation

Green and Brock (2000, 2002) coined the term psychological transportation to describe the experience of being cognitively and affectively immersed in a narrative, or as Nell (1988) described it concerning reading: feeling “lost in a book”. Such an
adventure into a narrative world requires individuals to leave their own world, psychologically speaking, and focus their attention on the literary world (e.g., Green & Brock, 2000, 2002; Green, Kass, Carrey, Herzig, Feeney, & Sabini, 2008). In this experiential response to the story, the narrative evokes emotional responses and mental imagery, thus drawing on mental resources. Drawing from the psychological transportation scale (Green & Brock, 2000), expending these cognitive resources involves an investment in the story, such that people desire to learn how the story will end and even contemplate various ways the story might turn out. Further, the experience of being transported in a story relates to enjoyment of the narrative; although, transportation and enjoyment are generally regarded as distinct processes (Green, Brock, & Kaufman, 2006).

Psychological transportation shares the phenomenological-experience that Csikszentmihalyi (1982, 1990) called flow (e.g., Green & Brock, 2002; Green, 2004). While observing artists at work, Csikszentmihalyi noted that they appeared incredibly immersed in their work, investing a great deal of effort to create the final product, only to lose interest in the resulting creation soon after it was completed (see Csikszentmihalyi & Csikszentmihalyi, 1988). Since this initial interest, he has conceptualized the flow experience as an optimal experience, in which one’s state of consciousness feels organized and focused on the task (Csikszentmihalyi, 1975, 1990). Although psychological transportation and flow share the experience of becoming immersed in a narrative or an activity, respectively, the concept of flow is a more general experience. Psychological transportation, on the other hand, specifically involves an emotional response and mental imagery prompted by a narrative.
Antecedents of Transportation: Transportation-Imagery Model

In their transportation-imagery mode, Green and Brock (2002) identify three domains through which transportation may be influenced. First, people’s dispositional characteristics affect transportation. Green and Brock point to the possible influence of people’s ability to mentally create vivid images (e.g., Sheehan, 1967) and become fully immersed in experiences (Tellegen, 1982; Tellegen & Atkinson, 1974). Considering that transportation involves both imaging events of the narrative and becoming immersed in the story, people who are better able to create a mental image of the story or are more prone to immerse themselves in any experience are more likely to become transported in a story. Indeed, in their development of the transportation scale, Green and Brock (2000) observed a moderate positive relationship between scores on Tellegen’s (1982) Absorption scale and transportation in a short story. Green (2004) also found evidence that individual’s prior personal experiences may impact transportation – specifically, when participants reported greater familiarity of story-relevant information, they became more transported. So although transportation takes the traveler into the narrative world, clearly, the traveler brings along some baggage, which in itself impacts the experience of this trip.

Second, factors of the narrative itself, such as quality, may prompt or disrupt transportation. Certainly, most people would agree that a good story provides for a more pleasurable experience than a bad story, and empirical evidence appears to support this claim (Gerrig & Prentice, 1991). However, this evidence relies on using different stories, which means that the demonstration includes a problematic confound of variables. Further, what makes a story good or bad may be somewhat subjective. Ideally, examining
the impact of a story’s quality on transportation requires a change in quality with no true change to the story. Additionally, quality as an antecedent of transportation in a narrative does not allow researchers to distinguish between transportation and enjoyment. The experience of media enjoyment is highly related to transportation, though Green and colleagues (2006) argue the two concepts are conceptually distinct. Certainly, a good narrative should be more enjoyable than a bad narrative, no matter the level of transportation in the narrative. Thus, unfortunately the antecedent of narrative quality does not provide clarity on the phenomenological experience of transportation. I consider this issue further in Chapter 3.

Aside from quality, Green and Brock (2000) also considered the source of the narrative: whether it was labeled as a true story or as entirely fictional. Strange and Leung (1999) showed that a non-fiction narrative, labeled as news story, had a similar impact on participants’ perceptions of the social problem conveyed in the story, as the same narrative, labeled as fiction. Green and Brock (2000; see also Green, Garst, Brock, & Chung, 2006) found similar results with belief change, again suggesting that, whether the narrative is fact or fiction, does not seem to matter to readers. In fact, people may be more than willing to accept as truth bits of false information embedded in narratives (Marsh, Meade, & Roediger, 2003; Prentice, Gerrig, & Bailis, 1997; Wheeler, Green, & Brock, 1999). More importantly, the fact versus fiction label did not appear to influence transportation (Green & Brock, 2000).

Finally, Green and Brock (2002) suggest that the context of the narrative is meaningful for people’s transportation experience. Their model primarily considered context to be medium, such as whether the story was a written narrative or a film.
However, later studies appeared to suggest that there was little main effect difference between transportation experienced in a story presented in written form or film (Green et al., 2008). Although in their transportation-imagery model, Green and Brock did not elaborate on any other specific contextual elements, other characteristics of the situation in which people are exposed to the narrative may be meaningful to the transportation experience. For instance, it might be expected that people will become more transported in a film when they are watching it in a comfortable environment. People’s purpose while reading or watching a narrative may also provide a contextual influence on transportation. For example, Green and Brock (2000) found that leading participants to focus on more technical elements of a story (i.e., difficulty of vocabulary in the story) detracted from transportation; although this effect was not reliable. In another attempt, to manipulate transportation, instructing participants to either relax while reading or critically evaluate the arguments of the story also failed to provide a difference in transportation (Green, 2004). Despite failures to provide a main effect of context on the transportation experience, it may be possible that elements of the individual and the story, as discussed above, interact with context. Neither the model nor previous empirical work by Green and colleagues provides specific suggestions for how varying the context might produce different effects of individual characteristics or story characteristics. Thus, in considering the phenomenological experience of psychological transportation below, I maintain Green and Brock’s assumption that the context of narrative exposure can influence transportation.
The Phenomenology of Psychological Transportation

The transportation-imagery model does provide suggestions as to the antecedents of psychological transportation, but the model does not explain the process for these antecedents: namely why do the factors discussed above contribute to the transportation experience? To begin answering this question, it may be helpful to reflect on the similar phenomenological experience called flow. In Csikszentmihalyi’s (e.g., 1975, 1990) writings on flow, he outlined several conditions which may promote flow, including clear goals and receipt of feedback on an activity. However, he emphasized the relationship between skill level of the individual and challenge, or difficulty, level of the task. When the individual’s skill level exceeds the demands of the activity he predicts that an individual will feel bored. On the other hand, when the individual’s skill level is insufficient compared to the demands of the activity, the individual experiences anxiety. It is when the individual’s ability and the activities requirements are balanced that flow is achieved. While the ability level and challenge level of Csikszentmihalyi’s (e.g., 1975, 1990) model of flow may not directly map onto the experience of psychological transportation, it may be helpful in better illustrating the experience of transportation and its antecedents. I propose that to understand why the antecedents proposed by Green and Brock (2002) influence transportation, we need to consider two critical elements of psychological transportation phenomenological experience: first, energy expenditure, and second, focus of energy.

*Transportation and Energy Expenditure*

While not explicit in Green and Brock’s (2000) definition of psychological transportation, the experience of transportation does implicitly appear to involve use of
cognitive resources, in order to attend to the narrative, develop mental images, and intensify emotional responses. Indeed, if people were to exert absolutely no energy while reading a book or watching a film, they would not be immersed in the narrative. So with zero energy exerted, psychological transportation theoretically would not be possible. In their model of narrative engagement, including psychological transportation, Busselle and Bilandzic (2008) suggest that becoming absorbed in the narrative involves constructing meaning in the story. Although it may seem like this would be the job of the narrative’s author to convey meaning in the story, as Oatley (2002) explains, in a sense the audience “becomes the writer of [its] own version of the story” (p. 43), and consequently the audience itself is also responsible for providing meaning. Therefore, while it may appear that reading a book or watching a film, for example, is a rather passive process, to become transported in the story, the reader or viewer takes on an active role (Busselle & Bilandzic, 2008). As an active participant, exposure to the story now draws on a person’s cognitive resources. Thus, one dimension of psychological transportation may be the level of mental energy exerted. In this case, qualities of the narrative, such as difficulty, and qualities of the context of narrative exposure, such as ego-depletion and uncertainty, may influence the transportation experience by manipulating the level of effort engaged while exposed to the narrative.

**Task Difficulty**

In their model of motivation, Brehm and colleagues (e.g., Brehm & Self, 1989; Brehm, Wright, Solomon, Silka, & Greenberg, 1983; Wright & Brehm, 1989; Wright, 1996) proposed that the level of energy people exerted (or motivational intensity) was determined by people’s perception of how much energy the activity required.
Consequently, the more difficult a task seemed (i.e., required more energy to perform), the more energy people should exert to do it. This is at least up until the point at which the activity seems to be impossible: at the point the activity becomes impossible, at least in the mind of the individual, energy exerted drops to zero (i.e., the person gives up). In determining the level of energy needed for an activity, people’s level of ability and motivation may influence their judgment. For instance, people with lower ability may judge that they need to exert more effort on the same task as those with higher ability (Wright, 1996). Likewise, if motivation is completely lacking, individuals may be entirely disinclined to exert any amount of effort. Thus, lower motivation should generally lead individuals to set a lower threshold for the maximum amount of effort they would exert.

In the context of narratives, certain stories may be perceived as more challenging or difficult than others. Intuitively, we might recognize how a thought-provoking film or a sub-titled foreign film feels more difficult to watch. This would be compared, at least, to how much energy it would take to watch a more predictable film, like the typical romantic comedy or the “underdog wins the game” story. Likewise, a film we have seen before probably requires us to use less cognitive energy to follow the story, since we ostensibly know what will happen and when. Unfortunately, empirical work on the difficulty of narratives has generally focused on readability, or the reading level required of individuals to comprehend the story (e.g., Harrison, 1977; Klare, 1984). Readability primarily is focused on the grammatical nature of a story, such as vocabulary and sentence complexity. Besides readability, Davey (1988) does suggest that within the narrative, coherence and abstractness influence difficulty, with greater coherence and
lower abstractness (i.e., more concreteness) leading to a less difficult narrative. Such factors may reduce the amount of work on the part of audience members, easing the inference process they need to complete in order to appreciate the story. Further, a message may be more or less difficult to read based on the format, rather than content. For instance, blurry messages are more difficult to read than messages using clear fonts (Labroo & Kim, 2009; Novemsky, Dhar, Schwarz, & Simonson, 2007).

**Ego-Depletion**

Another possible contextual factor that might affect the level of energy people exert during exposure to a narrative if the level of energy they have available. For instance, if people recently exerted a great deal of effort on one task, their ability to exert effort on a subsequent task may be diminished, an experience termed ego-depletion (Baumeister, Bratslavsky, Muraven, & Tice, 1998). When ego-depleted, people appear may prefer more passive reactions (Baumeister et al., 1998). An initial assumption may be that entertainment media is perfectly suited for the ego-depleted; certainly sitting and reading or watching a story does on the surface appear rather passive. Though, as discussed previously, engagement in a narrative may be more active than it seems at first blush (Busselle & Bilandzic, 2008; Oatley, 2002). So perhaps while simply being exposed to entertainment media may offer ego-depleted individuals the passive activity they seek, becoming transported in the narrative may be too active, and consequently, it can be expected that ego-depletion would interfere with at least some transportation some of the time, particularly for narratives that demand more cognitive effort (e.g., thought-provoking, complex stories compared to more predictable, simple stories).
Uncertainty Reduction

When confronted with inconsistent information, people are faced with a more difficult, complex cognitive process (Ditto & Lopez, 1992; Ditto, Scepansky, Munro, Apanovitch, & Lockhart, 1998). Dissonance research, for example, suggests that people experience arousal when made aware that they hold two discrepant beliefs; and people are motivated to reduce this arousal (e.g., Festinger, 1957; Zanna & Cooper, 1974). Uncertainty reduction might actually suggest two different explanations for an increase in energy during a given experience. First, it might be the case that the simple arousal prompted by the awareness of inconsistency is enough to increase energy exertion. Second, it might be the case that people exert energy when trying to reconcile what appears to be inconsistent information. Along similar lines, Moscovici and Personnaz (1991) suggested for minority influence, people sense of conflict with the majority, which prompts them to increase attention, in order to thoroughly consider “whether the deviant responses might contain a grain of truth” (p. 102). Mackie (1987) similarly suggests that exposure to a counter-attitudinal majority motivates individuals to engage in more scrupulous cognitive evaluation of the stimulus (see also De Vries, De Dreu, Gordijn, & Schuurman, 1996). So whether it is because of the minority or majority, conflicting social information clearly prompts effortful thought.

In the context of entertainment media Knobloch-Westerwick and Keplinger (2006) found that, at least when reading a mystery story, participants actually enjoyed a story more when it was unclear who the culprit was. This did not appear simply due to the fact that people might expect a mystery story to provoke uncertainty; however, their results suggest that when two characters were likely suspects, rather than one clear
suspect emerging, readers reported greater elaboration related to figuring out who was the guilty party. [Researchers measured elaboration with a single self-report item, in which participants responded to the question “While reading the text, did you ponder who could be the perpetrator?” on a Likert scale ranging from 1, being “No, I did not ponder about it at all”, to “Yes, I pondered about it intensively”.] Although psychological transportation and enjoyment are distinct concepts, they appear strongly related, and transportation may indeed be a key component to enjoying a narrative (Green, Brock, & Kaufman, 2006). In Knobloch-Westerwick and Keplinger’s study, it might be reasonable to assume that that experience of higher uncertainty actually led participants to exert greater energy (as supported by the study’s results), which contributed to more transportation in the story (not measured in the study). That experience of being immersed in the mystery story could be what participants based their enjoyment on, such that more transportation led them to enjoy the story more, as proposed by Green, Brock, and Kaufman (2006).

*Transportation and Focus of Energy*

To distinguish between simply exerting energy while exposed to a narrative and the experience of transportation, it may be useful to consider how transportation differs from a similar energy-demanding concept called elaboration. In their initial definition of transportation, Green and Brock (2000) distinguish between psychological transportation and elaboration, or thinking about information in a message (Petty & Cacioppo, 1981). Transportation has been indicated as a mechanism for narrative persuasion, or belief change prompted by exposure to a story, aligning readers’ or viewers’ beliefs with that advocated in the story (Green & Brock, 2000). Likewise, elaboration influences persuasion as illustrated in the Elaboration Likelihood Model (ELM; Petty & Cacioppo,
1981; see also Chaiken, 1980, regarding the heuristic-systematic model). Although elaboration draws on mental resources, it involves a critical evaluation of information, but transportation involves a more accepting (and uncritical) immersion in the information of a narrative (Green & Brock, 2000). Also, elaboration is not considered an experiential response; transportation, on the other hand, may allow people to feel as though they have been personally involved in the narrative and have gained the information it provides through first-hand experience. Finally, elaboration may involve individuals not only focusing on information presented in a message but also accessing their own knowledge (e.g., previous knowledge, existing opinions) relevant to the message, in order to evaluate its content. Green and Brock, however, describe transportation as a convergent process, which actually reduces individuals’ self-focus. Thus, beyond simply being a matter of energy exertion, psychological transportation is about a focused energy directed into the narrative.

Psychological transportation must be more than simply evoking energy for the sake of narrative exposure. To understand how energy exerted becomes psychological transportation in a narrative, the analogy of the laser may be apt. When people experience psychological transportation, their exerted energy becomes focused narrowly on the narrative, much like a laser focusing light energy on a single point. The laser achieves this narrowed focus of light energy by use of a lens: light energy is filtered through a lens, which directs the energy into the focused beam of the laser. I suggest then that psychological transportation requires a similar lens, which directs cognitive energy on the narrative.
As can be demonstrated by numerous studies in the domain of “hot cognition”, affect and motivation directs cognitive processes, such as attention. For instance, in the emotions literature, it was generally supported that positive affect widened attention and negative affect narrowed it (e.g., Fredrickson, 2001; Isen, 2000). However, recently Gable and Harmon-Jones (2008) questioned these previous findings for positive affect, and suggested that motivation moderates the influence of affect on the breadth of attention. Specifically, under an approach motivation, people are driven by a focus on gains, or desirable outcomes (i.e., rewards), versus non-gains (e.g., Elliot, 1999). In the work of Gable and Harmon-Jones, when approach motivation is higher, positive affect narrows attention, leading individuals to focus on more local (as opposed to global) features of a stimulus, similar to the experience of transported individuals, when their attention, or more generally their cognitive resources, becomes narrowly focused on the story. Supporting the reasoning that positive affect may focus attention, Vermeulen (2010) found that greater feelings of positive affect directly related to participants’ ability to accurately report a second target word, when using the attentional blink paradigm. In other words, those individuals in a more positive mood appeared to pay closer attention during the task. Results from Gable and Harmon-Jones (2008) and Vermeulen (2010) may imply that attention, or perhaps more generally cognitive energy, becomes more focused when employed for the sake of a desirable goal. Reasoning from the studies discussed above, expenditure of cognitive energy may become more focused when effort expenditure feels desirable. I turn now to discussing two such cases.
According to the transportation-imagery model (Green & Brock, 2002), likelihood of being transported in a story is in part influenced by aspects of the individual. Certainly, people may dispositionally vary in their desire to exert energy. Considering that psychological transportation, though, is more about cognitive energy, as opposed to behavioral effort for instance, people who have a dispositional tendency to seek out and enjoy activities that require cognitive effort, or those who are high in need for cognition (NFC; Cacioppo & Petty, 1982), may be more prone to experience transportation in a narrative. For people higher in NFC, simply, exerting cognitive energy is in itself a desirable reward.

In 1955, Cohen, Stotland, and Wolfe suggested that people may differ in their “need to structure relevant situations in meaningful, integrated ways” and “to understand and make reasonable the experiential world” (p. 291). To some degree, narratives may simplify the process of discovering meaning and integrating various situations; indeed, Bruner (2003) described narratives as a tool to make sense of reality. However, as I propose, becoming transported in the story, even if the story does aid in sense-making, still draws on people’s cognitive resources, to focus their attention on the story, develop mental images relevant to the story, and “become the writer of their own version of the story” (Oatley, 2002, p. 43). I anticipate that people who are higher in NFC then will be more inclined to be transported in the narrative, as transportation allows them to employ mental resources. Across several studies, Green and others (Appel & Richter, 2007; Green & Brock, 2000; Green et al., 2008) found varying correlations between transportation and NFC. However, under certain conditions, the relationship between
transportation and NFC became more pronounced. For instance, participants higher in NFC became more transported in a story that was in written form, compared to their lower NFC peers; the reverse was true when the story was in film form (Green et al., 2008), suggesting the unstable nature of the relationship.

**Experience of Growth**

While people may have a dispositional interest in exerting energy, there may be situations for which exerting energy is more desirable. Again reflecting on Csikszentmihalyi’s model of flow, it is important to ask what people may gain from activities that balance task’s demands and individuals’ abilities, which leads to flow? Csikszentmihalyi (1990) suggested the possibility of creating “a sense of discovery”, which offers the opportunity for growth (p. 74), since people have to continuously shift to tasks of greater difficulty as their ability level increases, in order to continue experiencing flow. If growth indeed motivates flow during an activity, growth may similarly serve as a motivation for exerting effort during narrative exposure, prompting the experience of psychological transportation. As narratives can provide access to a variety of experiences which people may not otherwise be able to seek out, they certainly are well adapted to provide growth opportunities.

*Self-Expansion.* Aron and colleagues (e.g., Aron, Aron, & Norman, 2004) developed the self-expansion model to understand motivation for seeking out and maintaining interpersonal relationships. Simply, people want to accrue resources that enhance pursuit of their goals to grow, and relationship formation can be one means for satisfying this desire (e.g., Aron, Paris, & Aron, 1995). According to their model, opportunity to self-expand through a potential relationship, and thus accumulate
resources via another person, motivates initial attraction to and formation of the relationship, and experience of self-expansion in an established relationship motivates continued maintenance and development of the relationships (Lewandowski & Aron, 2004). Narratives provide opportunity to build what Horton and Wohl (1956) termed parasocial relationships. These parasocial relationships are one-sided relationships, in the sense that interaction only occurs in one direction: fictional characters cannot provide any reaction to the other partner (i.e., individual who formed the parasocial relationship), and cannot reciprocate the emotions felt by the other partner.

Similar to our friends in real relationships, parasocial relationships with fictional characters *feel* real to us, and parasocial relationships appear to function in much the way dynamic relationships work. For instance, parasocial relationships appear related to the fulfillment of belonging (Derrick, Gabriel, & Hugenberg, 2009; Gardner, Pickett, & Knowles, 2005), a fundamental human need (Baumeister & Leary, 1995; see also Leary & Kelly, 2009). For example, while not the sole predictor of parasocial interaction, Greenwood and Long (2009) found that development of attachments with characters may be in part an attempt to cope with loneliness. Additionally, one’s attachment styles influence parasocial attachments. Specifically, previous research found that people with avoidant attachment styles were least likely to form parasocial relationships with television characters (Cole & Leets, 1999; see also Cohen, 1997). Thus, much like they avoid forming real relationships, individuals with an avoidant attachment style avoid forming relationships with fictional characters. Moreover, similar to the use of real relationships, parasocial relationships can provide a buffer from social rejection. Derrick, Gabriel, and Hugenberg (2009) found that participants who thought about a favorite
television show, presumably including the characters on the show with whom they experienced a parasocial relationship, had significantly lower accessibility of rejection-oriented words than people who thought about a non-favorite television show or a positive, non-social life event. Parasocial relationships have been found to even impact performance-related behaviors. Paralleling the effects of close others on task performance (e.g., Blascovitch, Mendes, Hunter, & Saloman, 1999; Bond & Titus, 1983; Triplett, 1898), Gardner and Knowles (2008) reported that participants experienced social facilitation effects when exposed to their favorite television character, such that the presence of the character (i.e., picture of the favorite character vs. a non-favorite character presented on the computer screen while participants completed an unrelated task, not on the computer) enhanced performance on an easy task (i.e., tracing task with the dominant hand) but hindered performance on a difficult task (i.e., tracing task with the non-dominant hand). Finally, people can even experience stress following a break-up of a parasocial relationship (e.g., when a show is cancelled), albeit less stressful than the break-up of a real relationship (Eyal & Cohen, 2006).

Self-expansion in relationships can occur through the cognitive merging of the self and the other (Aron, Aron, & Smollan, 1992; Aron, Aron, Tudor, & Nelson, 1991; Lewandowski & Aron, 2004). The consequence of the self-other merger in relationships, according to the self-expansion model, is that the overlapping mental representations of the two people make the resources of one individual accessible to the other. For instance, in their studies, Mashek, Aron, and Boncimino (2003) found that greater reported closeness between two individuals predicted greater source errors for traits (i.e., identification of who possessed a trait) within a relationship. This effect was above and
beyond familiarity with the other person or perceived similarity between the self and other. When investigating dating couples, Agnew and colleagues (1998) found that people who selected circles with more overlap also used more plural first-person pronouns (e.g., we, us) to describe themselves and their partner, a linguistic measure of closeness (Agnew, Van Lange, & Rusbult, 1998; Simmons, Gordon, & Chambless, 2005) that may also indicate ownership of a partner’s possessions.

The merger illustration is reminiscent of Csikszentmihalyi’s (1990) own suggestion that flow involves a merging of awareness and action. In other words, the self and the activity become entwined. Green and Brock (2000, 2002) have also discussed a similar experience with psychological transportation; as explained above, highly transported individuals feel their attention turn entirely into the story, dismissing outside distractions, and in many ways losing a connection to their own physical world in lieu of connecting to the narrative world. Therefore, just as the self-other merger in relationships increases resources, providing self-expansion, a self-narrative merger, brought on by the experience of psychological transportation may do so as well.

**Learning Goals.** Similar to the goal of self-expansion, a learning, or mastery, focus orients people towards the opportunity to grow. Research on achievement goals suggest that people may approach a task with a learning, or mastery, goal, which drives them to want to *improve*, or they may approach a task with a performance goal, which drives them to want to *prove* their ability (Ames, 1984; Dweck, 1986; Nicholls, 1984). Considering the motivation under learning goals are reminiscent of the desire to grow which Csikszentmihalyi (1990) suggests inspires the experience of flow more generally, in the context of narrative-exposure it would be likely narrative-exposure in the context
of learning goals might be more transporting. Besides the opportunity for growth, however, learning goals also make energy expenditure more desirable. Effort becomes a means for accomplishing the goal of improvement; as such, effort and ability are seen as directly related (Dweck & Leggett, 1988). Further supporting this conclusion, research by Dweck and Bempechat (1983) suggests that students who hold felt intelligence could be changed (i.e., incremental theory of intelligence), not only preferred activities with learning goals, but also preferred to seek out challenging, or effortful, activities. On the other hand, effort is seen as inversely related to ability in the context of performance goals (Dweck & Leggett, 1988). Expending effort on performance goals detracts from the goal of demonstrating ability, because effort becomes a competing explanation for performance.

Overview of Present Studies

The studies presented in this dissertation all aim to examine if, and how, energy exertion and opportunity to grow afforded by the narrative contribute to psychological transportation. In Chapter 2, I first consider how creating an experience that evokes energy exertion may promote transportation. First, in Study 1a I consider the impact of ego-depletion, which temporarily reduces people’s ability to exert cognitive energy, and NFC, which describes people’s chronic motivation, or desire, to exert energy, on preferences for film types. I anticipated main effects of both variables. Specifically, I expected that higher NFC would lead people to prefer more thought-provoking, energy demanding film options, while lower NFC would lead people to prefer less thoughtful, more predictable film options. Ego-depleted individuals should behave more like lower
NFC individuals compared to the control, or non-ego-depleted, participants. A clear interaction was not predicted. Then in Study 1b I took the variables of ego-depletion and NFC and considered their impact on psychological transportation in two types of film clips, varying in level of difficulty: a more thought-provoking clip and a less thoughtful, more predictable, humorous clip.

In Chapter 3, I use the element of energy exertion in psychological transportation to distinguish the experience of being immersed in a narrative from enjoyment of the narrative. In Study 2 I employ uncertainty reduction to create a drive to exert energy while reading a story. Participants receive evaluations of the story they will be reading, ostensibly provided by previous participants. The evaluations initially either suggest that the story will be good or bad. However, subsequent comments, again ostensibly from previous participants, follow-up the initial evaluations, either confirming or disconfirming those evaluations. Thus participants can either trust that the initial evaluations were fairly accurate in their appraisal that the story was good or bad, or they were uncertain what to expect of the upcoming narrative. Further, they would likely want to resolve the conflict which created the uncertainty, evoking more energy, and thus becoming more transported in the story, compared to people who received consistent information. The same effect was not expected for enjoyment, which I proposed does not require energy exertion.

In Chapter 4, I turn to considering the potential limitations of energy exertion. According to the Yerkes-Dodson curve of arousal (e.g., Yerkes & Dodson, 1908), level of performance is influenced by level of arousal. Initially, as arousal increases, it improves performance; this suggests that too little arousal hinders performance, much as
I am suggesting that transportation requires some level of energy exertion. However, based on the Yerkes-Dodson curve, after a point, arousal and performance become inversely related; too much arousal interferes with performance. Perhaps, while some level of energy exertion is necessary for transportation, there may be conditions under which too much energy actually hurts the transportation experience. Consequently, I aimed to vary energy exerted while watching a film clip, creating both a low energy and a high energy experience. First in Study 3, I put participants in the role of either an audience member (low energy) or a critic (high energy), and then in Study 4, based on Zajonc’s (1960) idea of cognitive tuning, I put participants in the role of either a receiver (low energy) or a transmitter (high energy).

In Chapter 5, I further consider the element of focusing energy exerted to produce transportation in a narrative. To do so, I examine the role that opportunity for growth may play in focusing energy expending during narrative exposure. For this, I consider the opportunity to grow, first by looking at self-expansion in Study 5, and then by looking at learning versus performance goals in Study 6. Study 5 uses a correlational design to examine the relationship between perceived opportunity to obtain resources for the self through a potential relationship, in the case of a narrative with a fictional character, and transportation in the narrative. I expect that feeling as though one is gaining resources for the self will relate to the experience of being immersed in the narrative world. To follow-up this study, in Study 6, I manipulate whether participants see the task as a learning-oriented task, that will give them an opportunity to improve their reading abilities, or as a performance-oriented task, that will put them in a position to have to demonstrate their reading ability level. Finally, I summarize my results in Chapter 6, and consider them in
the context of future directions for studies in psychological transportation, as well as the broader concept of psychological engagement, or a feeling of immersion, in activities.
CHAPTER 2
PSYCHOLOGICAL TRANSPORTATION AND
USE OF COGNITIVE RESOURCES

Overview

As I have proposed in the introduction, first, exerting energy is necessary to potentially experience psychological transportation. Exerting energy alone, though, does not guarantee a transporting experience. When the process of exerting energy feels desirable, that energy becomes more narrowly focused on the narrative, leading to transportation. In the current studies, I consider two variables which may influence whether energy is exerted (i.e., task difficulty and ego-depletion) and one variable which may influence whether expending effort is desirable (i.e., need for cognition, or NFC).

Regarding whether energy is expended, first Brehm and colleagues (e.g., Brehm & Self, 1989; Brehm, Wright, Solomon, Silka, & Greenberg, 1983; Wright & Brehm, 1989; Wright, 1996) propose that as a task becomes more challenging, people exert more energy to perform it; thus, for stories that are more challenging or thought-provoking, more energy should be exerted, as opposed to simple or predictable stories. Certainly, Davey (1988) suggests as well that an abstract story will be more difficult to understand than a concrete story. For instance, a film that wrestles with more philosophical concepts, like freedom and the meaning of experiences, should be judged to be more difficult than a
film that tells a story that does not go beyond the film, such as the age-old tale of boy meets girl. In addition to task difficulty, the level of available energy may impact whether people expend effort or not. When people are ego-depleted, they have lower cognitive resources available (Baumeister et al., 1998). Consequently, it may be expected that people should experience an obstacle to transportation when they are ego-depleted. Regarding whether expending energy is desirable, NFC describes individuals’ chronic desire to not only seek out opportunities to exert cognitive energy, but also enjoy those experiences (Cacioppo & Petty, 1982). For individuals high in NFC, expending effort should be desirable; it is the desirability element which focuses the exerted energy. Consequently, I expect that people higher in NFC should be more prone to experience psychological transportation.

Pilot Study 1

To establish that the two chosen film clips (one a more serious, thoughtful narrative from the 2002 movie Equilibrium, and the other a more predictable, romantic comedy narrative from the 2004 movie Along Came Polly), a pilot study was conducted examining people’s reactions to the two clips. The intention in selecting these two clips was to choose one which required the use of more cognitive energy and another which demanded less cognitive energy. To test this assumption, I conducted a pilot study.

Method

Participants and Design

Undergraduate students (9 males and 8 females), ranging in age from 18 to 43 ($M = 22.12, SD = 6.60$), took part in the study for partial completion of their introductory
psychology course. The pilot study used a between-subjects design with participants randomly assigned to watch either the more serious, thoughtful clip from *Equilibrium* or the more predictable, romantic comedy clip from *Along Came Polly*. Need for cognition was used as a covariate.

**Materials**

*Film Clips.* The first film clip, approximately 11 minutes long, was taken from a serious and thoughtful film (i.e., *Equilibrium*). The film revolves around a society that, in order to remove aggression, outlaws all emotional expression. During the clip, the main character begins to question the society that he is charged with protecting. He recalls the loss of his wife and more recently his partner, who were both charged as “sense offenders”. Later, while interrogating a woman, she confronts him with the question of his purpose in a society where no one is allowed to feel.

The second film clip, also approximately 11 minutes long, was taken from a light romantic comedy (e.g., *Along came Polly*). The film tells the classic tale of opposites-attract. After leaving his new wife when he discovers she has been cheating on him, the main character tries to pursue a relationship with a girl he knew in high school. In the clip, the main character discusses his interest in Polly with his friend, who warns him that the relationship will not work. Later he finally goes on a date, which highlights the differences between the two characters.

*Need for Cognition.* Participants completed the brief version of the need for cognition (NFC) scale, containing 18-items (Cacioppo, Petty, & Kao, 1984; Cronbach’s $\alpha = .91$) during a prescreening session. For each item, participants rated how characteristic each statement was of them (e.g., “I would prefer a task that is intellectual, difficult, and
important to one that is somewhat important but does not require much thought,“)
ranging from 1 (extremely uncharacteristic) to 5 (extremely characteristic).

*Psychological Transportation.* Participants completed the first nine items
(Cronbach’s $\alpha = .67$) of the psychological transportation scale (Green & Brock, 2000)
assessing participants’ cognitive attention, emotional response, and mental imagery. The
last three items of the scale are more relevant to narrative persuasion, and since that was
not the focus of the study, those items were not included. For each item, participants
rated how much they agreed with the statement (e.g., “While I was reading the story, I
could easily picture the events in it taking place”) ranging from 1 (strongly disagree) to 7
(strongly agree).

*Perceived difficulty.* Participants completed three items (Cronbach’s $\alpha = .47$)
assessing their perceived difficulty of watching the film clip. For each item, participants
rated how true they felt each statement was (e.g., “I felt like watching the clip was
challenging.”) ranging from 1 (not at all true) to 7 (very true).

*Effort.* Participants completed five items (Cronbach’s $\alpha = .62$) assessing their
perceived choice in watching the film clip (e.g., McAuley, Duncan, & Tammen, 1989;
Ryan, 1982). For each item, participants rated how true they felt each statement was (e.g.,
“I put a lot of effort into watching the clip.”) ranging from 1 (not at all true) to 7 (very true).

*Enjoyment.* Participants completed seven items (Cronbach’s $\alpha = .80$) assessing
their enjoyment of the film clip (e.g., McAuley, Duncan, & Tammen, 1989; Ryan, 1982).
For each item, participants rated how true they felt each statement was (e.g., “I enjoyed
watching the clip very much.”) ranging from 1 (not at all true) to 7 (very true).
Perceived choice. Participants completed seven items assessing their perceived choice in watching the film clip (e.g., McAuley, Duncan, & Tammen, 1989; Ryan, 1982; Cronbach’s α = .90). For each item, participants rated how true they felt each statement was (e.g., “I watched the clip because I wanted to.”) ranging from 1 (not at all true) to 7 (very true).

Perceived responsibility. Participants completed three items (Cronbach’s α = .45) assessing their perceived responsibility while watching the film clip. For each item, participants rated how true they felt each statement was (e.g., “I felt accountable for what I did while watching the clip.”) ranging from 1 (not at all true) to 7 (very true).

Familiarity with the film. Participants completed one item assessing their familiarity with the specific film (i.e., “On the following scale, how familiar would you say you are with the film from which the clip came, Along Came Polly?”), responding on a scale ranging from 1 (“I knew nothing about the film before watching the clip today.”) to 7 (“I had seen the film multiple times and knew it by heart before today.”). They completed a second item assessing their familiarity with films like Along Came Polly (i.e., “On the following scale, how familiar would you say you are with film like Along Came Polly? [e.g., other romantic comedies]?”), again responding on a scale ranging from 1 (“I never watch films like this.”) to 7 (“I watch films like this all of the time.”).

Procedure

Prior to being invited to participate in the study, students completed several prescreening measures, including the NFC scale. All participants who completed the NFC scale were invited to enroll in the study if they chose to do so. Upon arriving for the study, participants completed an informed consent and were told the study was
examining responses to entertainment media. Participants were then given a brief
description of the film clip they would be watching (see Appendix). Immediately after
watching the film clip, participants completed the psychological transportation scale and
other dependent measures about their reaction to the film clip. Finally, participants were
thanked and debriefed.

Results

Psychological Transportation in Film Clips

To compare how transporting each film was, a two-way (serious/high thought vs.
humorous/low thought film clip) ANCOVA was conducted with NFC as a covariate and
psychological transportation as the dependent measure. NFC did not appear related to
transportation, $F(1, 14) = 0.04, p > .20, \eta^2_p = .003$. There appeared to be no difference in
the extent to which participants were transported in the two film clips, $F(1, 14) = 0.18, p
> .20, \eta^2_p = .01$ (Equilibrium clip: $M = 4.91, SD = 0.66$; Along Came Polly clip: $M = 4.71,$
$SD = 1.33$), suggesting both films had equal potential to be engaging for viewers.

Perceptions of Film Clips

To consider how the participants perceived the two film clips, a two-way
(serious/high thought vs. humorous/low thought film clip) MANCOVA was conducted
with NFC as a covariate, difficulty, effort, enjoyment, choice, and responsibility as the
dependent measures. The only notable difference between the two film clips was that
watching the more thought-provoking clip from Equilibrium ($M = 1.56, SD = 0.58$) was
perceived as more difficult than watching the less thoughtful clip from Along Came Polly
($M = 1.13, SD = 0.25$), $F(1, 14) = 3.34, p = .09, \eta^2_p = .19$. Unfortunately, the difference
was only marginally significant, and both means fell well below the scale mid-point (i.e.,
4, on a 1-7 scale), suggesting that neither film was challenging. All other differences were non-significant ($ps > .20$).

**Discussion**

While there remain other differences between the two films, the results from the pilot study suggest that, as expected, watching the thought-provoking *Equilibrium* felt more difficult than watching the romantic comedy *Along Came Polly*. This follows along the suggestions of Davey (1988), who described abstract stories, like the *Equilibrium* clip, as more difficult than concrete stories, like the *Along Came Polly* clip. Based on Brehm’s model of energization (e.g., Brehm & Self, 1989; Brehm, Wright, Solomon, Silka, & Greenberg, 1983; Wright & Brehm, 1989; Wright, 1996), perceiving the task as more difficult should mean that people exert greater energy while performing the task, or in this case, watching the film clip. In the pilot study, however, difficulty of the film clip did not appear to be meaningful in the experience of transportation, perhaps because neither film was perceived as highly difficult to watch. It may be that since watching films is thought of as entertainment, the experience is generally not regarded as highly difficult no matter the story. In Study 1b, I employ both film clips to consider whether the individual difference of NFC and the situational experience of ego-depletion influence the experience of psychological transportation. However, before considering how individuals may respond to these film clips, I consider in Study 1a how NFC and ego-depletion influence film preference.
Study 1a

**Method**

*Participants and Design*

Undergraduate students (28 males and 21 females), ranging in age from 18 to 26 ($M = 18.86$, $SD = 1.35$), took part in the study for partial completion of their introductory psychology course. The experiment used a $2$ (ego-depletion vs. control) $\times$ continuous (need for cognition: NFC) between-subjects design with participants randomly assigned to the first two conditions.

*Materials*

**Ego-Depletion Manipulation.** Participants were asked to write a story about a recent trip they took ("It may be a trip to the store, to another city, another state, or another country - wherever"). In the control condition (no ego-depletion) they were given no additional instructions. However, in ego-depletion condition, they were told to not use the "a" or "n" on the keyboard. Previous research has found that exerting self-control to avoid using these common keys induces an experience of ego-depletion (Schmeichel, 2007; Schmeichel & Vohs, 2009).

**Need for Cognition.** Participants completed the brief version of the need for cognition (NFC) scale, containing 18-items (Cacioppo, Petty, & Kao, 1984; Cronbach’s $\alpha = .81$). For each item, participants rated how characteristic each statement was of them (e.g., “I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought,”) ranging from 1 (*extremely uncharacteristic*) to 5 (*extremely characteristic*).
Procedure

Upon completing an informed consent, participants were told the study was examining the relation between individuals' verbal abilities and their preferences for entertainment media. Participants were then randomly assigned to complete the control or the ego-depleting condition. Immediately following the task, as a manipulation check, participants rated how much they agreed with the statement, “I felt that writing the story was mentally exhausting;” responses ranged from 1 (strongly disagree) to 7 (strongly agree). Afterwards, participants were told, “Now we want to know more about what type of entertainment media you enjoy. We realize that movie preferences are highly sensitive to the situation, so on each of the following screens, please pick which of the two options best describes a film you would like to watch right now.” On the following screens, participants made a forced choice between one of the two options in each pairing: a film that 1) did or did not require them to think much; 2) was happy vs. sad; 3) they had or had not seen before; 4) was complex or simple; and 5) was comical or tragic. Then participants were given a list of eight brief film descriptions: 1) a hilarious, mindless comedy set on a college campus; 2) a complex and stimulating mystery; 3) a humorous but introspective social commentary; 4) an action story with minimal plot but great special effects; 5) a thought-provoking, psychological drama; 6) a classic story of an underdog team overcoming obstacles; 7) a predictable, but heart-warming high school love story; and 8) a sub-titled foreign film with exciting twists-and-turns in the plot. Three independent coders selected film descriptions 1, 4, 6, and 7 as low thought films, and the remaining four as high thought films. They were told to imagine that each of the films were of equivalent quality. Then participants were asked to select the film that they
were most interested in watching and the film they were least interested in watching. After making selections about film preferences, participants completed the brief version of the NFC scale. Finally, participants were thanked and debriefed.

Results

Manipulation Check

To ensure that the participants in the ego-depletion condition felt the writing task was mentally exhausting, I conducted a one-way ANCOVA with ego-depletion condition and NFC as a covariate. Since people who are higher in NFC have a greater propensity to seek out and perform activities that require mental effort, I anticipated that they may have more practice with effortful tasks, and thus feel that our manipulation was less mentally demanding than their low NFC counterparts judged the task. Results from the analyses confirmed an effect of NFC as a covariate, $F(1, 46) = 5.44, p < .05, \eta_p^2 = .11$; higher NFC was associated with feeling that the task was less mentally exhausting, $r(49) = -0.27, p = .06$. More importantly, it did appear that the ego-depletion manipulation had the desired main effect, such that participants in the ego-depletion condition ($M = 4.52, SD = 2.06$) reported that the task was more mentally exhausting than participants in the control condition ($M = 2.71, SD = 1.40$), $F(1, 46) = 14.84, p < .001, \eta_p^2 = .24$.

Effects of Ego-Depletion and NFC on Film Preferences

I conducted a multiple linear regression analysis, including ego-depletion condition (dichotomous) and NFC (continuous) to predict film preferences. In the final model, only NFC predicted choices: participants higher in NFC preferred a film that required them to think over a film that did not require much thought ($b = .299, t = 1.55, p = .13$) and a complex film over a simple film ($b = -.479, t = 2.52, p < .05$). Additionally,
people higher in NFC were most interested in watching one of the high thought films 
(i.e., film descriptions 2, 3, 5, and 8) than one of the low thought films ($b = .536$, $t = 2.91$, 
$p < .01$). NFC did not predict which film participants were least interested in watching ($b$ 
$= .114$, $t = .56$, $p > .20$).

Effects of Mental Exhaustion and NFC on Film Preferences

Next, I conducted an internal analysis using participants’ self-reported experience of the ego-depletion manipulation as mentally exhausting. In the multiple linear regression analysis perception of the ego-depletion manipulation as mentally exhausting (continuous) and NFC (continuous) were used to predict film preferences. In addition to effects which replicated those discussed above (i.e., higher NFC leading to a preference for films that require thought, $b = .282$, $t = 2.02$, $p = .05$, and were complex, $b = -.342$, $t$ 
$= -2.48$, $p < .05$), the regression analyses also revealed marginal effects suggesting that participants who experienced lower mental exhaustion also preferred a film that required them to think over a film that did not require much thought ($b = -.261$, $t = -1.84$, $p = .07$) and a complex film over a simple film ($b = .225$, $t = 1.61$, $p = .11$). Further, participants with higher NFC still selected the high thought film clip as the film they would be most interested in watching ($b = .399$, $t = 3.02$, $p < .01$), just as the participants who experienced less mental exhaustion during the essay also selected the high thought film clip as the film they would be most interested in watching ($b = -.248$, $t = -1.85$, $p = .07$).

Above and beyond these main effects, the internal analysis also revealed two statistically significant interactions of perceived mental exhaustion from the task and NFC. First, the interaction of perceived mental exhaustion of the essay and NFC affected whether participants reported preferring to watch a film they had never seen before
versus preferring to rewatch a film they had already seen ($b = .276, t = 1.90, p = .06$). When a previous task felt less mentally exhausting, a marginally significant effect suggested that participants with higher NFC were more inclined to be interested in watching a film they had not seen, while participants lower in NFC leaned more towards rewatching a film they had already seen ($b = -.334, t = -1.63, p = .11$). However, NFC did not predict desire to rewatch a film when the previous task felt more mentally exhausting ($b = .185, t = 0.93, p > .20$).

Second, the interaction of perceived mental exhaustion of writing the essay and NFC also affected which film participants were least interested in watching ($b = .368, t = 2.65, p < .05$). As expected, if a preceding task did not feel mentally exhausting, participants with higher NFC were least interested in watching a low thought film and participants with lower NFC were least interested in watching a high thought film ($b = -.380, t = -1.93, p = .06$). However, after a task that felt mentally exhausting, surprisingly the relationship reversed: participants with higher NFC appeared to be least interested in watching a high thought film and participants with lower NFC were actually least interested in watching a low thought film; although the effect of NFC was no longer statistically significant ($b = .314, t = 1.65, p = .11$).

**Discussion**

Based on the results of the Study 1a, it appeared that primarily NFC, but not the experience of ego-depletion, impacted people’s choices of films. Generally speaking, Study 1a suggests, as might be expected, that those higher in NFC prefer more thoughtful films, presumably because they find them more entertaining. The internal analyses did suggest that perhaps there is some limit to this; under mental exhaustion, in fact, the
The effect of NFC on film preferences appeared to weaken. It is important to consider that while people make choices based on predictions that they will have a certain experience, people are not necessarily always accurate in their ability to forecast those responses (see Gilbert, 2006). Consequently, in Study 1b, I consider the NFC and the experience of ego-depletion in responding to film clips, as selected based on the previous pilot study.

**Study 1b**

**Method**

**Participants and Design**

Undergraduate students (43 males and 44 females), ranging in age from 18 to 31 ($M = 19.11$, $SD = 1.67$), took part in the study for partial completion of their introductory psychology course. The experiment used a 2 (ego-depletion vs. control) x 2 (serious/high thought vs. humorous/low thought film clip) x continuous (need for cognition: NFC) between-subjects design with participants randomly assigned to the first two conditions.

**Procedure**

Upon completing an informed consent, participants were told the study was examining the relation between individuals' verbal abilities and their responses to entertainment media. Participants were then randomly assigned to complete the control or the ego-depleting condition. Immediately following the task, as a manipulation check, participants rated how much they agreed with the statement, “I felt that writing the story was mentally exhausting;” responses ranged from 1 (strongly disagree) to 7 (strongly agree). After responding to the manipulation check, they were given a brief description of the film clip they would be watching (see Appendix). Immediately after watching the
film clip, participants completed the psychological transportation scale, followed by the NFC scale. Finally, participants were thanked and debriefed.

Results

Manipulation Check

To ensure that the participants in the ego-depletion condition felt the writing task was mentally exhausting, I conducted a one-way ANOVA with ego-depletion condition and NFC as a covariate. Results from the analyses confirmed an effect of NFC as a covariate, $F(1, 84) = 4.45, p < .05, \eta_p^2 = .05$; higher NFC was associated with feeling that the task was less mentally exhausting, $r(87) = -0.28, p < .01$. More importantly, it did appear that the ego-depletion manipulation had the desired main effect, such that participants in the ego-depletion condition ($M = 4.93, SD = 1.84$) reported that the task was more mentally exhausting than participants in the control condition ($M = 2.70, SD = 1.63$), $F(1, 84) = 32.17, p < .001, \eta_p^2 = .28$.

Effects of Ego-Depletion and NFC on Transportation

I conducted a multiple linear regression analysis, including film clip (dichotomous), ego-depletion condition (dichotomous), and NFC (continuous) to predict mean transportation scores. In the final model, testing all main effects and interaction effects, we revealed two statistically significant effects. NFC produced a main effect, suggesting that as NFC increased, participants were more transported into the narrative ($b = .514, t = 2.39, p < .05$). However, this was qualified by an interaction of NFC and the film clip ($b = -.503, t = -2.54, p < .05$). Specifically, it was for the serious, thought-provoking clip (*Equilibrium*) that higher NFC led to greater transportation ($b = 1.289, t = 2.67, p < .01$); while in the lighter, humorous clip (*Along Came Polly*) lower NFC led to...
greater transportation, although the difference between the low and high NFC participants did not approach statistical significance ($b = -0.260$, $t = -1.20$, $p = .23$).

The initial expectation in the study, however, was to see an effect of ego-depletion, such that participants in the ego-depletion condition reported lower transportation than participants in the control condition, suggesting that lower mental resources hindered psychological engagement. While results were in the anticipated direction, the main effect of ego-depletion did not reach statistical significance ($b = 0.149$, $t = 1.04$, $p = .30$), and unfortunately the three-way interaction was only approaching marginal statistical significance ($b = 0.269$, $t = 1.47$, $p = .15$). However, an interesting trend did appear in this three-way interaction: higher NFC generally produced higher transportation, although this difference failed to reach statistical significance for both films following the non-ego-depleting experience (Equilibrium clip following ego-depletion: $b = 2.205$, $t = 1.92$, $p = .06$; Equilibrium clip following control: $b = 0.552$, $t = 1.29$, $p = .20$; Along Came Polly clip following control: $b = 0.254$, $t = 1.07$, $p = .29$).

However, this relatively common relationship suggesting higher NFC participants were more inclined to exert energy, and thus be transported in the film clip reversed for participants watching the Along Came Polly clip following an ego-depleting experience. In other words, higher NFC now leaned towards producing lower transportation ($b = -0.774$, $t = -1.57$, $p = .12$). Another notable trend observed in the results is that the effect of NFC seemed greatest in the ego-depletion condition, while people higher and lower in NFC had more similar transportation experiences in the control condition.
Effects of Mental Exhaustion and NFC on Transportation

To further explore the potential three-way interaction above, I conducted an internal analysis using participants’ self-reported experience of the ego-depletion manipulation as mentally exhausting. In the multiple linear regression analysis film clip (dichotomous), perception of the ego-depletion manipulation as mentally exhausting (continuous), and NFC (continuous) were used to predict mean transportation scores. In addition to effects which replicated those discussed above (i.e., main effect of NFC and interaction of NFC and film), now the three-way interaction reached statistical significance ($b = -.298, t = -1.95, p = .05$). The direction of the results was the same as before, again suggesting that higher NFC generally led to greater transportation, except when a task that was perceived as more mentally taxing was followed by the light, romantic comedy clip (Along Came Polly). The increased transportation for higher NFC, however, was only statistically significant for participants who experienced higher mental exhaustion before watching Equilibrium ($b = 1.436, t = 3.43, p < .01$), but not for participants who experienced lower mental exhaustion before watching either film clip (Equilibrium: $b = .522, t = 1.05, p = .30$; Along Came Polly: $b = .267, t = 1.34, p = .18$). The decreased transportation for higher NFC when experiencing higher mental exhaustion prior to watching Along Came Polly only reached marginal significance ($b = -.402, t = -1.69, p = .09$). Notably, as before, the differing experiences of those higher and lower in NFC seemed pronounced under conditions of higher mental exhaustion.
A notable difference between the two film clips was the degree of familiarity participants had with the film prior to the study. Only 8 participants out of the total 47 who watched the *Equilibrium* clip had seen any portion of the film prior to the study. In fact, the majority of the group (74.5%) who saw this clip had neither seen nor heard of the film prior to the study. In contrast, most of the participants who watched the *Along Came Polly* clip (60.0%) had seen the entire film at least once, and only 3 out of the 40 participants had never seen nor heard of the film prior to the study. The difference in familiarity with the film clips does present problems for comparing results between the two film clips, and thus is discussed below as a limitation of the current study.

**Discussion**

To understand the phenomenological experience of psychological transportation, I suggested that psychological transportation in a narrative should involve greater exertion of cognitive energy. As found in the current study, higher need for cognition, which may explain individuals’ propensity to exert energy on cognitive tasks (Cacioppo & Petty, 1982), predicted greater transportation, but this was only the case for the more thought-

![Figure 2.1. Three-way Interaction on Transportation in Film Clips](image-url)
provoking clip. Based on pilot testing, watching the serious, thought-provoking clip from *Equilibrium* should be somewhat more difficult than watching the lighter, less thought-provoking clip from *Along Came Polly*. Following from Brehm’s model of energization (e.g., Brehm & Self, 1989; Brehm, Wright, Solomon, Silka, & Greenberg, 1983; Wright & Brehm, 1989; Wright, 1996), the greater difficulty should evoke higher energy exertion. Interestingly then, transportation benefitted from a combination of participants’ inclination to exert cognitive energy and a situation that demanded more energy.

Further, while ego-depletion did not appear to have a statistically significant effect on transportation, it was notable that the effect of NFC and the type of film clip was most pronounced under ego-depletion. The observed trend provides an interesting direction for future direction. While it may not be the case that ego-depletion simply acts as an obstacle to exerting energy while watching films, it may provide a context that makes film viewers more sensitive to the effects of exerting energy. For people higher in NFC, the somewhat higher difficulty of watching *Equilibrium* appears to be enough to engage energy for the sake of transportation in the film. However, for people lower in NFC, the difficulty of watching *Equilibrium* may be too much, since these individuals are not prone to want to exert energy. On the other hand, when watching the lower difficulty of the *Along Came Polly*, individuals higher in NFC may not have felt the activity required as much energy, and since their cognitive resources were limited anyhow, they only exerted a minimal level of energy, the consequence being lower transportation. Unfortunately the current results cannot definitively speak to this possibility, and thus additional studies may be helpful in understanding why higher NFC individuals, so often prone to exert energy and engage in cognitive tasks, suddenly disengage when faced with
what should be an easier activity under circumstances where they feel mentally exhausted.

As was pointed out, however, in the results above, there is a different level of familiarity with the two films from which the clips came. While problematic, the higher familiarity with the *Along Came Polly* clip actually would suggest that the film clip should require less energy to watch. Indeed, in Study1a, it was found that just as higher NFC leaned towards films that may require more thought, at least when they did not feel mentally exhausted, they also preferred a new film rather than a film they had seen before. This would support the assumption that familiarity was associated with greater ease for the film watching experience, and participants’ greater familiarity with *Along Came Polly* further made it a less difficult film clip to watch than the *Equilibrium* clip, as I had initially expected.

**General Discussion**

As suggested by the current study, exerting energy may be a necessary element of the psychological transportation experience. When people are more prone to exert cognitive energy (i.e., those higher in NFC), they become more transported, particularly when the narrative would demand more energy. But there may be some limits to exerting effort. For instance, the current study provides an instance in which participants who are high in NFC actually go against their general tendency to exert energy. Although the current study cannot explain why high NFC participants became less transported when watching the lighter-thought clip from *Along Came Polly*, exploring potential explanation
for the trend may produce useful future directions in this research and may provide meaningful moderators for previous effects of NFC.

As discussed in Chapter 1, psychological transportation also requires a focus of energy expended, which may be created under conditions which the exertion of effort feels desirable or rewarding. Under normal conditions (i.e., non-ego-depleted), for people with higher NFC exerting cognitive energy is generally desirable. Thus, while watching the film, because energy is available, it is expended and because that act of expending energy is desirable, the energy becomes focused, and those individuals consequently feel transported in the narrative. Interestingly, this is whether or not the narrative itself might demand exertion of energy; in other words, even on what may be judged as a more low thought film, higher NFC might drive people to seek out the complexity of the story, thus over-thinking more simplistic narratives. This would be demonstrated if higher NFC people indeed reported greater thought, such as extrapolating beyond the story itself, while watching films like *Along Came Polly* (e.g., lower thought, more predictable) compared to their lower NFC peers. Such a conclusion also means that ego-depletion has consequences for this process of over-thinking a low-thought film by higher NFC individuals; namely, when ego-depleted, higher NFC may not want to or be able to think deeply about a film that is not of their usual interest (i.e., more thoughtful films).

Although such speculation may prompt further studies, a crucial limitation is that the ego-depletion did not produce a statistically significant effect on transportation, contrary to expectations. Thus, although ego-depletion was described in Chapter as an obstacle to exerting cognitive energy and thus transportation, ego-depletion itself may be more limited in how it disrupts energy exertion. Numerous past studies on ego-depletion
support the idea that after exerting self-control on one task, people are less able to exert self-control on another task. Perhaps the energy exerted, though, in the name of transportation is not about self-control.

Such a distinction does suggest that ego-depletion does not simply deplete cognitive resources, but perhaps specifically depletes self-control resources. Cognitive resources for the sake of other tasks, including entertainment, may still be readily available. For instance, Price and Yates (2010) found that ego-depleted participants did not necessarily withdraw effort entirely but rather devoted it to working on simpler math problems, while their non-ego-depleted peers took on more challenging math problems. In other words, the ego-depleted participants still exerted energy, though on a task that required lower levels. Considering that viewing either film clip was not seen as highly difficult in the pilot study, the results of Price and Yates (2010) suggest ego-depletion still left enough energy to exert on the film clips, and consequently ego-depletion itself did not impede transportation.

Another possibility is that although ego-depletion may reduce cognitive resources, it does not reduce drive altogether. Schmeichel and colleagues (2010) recently found that ego-depleted participants were actually temporarily more prone to approach motivation (Study 1 and 2); in fact, exerting self-control momentarily made individuals more sensitive to perceiving reward-based symbols (Study 3). In the context of the current study, entertainment is likely best understood as an approach activity, in which people are interested in gaining from the narrative (e.g., new experience, mood enhancement), rather than potential losses (e.g., time wasted) and certainly a rewarding experience. Thus the
ego-depleting experience may actually encourage energy expenditure on entertaining experiences, like watching film clips. This may further explain why the effects of NFC and film clip were more pronounced in the ego-depletion condition.

The trend of pronounced effects under ego-depletion does suggest that ego-depletion may be meaningful for the experience of psychological transportation, albeit not in the simple manner initially expected (i.e., an obstacle to transportation). Understanding the potential influence of ego-depletion may involve understanding what ego-depletion means to participants. For example, Wan, Rucker, Tormala, and Clarkson (2010) recently found that when consumers formed an attitude while ego-depleted, they were more certain of their attitude. The researchers suggested that this is because ego-depleted consumers feel as if they have exerted great energy during the process of forming the attitude, and exerting greater energy predicts more certainty in attitudes. In the current study, ego-depletion likely does suggest to participants that they have just exerted effort, or put forth work on a prior task. What this may mean for them is that they now can take time to have fun. Indeed in goal pursuit research, when individuals interpret a behavior as having made progress towards a goal, they are inclined to take a break from pursuit of that goal (e.g., Fishbach & Dhar, 2005). Thus, perhaps the experience of working harder on a somewhat academic task (i.e., restricted writing condition) signals that it is time to take a break. Rather than simply leading to a main effect of ego-depletion, though, NFC and the type of film matter. For higher NFC people, the more thoughtful film is seen as more entertaining, and for lower NFC people, the less thoughtful film is seen as more entertaining.
CHAPTER 3

USING COGNITIVE RESOURCES: DISTINGUISHING BETWEEN
PSYCHOLOGICAL TRANSPORTATION AND ENJOYMENT

Overview

As pointed out in the introduction, psychological transportation and enjoyment are commonly highly related, but are in fact distinct concepts (Green, Brock, & Kaufman, 2006). Often in narrative studies, it is not clear how they might be different. For instance, when proposing that better quality enhances transportation in a story (Green & Brock, 2002), it could easily be argued that better quality improves enjoyment of the story. However, unlike enjoyment, I propose that the experience of transportation requires exertion of cognitive energy. To examine this potential distinction between transportation and enjoyment, I use social influence to manipulate people’s expectations of a story’s quality, creating either a situation in which participants should be certain about their expectations or uncertain. In the latter case of uncertainty, I expected that participants should exert cognitive energy to resolve the conflict among the social information provided. Before turning to the current studies, and to provide a framework for the manipulation, I will first discuss the role of social informational influence in the entertainment media experience.
Often, to understand the world around them, people will turn to others, using the beliefs and behaviors of their peers as evidence of what the world is like. The information collected from social others can be used to form people’s expectations for an experience, including exposure to a narrative. These expectations hold what may be an underappreciated power to influence our evaluation of an experience (Wilson, in press). For example, Lee, Frederick, and Ariely (2006) asked individuals to participate in a beer taste-test. Those who had expected an unpleasant-tasting beer rated the vinegar-infused beer less favorably than both those who were either not told of the beer’s unique flavoring and those who were informed about the vinegar only after they tried the beer. Similarly, Hodges, Klaaren, and Wheatley (2000) found that students who were given positive expectations about an uncomfortable interpersonal discussion reported more positive evaluations of the situation than those given negative expectations.

Other researchers have extended such findings of expectations’ influence to the evaluation of entertainment media. Klaaren, Hodges, and Wilson (1994) told half of the volunteers that previous participants had enjoyed a film, creating positive expectations of the film. The rest of the volunteers were given no information regarding previous evaluations. Participants with positive expectations reported enjoying the film more than participants given no evaluations. Expectations guided reported enjoyment even when participants had to watch the film seated in an uncomfortable chair situated at a poor viewing angle from the screen (see also Hodges, Klaaren, & Wheatley, 2000). Positive expectations overrode an objectively unpleasant experience (Wilson, in press).
Pilot Study 2

I first conducted a pilot study to demonstrate that the perceived quality of the story could be shaped by my manipulation of social influence. Specifically, when participants read more positive evaluations of a story’s quality, they would later rate the story to be better than participants who read negative evaluations. Participants (39 males and 57 females) volunteered for the study in exchange for partial course credit in an introductory psychology course. Participants were told they would read a story and complete measures assessing their responses to the story. Before reading the story, participants in the experimental conditions were given brief evaluations of their assigned story. Peer evaluations consisted of: a) three written comments that were ostensibly selected at random from those provided by previous participants and b) the supposed average rating of their assigned story from all previous study participants. Experimental participants were assigned one of five levels of evaluations ranging from very negative (three extremely negative critiques with an average peer evaluation score of 1.4 of 10) to very positive (three extremely positive written critiques with an average peer evaluation score of 9.4 of 10). Additionally, participants in a control group received no evaluative information about the story. After reading the peer evaluations, participants were asked to report their expectations of the story’s quality (i.e., “I expect this story to be:”) on a 7-point Likert scale ranging from 1 (terrible) to 7 (excellent). They then read the story, and were asked to rate the story’s quality using a one-item measure (i.e., “On a scale from 1 to 10, with 10 being the best score the story could receive, what score would you give this story?”).
A one-way analysis of variance (ANOVA) indicated that, as expected, expectations were guided by the evaluations from previous participants, $F (5, 96) = 73.56, p < .001, \eta^2_p = .80$; as the evaluations became increasingly positive, expectations followed suit. Importantly, Tukey post-hoc comparisons revealed significant differences between all five levels of peer evaluation valence, $ps < .05$; however, the average evaluation (i.e., rating of 5.4) appeared not to differ from the no-evaluation control condition, $p = .98$. Additionally, results from the ANOVA supported that the perceived quality of the story was sensitive to the evaluations, $F (5, 96) = 2.66, p < .05, \eta^2_p = .13$. Unlike with expectations, the Tukey post-hoc comparisons suggested that this effect was driven primarily by a marginal difference between mean ratings for the extremely negative and extremely positive evaluation conditions, $p = .13$. The means revealed two clusters of ratings: the extremely negative ($M = 5.65, SD = 2.30$), moderately negative ($M = 5.91, SD = 1.97$), and average evaluation ($M = 5.71, SD = 1.49$) led to lower ratings of quality, and the extremely positive ($M = 7.00, SD = 1.57$), moderately positive ($M = 6.86, SD = 0.95$), and no evaluation ($M = 6.94, SD = 0.93$) led to higher ratings of quality. Thus, although expectations were highly sensitive to the peer evaluations, perceived quality of the story was less so. Since the extremely negative and positive provided the greatest difference in perceived quality for the same story, these two were used to manipulate the quality of the story for Study 2.
Study 2

Method

Participants and Design

Undergraduate students (77 males and 86 females), ranging in age from 18 to 53 ($M = 19.83, SD = 3.33$), took part in the study for partial completion of their introductory psychology course. The experiment used a $2 \times 2$ (initial peer evaluation: favorable or unfavorable) x 2 (meta-evaluation: confirmed vs. disconfirmed) between-subjects design with participants randomly assigned to conditions.

Materials

Stimulus story. Sunday in the Park by Bel Kaufmann describes an ordinary incident that occurred between two families during a playground altercation and the interpersonal frustration between spouses that ensued afterward.

Psychological transportation. After reading the short story, participants completed the twelve-item psychological transportation scale assessing participants’ cognitive attention, emotional response, and mental imagery (Green & Brock, 2000). For each item, participants rated how much they agreed with the statement (e.g., “While I was reading the story, I could easily picture the events in it taking place”) ranging from 1 (strongly disagree) to 7 (strongly agree). Responses demonstrated acceptable reliability (Cronbach’s $\alpha = .73$).

Procedure

After entering the lab, participants were led to believe that the present experiment on short stories had collected data over multiple quarters, involving three rounds of readers: a) the first round of readers merely read and evaluated a target story (“initial
evaluation”), b) the second round of readers read the short story and reported how well the initial readers’ evaluations described the story’s quality (“meta-evaluation”), and c) the current round of readers (i.e., the research participants of this study) receive both sets of comments before reading the short story. Participants were informed that they were part of the third and final round, and thus their task during the study would be to read data collected from previous participants in both rounds, read the story, and then assess the descriptions written by previous participants ostensibly from the second round. They were told the overall goal of the study, including previous rounds, was to understand how people form different opinions when reading the same story.

After participants understood the purpose of the study, they read three written initial evaluations ostensibly provided by participants in round one of the study. Students were given peer evaluations that were either extremely negative or extremely positive as tested in the pilot study. However, participants were not given the supposed average numerical ratings (i.e., 1.4 and 9.4, respectively) to increase ambiguity that might be created by inconsistent evaluations. Participants then read the meta-evaluation from the “second round” readers regarding the validity of the initial opinions they read (see Appendix 1). These comments indicated that either the initial evaluation was valid or inaccurate, thereby providing the participant with a consistent or inconsistent base for expectations. Inconsistent information presumably created a sense of doubt about the information prior to participants reporting their expectations for the story’s quality. A control condition was included in which participants received no previous evaluations of the story.
After reading the evaluations, participants reported their expectation for the story’s quality using a one-item statement (i.e., “I expect this story to be:”) on a scale ranging from 1 (terrible) to 7 (excellent). Then participants read the short story, after which they completed the psychological transportation scale. They also reported their enjoyment of the story, rating their agreement with two statements (e.g., “I greatly enjoyed reading the story”; Cronbach’s $\alpha = .83$), on a scale ranging from 1 (strongly disagree) to 7 (strongly agree), and provided a rating of the story’s quality (i.e., “On a scale from 1 to 10, with 10 being the best score the story could receive, what score would you give this story?”). Finally, participants were thanked and debriefed.

Results

Manipulation Check

To ensure that the evaluations were influencing participants’ expectations of the story, a 2 (initial peer evaluation: favorable or unfavorable) x 2 (meta-evaluation: confirmed vs. disconfirmed) ANOVA on expectations revealed a main effect of initial peer evaluation indicating that when participants read favorable initial evaluations they expected the story to be better ($M = 5.57$, $SD = 1.09$) than when they read unfavorable initial evaluations ($M = 2.52$, $SD = 1.41$), $F (1, 122) = 317.26$, $p < .001$, $\eta_p^2 = .72$, replicating the findings of the pilot study. The main effect was qualified by the expected interaction, indicating that expectations were most influenced by initial evaluations when such evaluations were confirmed by the meta-evaluation in round two, $F (1, 122) = 110.54$, $p < .001$, $\eta_p^2 = .48$. Within both the unfavorable evaluation and favorable evaluation conditions, the meta-evaluation had a significant main effect, $F (2, 95) = 93.79$, $p < .001$, $\eta_p^2 = .66$, and $F (2, 99) = 39.64$, $p < .001$, $\eta_p^2 = .45$, respectively;
although the effect did appear smaller for favorable evaluations. Tukey post hoc analyses revealed that when participants read unfavorable evaluations, they expected a worse story when the evaluation was confirmed \((M = 1.55, SD = 0.90)\) as opposed to disconfirmed \((M = 3.68, SD = 0.94), p < .001,\) and both were worse than the control who received no evaluations \((M = 4.38, SD = 0.83), ps < .01.\) Likewise, when participants read favorable evaluations, they expected a better story when the evaluation was confirmed \((M = 6.14, SD = 0.72)\) as opposed to disconfirmed \((M = 4.86, SD = 1.06), p < .001,\) and both were statistically different than the control \((M = 4.38, SD = 0.83), ps < .07.\) The pattern of means suggested that, as expected, conflicting information weakened expectations, thus, participants should have been less certain about the upcoming story’s quality.

**Psychological transportation**

A 2 (initial peer evaluation: favorable or unfavorable) x 2 (meta-evaluation: confirmed vs. disconfirmed) ANOVA on psychological transportation revealed a main effect of initial evaluation with positive initial evaluations leading to greater transportation \((M = 4.69, SD = 0.77)\) than negative initial evaluations \((M = 4.37, SD = 0.67), F (1,122) = 5.71, p < .05, \eta^2_p = .05.\) The participants in the control condition, who received no evaluations prior to reading, reported nearly identical transportation \((M = 4.69, SD = 0.89)\) to the participants in the positive initial evaluations, suggesting that quality, or at least expectation of higher quality, did not boost transportation, but expectation of lower quality certainly hurt transportation. Additionally, a marginally significant effect of meta-evaluation occurred, such that when evaluations were disconfirmed participants experienced greater transportation \((M = 4.66, SD = 0.70)\) than when evaluations were confirmed \((M = 4.43, SD = 0.76), F (1, 122) = 3.61, p = .06, \eta^2_p = \)
.03. Notably, the participants in the disconfirmed condition experienced similar transportation to those in the control (\(M = 4.69, SD = 0.89\)). This is discussed in reference to potential energy exertion in the discussion below.

Finally, there was no interaction of initial peer evaluation and meta-evaluation of validity on transportation, \(F(1, 122) = 1.39, p > .10, \eta_p^2 = .01\). However, to further explore the main effect of meta-evaluation on transportation, I compared means of confirmed and disconfirmed evaluations within the favorable and unfavorable evaluations. Within the unfavorable evaluations, the meta-evaluation had a significant main effect, \(F(2, 95) = 4.22, p < .05, \eta_p^2 = .08\). As discussed above, it appeared that those who read disconfirmed evaluations (\(M = 4.58, SD = 0.64\)) or those in the control condition (\(M = 4.69, SD = 0.89\)) experienced similar transportation, \(p > .20\), while participants read confirmed evaluations experienced significantly lower transportation (\(M = 4.19, SD = 0.66\)) than either of the latter conditions, \(p < .11\). Within favorable evaluations, the meta-evaluation had no main effect, \(F(2, 99) = 0.10, p > .20, \eta_p^2 = .002\), but, as expected, the participants who read disconfirmed evaluations (\(M = 4.74, SD = 0.75\)) did at least appear more transported than the participants who read confirmed evaluations (\(M = 4.65, SD = 0.78\)).

**Enjoyment**

Just as was observed with transportation, a 2 (initial peer evaluation: favorable or unfavorable) x 2 (meta-evaluation: confirmed vs. disconfirmed) ANOVA on enjoyment revealed a main effect of initial evaluation with favorable initial evaluations leading to greater enjoyment (\(M = 5.45, SD = 1.29\)) than unfavorable initial evaluations (\(M = 4.43, SD = 1.51\)), \(F(1, 122) = 15.51, p < .001, \eta_p^2 = .11\). The participants in the control...
condition, who received no evaluations prior to reading, reported nearly identical
enjoyment ($M = 5.23, SD = 1.18$) to the participants in the favorable initial evaluations,
suggesting that quality, or at least expectation of higher quality, did not boost
transportation, but expectation of lower quality certainly hurt transportation.

The main effect of initial peer evaluation, however, was qualified by an
interaction, $F (1, 122) = 5.36, p < .05, \eta_p^2 = .04$. Means followed a similar pattern
observed with expectations, discussed above. Within the unfavorable evaluation
conditions, the meta-evaluation had a significant main effect, $F (2, 95) = 7.33, p < .01,
\eta_p^2 = .13$, but this was not the case for favorable evaluations, $F (2, 99) = 0.66, p > .20, \eta_p^2
= .01$. Tukey post hoc analyses revealed that when participants read unfavorable
evaluations, they enjoyed the story more if those evaluations had been disconfirmed ($M =
4.91, SD = 1.31$), compared to confirmed evaluations ($M = 4.02, SD = 1.56$), $p < .05$. The
control condition reported greater enjoyment ($M = 5.23, SD = 1.18$) than those in the
confirmed negative condition, $p < .01$, but not in the disconfirmed unfavorable condition,
$p > .20$, thus disconfirming unfavorable evaluations brought the self-reported enjoyment
of participants back to a baseline, represented by the control condition. For favorable
evaluations, the trend of the means supported this pattern, although the confirmed
condition ($M = 5.56, SD = 1.41$) was not statistically higher than either the disconfirmed
($M = 5.31, SD = 1.14$) or control condition ($M = 5.23, SD = 1.18$), $ps > .20$.

**Psychological Transportation vs. Enjoyment**

Transportation and enjoyment were positively correlated, $r (163) = 0.64, p < .001$.
Finally to compare the effects on transportation and enjoyment, a 2 (initial peer
evaluation: favorable or unfavorable) x 2 (meta-evaluation: confirmed vs. disconfirmed)
ANOVA was conducted to compare how the evaluations and meta-evaluations (between-subjects) differentially affected the entertainment experiences of transportation and enjoyment (within-subjects). Results revealed that indeed the social information provided by both the evaluations and meta-evaluations did have different effects on transportation compared to enjoyment, \( F(1, 122) = 4.69, p < .05, \eta_p^2 = .04 \). Considering the different effects of evaluation and meta-evaluation on transportation compared to enjoyment, the results support that the two entertainment experience concepts, though related, are indeed distinct.

**Discussion**

As the results suggested, psychological transportation was greater when a) participants expected a pleasurable experience based on positive evaluations from peers, and b) there was uncertainty about the evaluations, created when there was disconfirmation of the original evaluations. It was presumed that in an attempt to reduce such uncertainty and conflict, participants likely would evoke greater mental energy while reading the story. The exertion of energy would in part contribute to psychological transportation, as was supported by the results. Although exerting energy should benefit transportation, this was not the case for enjoyment. As observed, a main effect of the initial peer evaluation, suggesting a higher or lower quality story, did prompt or disrupt enjoyment, respectively, much like it did for transportation. Again, this was expected, based on Green and Brock’s (2002) prediction that quality should improve transportation. However, the lack of main effect of meta-evaluation on enjoyment suggested that enjoyment reaped no benefit from energy exertion. Thus, it appears that the current studies provide a potential conceptual difference between the experience of transportation
and enjoyment. Unfortunately, where the difference between transportation and enjoyment appeared most relevant was within the positive evaluations, and for both measures, the effect of meta-evaluation was not statistically significant. However, the direction of the means at least conformed to my expectations, that disconfirmation, a situation which should evoke energy exertion, improved transportation, but not enjoyment.

General Discussion

As I had anticipated, exertion of energy (in the case of disconfirmed compared to confirmed evaluations) indeed contributed to participants’ psychological transportation. Unfortunately, these effects were fairly small. One limitation in the current study is the manipulation of the confirmed versus disconfirmed evaluations to evoke varying levels of energy. It had been expected that when faced with conflict in the evaluations, participants would feel less certain about their expectations of the narrative. Indeed, the impact of positivity versus negativity in the evaluations on expectations was attenuated when those evaluations were disconfirmed, suggesting that participants were experiencing uncertainty (or at least becoming less extreme in their expectations). However, it may have been the case that some participants disregarded this uncertainty, and thus did not necessarily increase the energy they used while reading to resolve the conflict. Future studies would benefit this line of work by definitively measuring the amount of energy evoked while reading under the experience of consistent or conflicting information.

Further, this study adds to previous theory and research suggesting that quality improves the experience with a narrative (e.g., Gerrig & Prentice, 1991; Green & Brock,
2002). By using social influence to shape expectations of a story’s quality, the current study provided a valuable means for exploring the effects that quality of a story can have. Unlike previous work which relied on using different stories (e.g., Gerrig & Prentice, 1991), the current study was able to employ the same story in a lower quality and higher quality framework. Clearly, the effect of quality than was not about the story itself, but how participants saw the story.
CHAPTER 4

PSYCHOLOGICAL TRANSPORTATION AND LIMITS OF USING COGNITIVE RESOURCES

Overview

While transportation may generally benefit from the use of cognitive energy, I also expected that there are limits to this benefit. For example, the Yerkes-Dodson curve of arousal suggests a curvilinear relationship between arousal and performance (e.g., Yerkes & Dodson, 1908). Low arousal may not be enough to bring out people’s best performance, but high arousal may hurt performance. At an optimal level of arousal, performance is maximized. Similarly, I wanted to consider whether there may be an optimal level of energy exertion which boosts transportation. However, if a narrative involves too much work, while energy is being exerted, transportation may actually be disrupted, instead of enhanced. To explore potential conditions under which watching a film may involve too much effort, in two studies, I provided participants with either an easy or difficult role. It was expected in both cases that the difficult roles would demand too much energy and become an obstacle to transportation, much like with the Yerkes-Dodson theory, too much arousal becomes an obstacle for performance.

The first method puts participants in one of two roles: that of an audience member or that of a critic. The audience member has the rather simple job of deciding whether the
film was enjoyable. While people may not consciously walk into a film with the task to decide whether they liked it or not, this is a common judgment for film viewers to make. On the other hand, the critic has a more complex job: evaluate the film’s quality based on several detailed dimensions. This should not be a common approach for most participants watching a film, and thus the complexity of the task should make watching a film clip more difficult.

The second method of making film-watching more or less difficult involved the use of cognitive tuning. In the original studies by Zajonc (1960), participants had the task of either conveying information to others (i.e., transmitter) or listening to information provided by others (i.e., receiver). This difference is excellently illustrated by the differing roles of a teacher and student when reading for class. The teacher serves as the transmitter, responsible for not only taking in information but also then providing that information to students (i.e., receivers). When reading materials for class then, this transmitter role likely makes reading an effortful experience for teachers. On the other hand, the student most often takes on the role of receiver. While reading materials for class, not only is the student aware that the teacher will likely be relaying this information later, but the student feels no responsibility to provide the information with anyone. Thus, the receiver role may make reading less effortful for students, compared to the teacher. Zajonc’s purpose in these early studies was to consider how people’s cognitive organization of information differed based on different approaches to that information, prompted by the cognitive tuning manipulation. For instance, participants within the transmitter role created more complex cognitive representations (Zajonc, 1960; see also Guerin & Innes, 1989). Harkins, Harvey, Keithly and Rich (1977) found that giving the
task of being a transmitter to participants prior to their being exposed to a video did change how people approached the video, compared to either receivers or fellow transmitters who found out about their task only after being exposed to the video.

Study 3

Methods

Participants and Design

Undergraduate students (29 males and 42 females), ranging in age from 18 to 27 ($M = 19.48, \text{SD} = 1.53$), took part in the study for partial completion of their introductory psychology course. The experiment used a $2$ (audience role vs. critic role) x $2$ (serious/high thought vs. humorous/low thought film clip) x $2$ (NFC completed in prescreening/pre-study vs. post-study) x continuous (need for cognition: NFC) between-subjects design with participants randomly assigned to the first two conditions.

Materials

Need for Cognition. Participants completed the brief version of the need for cognition (NFC) scale, containing 18-items (Cacioppo, Petty, & Kao, 1984). For each item, participants rated how characteristic each statement was of them (e.g., “I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought,”) ranging from 1 (extremely uncharacteristic) to 5 (extremely characteristic). The NFC scale was either completed in a prescreening session, prior to completing the study, or at the end of the study.

Role Manipulation. Participants were randomly assigned to one of three roles before watching the film clip. Those in the audience role condition were told, “Your task
during the experiment will be to watch some film clips and make a judgment about whether you like the clip or not.” Those in the critic role condition were told, “Your task during the experiment will be to watch some film clips and make several judgments about the a) storyline, b) characters, c) acting, d) theme, e) symbolism, f) social relevance of the story, and g) originality of the story.” Participants in the control condition were told that, “You will watch a brief film clip and complete measures regarding your response after each clip,” and thus were not provided with a specific role to fulfill while watching the clips. It was expected that the audience role and control condition would be seen as less difficult, and thus requiring less effort than the critic role, since the critic had to make judgments based on multiple criteria.

_Film Clips._ The first film clip, approximately 11 minutes long, was taken from a serious and thoughtful film (i.e., _Equilibrium_). The film revolves around a society that, in order to remove aggression, outlaws all emotional expression. During the clip, the main character begins to question the society that he is charged with protecting. He recalls the loss of his wife and more recently his partner, who were both charged as “sense offenders”. Later, while interrogating a woman, she confronts him with the question of his purpose in a society where no one is allowed to feel.

The second film clip, also approximately 11 minutes long, was taken from a lighter romantic comedy (e.g., _Along came Polly_). The film tells the classic tale of opposites-attract. After leaving his new wife when he discovers she has been cheating on him, the main character tries to pursue a relationship with a girl he knew in high school. In the clip, the main character discusses his interest in Polly with his friend, who warns
him that the relationship will not work. Later he finally goes on a date, which highlights the differences between the two characters.

**Psychological transportation.** Participants completed the first nine items of the psychological transportation scale assessing participants’ cognitive attention, emotional response, and mental imagery (Green & Brock, 2000). The last three items of the scale are more relevant to narrative persuasion, and since that was not the focus of the study, those items were not included. For each item, participants rated how much they agreed with the statement (e.g., “While I was reading the story, I could easily picture the events in it taking place”) ranging from 1 (strongly disagree) to 7 (strongly agree).

**Perceived difficulty.** Participants completed three items assessing their perceived difficulty of watching the film clip. For each item, participants rated how true they felt each statement was (e.g., “I felt like watching the clip was challenging.”) ranging from 1 (not at all true) to 7 (very true).

**Enjoyment.** Participants completed seven items assessing their enjoyment of the film clip (e.g., McAuley, Duncan, & Tammen, 1989; Ryan, 1982). For each item, participants rated how true they felt each statement was (e.g., “I enjoyed watching the clip very much.”) ranging from 1 (not at all true) to 7 (very true).

**Perceived choice.** Participants completed seven items assessing their perceived choice in watching the film clip (e.g., McAuley, Duncan, & Tammen, 1989; Ryan, 1982). For each item, participants rated how true they felt each statement was (e.g., “I watched the clip because I wanted to.”) ranging from 1 (not at all true) to 7 (very true).

**Effort.** Participants completed five items assessing their perceived choice in watching the film clip (e.g., McAuley, Duncan, & Tammen, 1989; Ryan, 1982). For each
item, participants rated how true they felt each statement was (e.g., “I put a lot of effort into watching the clip.”) ranging from 1 (not at all true) to 7 (very true).

Perceived responsibility. Participants completed three items assessing their perceived difficulty of watching the film clip. For each item, participants rated how true they felt each statement was (e.g., “I felt accountable for what I did during the task.”) ranging from 1 (not at all true) to 7 (very true).

Procedure

Upon completing an informed consent, participants were told the purpose of the study was to examine what types of entertainment media people enjoy. They were then randomly assigned to read the instructions for the audience or critic role, or read no additional instructions for the control condition. To ensure participants understand what they would be doing in the study, they were asked to briefly describe what they believed was expected of them during the study. They had an opportunity to review the previous instructions if they desired to do so. Immediately after verifying their understanding of the study’s task, they read a brief introduction for the film clip and began watching it. After the film clip was over, participants completed the psychological transportation scale, and then, as they were informed via their role manipulation instructions, either responded to a one-item measure regarding their liking of the film in the (i.e., “On the following scale, how much would you say you liked the film clip?”, on a scale ranging from 1, being “hated it”, to 5, being “loved it”), for the audience role, or responded to seven items measuring their evaluation of the film clip on various dimensions (e.g., “On the following scale, how would you rate the STORYLINE?”, on a scale ranging from 1, being “terrible”, to 5, being “terrific”), for the critic role. Participants in the control
condition did not complete these measures; rather they moved directly into the post-
experience measures, aimed at assessing participants experience while watching the film
clip and completing the measures: perceived difficulty, enjoyment, absorption, perceived
choice, perceived effort, and perceived responsibility. For participants who had not
completed the NFC in prescreening, they completed at the NFC after the post-experience
measures. Finally, participants were thanked and debriefed.

Results

NFC in Prescreening vs. Post-Study

To compare NFC scores for prescreened and non-prescreened participants, a 2
(audience role vs. critic role) x 2 (serious/high thought vs. humorous/low thought film
clip) x 2 (NFC completed in prescreening/pre-study vs. post-study) ANOVA was
conducted with NFC as the dependent measure. As expected, there was no main effect of
whether NFC was completed in prescreening or at the end of the study, $F (1, 63) = 0.29,$
$p > .20, \eta_p^2 = .005.$ Additionally, the prescreening condition did not interact with any
other variables, $F_s < 1.00, ps > .20, \eta_p^2 < .01.$ Finally, there were no other statistically
significant effects of any other variables on NFC, $F_s < 2.75, ps > .10, \eta_p^2 < .05.$
Consequently, results were collapsed across the two conditions, and no remaining
analyses included the timing of the NFC measure as a predictor variable.

Effect of Role on Psychological Transportation

Of primary interest in the study, I first considered how the type of role
participants had while viewing the film clip, as either an audience member or critic
affected transportation in the film clips when controlling for NFC. Thus, I conducted a 2
(audience role vs. critic role) x 2 (serious/high thought vs. humorous/low thought film
clip) ANCOVA with NFC as a covariate and psychological transportation as the dependent measure. Results suggested that as a covariate, NFC did have a marginally significant effect on transportation, \( F(1, 66) = 3.31, p = .07, \eta_p^2 = .05 \). The means appeared to suggest that, as anticipated, the critic role experienced slightly less transportation for both film clips (Equilibrium: \( M = 4.83, SD = 1.12 \); Along Came Polly: \( M = 5.03, SD = 0.66 \)) than the audience role (Equilibrium: \( M = 5.15, SD = 1.37 \); Along Came Polly: \( M = 5.20, SD = 0.73 \)), suggesting that the critic role may be leaning towards turning the film watching experience into work, as opposed to play; however, the main effect of role, as well as all other potential effects, failed to reach statistical significance, \( Fs < 1.25, ps > .20, \eta_p^2 < .02 \).

**Meaning of the Role Manipulation**

To consider how the participants perceived the role manipulation, a 2 (audience role vs. critic role) x 2 (serious/high thought vs. humorous/low thought film clip) MANCOVA was conducted with NFC as a covariate and perceived difficulty, enjoyment, perceived choice, perceived effort, and perceived responsibility as the dependent measures. First, the covariate of NFC had an effect on enjoyment, \( F(1, 66) = 3.34, p = .07, \eta_p^2 = .05 \), and perceived responsibility, \( F(1, 66) = 4.45, p < .05, \eta_p^2 = .06 \). Regarding participants’ perception of the role itself, as expected, the type of role impacted perceived difficulty of the task, \( F(1, 66) = 8.50, p < .01, \eta_p^2 = .11 \), such that participants in the audience condition (\( M = 1.30, SD = 0.48 \)) felt that the task was less difficult than participants in the critic condition (\( M = 1.74, SD = 0.79 \)). Notably, though, these means fell well below the scale mid-point (i.e., 4), suggesting that the task was not incredibly difficult for either condition. Interestingly, participants appeared to feel they
had more choice during the task while watching the *Equilibrium* clip \((M = 6.20, SD = 0.74)\) than the *Along Came Polly* clip \((M = 5.80, SD = 1.09)\), \(F(1, 66) = 3.38, p = .07, \eta^2_p = .05\). Similarly to the perceived difficulty means, these means were both above the scale mid-point (i.e., 4), suggesting in both cases, participants did feel they had choice. The effect of film clip on choice may have more to do with the context of the story in *Equilibrium*; this will be discussed further below. All other main effects and interactions did not reach statistical significance, \(Fs < 2.00, ps > .15\).

**Discussion**

Contrary to the expectations of this study, the type of role with which people approached watching the film had no effect on psychological transportation. However, this may be in part due to the finding that, while being a critic was seen as more difficult than being an audience member, neither was perceived as more difficult than the scale mid-point (i.e., 4). Consequently, it appeared that being a critic failed to turn watching a film clip into work. Further, as noted above, the film clip itself appeared to have an interesting effect on participants’ perceived choice, suggesting they felt they had more choice in watching the *Equilibrium* clip. This effect may be due to that fact that the story of *Equilibrium* discusses a society where people have very limited choice; the government aims to control their emotional expression in order to reduce crime. Watching the film clip may have prompted participants to want to reassert their own sense of perceived choice, or perhaps they felt in comparison to the characters in the film they indeed had greater choice in their own lives.
Study 4

Methods

Participants and Design

Undergraduate students (34 males and 34 females), ranging in age from 18 to 30 (\(M = 19.62, SD = 2.01\)), took part in the study for partial completion of their introductory psychology course. The experiment used a 2 (receiver task vs. transmitter task) x 2 (serious/high thought vs. humorous/low thought film clip) x continuous (need for cognition: NFC) between-subjects design with participants randomly assigned to the first two conditions.

Materials

Task Manipulation. Participants were randomly assigned to one of three tasks to complete while watching the film clip. Those in the receiver task condition were told, “Your task during the experiment will be to evaluate some short descriptions of film clips, each describing what happened in the story, written by a previous participant who has seen the clip. Before you read the description, so that you can evaluate it, you will watch the film clips associated with each description.” Those in the transmitter task condition were told, “Your task during the experiment will be to watch film clips and then communicate information about the story to future participants, by writing a short description of what happened in each clip. The description that you write should be informative enough that a person who has not seen the film clip before understands exactly what happened.” As in Study 3, participants in the control condition were told that, “You will watch a brief film clip and complete measures regarding your response after each clip,” and thus were not provided with a specific role to fulfill while watching.
the clips. It was expected that the receiver task and control condition would be seen as requiring less effort than the transmitter task (Guerin & Innes, 1989; Zajonc, 1960).

Procedure

Study 4 used the same procedure as Study 3, replacing the manipulation of audience versus critic role with the receiver versus transmitter manipulation.

Results

NFC in Prescreening vs. Post-Study

To compare NFC scores for prescreened and non-prescreened participants, a 2 (receiver role vs. transmitter role) x 2 (serious/high thought vs. humorous/low thought film clip) x 2 (NFC completed in prescreening/pre-study vs. post-study) ANOVA was conducted with NFC as the dependent measure. Again as expected, there was no main effect of whether NFC was completed in prescreening or at the end of the study, $F(1, 60) = 1.84, p > .15, \eta^2_p = .03$. However, the timing of the NFC measure did interact with the film clip, $F(1, 60) = 4.53, p < .05, \eta^2_p = .07$. When comparing within each film clip, it appeared the effect was driven by participants who watched the clip from Equilibrium: interestingly, participants who reported NFC after watching the film clip ($M = 3.55, SD = 0.60$) appeared to have higher NFC scores than people who reported NFC before the study ($M = 3.01, SD = 0.85$), $F(1, 30) = 4.88, p < .05, \eta^2_p = .14$. For participants who watched Along Came Polly, however, the trend suggested that NFC was lower for participants who completed the NFC measure after watching the film clip ($M = 3.46, SD = 0.59$) as opposed to those who completed it prior to the study ($M = 3.55, SD = 0.53$); although the difference was not statistically significant, $F(1, 30) = 0.40, p > .20, \eta^2_p = .01$. Consequently, I included the timing of the NFC measure in subsequent analyses.
Effect of Role on Psychological Transportation

As in Study 3, I first considered how the type of role participants had while viewing the film clip, now as either a transmitter or receiver, affected transportation in the film clips when controlling for NFC. Thus, I conducted a 2 (receiver role vs. transmitter role) x 2 (serious/high thought vs. humorous/low thought film clip) x 2 (NFC completed in prescreening/pre-study vs. post-study) ANCOVA with NFC as a covariate and psychological transportation as the dependent measure. Results suggested that as a covariate, NFC once again had a marginally significant effect on transportation, $F(1, 59) = 3.45, p = .07, \eta^2_p = .06$. Unlike was observed in Study 3, there appeared to be a marginally significant interaction of role instructions and film clip, $F(1, 59) = 3.17, p = .08, \eta^2_p = .05$. Transportation appeared higher for transmitters watching the *Along Came Polly* clip ($M = 5.16, SD = 1.04$), compared to their peers who received receiver instructions ($M = 4.66, SD = 0.67$), $F(1, 29) = 2.74, p = .10, \eta^2_p = .09$. The direction reversed for participants watching the *Equilibrium* clip; although this difference did not reach statistical significance, $F(1, 29) = 0.54, p > .20, \eta^2_p = .20$ (transmitter: $M = 4.86, SD = 1.07$; receiver: $M = 5.26, SD = 0.88$).

Meaning of the Role Manipulation

To consider how the participants perceived the role manipulation, I conducted a 2 (receiver role vs. transmitter role) x 2 (serious/high thought vs. humorous/low thought film clip) x 2 (NFC completed in prescreening/pre-study vs. post-study) MANCOVA with NFC as a covariate and perceived difficulty, enjoyment, perceived choice, perceived effort, and perceived responsibility as dependent measures. NFC marginally predicted enjoyment, $F(1, 59) = 2.89, p = .10, \eta^2_p = .05$, perceived choice, $F(1, 59) = 3.74, p = .06$. 

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.06, $\eta^2_p = .06$, and responsibility, $F(1, 59) = 3.21, p = .08, \eta^2_p = .05$. Of greatest interest was how participants perceived the role itself. First, the aim was to create a more challenge, difficult experience for the transmitters ($M = 2.42, SD = 1.00$) as opposed to receivers ($M = 1.94, SD = 0.96$), and while the means supported this objective, the difference was only marginally significant, $F(1, 59) = 3.18, p = .08, \eta^2_p = .05$. Further, as was observed in Study 3, neither role was perceived as more difficult than the scale midpoint (i.e., 4). In addition to the expected effect, transmitters also appeared to enjoy the task less ($M = 3.99, SD = 1.20$) and feel less responsible for their actions during the activity ($M = 5.21, SD = 1.30$), compared to receivers ($M = 4.61, SD = 0.85$ and $M = 5.79, SD = 0.90$, respectively), $F(1, 59) = 6.37, p < .05, \eta^2_p = .10$, and $F(1, 59) = 4.11, p = .05, \eta^2_p = .07$. The latter main effect on responsibility was qualified by an interaction of instructions and film clip, $F(1, 59) = 5.27, p < .05, \eta^2_p = .08$. It appeared that the effect was greater for participants who watched the *Equilibrium* clip, $F(1, 29) = 7.73, p < .01, \eta^2_p = .21$ (transmitter: $M = 6.04, SD = 0.96$; receiver: $M = 4.80, SD = 1.31$). The difference was not statistically significant for participants who watched the *Along Came Polly* clip, $F(1, 29) = 0.11, p > .20, \eta^2_p = .004$ (transmitter: $M = 5.67, SD = 1.18$; receiver: $M = 5.56, SD = 0.79$).

**Discussion**

The goal of Study 4 was to use the transmitter mode to turn the film watching experience into work. For *Equilibrium*, it appeared based on transportation results that the manipulation may have worked as expected, since transportation trended towards being lower for the transmitters. However, considering the difference failed to reach statistical significance and the transmitter mode was not judged to be particularly difficult in
relation to the scale mid-point (i.e., 4), my expectation that turning the film experience into work would deplete transportation was not supported. Additionally, contrary to my intentions, the transmitter role actually improved transportation for the *Along Came Polly* clip. Although the results failed to support the manipulations intended purpose, it did provide evidence that, as I suggest, increasing energy exertion improves transportation. In other words, working a little harder in the case of a fairly low thought film may actually improve the experience with the film.

**Study 3-4**

*Results*

*Prescreening of NFC*

First, in examining the responses of Study 3 and 4 together, I conducted a 2 (Study 3 vs. Study 4) x 2 (lower vs. higher difficulty task) x 2 (serious/high thought vs. humorous/low thought film clip) x 2 (NFC completed in prescreening/pre-study vs. post-study) ANOVA with NFC as a dependent measure. The analysis revealed that timing of the prescreening measure did not affect NFC, either as a main effect or in any interaction effects, $F_s < 2.50, ps > .10$. Thus, the timing of the prescreening measure was not included as a predictor in subsequent analyses.

*NFC and Transportation*

In both Study 3 and 4, I noted that as a covariate, NFC had a marginally significant effect on transportation. To consider when NFC and transportation might be related, I conducted a multiple linear regression on the combined data sets of Study 3 and 4. In a multiple linear regression model, I included NFC (continuous), film
(dichotomous), level of task difficulty (dichotomous), and type of task (dichotomous) predicting transportation. In the final model, testing all main effects and interactions, there were no significant predictors of transportation ($p > .15$). Next, since Study 1b (Chapter 2) found an interaction between NFC and film clip; I conducted a multiple linear regression analysis, including NFC (continuous), film (dichotomous), and the interaction term for these two variables. The results replicated the previous finding ($B = .384, t = 2.95, p < .01$), again suggesting that during the more serious, thought-provoking clip from *Equilibrium* higher NFC did predict higher transportation ($B = .392, t = 3.72, p < .001$), but this was not the case for the more humorous, lighter-though clip from *Along Came Polly* ($B = -.103, t = -0.79, p > .20$). Based on these findings, it appeared that NFC may relate to transportation in more thoughtful situations. Thus, providing that the role of critic and transmitter were more thoughtful than their counterparts, I conducted an additional model, including NFC (continuous), film (dichotomous), level of task difficulty (dichotomous), type of task (dichotomous), and the interaction terms for these three variables. Unfortunately, it did not appear in this model that any of the variables significantly predicted transportation ($p > .20$).

**Perception of Task**

To consider how the participants perceived the role manipulation, I conducted a 2 (Study 3 vs. Study 4) x 2 (lower vs. higher difficulty task) x 2 (serious/high thought vs. humorous/low thought film clip) MANCOVA with NFC as a covariate and perceived difficulty, enjoyment, perceived choice, perceived effort, and perceived responsibility as dependent measures. NFC predicted enjoyment, $F(1, 130) = 4.45, p < .05, \eta^2_p = .03$, perceived choice, $F(1, 130) = 3.89, p = .05, \eta^2_p = .03$, and responsibility, $F(1, 130) = \ldots$
6.83, \( p < .05 \), \( \eta_p^2 = .05 \). Finally, as was supported in the previous results, being an audience member or receiver was seen as less difficult (\( M = 1.62, SD = 0.82 \)) than being a critic or transmitter (\( M = 2.06, SD = 0.95 \)), \( F (1, 130) = 10.58, p < .01 \), \( \eta_p^2 = .08 \). Which study participants were in also had a main effect on difficulty; participants who were in Study 3, using the audience/critic roles, reported lower difficulty with their role (\( M = 1.52, SD = 0.69 \)) than participants in Study 4, using the receiver/transmitter roles (\( M = 2.17, SD = 1.00 \)), \( F (1, 130) = 22.84, p < .001 \), \( \eta_p^2 = .15 \). However, both main effects were qualified by a three-way interaction of type of role instructions (Study 3: audience/critic vs. Study 4: receiver/transmitter), difficulty of role (lower difficulty: audience/receiver vs. higher difficulty: critic/transmitter), and film clip, \( F (1, 130) = 4.28, p < .05 \), \( \eta_p^2 = .03 \). The same three-way interaction affected perceived responsibility as well, \( F (1, 130) = 7.35, p < .01 \), \( \eta_p^2 = .05 \). When examining the means for both of these relationships, it was notable that it was participants who watched the *Equilibrium* clip as a transmitter (higher difficult from Study 4) that found the task to be the most difficult and that felt least responsible for their actions during the task (see Figures 4.1 and 4.2). Also of note, participants who watched the *Along Came Polly* clip as an audience member (lower difficult from Study 3) found it to be the least difficult, but they did not feel most responsible for their actions during the task.
Additionally, it appeared that participants in either the audience or receiver role, which as discussed above, were judged to less difficult, generally found the task to be more enjoyable ($M = 4.72, SD = 0.89$) than participants in either the critic or transmitter role ($M = 4.35, SD = 1.08$), $F(1, 130) = 5.51, p < .05, \eta^2_p = .04$. Paralleling these
findings, participants who were in Study 3, using the audience/critic roles, which was
also seen as less difficult as discussed above, reported greater enjoyment \( (M = 4.75, SD = 0.89) \) than participants who were in Study 4, using the receiver/transmitter roles \( (M = 4.32, SD = 1.07) \), \( F (1, 130) = 8.38, p < .01, \eta^2_p = .06 \). Finally, participants who were in
Study 3, using the audience/critic roles, reported feeling more choice in completing the
task \( (M = 5.99, SD = 0.96) \) than those in Study 4 \( (M = 5.64, SD = 1.14) \), \( F (1, 130) = 4.67, p < .05, \eta^2_p = .04 \).

Discussion

One important finding from the meta-analysis of these two studies is that higher
NFC can benefit transportation, but only under certain circumstances. While I expected
that NFC would increase transportation for thoughtful activities, the interaction of NFC
and the role manipulation did not seem to support this. I did, however, find that the type
of film clip influenced the effect of NFC. Rather than this difference being driven by
difficulty of the film clip, it may actually be a matter of the tone of the film or content of
the narrative. For instance, it may only be narratives with a serious tone that lead higher
NFC to increase transportation. However, it may also be that the Equilibrium clip
involved a more socially relevant issue (e.g., censorship), and thus may have seemed
more meaningful compared to the Along Came Polly clip.

Another important finding from the meta-analysis of these two studies is that the
more difficult roles more consistently impeded enjoyment, but not transportation. This
again reflects on the distinction between transportation and enjoyment, as discussed in
Chapter 3. Namely, task difficulty should trigger greater energy exertion (Brehm & Self,
1989; Brehm, Wright, Solomon, Silka, & Greenberg, 1983; Wright & Brehm, 1989;
Wright, 1996). I propose that the greater energy exertion, at least to a point, enhances transportation. On the other hand, it should not directly help enjoyment.

General Discussion

Unfortunately, the current studies (Study 3 and 4) failed to demonstrate a situation in which the playful nature of watching a film becomes work. However, taken together, the two studies may suggest some useful trends. Across both studies, I noted that for the Equilibrium clip, the intended difficult conditions (i.e., critic role for Study 3 and transmitter role for Study 4) both appeared to lead to a decline in transportation compared to the intended easy conditions (i.e., audience role for Study 3 and receiver role for Study 4), albeit both being non-significant differences. This is in contrast to the Along Came Polly clip, for which all conditions experienced similar transportation, with the exception of the receiver condition (Study 4). Under this role, people’s transportation suffered compared to the alternative roles. These trends suggest that, as expected, it may be possible to take an already fairly challenging, more thought-provoking film, and make it more effortful. Thus, there may still be scenarios in which the amount of energy required during narrative exposure may not actually contribute to transportation, but because it is actually beyond an optimal level of energy exertion, it begins to detract from the transportation experience.

Although both the critic role and transmitter role were seen as more difficult than their respective counterpart roles, neither was seen as more difficult than the mid-point of the scale. However, in addition to creating a more difficult experience, both of these roles may have introduced additional factors that could be meaningful to the transportation experience.
experience. For example, research has suggested transmitters may feel more self-presentation pressures than receivers (Moore, 1974). Likewise, people in the critic role may also feel that somehow their performance on their task (i.e., evaluating the film on several dimensions) implicates their ability. Thus in both cases, for the critic and transmitter, in addition to perhaps being a more difficult task, it may be more threatening to the self, or at least draw attention to the self. Considering that Green (Green & Brock, 2002; Green, 2004) suggests transportation is associated with a decline in self-awareness, it may actually be that self-focused attention disrupts possible transportation, as opposed to too much energy being exerted. However, the problem with this interpretation in the current studies is that the critic and transmitter roles are really only problematic for those watching the *Equilibrium* clip.

Unfortunately, as discussed in Chapter 2, the difference in experience of the *Equilibrium* and *Along Came Polly* clips may be in part due to the familiarity with the latter film. Thus, perhaps the role of critic or transmitter was not particularly difficult if participants had previously seen the film clip, providing an explanation for why they may only be distracting for the *Equilibrium* clip. However, the results do not appear to support this explanation, as the interaction of role instructions and film did not influence perceived difficulty in either Study 3 or Study 4, nor do means follow such a trend.

Finally, the current studies both found that NFC did account for some of the variance in transportation. As previous studies have been mixed in their support for their relationship between transportation and NFC (Appel & Richter, 2007; Green & Brock, 2000; Green et al., 2008), again I find that although the relationship is not often highly statistically significant, NFC can be meaningful in the transportation experience. A
potential reason for the positive relationship in Study 3 and 4 may be the introduction of the role instructions. In any of the four roles, participants had a task that should have required varying levels of cognitive resources. Indeed, reflecting back on the Pilot Study conducted in Chapter 2, aimed to compare the difficulty level between the two film clips, when participants did not have a specific task to complete while watching the film, NFC appeared to no longer be associated with transportation. These observed results provide a possible moderator for the relationship between transportation and NFC: namely, purpose during narrative exposure.
CHAPTER 5
PSYCHOLOGICAL TRANSPORTATION AND OPPORTUNITY TO GROW

Overview

In addition to drawing on cognitive resources, I suggest that transportation involves focusing cognitive energy on the narrative, just as a laser involves focusing light energy on a single point. Focusing energy may involve perceiving expended effort as desirable or providing a reward, as in approach motivations (e.g., Elliot, 1999). While I discussed one such way this may occur in Chapter 2 (i.e., need for cognition), expending energy may also be judged as desirable when people want to experience growth, or self-expansion, through a narrative. As discussed in the introduction, self-expansion provides resources to enhance the goal pursuit process (e.g., Aron, Aron, & Norman, 2004; Aron, Paris, & Aron, 1995). Narratives may be a rich resource to seek out new perspectives and knowledge which serve this very purpose. Thus in Study 5, I consider the relationship between self-expansion (experienced via the narrative’s protagonist) and psychological transportation in the narrative. I hypothesized that as people experienced greater self-expansion, they would likewise feel more immersed in the narrative.

To follow this study, I also employ the framework of learning, or mastery, goals, as opposed to performance goals. The former goals focus on growth, while the latter focus on demonstrating a status quo, such as one’s current ability level (e.g., Ames, 1984;
Dweck, 1986; Nicholls, 1984). When approaching a story with learning goals, people should perceive the narrative as a chance to grow. Energy exerted under these conditions is useful, and therefore, transportation is experienced. On the other hand, when approaching a story with performance goals, exerting energy on the narrative is not useful, so rather than prompt transportation, it would actually impede it.

Study 5

Method

Participants and Design

Undergraduate students (39 men and 74 women) participated in exchange for partial course credit in an introductory psychology course. They ranged in age from 18 to 28 (M = 18.84, SD = 1.35). The study used a correlational design, exploring the relationship between relationship measures (i.e., self-other overlap with a character in a short story and self-expansion experienced via the character) and psychological transportation.

Materials

Stimulus story. The short story was written by the researcher, and conveyed the experience of an anxious runner up to and during an important race. The story was written in first-person narrative voice, leaving gender ambiguous, and described the thoughts and feelings of the character as he/she strives to win the race.

Psychological transportation. After reading the short story, participants completed the 12-item psychological transportation scale assessing participants’ cognitive attention, emotional response, and mental imagery (Green & Brock, 2000). For
each item, participants rated how much they agreed with the statement (e.g., “While I was reading the story, I could easily picture the events in it taking place”) ranging from 1 (strongly disagree) to 7 (strongly agree). Responses demonstrated acceptable reliability (Cronbach’s $\alpha = .78$).

**Inclusion of Other in Self.** To measure the cognitive overlap between the participants and the character, the participants selected one of seven pictures of paired circles that best described their relationship with the fictional character (Aron, Aron, & Smollan, 1992). The scale was scored from 1, being no overlap, to 7, being almost complete overlap. Although Aron and colleagues report that the scale has most often been used to assess closeness in romantic relationships, they suggest that the scale can be applied to other interpersonal relationships.

**Self-Expansion Questionnaire.** To measure the degree to which participants felt they had experienced self-expansion through the narrative’s protagonist, Lewandowski and Aron’s (2002) 14-item self-expansion questionnaire was adapted to capture the potential relationship with the character. For each item, participants rated how true they felt each statement was (e.g., “Reading about the character has helped to expand my sense of the kind of person I am”) ranging from 1 (not at all true) to 7 (very true). Responses demonstrated acceptable reliability (Cronbach’s $\alpha = .92$).

**Perceptions of the Character.** Participants responded to several single items exploring their perceptions of the character: 1) liking of the character (i.e., “How likeable would you say the character is?”), 2) attitude towards the character (i.e., “Overall, how negative or positive would you say the character is?”, and 3) how much the character represented their actual, ideal, and ought selves (e.g., “How much would you say the
character is like who you want to be?”). For the evaluation items, participants responded on a 7-point scale, while for the latter items regarding representation of self-guides, participants responded on a 5-point scale (1, being not at all like who [description of self-guide], to 5, being very much like who [description of self-guide]).

**Procedure**

Participants first read the short story. Afterwards, participants completed the psychological transportation scale (Green & Brock, 2000), the inclusion of other in the self (IOS) scale (Aron, Aron, & Smollan, 1992), and the adapted 14-item self-expansion questionnaire (Lewandowski & Aron, 2002), with the narrative protagonist as the target. Finally, participants responded to several single items exploring their perceptions of the character. At the end of the study, participants were thanked and debriefed.

**Results**

A multiple linear regression was conducted to predict transportation in the story, concurrently using self-other overlap with the character, self-expansion, likeability of the character, general attitude towards the character, and degree to which the character represented participants’ actual self, ideal self, and ought self as continuous predictor variables. Only self-other overlap ($B = .21, t = 2.29, p < .05$) and experience of self-expansion ($B = .43, t = 4.83, p < .001$) predicted transportation, such that when participants saw an opportunity for growth by forming a relationship with the character, they also experienced greater transportation in the narrative.

**Discussion**

The goal of the current study was to consider the opportunity for growth as a means for focusing expended effort during narrative exposure, which I propose leads to
transportation. When participants experienced a merging of their own self-concept and their mental representation of the narratives’ protagonist, they reported an increased feeling of being transported in the narrative. The current study is limited, however, in that it does not speak to the nature of energy being exerted while reading the narrative. Additionally, since the study is correlational, the direction of the relationship between self-expansion and transportation is not clear. Based on the model, I suggest that opportunity to self-expand facilitates the transportation experience as energy exerted increases.

Because the results are correlational, Study 5 does not clearly provide evidence that opportunity for growth focused expended cognitive energy, consequently leading individuals to feel transported in a narrative. Certainly, transportation may instead produce the experience of growth, or both self-expansion and transportation may operate in tandem without one causing the other. Based on the model I describe in Chapter 1, however, I would expect that when individuals exert energy and feel they experience growth during the experience, the energy should be more focused on the narrative (i.e., source of growth), and thus individuals should experience greater transportation. While Aron and colleagues have not had reliable success in manipulating desire to experience self expansion (G. Lewandowksi, personal communication), other cues may prompt individuals to expect a growth experience. For instance, if prior to reading, participants were led to believe that a story they were about to read provided a novel experience (allowing for self-expansion) versus a common experience they may be more inclined to experience transportation. Simply, the expectation of the new experience might focus energy more on the story, and thus drive psychological transportation. Another means for
triggering a focus on a growth opportunity is provided by Dweck and colleagues (e.g., Elliott & Dweck, 1988) differentiation between learning and performance goals, which is employed in Study 6.

Study 6

Method

Participants and Design

Undergraduate students (36 males and 25 females), ranging in age from 18 to 31 ($M = 19.33$, $SD = 2.12$), took part in the study for partial completion of their introductory psychology course. The experiment used a 3 (learning goal vs. performance goal vs. control) x continuous (need for cognition: NFC) between-subjects design with participants randomly assigned to the goal conditions.

Materials

Goal Manipulation. All participants were told that “You have been randomly assigned to complete the reading comprehension test. You will read a short story, respond to questions about your experience while reading the story, and then answer 10 items, measuring your understanding of the story.” To manipulate the goal with which participants approached reading the story, participants in the goal condition then read one of two sets of instructions (Elliott & Dweck, 1988). In the learning goal condition, participants were informed that “Reading tasks, such as these, can improve your reading ability.” In the performance goal condition, participants were informed that, “Your responses will be used to assess your present reading ability.” Participants in the control condition were not provided with additional instructions about the meaning of the task.
Stimulus story. Sunday in the Park by Bel Kaufmann describes an ordinary incident that occurred between two families during a playground altercation and the interpersonal frustration between spouses that ensued afterward.

Psychological transportation. Participants completed the first nine items (Cronbach’s $\alpha = .76$) of the psychological transportation scale assessing participants’ cognitive attention, emotional response, and mental imagery (Green & Brock, 2000). The last three items of the scale are more relevant to narrative persuasion, and since that was not the focus of the study, those items were not included. For each item, participants rated how much they agreed with the statement (e.g., “While I was reading the story, I could easily picture the events in it taking place”) ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

Reading comprehension questions. Ten questions were developed to allegedly test participants’ comprehension of the story. These questions focused primarily on participants’ attention to and recall of details in the story (e.g., “Who does Morton get angry with when leaving the park?”). For each question, participants were provided with four multiple-choice answers to select, as well as the option to skip the question.

Effort. Participants completed five items (Cronbach’s $\alpha = .72$) assessing their perceived effort exerted while completing the study’s task (e.g., McAuley, Duncan, & Tammen, 1989; Ryan, 1982). For each item, participants rated how true they felt each statement was (e.g., “I put a lot of effort into the task.”) ranging from 1 (*not at all true*) to 7 (*very true*).

Enjoyment. Participants completed seven items (Cronbach’s $\alpha = .89$) assessing their enjoyment of the study’s task (e.g., McAuley, Duncan, & Tammen, 1989; Ryan,
For each item, participants rated how true they felt each statement was (e.g., “I enjoyed doing the task very much.”) ranging from 1 (not at all true) to 7 (very true).

**Perceived choice.** Participants completed seven items (Cronbach’s α = .87) assessing their perceived choice in completing the study’s task (e.g., McAuley, Duncan, & Tammen, 1989; Ryan, 1982). For each item, participants rated how true they felt each statement was (e.g., “I did the activity because I wanted to.”) ranging from 1 (not at all true) to 7 (very true).

**Perceived competence.** Participants completed six items (Cronbach’s α = .82) assessing their perceived choice in completing the study’s task (e.g., McAuley, Duncan, & Tammen, 1989; Ryan, 1982). For each item, participants rated how true they felt each statement was (e.g., “I think I am pretty good at the activity.”) ranging from 1 (not at all true) to 7 (very true).

**Pressure.** Participants completed five items (Cronbach’s α = .77) assessing their perceived choice in completing the study’s task (e.g., McAuley, Duncan, & Tammen, 1989; Ryan, 1982). For each item, participants rated how true they felt each statement was (e.g., “I felt very tense while doing the activity.”) ranging from 1 (not at all true) to 7 (very true).

**Need for Cognition.** Participants completed the brief version of the need for cognition (NFC) scale (Cacioppo, Petty, & Kao, 1984), containing 18-items (Cronbach’s α = .87). For each item, participants rated how characteristic each statement was of them (e.g., “I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.”) ranging from 1 (extremely uncharacteristic) to 5 (extremely characteristic).
Procedure

Upon completing informed consent, participants were told the study was examining the role effort plays in completing various academically-oriented tasks. They were instructed that they would be randomly assigned to one of three academic tests, with 10 questions measuring: 1) verbal reasoning, 2) mathematical reasoning, or 3) reading comprehension. They were asked to provide the correct response; however, if they were unable to arrive at the correct answer, they were told they had the option to skip a question and move to the next one. After being informed about the general task, participants then read that they had been randomly assigned to complete a reading comprehension task. At this point participants were actually randomly assigned to read instructions regarding the goal manipulation. Following manipulation, participants read the story and then completed the psychological transportation scale. Then participants completed the 10 reading comprehension questions. The participants completed several items regarding their experience of both reading the story and completing the reading comprehension questions: enjoyment, perceived competence, effort, pressure, flow, vigor, dedication, and absorption. They were then asked to rate their agreement with two manipulation check items (i.e., “I feel like my performance on the task indicates something about my ability level” and “I feel the task will offer me an opportunity to improve my ability level”), on a scale ranging from 1 (strongly disagree) to 7 (strongly agree). Finally, participants completed the NFC scale, and were thanked and debriefed.
Results

Manipulation Check

Previous research suggests that participants are less persistent under performance goals than learning goals, at least when they believe their ability is low (Kamins & Dweck, 1999; Mueller & Dweck, 1998; see also Dweck & Leggett, 1988). Thus, to test whether the participants under the learning goal in the current study demonstrated greater persistence, first I conducted a one-way (learning vs. performance vs. control condition) ANCOVA with NFC as a covariate and the number of questions participants skipped as the dependent measure. While the means suggested that indeed those in the performance condition were more inclined to skip questions ($M = 0.26, SD = 0.56$) compared to participants in either the learning ($M = 0.05, SD = 0.23$) or control ($M = 0.04, SD = 0.21$) conditions, the difference failed to reach statistical significance, $F (2, 57) = 2.18, p = .12, \eta_p^2 = .07$. There also appeared to be a floor effect. Participants could skip up to 10 questions; of the 61 participants, 5 skipped a single question, and 1 participant skipped 2 questions. Of the participants who skipped any questions, 3 who skipped a single question and the 1 who skipped 2 questions were in the performance condition.

As an alternative test of persistence, I also conducted a one-way (learning vs. performance vs. control condition) MANCOVA with NFC as a covariate and the amount of time spent reading the story and completing the questions (measured in seconds) as the dependent measures. Contrary to the expectation, participants in the performance condition actually spent more time reading the story ($M = 415.83, SD = 171.87$) and answering the questions ($M = 119.12, SD = 51.48$) than participants in either the learning ($M = 349.11, SD = 127.36; M = 103.59, SD = 24.51$) or control ($M = 399.57, SD = 88$)
115.10; \( M = 113.67, SD = 23.80 \) condition; though as before, these differences were not statistically significant, \( F (2, 57) = 1.08, p > .20, \eta^2_p = .04 \), and \( F (2, 57) = 0.89, p > .20, \eta^2_p = .03 \), respectively.

Finally, I conducted a one-way (learning vs. performance vs. control condition) MANCOVA with NFC as a covariate and the two manipulation check items as the dependent measures. Goal condition did not appear to make a difference on either item, \( Fs < 1.5, ps > .20, \eta^2_p s < .05 \), nor did the means even support that the learning condition was seen as an opportunity to improve while the performance condition was seen as an opportunity to demonstrate ability. Taken together with the above results, the current study may not have successfully manipulated the learning vs. performance goal, despite success of the manipulation in previous research (Elliott & Dweck, 1988). This is discussed further below.

**Effects of Goal and NFC on Psychological Transportation**

Considering that it might be expected that higher NFC individuals perceive academic tasks differently than lower NFC individuals, I anticipated that any difference due to goal condition may be different based on NFC. Thus, I conducted a multiple linear regression analysis, including goal condition (dummy-coded) and NFC (continuous) to predict mean transportation scores to examine the potential of an interaction effect. In the final model, testing all main effects and interaction effects, we revealed a statistically significant effect of NFC, such that higher NFC predicted greater transportation in the story (\( B = .478, t = 2.31, p < .05 \)). Unfortunately, contrary to my expectations, it did not appear that participants’ transportation in the story was boosted when they were focused on the opportunity to grow, compared to the control condition which had no specific
goal-focus ($B = -.049, t = -0.38, p > .20$). However, participants may have experienced a disruption to transportation when they were focused on the performance-goal, as compared to the control ($B = -.219, t = -1.68, p = .10$). In other words, it appeared that performance goals actually lead people to disengage during a task, rather than learning goals leading them to become more immersed. Somewhat surprisingly, NFC did not interact with the type of goal participants to affect transportation ($ps > .20$).

Effects of Goal and NFC on Performance

To consider the potential effects of engagement on reading comprehension, or recall of the story, I first conducted a multiple linear regression analysis, including goal condition (dummy-coded) and NFC (continuous) to predict total reading comprehension scores. In the final model, testing all main effects and interaction effects, none of the main effects or interactions reached statistical significance ($ps > .10$). However, when I added transportation (continuous) to the model above, transportation alone did predict reading scores ($B = .422, t = 2.93, p < .01$), suggesting that being immersed in the narrative did allow for participants to glean more information from the story.

Perceptions of the Task

Finally, to consider how the participants perceived the role manipulation, I conducted a one-way (learning vs. performance vs. control condition) MANCOVA with NFC as a covariate and enjoyment, perceived choice, perceived effort, perceived competence, and pressure as dependent measures. NFC predicted enjoyment, $F(1, 57) = 6.27, p < .05, \eta^2_p = .10$, perceived choice, $F(1, 57) = 2.84, p = .10, \eta^2_p = .05$, and perceived competence, $F(1, 57) = 5.78, p < .05, \eta^2_p = .09$. The only effect goal condition appeared to have was on perceived effort, $F(2, 57) = 2.38, p = .10, \eta^2_p = .08$; although
this effect was not statistically significant. The means suggested that those in the
performance condition reported exerting less effort ($M = 4.00, \text{SD} = 1.17$) than the
control condition ($M = 4.74, \text{SD} = 0.98$), $p = .08$; the level of effort was not significantly
lower than that for the learning condition ($M = 4.37, \text{SD} = 1.07$), $p > .20$.

*Internal Analyses*

Since the manipulation did not appear to have the expected effect, additional
internal analyses were conducted to consider what might predict transportation. In a
linear regression model I included NFC, extent to which the task might improve ability,
extent to which the task demonstrated ability, enjoyment, perceived choice, perceived
effort, perceived competence, and pressure to predict psychological transportation. In this
model, greater transportation was predicted by higher NFC ($B = .268, t = 2.91, p < .01$),
greater enjoyment of the task ($B = .521, t = 4.44, p < .001$), and perception that the task
could improve ability ($B = .411, t = 3.20, p < .01$). It was the latter relationship that
supported my expectation that seeing a narrative as a chance to grow related to the
experience of transportation.

*Discussion*

The results did not support my hypothesis that transportation would be enhanced
when participants framed a narrative as an opportunity to grow. However, this may in
fact be due to the failure of the manipulation itself. The current results did not support
previous studies which found that a learning goal led to less giving up and more
persistence on a task; although there may not have been an observed difference between
the performance and learning-oriented participants if participants felt they already had
high ability in the former condition (Kamins & Dweck, 1999; Mueller & Dweck, 1998;
see also Dweck & Leggett, 1988). While it appeared that the participants in my performance condition may have been more inclined to give up, even they tended to persist on the reading questions. Further, rather than invest less effort, they appeared to invest greater; though again, this was not a statistically significant effect. Finally, based on participants’ perceptions of the goal manipulation, participants did not differ in how they experienced the task.

While the manipulation may not have worked in the anticipated manner, the results of the study still do provide some evidence that transportation involves focusing the exerted energy, and opportunity to grow, presumably a reward, makes exerting energy desirable and consequently focused on the narrative. As was pointed out with the internal analysis, seeing the task of reading the narrative as an opportunity to improve one’s ability was associated with greater transportation. Also supporting the relationship, greater transportation predicted better performance; suggesting transportation does involve gleaning information from a narrative. Unfortunately, as was the case in Study 5, the direction of the relationship is not clear. Future manipulations should establish prior to the exposure to a narrative that participants perceive the task as providing a desirable experience in order to ensure that indeed this judgment focuses energy exerted, promoting the experience of transportation.

General Discussion

Both Studies 5 and 6 provide preliminary evidence that, as I propose, the experience of transportation is not simply about exerting energy, but about receiving a return on that expenditure. Unfortunately, based on the current results, it is not clear
whether the opportunity of growth promotes transportation or follows from it. Together the studies do provide potential suggestions for future directions. First, readers and viewers may be more sensitive to what they could glean from a narrative. Learning about a new experience may be valuable to them, and worth the energy exertion. On the other hand, they may not be as interested in learning skills or improving ability. In other words, the growth may need to come from the story’s content rather than the process of being exposed to the story.

Second, although the direction of the relationship between transportation and growth may not be established, future studies may find that indeed this is a bidirectional relationship. In other words, people may experience greater transportation in stories that provide a new experience, and thus a chance to grow. As they become transported in the story, they continue to take away more from the narrative experience. Such a relationship is valuable to understand as it may have implications in educational settings. For instance, using narratives to teach lessons may benefit from framing the narrative in a way that students feel they will grow from the experience. If students are able to see the narrative as useful to them, they may become more transported in the story and learn even more than they had initially anticipated learning.
CHAPTER 6
FINAL CONCLUSIONS AND FUTURE DIRECTIONS
FOR PSYCHOLOGICAL TRANSPORTATION

Summary of Major Findings and Limitations

Taken together, the collection of current studies provides a new understanding regarding the process of psychological transportation. Among the many variables investigated throughout the six studies, two themes arose. First, the experience of psychological transportation involves a level of cognitive effort, as supported by the studies discussed in Chapter 2. Study 1b found that people higher in need for cognition (NFC), who are more inclined to exert cognitive energy (Cacioppo & Petty, 1982), generally were more transported. Surprisingly, ego-depletion, or a decreased availability of cognitive resources, did not appear to deter transportation, except for individuals higher in NFC when watching the clip from the romantic comedy (Along Came Polly). The results might suggest that the individuals with higher NFC, under ego-depletion, quickly deduced that the lower thought romantic comedy did not require much cognitive energy. Based on the energization theory proposed by Brehm and colleagues (e.g., Brehm & Self, 1989; Brehm, Wright, Solomon, Silka, & Greenberg, 1983; Wright & Brehm, 1989; Wright, 1996), perceiving a task as less difficult means that people deploy less
effort on the task. Unfortunately, this comes with a cost to psychological transportation. However, it is unclear why those with higher NFC did not make the same judgment, that the lower thought romantic comedy did not require much cognitive energy, and subsequently exert less effort only after experiencing another mentally exhausting task. The relationship does provide a direction for future directions and is discussed further below. On their own then, situational factors and individual differences that impact energy exertion may not explain the entire experience of energy used in the name of transportation. Rather, they may interact to have varying consequences for people’s experience of narratives.

In another attempt to prompt energy exertion, I considered the impact of discordant information in Study 2 (Chapter 3). As suggested by dissonance research (e.g., Festinger, 1957; Zanna & Cooper, 1974), being confronted with two pieces of information that they not seemingly coincide with one another produces a state of negative arousal, which people are motivated to reduce by resolving the conflict. Presumably, the experience of arousal and subsequent attempt to reduce it draws on cognitive resources. Thus, Study 2 examined the impact of exposure to dissonant information about a story on transportation in the story, revealing that inconsistent information may promote greater transportation compared to consistent information. Additionally, in suggesting this effect of uncertainty resolution in transportation, Study 2 also suggested that transportation is not simply about enjoying an experience, since transportation benefited from an increase in energy while enjoyment did not. Specifically, while transportation like enjoyment was enhanced when information about a story was
positively valence, only transportation appeared to receive any boost from inconsistent information.

Chapter 4 turned to considering the limitations to exerting energy while watching a film, making the film watching experience more difficult. Using two methods of manipulation, either putting participants in a critic or audience role (Study 3), or putting participants in a transmitter or receiver role (Study 4), I aimed to create an experience which involved exerting so much energy it actually disrupted the transportation experience. The manipulations of difficulty (i.e., actor vs. critic and receiver vs. transmitter) were not successful. Further, they introduced unexpected confounds, like an increase in self-focus (as discussed in the general discussion of Chapter 4).

More than simply exerting cognitive energy, though, I propose that psychological transportation involves focusing that energy on the narrative. Energy may become focused when exerting it is deemed desirable. As discussed above regarding Chapter 2, NFC may be one condition which makes exerting effort more desirable. In the studies discussed in Chapter 5, I suggested an opportunity for growth as a means for making effort a desirable experience. Study 5 found that as people perceived opportunity for self-expansion (i.e., inclusion of other in self) and experienced self-expansion, transportation increased. Likewise, in Study 6 the perception that the reading task provided an opportunity to improve one’s ability directly related to transportation.

Further, the current studies generally found a positive relationship between NFC and transportation albeit occasionally a small effect. However, NFC clearly did not guarantee higher transportation, as has been shown in previous studies that produced varying relationships between NFC and transportation (Appel & Richter, 2007; Green &
Brock, 2000; Green et al., 2008). In the Pilot Study in Chapter 2, there was no relationship; the lack of relationship is most likely not attributable to NFC being measured in a prescreening session prior to the study, because the studies in Chapter 4 do not suggest that NFC are differentially related to transportation based on when NFC is measured. Instead a possible moderator may be the purpose of watching or reading the narrative. For example, following a mentally exhausting task, participants in Study 1b (Chapter 2) increased transportation in the thought-provoking clip, while decreasing transportation in the less thought-provoking clip. Within the participants who had not just completed a mentally exhausting task, though the trend suggested higher NFC might boost transportation, the two concepts were not statistically related. For Study 3 and 4 (Chapter 4), having a task may have allowed those higher in NFC to experience slightly boosted transportation.

Expanding our Understanding of Psychological Transportation

*What Psychological Transportation Is*

Beyond immersion in a narrative, as Green and Brock (2000) originally defined psychological transportation, the current results provide a deeper look into what the phenomenological experience of transportation entails. Based on their writings of transportation and the operationalization of the variable in the scale, it appeared evident that transportation involved an increased usage of mental resources. The current results, primarily from Study 1b and Study 2, provide initial support for the supposition that the experience of transportation in a narrative draws on people’s cognitive energy.
More than using cognitive energy, though, in aid of experiencing a narrative, transportation involves a focus of that exerted energy. The current studies, for instance, considered the opportunity to self-expand or learn. This is inline with theoretical discussions of the use of narratives in society. As Slater (2002) points out, using stories to guide social behavior has been done across time and cultures. A relatively new industry of entertainment education aims to use narratives in entertainment media to promote positive social and public health messages (e.g., responsible family planning). In entertainment education it may be worthwhile to subtly embed a story’s moral in a desired experience, allowing the audience to walk away with an experience it wants and aligning the behavior of audience members with more prosocial goals.

What Psychological Transportation Is Not

By providing a clearer sense of the phenomenological experience of transportation in narratives, the current work does provide insight into how transportation may be distinct from other similar concepts. First, Green, Brock, and Kaufman (2004) admit that transportation and enjoyment are highly related, however not the same. Recognizing that transportation involves an experience of increased cognitive energy exertion may highlight what is indeed different between transportation and enjoyment. Namely, this energy exertion is not necessary for enjoyment. In other words, an experience may be enjoyable whether or not any cognitive energy is employed, but the lack of cognitive energy inhibits the transporting experience. Indeed as suggested by Study 2 (Chapter 3), when energy was ostensibly exerted, in the disconfirmed evaluation conditions, participants appeared more transported, but did not necessarily enjoy the story more.
Higgins (2006) proposes a similar distinction between what he calls engagement, similar to the concept of transportation albeit more general, and hedonic experience, similar to enjoyment. In the model that Higgins sets forth, both uniquely contribute to value of an activity. The current studies on the phenomenological experience of psychological transportation may provide a potential explanation of why transportation, or more generally engagement, can contribute to enjoyment and value. As research on effort justification (Aronson & Mills, 1959), a domain of cognitive dissonance research, suggests, exerting energy to achieve a specific outcome increases the value of that outcome. Specifically, in their effort-justification paradigm, Aronson and Mills (1959) had people complete either a severe or mild initiation; presumably the former required more effort, though also more risk. To justify going through the severe initiation, participants rated the group more positively. For narratives, exerting effort while reading or watching them, thus becoming psychologically transported in the story world, may translate to enjoyment of the experience, as people justify the energy exerted for the sake of the narrative. Specifically, when people feel they spent cognitive resources during the narrative experience, they may be more inclined to justify the energy expenditure by saying that it was an enjoyable experience.

Future Directions

The current studies do provide a deeper look into the experience of psychological transportation. Based on the results, it appears that transportation may entail exerting energy and focusing that energy on the narrative, potentially by making the process of exerting energy desirable. Although future studies should aim to replicate and provide
further support of these elements of transportation, my model and results do have some interesting implications that may be explored in future studies.

One such direction for future studies may examine the use of narratives in educational settings. Educators at least assume that students can learn from stories, even when fictional (e.g., Dubcek, Bruce, Schmuckler, Moshier, & Boss, 1990; Storey, 1982) and empirical work supports this assumption (e.g., Marsh, Meade, & Roediger, 2003; Prentice, Gerrig, & Bailis, 1997; Strange & Leung, 1999; Wheeler, Green, & Brock, 1999). Based on the findings related to participants reading comprehension performance in Study 6 and reasoning from Green and colleagues (e.g., Green, 2004; Green & Brock, 2002), students may glean more information from a narrative when transported in the story. Consequently, encouraging their transportation in the story may benefit students. As discussed in Chapter 5 (Studies 5 and 6), opportunity for growth may be a situational case in which exerting energy is desirable, and thus energy exerted is focused on the narrative, promoting psychological transportation. Further, as discussed in Chapter 4 (Studies 3 and 4), providing a task while watching a film may not necessarily interrupt transportation by making the film watching experience too effortful. For instance, as pointed out in Chapter 4, previous studies have found that participants in the transmitter role created more complex cognitive representations of information (Zajonc, 1960; see also Guerin & Innes, 1989). Such complex schemas are likewise often held by experts with greater knowledge and interest in their given field (e.g., Fletcher et al., 1986). In other words, students may develop more expert-like schemas of material portrayed in a film when they approach that film as a transmitter. Thus for teachers employing films to demonstrate points in their classroom, it may be valuable to task the students with being
transmitters of information from the film, rather than passively watching it. This approach is akin to active learning, which aims to get students participating more in the learning process (Pratton & Hales, 1986); techniques may be as simple as having students express their reactions to course material by raising their hands or including demonstrations of material. In a sense, active learning brings material that may be fairly abstract down to a level that feels more tangible for students. Thus, the use of narratives in the pursuit of active learning may be helpful, as narratives can offer a feeling of direct experience when readers or viewers are transported (Green & Brock, 2000).

Another direction for the current studies suggests broadening the experience and considering whether immersion in a narrative can inform us about the experience of immersion in other activities. As Green and colleagues (e.g., Green & Brock, 2002; Green, 2004; Green et al., 2008) discuss, transportation and flow share a common phenomenological experience, albeit flow describing a more general experience of immersion in various activities beyond narratives. Thus in a broader sense, becoming immersed in activities may involve investment of cognitive resources in a context where exerting effort is desirable, such as when there may be potential to experience growth. To consider this in an applied setting, people may already have to exert some level of cognitive effort in their jobs; however, they would not describe their jobs as immersive, or engaging. While in the flow state, Csikszentmihalyi (1990) explains that people feel a distortion in the passage of time, such as it is moving faster than it actually is. Unfortunately for most people, they are probably well aware of time flow and perhaps feel that it moves too slow. Based on my current studies, to encourage the experience of psychological immersion may involve taking an already effortful experience and framing
that effort exertion as desirable. I have provided two contexts in which effort may be pleasurable, and only one which is situationally flexible. Considering the potential value of the experience, understanding how to produce it may be a valuable avenue for future studies.

Conclusions

Taken together, the results from the current studies suggest that the phenomenological experience of psychological transportation involves not only investing cognitive energy during exposure to narratives but also desirability of that exertion of energy. Exploring what it feels like for readers and viewers to be immersed in a narrative world can shape how narratives are used in daily life, such as in educational contexts discussed above. More than understanding the narrative experience, though, additional research aimed at examining how energy exertion can be engaging may have implications for improving people’s experience of exerting effort.
References


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Appendix A: Film Descriptions

**Study 1b**

The following clip is taken from "Equilibrium". The film presents a society that has tried to remove aggression by removing emotion altogether. To do so, they have banned art and books; they are not allowed to feel emotional attachments to others; and they even take daily inoculations to remove the psychological experience of emotions. In this thought-provoking clip Jon, the main character, begins to question the value of emotion, good and bad. He struggles with the loss of his wife and his partner, both who were labeled "sense offenders", and wonders what the point of his existence is in a world with no emotion.

The following clip is taken from "Along Came Polly". The film presents the classic opposites attract dilemma. Reuben, the main character, recently married and shortly after divorced, bumps into a girl he knew in high school: Polly. But there is a problem. He's an uptight risk assessment manager who longs for long-term commitment, while Polly is a free-spirit who has never been able to settle in one place for long. In this predictable but hilarious clip, Reuben discusses his new romantic interest with a somewhat supportive friend and finally works up the courage to set a date with Polly.

**Study 3 and 4**

The following clip is taken from "Equilibrium". The film presents a society that has tried to remove aggression by removing emotion altogether. To do so, they have banned art and books; they are not allowed to feel emotional attachments to others; and they even take daily inoculations to remove the psychological experience of emotions.

The following clip is taken from "Along Came Polly". The film presents the classic opposites attract dilemma. Reuben, the main character, recently married and shortly after divorced, bumps into a girl he knew in high school: Polly. But there is a problem. He's an uptight risk assessment manager who longs for long-term commitment, while Polly is a free-spirit who has never been able to settle in one place for long.