

Need for Social Cognition: Devising and Testing a Measurement Scale

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Abstract

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Need for Social Cognition: Devising and Testing a Measurement Scale
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This paper describes a theorized individual difference in a need for social cognition (NFSC). We defined need for social cognition as a motivation to understand the thoughts and perspectives of others. Studies 1-3 were performed to devise a reliable scale for measuring this construct as well as establish acceptable convergent and divergent validity with several related scales. Finally, we performed the Two-Stories experiment, which explored one aspect of NFSC's role in narrative transportation and attitude change by testing whether high levels of NFSC increase transportation and persuasion in stories that require more reader involvement. The hypotheses of the Two-Stories experiment failed. We discuss possible reasons for this result and explore potentially important conclusions from the experiment.

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Need for Social Cognition: Devising and Testing a Measurement Scale

In typical, healthy development, children reach a point where they are able to make an astounding cognitive leap: other human beings are transformed from impenetrable objects to independent agents with their own unique viewpoints, thoughts, and emotions. From that point, children acquire the nuance and insight required to interact maturely with others, to truly understand that the motivations and perspectives of other people must be acknowledged and navigated.

However, for some people, there is undeniably more to the story than the purely practical benefit of efficient communication. Some individuals seem to easily become intrigued and fascinated by the mystery of others' thoughts and feelings and get real pleasure when puzzling out other people's perspectives. On the other hand, some individuals seem to not have much innate interest in such things and are not easily motivated to theorize deeply about the mental states of the people around them. The Need for Social Cognition scale was designed to measure the theorized trait that may explain this difference. Beyond simply explaining this aspect of human behavior, NFSC may also have applications in the area of narrative transportation and attitude change.

Narratives and Social Tendencies

The stereotyped mental image of the heavy reader is easy to call to mind: slumped shoulders, coke-bottle glasses, a downcast, shy expression guarding awkward, inexpressible thoughts. While not entirely negative, this image does not describe an individual with tact, panache, or social flair; the bookworm is self-conscious, socially anxious, and all-in-all would

prefer to be with imaginary people than real ones. Perhaps the archetype of the heavy reader comes from the Twilight Zone episode “Time Enough at Last,” where the unwashed, nerdy reader is happy about the death of the rest of humanity, because now he can read as much as he wishes (until, unfortunately, he breaks his very thick glasses).

However, there is evidence that this stereotype might not be entirely accurate. Heavy fiction readers have been found to not be entirely reserved and awkward, and in fact may even have *better* social skills than non-readers, particularly when it comes to recognizing subtle interpersonal signals (Mar et al., 2006). With this in mind, it is plausible that the pleasure found in reading a narrative may have its roots in humans’ evolved social capacities, and perhaps certain social tendencies might cause an individual to enjoy fiction and to become deeply immersed while reading. For this reason, an important related concept is narrative transportation, which quantifies this tendency towards immersion.

Narrative Transportation

Narrative transportation describes the extent to which an individual becomes drawn into the world of a story, the amount he “loses himself” in a narrative and leaves the real world behind (Green & Brock, 2000). The concept is positively related to enjoyment of reading and has important implications for attitude change: people heavily involved in a story are more likely to adopt beliefs reflected in that story. However, there is not a complete understanding of what personality traits might cause an individual to be more or less likely to be transported.

Some traits have been found to significantly correlate with transportation. For example, Green and Brock (2000) found that a general tendency to be absorbed into experiences predicted transportation: specifically people who more easily lost themselves in experiences were also

more prone to transportation. Similarly, there was a moderate positive correlation between empathy and transportation.

Clearly, narrative transportation is a process that requires mental effort. However, need for cognition has not had a robust correlation with transportation (although low positive correlations have emerged in some studies), so there is plausibly something specific about the type of cognition relevant to stories that is especially engaging to some people. This missing piece of the puzzle may be theory of mind.

Theory of Mind

Theory of mind is a concept in cognitive and developmental psychology which describes the ability to ascribe mental states to others and to oneself (Premack & Woodruff, 1978). This requires both the understanding that everyone has unique perspectives and knowledge and the ability to efficiently infer inner states from observable phenomena. Throughout a lifetime, theory of mind is engaged often enough to quickly become automatic and instant, which results in very efficient and accurate assessments. A woman who glowers, sneers, and speaks curtly is perceived by an outside spectator as *angry*, despite the fact that her subjective feeling of anger is, practically by definition, unobservable. Because such assessments are made unconsciously, they allow for very proficient socializing; taking the time to explicitly sort through what each aspect of the woman's behavior might mean would result in extremely choppy, awkward interaction, while simply taking each behavior at face value without drawing any deeper conclusions would hinder an appropriate reaction.

However, despite the efficiency of the typical adult's theory of mind abilities, there is never a direct link between the mind and observed behavior. Theory of mind often results in correct assessments of others' mental states, but despite its commonly used synonym, *mind*

reading, no one can ever be certain of another person's thoughts or feelings. Furthermore, people are often motivated to disguise or hide their mental states. No matter how highly skilled an individual may be at theory of mind, it can be challenging to understand another in an ambiguous situation. Therefore, mind reading can be exciting and almost dangerous, and individuals both need and want to practice to maintain their skills. Like exercising muscles, practicing or playing with theory of mind may be a rewarding pursuit (Zunshine, 2006). This enjoyment may be key to the link between narratives and our social instinct.

Theory of mind and narratives

Reading a story involves many cognitive skills: the ability to comprehend the vocabulary involved, a working knowledge of grammar, and an understanding of what a story is, to name just a few. As Zunshine (2006) points out, theory of mind is also necessary to comprehend written narrative, and may even be the reason people find it enjoyable to become lost in a story. In a narrative, information comes from a variety of sources which readers must navigate and monitor in order to make sense of the story. Fiction allows people to use their mind reading abilities in a much wider variety of circumstances than would otherwise be available, and so keeping track of *who thinks what* can be a challenging and fulfilling theory of mind exercise.

Furthermore, unlike most real life situations, narratives contain embodied transparency, situations where there is a certain, undeniable link between an individual's mental state and his behavior (Zunshine, 2008). These moments can be extremely refreshing for a reader of fiction, since they reward skillful mind reading with what is usually missing in day-to-day interactions: certainty. The enjoyment of such a phenomenon could plausibly help drive an individual's desire to become swept away in a story: seeking this enjoyment may encourage people to read

more often, and higher levels of transportation might increase the affective reward that comes from a moment of embodied transparency.

A need for social cognition

Though theory of mind could be an underpinning of narrative transportation, there still remains the question of how to explain individual differences in transportation tendencies. Many researchers discuss theory of mind in black and white terms, implying that all healthy adults possess similar capacities and interest in mind reading (e.g. Zunshine, 2006). However, it is possible that individuals could differ in their curiosity, interest, and motivation when engaging in theory of mind exercises and that this difference could be reliably measured. For this purpose, I developed the Need For Social Cognition scale.

Need for Social Cognition (NFSC) is a theorized personality trait that indicates the extent to which an individual enjoys and is willing to exert effort towards understanding the mental states of others. In other words, need for social cognition is an individual difference that affects how much people seek out theory of mind activities. Clearly, this concept could be relevant to social interaction: individuals high in NFSC could be more sophisticated and skillful when observing or communicating with other people (although this is not necessarily true; individuals' heightened desire to understand the thoughts of others may not imply an increased ability to do so). However, as stated above, NFSC may also be a key influence on narrative transportation, and, by extension, narrative-based attitude change. NFSC may help to refine our understanding of how, why, and under what circumstances people may come away from stories with new or refined beliefs, and potentially could help researchers devise ways to protect people from dangerous attitudes in stories by shedding light on what types of stories are especially persuasive to specific audiences.

Though NFSC is likely related to established psychological concepts, it defines a unique idea. Need for cognition is similar to NFSC in that it measures how much people are willing to engage in mental effort, but NFSC focuses on a particular type of mental effort: theorizing about other people's mental states specifically. This distinction may be especially relevant when it comes to fiction, since being swept into non-fiction may involve mental energy in general, while narratives specifically involve the perspectives of others. Likewise, NFSC may seem similar to the concept of empathy, but again, it specifically focuses on the enjoyment of puzzling out the mental states of other people rather than sharing their feelings. NFSC may also be related to the concept of psychological mindedness (Conte et al., 1996), the tendency to delve into the complex psychological determinants of people's behavior. This scale was developed to measure a disposition that was perceived to be especially useful for practitioners of dynamically oriented psychotherapy. However, psychological mindedness measures factors that, while specifically useful to therapists in a clinical setting (such as access to one's own feelings), are not directly relevant to NFSC's focus on Theory of Mind. Because of its distinctive focus on social perspectives, NFSC is theorized to be especially relevant to narrative transportation and adds a new concept to the area of social interaction.

Study 1

The purpose of this study was to develop and provide initial validation for the need for social cognition scale. We devised a large number of items for the NFSC scale with the intention of refining and reducing the scale through the testing process, using both measures of reliability and factor analysis.

We tested convergent validity between NFSC and theoretically related concepts, such as empathy and need for cognition.

Participants

Participants (N = 97; 23 males and 74 females) were undergraduates who participated online in exchange for course credit.

Materials

Need for Social Cognition scale. The initial Need for Social Cognition questionnaire consisted of 23 statements. Participants were directed to rate each statement on a scale of 1 (strongly disagree) to 7 (strongly agree). Statements were meant to measure the extent to which the participants exhibit curiosity and complexity regarding other individuals' social perspectives. Example statements are, "If the way I define something works for me, I don't need to know what other people think about it," "When I see two strangers arguing, I often find myself wondering what their conflict is," and "When I meet new people, I often wonder how they got to where they are in life." This version of the scale can be found in Appendix A.

In order to assess the construct validity of the NFSC scale, the online survey also contained several potentially related measures, described below.

Dispositional transportation scale (transportability; Green & Brock, 2000). This 12-item scale is measured on a 1 (not at all) to 7 (very much) scale and is used to measure individuals' general, typical levels of immersion when reading narratives. A typical item is "I am mentally involved in stories while reading them." Participants were asked to rate their *tendencies* when reading: the scale was used to measure general transportability rather than transportation into a specific story. Since enjoyment of narrative is theorized to extend out of playfulness and curiosity regarding other people's perspectives, NFSC was predicted to correlate positively with levels of transportedness.

Need for cognition scale (Cacioppo, Petty, & Kao, 1984). This 18-item scale is measured on a 1 (extremely unlike me) to 5 (extremely like me) scale and measures the extent to which individuals seek out mental effort. A typical item is "I like to have the responsibility of handling a situation that requires a lot of thinking." Since social cognition is a form of cognition, it was predicted that NFSC would correlate positively with NFC while remaining distinct enough to confidently consider them to be separate traits.

Interpersonal Reactivity Index (Davis, 1980). This 28-item test is measured on a 1 (does not describe me well) to 5 (describes me very well) scale and is a commonly used test for empathy. A typical item is "When I see someone being taken advantage of, I feel kind of protective toward them." Since both empathy and NFSC involve acknowledging the perspectives of others, it was predicted that the IRI would correlate positively with NFSC. The IRI is divided into four subscales: personal distress, perspective-taking, empathetic concern, and fantasy. We had no specific predictions about NFSC's correlation with any of the subscales, although because of NFSC's relatively more cognitive focus, it is plausible that it could be more strongly correlated with perspective-taking and fantasy than empathetic concern and personal distress.

The Big Five Inventory (John & Srivastava, 1999). This test measures the big five personality traits of openness, agreeableness, neuroticism, conscientiousness, and extroversion on a 1 (strongly disagree) to 7 (strongly agree) scale. It was predicted that NFSC would correlate positively with extroversion and openness while not correlating with neuroticism, agreeableness, and conscientiousness.

Social Curiosity Scale (Renner, 2006). This 10-item test uses a 1 (not at all true) to 7 (very true) scale and is used to measure both covert and general social curiosity. An example

item is "Every so often I like to stand in the window and watch what my neighbours are doing." Though social curiosity does not focus on theory of mind, it is similar to NFSC in that it measures individuals' level of interest towards others. Therefore, it was predicted that the SCS would correlate positively with NFSC.

Reading preferences and tendencies. Participants were asked how much they enjoy reading both fiction and nonfiction on a 1 (never) to 5 (very often) scale. They were also asked how much they enjoy reading fiction and nonfiction on a 1 (not at all) to 5 (very much) scale. It was predicted that the items related to reading fiction would correlate positively with NFSC and the items related to reading nonfiction would not correlate with NFSC.

Procedure

The entire survey was administered on-line on the Survey Monkey website. Participants were allowed to be at any location where they could connect to the survey web page.

Results

Reliability. The 23 items of the Need for Social Cognition scale had a Cronbach's alpha of 0.70. Reliability analysis revealed potential problems with item 5, "If I can get along with someone, I don't need to understand them on a deep personal level." If it were removed from the scale, the alpha would rise to .75. There were also concerns with item 10, "I like it when people just say what they mean." Were it removed from the scale, the alpha would rise to .73. Despite this, these items were retained in the subsequent analysis for the sake of completeness.¹

Convergent and divergent validity. As predicted, Need for Social Cognition showed significant correlations with Need for Cognition ($r = .51, p < .001$), empathy ($r = .50, p < .001$), and Social Curiosity ($r = .25, p = .01$). Table 1 provides correlations between these variables. Within the Interpersonal Reactivity Index, NFSC was significantly correlated with the subscales

Fantasy ($r = .31, p < .001$), Perspective-taking ($r = .57, p < .001$), and Empathetic Concern ($r = .47, p < .001$); however, NFSC was not significantly correlated with the subscale Personal Distress ($r = -.16, p = .11$). Regarding the Big Five Personality Traits, NFSC was significantly correlated with agreeableness ($r = .34, p < .001$) and openness ($r = .34, p < .001$). Table 2 provides the correlations for these variables.

Correlations were not significant between NFSC and the questions "How much do you like fiction?" ($r = .16, p = .11$), "How often do you read nonfiction?" ($r = .40, p = .70$), and "How much do you like nonfiction?" ($r = -.04, p = .70$). However, it was significant with the question "How often do you read fiction?" ($r = .30, p = .003$) and Green and Brock's Transportation scale ($r = .32, p < .001$). Individuals higher in NFSC reported reading fiction more frequently. See Table 3 for a summary of these correlations.

There were no gender differences in NFSC scores, $t(96) = .80, p = .43$ (M men = 4.74, SD = .61; M women = 4.90, SD = .57).

Discussion

The results of Study 1 were generally encouraging for the development of the Need for Social Cognition scale. The items of the scale showed acceptably high reliability, and correlations with related scales implied satisfactory convergent and divergent validity.

However, there were not enough participants to comfortably perform a factor analysis. Furthermore, there was some concern that the items were somewhat abstract and did not capture everyday social experience.

Study 2

After the data in Study 1 were collected, the researchers decided to lengthen the NFSC scale to 29 items, though the intention was still to ultimately reduce the length of the scale

through testing and analysis. These new items were similar to the old ones but focused slightly more on practical and "real world" situations. An example is "In a social group, I like to keep track of what each person thinks about the other people in the group." For replication, and to test the new items, we ran a second study using the same procedures and very similar materials.

Participants

Participants (n = 96; 32 males and 64 females) were undergraduates who completed the survey in exchange for course credit.

Materials

One test (described below) was added to the materials used in the first survey.

Personal approach test (Carpenter, 1977). This test is meant to measure the willingness of participants to consider the perspectives of others when describing them, and thus is theoretically related to the concept of NFSC. Participants were asked to list ten statements about someone they know well, and each was rated according to its level of acknowledgement for the other person's personal viewpoint. Rating is made on a four point scale, where a rating of 0 indicates no reference to internal states and a rating of 3 indicates deep acknowledgment and exploration of mental states. Because this was intended as a preliminary exploration, only one rater was used, but we intend to use multiple student raters in future studies. Each participants' ratings were summed, resulting in a single score for each individual. It was predicted that these scores would correlate positively with NFSC.

Procedure

Like Study 1, participants took the survey on-line. They could take it wherever they could connect to the Internet. The Personal Approach test and Social Curiosity Scale were added, as were the six additional questions for the NFSC scale. This version of the scale can be

found in Appendix B. In the interest of time, the Interpersonal Reactivity Index was removed. Otherwise, the two surveys were identical.

Results

Reliability. The 29 items of the Need for Social Cognition scale had a Cronbach's alpha of 0.70. Reliability analysis revealed concerns with item 28: "Sometimes I catch myself thinking of objects (such as my car and my computer) as having their own perspectives, even though I know they aren't alive." The alpha would have risen to 0.73 were that item deleted, and it was theoretically problematic as well. Slightly less damaging were item 10, "I like it when people just say what they mean," and item 17, "I am generally good at predicting how other people will react to me," (their removal both would raise the alpha to .72), as well as item 16, "Trying to puzzle out other people's thoughts and feelings is exhausting," (its removal raises the alpha to .71). Despite this, these items were retained in the analysis below for the sake of completeness.²

Convergent and divergent validity. The Need for Social Cognition scale had significant correlations with Personal Approach ($r = .49, p < .001$), Need for Cognition ($r = .44, p < .001$), and Renner's Social Curiosity scale ($r = .39, p < .001$). See Table 4 for these correlations. Regarding the Big Five Personality Traits, correlations were significant between NFSC and openness ($r = .42, p < .001$), agreeableness ($r = .38, p < .001$), and extroversion ($r = .21, p = .041$). Correlations were not significant between NFSC and neuroticism ($r = -.06, p = .60$) or conscientiousness ($r = .20, p = .06$). Table 5 provides these correlations.

Correlations were significant with Green and Brock's Transportation scale ($r = .28, p = .006$), and the question "How much do you like to read fiction?" ($r = .27, p = .011$). The correlation with the question "How often do you read fiction?" ($r = .20, p = .06$) was insignificant but marginal. Correlations were not significant between NFSC and the question

“How much do you like to read nonfiction?” ($r = .02, p = .82$), and “How often do you read nonfiction?” ($r = -.01, p = .96$). See Table 6 for a summary of these correlations.

Interestingly, in this sample, NFSC *did* significantly vary due to gender, $t(188) = 3.71, p < .001$; M men = 4.79, $SD = .63$; M women = 5.25, $SD = .68$. Women had higher NFSC than men.

Discussion

Overall, Study 2 replicated the results of Study 1. The exceptions were the question “Do you like to read fiction?”, the big five measure of extroversion, and gender, all of which were significantly correlated with NFSC in Study 2, but not in Study 1. The question “How often do you read fiction?” was significantly correlated in Study 1, but only marginally so in Study 2.

One unpredicted result is that NFSC was found to be positively correlated with agreeableness in both surveys, while it was not consistently found to be positively correlated with extroversion. It is possible that the correlation with agreeableness is a result of the wording of some of the negative items (discussed below in the introduction to Study 3).

Study 3

After the encouraging results of Studies 1 and 2, we carried out a factor analysis on the 29-item NFSC scale which was used in Study 2. Initial analysis revealed the items loading onto upwards of eight separate factors, many of which contained only a single item. We eliminated items that did not load strongly onto one factor and items that loaded onto multiple factors, which resulted in our cutting thirteen items from the scale. The subsequent analysis revealed that the positively and negatively worded items were consistently loading onto separate factors. The

results of this two-factor analysis of the 19-item scale (provided in Appendix B) can be found in Table 10.

This result was somewhat puzzling. One plausible explanation is that the positive and negative items are genuinely measuring distinct constructs. A tendency to avoid engaging in theory of mind could be different from a deficit of interest regarding others' mental states. It is possible that there is a difference between people who simply lack curiosity about others and people who actively reject the perspectives of others. Using theory of mind towards someone might be both effortful and potentially threatening, and perhaps some people are less willing to use those abilities when there is not a clear, social reward in doing so.

Another plausible explanation for the two-factor loading is that the wording of the negatively worded items may have been unnecessarily harsh: rather than a simple lack of curiosity, it was suggesting a severe denial of curiosity or interest in others. Several items were rewritten to address this issue and several items were trimmed for failing to load cleanly onto any factors, resulting in a provisional scale of 9 items. Some of the old, harshly worded, negative items that loaded onto the "negative" factor were added to the end of the provisional scale, out of concern that perhaps the 9-item scale contained an undesirable ratio of positively scored to negatively scored items. The resulting 15-item version of the NFSC scale can be found in Appendix C.

To test the new scale, we ran a third study similar in method to Studies 1 and 2.

Participants

Participants ($n = 195$; 149 females, 52 males, 4 declined to indicate sex) were undergraduates who completed the survey in exchange for course credit.

Materials

Three new scales were added to the survey in Study 3, listed below.

Need for Closure scale (Webster & Kruglanski, 1994). This test consists of 46 items using a 1 (strongly disagree) to 6 (strongly agree) scale and is meant to measure Need for Closure, which describes an individual's level of intolerance for ambiguity and disorder. An example item is "I enjoy having a clear and structured mode of life." Because social curiosity involved an openness to the perspectives and values of others, it was hypothesized that NFSC would be negatively correlated with need for closure.

Attributional Complexity scale (Fletcher et al., 1986). This scale consists of 28 items measured on a 1 (strongly disagree) to 6 (strongly agree) scale. It measures how much nuance and sophistication an individual will use when forming attributional schemata to explain behavior observed in others. An example item is "I tend to take people's behavior at face value and not worry about the inner causes for their behavior (e.g. attitudes, beliefs, etc.)." Because it is plausible that social curiosity could be related to attributional complexity, it was hypothesized that NFSC would be positively correlated with attributional complexity. The attributional complexity scale has seven subscales: level of interest, preference for complex rather than simple attributions, presence of metacognition concerning explanations, awareness of the influence of others on a person's behavior, the tendency to infer abstract or causally complex attributions, and the tendency to infer external causes operating from the past. We had no specific predictions regarding NFSC's correlation with any of the subscales.

Self-Monitoring scale (Snyder, 1974). This test consists of 18 true/false items and is meant to measure Self-Monitoring, which describes the level to which an individual will regulate his own behavior to match the situation he is in. High self-monitors are people who will change

their behavior drastically because of the situations they are in, while low self-monitors are people whose behavior is relatively constant across situations. An example item is "I'm not always the person I appear to be." Because mind-reading is potentially necessary for this process, it was hypothesized that NFSC would be positively correlated with self-monitoring.

Procedure

Like Studies 1 and 2, participants took the survey on-line. They could take it wherever they could connect to the Internet. In addition to the new NFSC scale, the need for closure scale, the self-monitoring scale, and the attributional scale were added. In the interest of time, the personal approach test was removed. Otherwise, the survey was identical to surveys 1 and 2.

Results

Reliability. The sixteen items of the Need for Social Cognition scale show a Cronbach's alpha of .83. Reliability analysis revealed concerns with item 1, "I like talking to my friends with people they know, even when I don't know them myself." After removal of this item, the alpha increased to .84. Also, in factor analysis, this item was strongly loading onto its own factor. The results of this analysis are in Table 11. Additionally, there was some concern that item 1 was possibly theoretically problematic as well, perhaps measuring an interest in gossip rather than in mental states. For these reasons, item 1 was dropped in subsequent analyses.

Factor analysis. Exploratory factor analysis among the fifteen items implies three distinct subscales, although the loadings are not ideally clean and further analysis is needed. Tentatively, these three factors seem to relate to three separate theoretical ideas. The first, which implies curiosity and seeking-out of people's perspectives, is made up of items such as "When I see two strangers arguing, I catch myself speculating on what their argument is." The second, which describes engagement with perspectives with which a person is directly involved, is made

up of items such as "I rarely find myself wondering what other people are thinking" (this item would be reverse-scored). The third subscale is related to people's tolerance and openness towards the perspectives of others and is measured by items such as "It is pointless to try to see things from other people's points of view" (this item would be reverse-scored).

For exploratory purposes, we performed correlations with the NFSC factors and the related scales. We have included these results in Tables 12-13.

Convergent and divergent validity. NFSC had significant positive correlations with need for cognition ($r = .38, p < .001$), the IRI ($r = .56, p < .001$), and attributional complexity ($r = .57, p < .001$). As expected, NFSC was negatively correlated with need for closure ($r = -.19, p = .01$). Unexpectedly, NFSC was not correlated with self-monitoring ($r = .06, p = .44$). Table 7 provides correlations between these variables.

In terms of the big five, NFSC was once again positively correlated with agreeableness ($r = .34, p < .001$) and openness ($r = .45, p < .001$) and was not correlated with conscientiousness ($r = .11, p = .13$), neuroticism ($r = .08, p = .25$), or extroversion ($r = .06, p = .44$). Table 7 provides these correlations.

Also as predicted, NFSC was also positively correlated with transportation ($r = .42, p < .001$), the question "How often do you read fiction?" ($r = .24, p = .001$) and "How much do you like fiction?" ($r = .28, p < .001$), but was not correlated with "How often do you read nonfiction?" ($r = -.01, p = .95$) or "How much do you like nonfiction?" ($r = -.01, p = .87$). Table 9 provides correlations between these variables.

NFSC did vary significantly according to sex, with women showing higher levels than men, $t(188) = 4.0, p < .001$ (M men = 4.82, SD = .69; M women = 5.30, SD = .65).

Discussion

Study 3 completed the process of reducing scale items with the elimination of item 1. Though the original intent was to test a 9-item scale, we decided to continue use of the 15-item scale, since the reliability was so good. We intend to use the 15-item scale in future studies.

Regarding validity, Study 3 replicated many of the results of Studies 1 and 2. NFSC was once again found to be positively correlated with transportation and the theoretically related scales. Also as predicted, NFSC showed a negative correlation with need for closure. Furthermore, Study 3 showed clean patterns of significance for a trend that had been implied by the earlier studies, that NFSC is correlated with people's habits and attitudes regarding fiction, but not nonfiction.

Contrary to original expectations but consistent with Studies 1 and 2, NFSC was again not found to be correlated with extroversion, but rather with agreeableness. The implication that a desire for others' mental states does not require gregariousness may be evidence against the "bookworm stereotype." Also contrary to expectations, NFSC was not correlated with self-monitoring, perhaps because there is not a direct link between understanding others' mental states and the desire to change one's behavior to match those states.

Discussion of Studies 1-3

Studies 1-3 were intended to validate and hone the Need for Social Cognition scale. Over the course of the three studies, the NFSC scale was reduced from a maximum of 29 items to 15. The final scale shows good internal reliability and acceptable divergent and convergent validity with theoretically related scales and it may show three distinct subscales. Also, NFSC was consistently correlated with narrative transportation and often with people's attitudes and habits towards fiction.

Thus, we feel confident that the NFSC scale does measure a desire for the perspectives of others and that this trait is relevant to people's reading habits. However, we have not yet looked at perhaps the most important piece of the puzzle, which is the ways in which this personality trait interacts with a narrative to result in a reader's adoption of story-relevant attitudes. For this purpose, we devised the Two-Stories experiment

Two-Stories Study

While Studies 1-3 offered encouraging evidence that there is a connection between an individual's need for social cognition and her tendency to become absorbed into stories, there is still the open question of whether aspects of a narrative itself could serve as moderators in this relationship. Zunshine (2006) assumes that hunger for theory of mind is the sole factor leading to the enjoyment of narratives, but it is plausible that relationship may be more complex: perhaps different types of stories are transporting for people at different levels of NFSC.

One specific thing that may make a difference is the amount of ambiguity in a given narrative. Since NFSC involves an active seeking out of opportunities to engage in mind reading, and since a story that is ambiguous requires the reader to delve into other perspectives to connect the missing pieces, it is possible that the more subtle a story is (while still remaining comprehensible), the more engaging it will be for individuals high in Need for Social Cognition.

The proposed experiment will therefore experimentally manipulate the subtlety of a narrative as well as testing participants' NFSC. It is hypothesized that these two variables will interact to predict participants' levels of transportation and subsequent adoption of story-related attitudes. This experiment also contains the additional benefit of testing transportation into a specific narrative, rather than general tendency to become transported.

Materials

The experiment used a story which appeared in one of two forms: a subtle version and a blatant version. The story was about a young woman who returns to her home town after learning her mother is sick with skin cancer. While there, she reconciles with her brother, with whom she had previously argued about his lack of ambition and her lesbianism.

Both versions of the story contain identical plots, but the blatant version overtly states many things that are merely implied in the subtle version. For instance, in the subtle version, a character asks, "Can they do surgery, or will it have to be radiation?" but in the blatant version, the question is, "Can they do surgery to cut out the melanoma, or will it have to be radiation?"

The blatant version of the story spells out four things that are generally left unsaid in the subtle version: the exact sickness affecting the protagonist's mother, the protagonist's sexuality, the specifics regarding the conflict between the protagonist and her brother, and specific descriptions of the setting and locations. The subtle version of the story can be found in Appendix D, and the blatant version of the story can be found in Appendix E.

The focus of this experiment was the Need for Social Cognition scale, which served as a predictor variable. We used the 15-item NFSC scale that was used in Study 3. In addition, we added eleven items to help elaborate on the subfactors. This 26-item scale is included in Appendix F.

Several other scales were to test convergent validity with NFSC: Need for Cognition, the IRI, Personal Approach, and Transportation. All of these scales were included at least once in studies 1-3.

Furthermore, we included several dependent measures assessing responses to the narrative:

Attitudes. Participants responded to 25 items on a 1 (not at all) to 7 (very much) scale, testing participants' agreement with attitudes on various topics related to the plot, themes, and characters of the story. The attitudes focused on three main aspects of the story. The first was health behaviors regarding skin cancer; an example attitude item for this group was "The quest to look 'eternally young' can be bad for people's overall health." The second was family values and togetherness, an example of which was "Family conflict is one of the most upsetting things a person can experience." The final group was attitudes directly related to the protagonist's goals, an example of which is "People without ambition are kind of pathetic." Finally, there was one stand-alone item, "Homosexuality is unacceptable." The skin cancer, pro-family, and protagonist attitude items are supported by the story, whereas the homosexuality attitude item is largely opposed by the story. The complete set of attitude items is included in Appendix G.

Character evaluations. Participants rated each of the main characters on 7-point scales anchored by wise/foolish, attractive/unattractive, good/bad, and pleasant/unpleasant.

Straightforwardness. To test the success of the manipulation, we included five questions directly asking the participants to rate the straightforwardness of the story on a 1(not at all straightforward) to 5 (very straightforward) scale. We also included five questions asking how long it took the participant to figure out various aspects of the story.

Recall. This asked very basic, multiple-choice questions about the story to identify participants who did not read it. An example item is "What is the relationship between the two main characters of this story?" The answer to this question (siblings) should be very obvious to anyone who has recently read it.

Demographics. Participants were asked their age, sex, race, year in school, and school major.

Participants

Participants were 125 UNC undergraduate volunteers (21 male and 104 female). Four participants' responses were excluded from the final results because they missed at least one recall question involving major elements of the story (for instance, incorrectly responding that the two main characters were lovers rather than brother and sister), leaving a final total of 121 participants. The subtle condition contained 60 participants, and the blatant condition contained 61 participants.

Procedure

Participants were seated at computers in individual carrels. They were each given paper copies of either the subtle or blatant version of the experimental story and had as long as necessary to read it. Afterwards, they turned in the stories and completed computerized surveys for the rest of the materials, starting with the dependent variables of transportation and narrative-relevant attitudes.

Hypothesis

We predicted that individuals high in Need for Social Cognition would be more engaged by the subtle story, resulting in higher levels of transportation and thus more agreement with narrative-relevant attitudes. We also predicted that individuals low in Need for Social Cognition would be more engaged by the blatant story, which would result greater transportation and, consequently, greater attitude agreement.

Regarding Need for Cognition, Personal Approach, and the IRI, we predicted replication with the results in Studies 1-3: positive correlations with NFSC. We had no specific predictions regarding these items and the effect of story ambiguity on transportation or attitude agreement.

Continued ambiguity about the exact nature of the NFSC subscales left us unable to form specific hypotheses about either their correlations or their interactions. However, we did predict that the general factor structure would be replicated in the new data set and we hoped that the results would illuminate the theoretical distinctions between the subscales.

Results

Manipulation. In the three questions asking participants to rate the straightforwardness of specific aspects of the story, the blatant story was judged to be significantly more straightforward than the subtle story regarding the nature of the mother's illness, $t(119) = -3.34, p < .001$ (M subtle = 3.22, SD = 1.12; M blatant = 3.87, SD = 1.00), the main character's sexuality, $t(119) = -8.80, p < .001$ (M subtle = 2.63, SD = 1.12; M blatant = 4.31, SD = .92), and the motivations underlying the conflict between the main character and her brother, $t(119) = -1.19, p = .06$ (M subtle = 3.25, SD = 1.14; M blatant = 3.64, SD = 1.13).

Reliability and factor analysis. The full 28-item scale showed good reliability (Cronbach's alpha = 0.84). We then performed exploratory factor analysis. The presupposed three subscales of curiosity, engagement, and openness to perspectives were replicated, though most of the new items and several of the old items did not load cleanly on any of the three factors. This process can be seen in Tables 14-15, where we show first the factor analysis for all 28 items, then for the final scale of 11 items. Unlike previous factor analyses, we performed a promax rotation, allowing the factors to correlate. This final 11-item scale has a Cronbach's alpha of 0.72. This scale, with subscales indicated, is in Appendix H.

The curiosity subfactor correlates significantly with the engagement subfactor ($r = 0.41, p < 0.001$) and also correlates significantly with the openness to perspectives subfactor ($r = 0.23,$

$p = 0.01$). The engagement subfactor correlates significantly with the openness to perspectives subfactor ($r = 0.25, p = 0.01$).

Interactions with NFSC. The overall NFSC scale did not interact significantly with condition to affect transportation ($\beta = -0.47, t = -0.46, p = 0.64$). However, within the conditions, NFSC predicted higher transportation in the subtle story ($\beta = 0.27, t = 2.10, p = 0.04$) but not in the blatant story ($\beta = 0.17, t = 1.28, p = 0.20$), consistent with our hypotheses.

NFSC also did not interact with condition significantly to affect pro-family attitudes ($\beta = -0.40, t = -0.50, p = 0.62$). It did interact with condition significantly to affect skin cancer relevant attitudes ($\beta = 1.97, t = 2.53, p = 0.01$). However, the interaction went the opposite direction as expected, as higher levels of NFSC predicted lower levels of attitude agreement in the subtle story and higher levels of attitude agreement in the blatant story. This interaction is depicted in Figure 1.

Skin cancer attitudes were also affected significantly by the interaction of condition and the curiosity subscale ($\beta = 1.17, t = 2.00, p = 0.05$). The interaction of condition and the engagement subscale approached significance ($\beta = 1.17, t = 1.97, p = 0.052$). As with the overall scale, the interactions went the opposite direction as predicted.

Correlations. The overall NFSC scale was significantly correlated with transportation ($r = 0.22, p = 0.02$), need for cognition ($r = 0.40, p < 0.001$), personal approach ($r = 0.21, p = .02$), the IRI subfactors of fantasy ($r = 0.28, p = 0.002$), perspective-taking ($r = 0.51, p < .001$), and empathetic concern ($r = 0.33, p < .001$), and the item measuring how unacceptable the individual finds homosexuality ($r = -0.22, p = 0.02$).

The curiosity subfactor correlated significantly with transportation ($r = 0.22, p = 0.02$), need for cognition ($r = 0.27, p = 0.01$), personal approach ($r = 0.19, p = .04$), and the IRI

subfactors of fantasy ($r = 0.29, p = 0.002$), perspective-taking ($r = 0.35, p < .001$), and empathetic concern ($r = 0.18, p = .04$).

The engagement subfactor correlated significantly with need for cognition ($r = 0.21, p = 0.02$), personal approach ($r = 0.20, p = .03$), and the IRI subfactors of fantasy ($r = 0.24, p = 0.01$), perspective-taking ($r = 0.32, p < .001$), empathetic concern ($r = 0.25, p = .01$), and personal distress ($r = 0.26, p = 0.004$).

The openness to perspectives subfactor significantly correlated with transportation ($r = 0.19, p = 0.03$), need for cognition ($r = 0.38, p < 0.001$) and the IRI subfactors of perspective-taking ($r = 0.44, p < .001$) and empathetic concern ($r = 0.27, p = .003$). A complete list of correlations for the experiment can be found in Tables 16-19.

Attitudes. The skin cancer attitude items showed good reliability (Cronbach's alpha = 0.70). The pro-family attitude items had a Cronbach's alpha of 0.88. The protagonist attitude items had a Cronbach's alpha of 0.53. Because of this low inter-item reliability, the protagonist items were not considered in analysis.³

The standalone item measuring intolerance towards homosexuality differed significantly across conditions, $t(119) = 2.31, p = 0.02$ (M subtle = 2.90, SD = 2.10; M blatant = 2.10, SD = 1.76). It also significantly interacted with condition to predict higher transportation in the blatant story and lower transportation in the subtle story ($\beta = 0.78, t = 2.73, p = 0.01$). It also predicted greater agreement with pro-family attitudes in the blatant story ($\beta = 0.31, t = 2.47, p = 0.02$) but not in the subtle story ($\beta = 0.21, t = 1.65, p = 0.10$). Although we had intended this item as a dependent variable, it may be functioning as an independent variable and measuring pre-existing attitudes.

Empathy. Because transportation may emerge from emotional as well as cognitive processes, we decided to test the effects of the IRI subscales on narrative-related attitudes. The personal distress subscale of the IRI significantly predicted greater agreement with pro-family attitudes in the subtle condition ($\beta = 0.41, t = 3.46, p = 0.001$) but not in the blatant condition ($\beta = -0.21, t = -1.65, p = 0.11$). This interaction is depicted in Figure 2. The fantasy subscale showed a similar pattern, approaching significance predicting greater pro-family agreement in the subtle condition ($\beta = 0.23, t = 1.76, p = 0.08$) but not in the blatant condition ($\beta = -0.21, t = -1.68, p = 0.10$).

Discussion

Because NFSC did not interact significantly with condition to predict greater transportation and attitude agreement in the subtle condition and less transportation and attitude agreement in the blatant story, our hypotheses were not confirmed (however, NFSC did predict higher transportation in the subtle but not the blatant condition). In fact, NFSC predicted a different pattern of skin cancer attitude agreement in the two conditions, but in exactly the opposite manner as predicted. NFSC did not significantly predict any change in pro-family attitudes in either condition.

One important problem is that the experiment contained no control condition, so it is difficult to say with confidence that the stories changed attitudes and if so, in what direction. Pilot testing did indicate that the attitude items used were relevant to the story, but there remains some ambiguity about the nature of the persuasion. In some cases, such as the standalone homophobia item, it is vague as to whether the item can be considered a dependent or an independent variable. Ideally, streamlined conditions and methods would make the inclusion of a control condition easier in future studies.

Another potential issue is the protagonist's status as a sexual outgroup member (at least for most participants). The item "Homosexuality is unacceptable" not only differed significantly across conditions, it quite surprisingly predicted both higher transportation and greater pro-family attitude agreement in the blatant condition, in which the protagonist is clearly a lesbian from the beginning of the story. This is notable particularly given that attitudes were generally more stable and unchanged among readers of the blatant story. It is possible that more homophobic readers could not read between the lines in the subtle story, lowering their transportation because they did not understand a major feature of the main character. Also, it is plausible that homophobic readers' family-related attitudes were heightened as a defense to reading about a character who, in their view, represents a threat to traditional families. In any case, the protagonist's lesbianism may have been far more salient and important to readers of the blatant story than was intended. Simply using a different story would fix this problem. Also, making the protagonist's homosexuality more central to the story may be another way to fix the problem, because then the salience of the issue would serve the themes and plot rather than distract from them.

Because the protagonist's lesbianism was less apparent in the subtle story, we feel more comfortable making interpretations of the results for those readers. There were two main findings regarding attitude change of participants in the subtle condition. First, there is the above-mentioned lowering of skin cancer attitudes for readers higher in NFSC. Second, there was the raising of pro-family attitudes for readers higher in personal distress and fantasy-proneness.

The latter finding seems to imply that there could be a mechanism similar to the one we hypothesized; however, this process seems to be driven not by theory of mind but rather by

features of empathy, and it seems to affect only certain types of attitudes. Meanwhile, subtle narratives have the peculiar feature of driving down agreement with other types of attitudes as NFSC increases.

One potential explanation for this pattern is that the skin cancer messages and the pro-family messages were subtle for different reasons. In order to understand the nature of the mother's illness (and therefore understand that skin cancer is relevant to the story), readers may have had to think consciously about the story, characters, and plot, a process that would be driven by NFSC and could draw the reader's attention to the presence of an attempted persuasive message. Once the reader notices this message, she could engage in counterarguing against it.

On the other hand, understanding the relevance of family to the story would require a much more intuitive, emotional process: feeling the characters' stress, conflict, anger, and eventual relief as they struggle and then reconcile. This process seems very relevant to empathy, and would not necessarily cause pro-family persuasive messages to be consciously salient to the reader. Therefore, he would not engage in counterarguing.

To address these possibilities, future studies could attempt to tease apart the cognitive and emotional aspects of narrative transportation and persuasion. If engagement into stories is driven by aspects of both empathy and theory of mind, then it may be possible to identify the types of attitudes relevant to each and maximize persuasion by altering elements of the story to capitalize on them.

General Discussion

Over the course of three studies, the Need for Social Cognition scale evolved through various forms. The most recent version shows good convergent validity with theoretically similar scales, such as Need for Cognition, and may show good predictive validity, as suggested

by correlations with the Personal Approach test. Furthermore, exploratory factor analysis suggests three subscales within NFSC which seem to measure related but distinct aspects of tendencies towards theory of mind.

Regarding the Need for Social Cognition scale, the curiosity, engagement, and openness to perspectives factors were partially replicated in the Two-Stories experiment, though in slightly different form from earlier data sets. Each of these subscales seems theoretically distinct and shows different patterns of correlations with related scales. Importantly, each factor may predict distinct patterns of actual social behavior. The inclusion of the Personal Approach test in Study 2 and the Two-Stories Experiment was intended to serve as a means to examine predictive validity by attempting to correlate the survey results with actual engagement with others. The subscales showed distinct patterns of correlation with the Personal Approach test, with only the engagement and curiosity factors significantly correlated. The next step will be to examine the effect of different levels of these two NFSC subscales on social interactions in a variety of situations. For instance, individuals high in the curiosity subscale may particularly enjoy observing others using any medium, but those high in the engagement subscale might specifically enjoy face-to-face interactions.

Finally, the NFSC subscales may have interesting applications in a variety of areas. For instance, the negative correlation between the curiosity factor and homophobia may imply a tolerance for outgroups or a resistance to stereotyping behavior. Also, NFSC's high negative correlation with Need for Closure may have interesting applications in regards to political psychology, as a tolerance for others' perspectives may be specifically related to such concepts as authoritarianism and political orientation.

In general, the concept of a Need for Social Cognition seems to have been validated as a distinct concept which may be made up of three separate factors. This personality trait is relevant to transportation and narrative-based attitude change, though not in the manner originally hypothesized. Additional testing may shed more light on the connection between theory of mind, narratives, and persuasion as well as the ways that different types of social curiosity can affect and spur behavior.

Table 1.

Correlations between measures for individual differences in Study 1 (r)

	NFSC	Social Curiosity	IRI	Need for Cognition
NFSC	1.00	.25*	.50**	.48**
Social Curiosity		1.00	.23*	.24*
IRI			1.00	.10
Need for Cognition				1.00

Note: *p < 0.05; **p < 0.001

n = 97

Table 2.

Correlations between measures for the Big 5 Personality Traits in Study 1 (r)

	NFSC	Neuro.	Open.	Consc.	Agree.	Extro.
NFSC	1.00	-.05	.34**	.15	.34**	.14
Neuro.		1.00	.03	-.18	-.37**	-.31**
Open.			1.00	.23*	.13	.24*
Consc.				1.00	.19	.29**
Agreea.					1.00	.14
Extro.						1.00

Note: *p < 0.05; **p < 0.001

n = 97

Table 3.

Correlations between measures for reading tendencies in Study 1 (r)

	NFSC	Transportation	Like fiction?	Like nonfiction?	How often fiction?	How often nonfiction?
NFSC	1.00	.27**	.16	-.02	.29**	.04
Transportation		1.00	.31**	.09	.35**	.16
Like fiction?			1.00	.15	.55**	.02
Like nonfiction?				1.00	-.12	.75**
How often fiction?					1.00	.08
How often nonfiction?						1.00

Note: *p < 0.05; **p < 0.001

n = 97

Table 4.

Correlations between measures for individual differences in Study 2 (r)

	NFSC	Need for Cognition	Social Curiosity	Pers. Approach
NFSC	1.00	.44**	.39**	.49**
Need for Cognition		1.00	.19	.20
Social Curiosity			1.00	.16
Pers. Approach				1.00

Note: *p < 0.05; **p < 0.001

n = 96

Table 5.

Correlations between measures for Big 5 Personality Traits in Study 2 (r)

	NFSC	Neuro.	Open.	Consc.	Agree.	Extro.
NFSC	1.00	-.06	.42**	.20	.38*	.21
Neuro.		1.00	-.13	-.10	-.30**	-.25*
Open.			1.00	.30**	.21*	.37**
Consc.				1.00	.36**	.27**
Agree.					1.00	.20
Extro.						1.00

Note: *p < 0.05; **p < 0.001

n = 96

Table 6.

Correlations between measures for reading tendencies in Study 2 (r)

	NFSC	Transportation	Like fiction?	Like nonfiction?	How often fiction?	How often nonfiction?
NFSC	1.00	.28	.27*	.02	.20	-.01
Transportation		1.00	.41**	.12	.55**	.23*
Like fiction?			1.00	.32**	.62**	.06
Like nonfiction?				1.00	.16	.55*
How often fiction?					1.00	.27**
How often nonfiction?						1.00

Note: *p < 0.05; **p < 0.001

n = 96

Table 7.

Correlations between measures for individual differences in Study 3 (r)

	NFSC	Self-Monitoring	Need for Cognition	Empathy	Need for Closure	Attributional Complexity
NFSC	1.00	.06	.38**	.56**	-.19**	.57**
Self-Monitoring		1.00	.16*	.03	-.10	.06
Need for Cognition			1.00	.26**	-.18**	.48**
Empathy				1.00	-.19**	.54**
Need for Closure					1.00	-.19**
Attributional Complexity						1.00

Note: *p < 0.05; **p < 0.001
n = 195

Table 8.

Correlations between measures for the Big 5 Personality Traits in Study 3 (r)

	NFSC	Neuro.	Open.	Consc.	Agree.	Extro.
NFSC	1.00	.083	.45**	.11	.34**	.06
Neuro.		1.00	-.01	-.18*	-.31**	-.17*
Open.			1.00	.10	.18*	.16*
Consc.				1.00	.20**	.09
Agree.					1.00	.07
Extro.						1.00

Note: *p < 0.05; **p < 0.001
n = 195

Table 9.

Correlations between measures for reading tendencies in Study 3 (r)

	NFSC	Transportation	Like fiction?	Like nonfiction?	How often fiction?	How often nonfiction?
NFSC	1.00	.39**	..28**	-.01	.24**	-.01
Transportation		1.00	..42**	-.02	.44**	.03
Like fiction?			1.00	.04	.68**	-.06
Like nonfiction?				1.00	.16	.59**
How often fiction?					1.00	-.03
How often nonfiction?						1.00

Note: *p < 0.05; **p < 0.001

n = 195

Table 10.

Two-factor results for items across Studies 1-2 for the 29-item scale.

	Factor 1	Factor 2
NFSC2	.176	.378
NFSC12	.078	.498
NFSC14	.121	.431
NFSC15	-.011	.464
NFSC20	.043	.425
NFSC25	-.088	.671
NFSC26	.175	.498
NFSC27	-.128	.618
NFSC5(reversed)	.474	.080
NFSC7(reversed)	.573	.088
NFSC8(reversed)	.611	-.138
NFSC13(reversed)	.504	.009
NFSC18(reversed)	.667	.047
NFSC19(reversed)	.455	.207
NFSC21(reversed)	.557	.166
NFSC29(reversed)	.504	-.011

Note: Maximum likelihood extraction, Varimax rotation

Table 11.

Results for items in Study 3 for the 16-item scale

	Factor 1	Factor 2	Factor 3	Factor 4
NFSC1	.133	.153	.026	.737
NFSC2	.052	-.082	.701	.374
NFSC4	.079	-.098	.734	.016
NFSC7	.130	.321	.495	.403
NFSC9	.107	.262	.495	-.135
NFSC3(reversed)	.784	.188	.009	-.052
NFSC5(reversed)	.693	.226	.139	.021
NFSC6(reversed)	.413	.431	.302	-.289
NFSC8(reversed)	.404	.140	.463	-.164
NFSC10(reversed)	.800	.024	.180	.060
NFSC11(reversed)	.574	.191	.132	.318
NFSC12(reversed)	.270	.678	.004	-.187
NFSC13(reversed)	.624	.252	.042	.227
NFSC14(reversed)	.195	.711	.067	.232
NFSC15(reversed)	.138	.749	-.029	.146
NFSC16(reversed)	.148	.807	.139	.163

Note: Maximum likelihood extraction, Varimax rotation

Table 12.

Correlations between subscales and related scales in Study 3 (r)

	Curiosity	Engagement	Persp. Open.	Transportation	Self- mon.	Attrib. comp.	Closure
Curiosity	1.00	.33**	.33**	.27**	.09	.43**	-.10
Engagement		1.00	.55**	.39**	.12	.44**	-.15*
Persp. Open.			1.00	.28**	-.06	.47**	-.23**
Transportation				1.00	.28**	.41**	-.15*
Self-mon.					1.00	.06	.75**
Attrib. complex.						1.00	-.20**
Closure							1.00

Note: *p < 0.05; **p < 0.001
n = 195

Table 13.

Correlations between subscales for the Big 5 Personality Traits in Study 3 (r)

	Curiosity	Engagement	Persp. Open.	Neuro.	Open.	Consc.	Agree.	Extro.
Curiosity	1.0	.33**	.33**	.05	.21**	-.01	.15*	-.03
Engagement		1.0	.55**	.14	.38**	.04	.12	.02
Persp. Open.			1.00	.06	.37**	.18*	.50**	.10
Neuro.				1.00	-.01	-.18*	-.31**	-.17*
Open.					1.00	.10	.18*	.16*
Consc.						1.00	.20**	.09
Agree.							1.00	.07
Extro.								1.00

Note: *p < 0.05; **p < 0.001
n = 195

Table 14.

Results for factor analysis for the 26-item scale in Study 3

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
NFSC1	.26	.33	.22	.06	.12	.18	.04	.78
NFSC2	.21	.51	.51	.09	.15	.21	.39	.22
NFSC4	.30	.17	.60	.22	.14	.03	.09	-.08
NFSC7	.74	.42	.37	.11	.12	.47	-.21	.16
NFSC9	.33	.02	.18	-.03	.67	.04	.06	.33
NFSC16	.25	.13	.15	.80	.09	.10	.01	-.03
NFSC17	.11	.26	.19	.82	.05	.01	.06	.22
NFSC19	.76	.26	.27	.10	.32	.04	-.04	.17
NFSC20	.77	.18	.16	.25	.09	.10	.07	.23
NFSC22	.55	.31	.55	-.13	-.16	.37	-.34	.28
NFSC24	.28	.32	.35	.08	.11	.16	.66	.07
NFSC25	.16	.11	.67	.08	.22	.19	.19	.29
NFSC3r	.40	.28	.01	-.14	.28	.38	-.04	.41
NFSC5r	.11	.20	.03	.00	.10	.78	.32	.02
NFSC6r	.65	.20	.39	-.33	.16	.42	.18	-.23
NFSC8r	.28	.02	.46	.10	-.07	.51	-.10	.20
NFSC10r	.18	.58	.14	-.07	.09	.64	-.41	.20
NFSC11r	.09	.36	-.11	.12	.69	.15	.25	.12
NFSC12r	.17	.76	.14	-.05	.14	.35	-.04	.19
NFSC13r	.40	.69	.01	.21	.18	.06	-.01	.17

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
NFSC14r	.34	.51	-.31	.15	.32	.38	.08	.26
NFSC15r	.71	.38	.07	.06	.22	.21	.01	.15
NFSC18r	.06	.22	-.02	.05	-.02	-.08	-.63	.02
NFSC21r	.30	.18	.29	.02	.74	.07	-.14	-.09
NFSC23r	.65	.29	.49	-.24	.43	.28	.06	-.21
NFSC26r	.44	.66	.11	.31	.14	.07	-.04	.26

Note: Maximum likelihood extraction, Varimax rotation

Table 15.

Three-factor results for items in Study 3 for the 11-item scale.

	Factor 1	Factor 2	Factor 3
NFSC4	-.09	.58	.29
NFSC9	.17	.56	.06
NFSC19	.32	.76	.10
NFSC24	.21	.24	.67
NFSC5(reversed)	.28	-.24	.77
NFSC6(reversed)	.15	.49	.55
NFSC8(reversed)	.04	.23	.61
NFSC12(reversed)	.72	-.00	.20
NFSC13(reversed)	.75	.40	.05
NFSC14(reversed)	.71	.04	.20
NFSC26(reversed)	.67	.43	.08

Note: Maximum likelihood extraction, Varimax rotation

Table 16.

Correlations between NFSC and relevant scales in the 2-stories experiment (r)

	NFSC	Trans.	Cognition	Distress	Concern	Persp.	Fantasy	Pers. App.
NFSC	1.0	.22**	.40**	.10	.33**	.35**	.51**	.22*
Trans.		1.0	.23*	-.10	.33**	.16	.36**	-.04
Cognition			1.00	-.25**	-.18*	-.31**	.15	.21*
Distress				1.00	.13	-.06	.30**	.03
Concern					1.00	.32**	.35**	-.05
Persp.						1.00	.09	.03
Fantasy							1.00	.06
Pers. App.								1.00

Note: *p < 0.05; **p < 0.001

n = 121

Table 17.

Correlations between Curiosity factor and relevant scales in the 2-stories experiment (r)

	Curiosity	Trans.	Cognition	Distress	Concern	Persp.	Fantasy	Pers. App.
Curiosity	1.0	.22**	.25**	.01	.18*	.35**	.29**	.19*
Trans.		1.0	.23*	-.10	.33**	.16	.36**	-.04
Cognition			1.00	-.25**	-.18*	-.31**	.15	.21*
Distress				1.00	.13	-.06	.30**	.03
Concern					1.00	.32**	.35**	-.05
Persp.						1.00	.09	.03
Fantasy							1.00	.06
Pers. App.								1.00

Note: *p < 0.05; **p < 0.001

n = 121

Table 18.

Correlations between Engagement factor and relevant scales in the 2-stories experiment (r)

	Curiosity	Trans.	Cognition	Distress	Concern	Persp.	Fantasy	Pers. App.
Curiosity	1.0	.09	.21*	.26**	.25**	.32**	.24*	.20*
Trans.		1.0	.23*	-.10	.33**	.16	.36**	-.04
Cognition			1.00	-.25**	-.18*	-.31**	.15	.21*
Distress				1.00	.13	-.06	.30**	.03
Concern					1.00	.32**	.35**	-.05
Persp.						1.00	.09	.03
Fantasy							1.00	.06
Pers. App.								1.00

Note: *p < 0.05; **p < 0.001
n = 121

Table 19.

Correlations between Openness to Perspectives factor and relevant scales in the 2-stories experiment (r)

	Persp.Open.	Trans.	Cognition	Distress	Concern	Persp.	Fantasy	Pers. App.
Persp. Open.	1.0	.22**	.25**	-.07	.26**	.32**	.24**	.09
Trans.		1.0	.23*	-.10	.33**	.16	.36**	-.04
Cognition			1.00	-.25**	-.18*	-.31**	.15	.21*
Distress				1.00	.13	-.06	.30**	.03
Concern					1.00	.32**	.35**	-.05
Persp.						1.00	.09	.03
Fantasy							1.00	.06
Pers. App.								1.00

Note: *p < 0.05; **p < 0.001
n = 121

Figure 1.

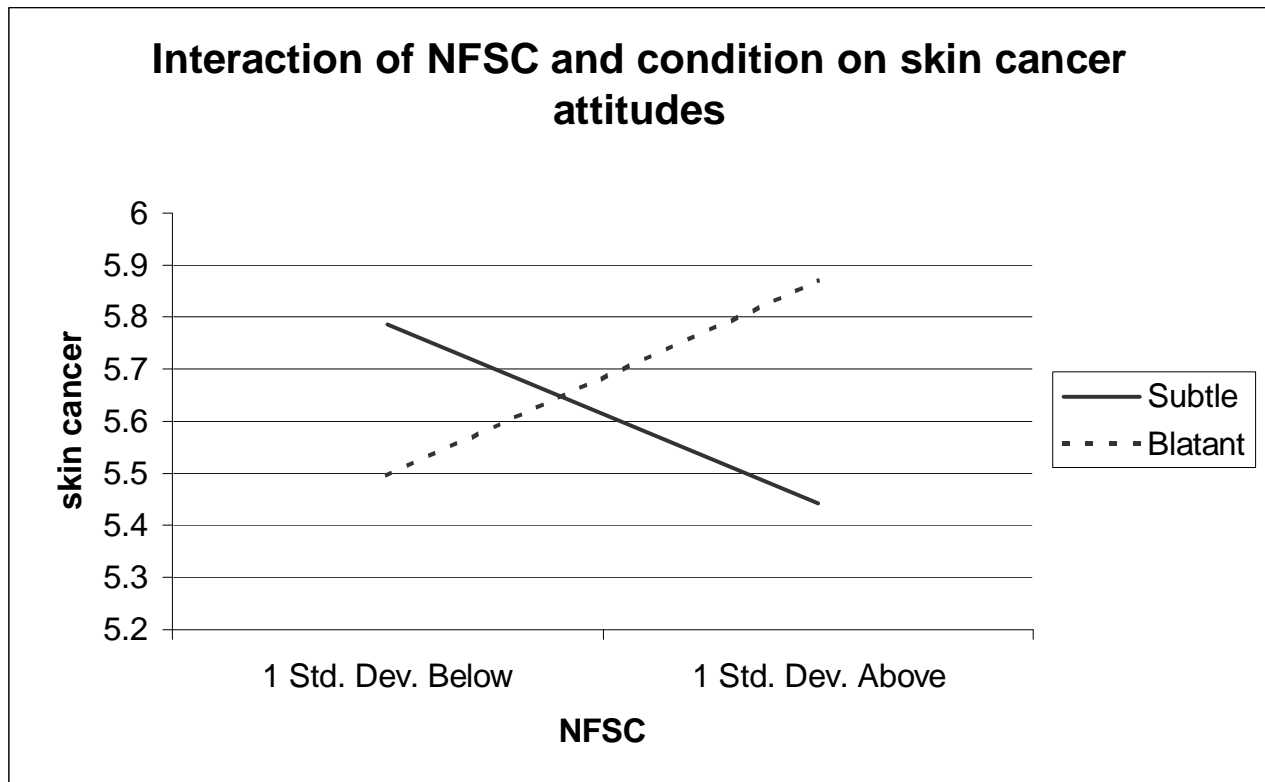
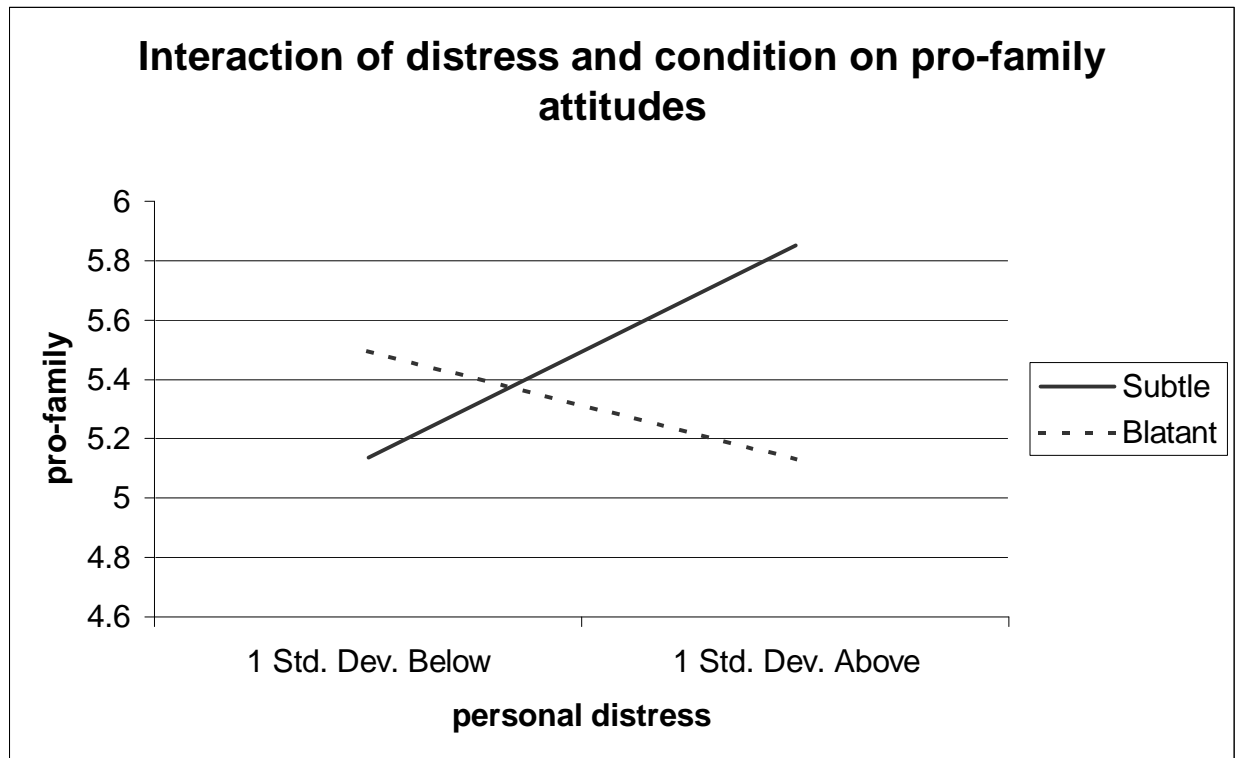


Figure 2.



Appendix A

NFSC Scale for Study 1

1. How someone looks and talks tells me pretty much all I need to know about him or her.
2. I often find myself actively seeking out other people's opinions, even when they differ from my own.
3. I am sensitive to cliches in music, movies, and fiction.
4. Everyone is essentially reducible to a few basic personality traits.
5. If I can get along with someone, I don't need to understand them on a deep personal level.
6. I like learning about subjects such as psychology, linguistics, or communications.
7. If the way I define something works for me, I don't need to know what other people think about it.
8. People who disagree with me about important issues are generally just misinformed.
9. In some ways, I relish trying to figure out difficult people.
10. I like it when people just say what they mean.
11. I would rather talk to someone who is complicated than someone who is pleasant.
12. When I see two strangers arguing, I often find myself wondering what their conflict is.
13. Everyone is pretty much the same.
14. I like talking to my friends about people they know, even when I don't know them myself.
15. When I meet new people, I often wonder how they got to where they are in life.
16. Trying to puzzle out other people's thoughts or feelings is exhausting.
17. I am generally good at predicting how other people will react to me.
18. It is pointless to try to see things from other people's points of view.

19. If someone's actions do not concern me directly, I generally do not concern myself with why they do what they do.
20. I often find myself wondering what other people are thinking.
21. I have little patience for listening to other people's problems.
22. Even people who seem straightforward have a lot going on under the surface.
23. Complicated twist endings in movies and books usually annoy me.

Appendix B

NFSC Scale for Study 2

1. How someone looks and talks tells me pretty much all I need to know about him or her.
2. I often find myself actively seeking out other people's opinions, even when they differ from my own.
3. I am sensitive to cliches in music, movies, and fiction.
4. Everyone is essentially reducible to a few basic personality traits.
5. If I can get along with someone, I don't need to understand them on a deep personal level.
6. I like learning about subjects such as psychology, linguistics, or communications.
7. If the way I define something works for me, I don't need to know what other people think about it.
8. People who disagree with me about important issues are generally just misinformed.
9. In some ways, I relish trying to figure out difficult people.
10. I like it when people just say what they mean.
11. I would rather talk to someone who is complicated than someone who is pleasant.
12. When I see two strangers arguing, I often find myself wondering what their conflict is.
13. Everyone is pretty much the same.
14. I like talking to my friends about people they know, even when I don't know them myself.
15. When I meet new people, I often wonder how they got to where they are in life.
16. Trying to puzzle out other people's thoughts or feelings is exhausting.
17. I am generally good at predicting how other people will react to me.
18. It is pointless to try to see things from other people's points of view.

19. If someone's actions do not concern me directly, I generally do not concern myself with why they do what they do.
20. I often find myself wondering what other people are thinking.
21. I have little patience for listening to other people's problems.
22. Even people who seem straightforward have a lot going on under the surface.
23. Complicated twist endings in movies and books usually annoy me.
24. I like to try to figure out what people are thinking just from looking at their expressions.
25. In a social group, I like to try to keep track of what each person thinks about the other people in the group.
26. There is just something intriguing about the insight different people can offer about someone else's motivations and perspective.
27. When I am in a conversation with more than one person, I like to think about how one person is interpreting what another person says in the conversation.
28. Sometimes I catch myself thinking of objects (such as my car or my computer) as having their own points of view and perspectives, even though I know they aren't alive.
29. If I can tell where someone is coming from, I don't need other people's thoughts on the matter.

Appendix C

NFSC Scale for Study 3

1. I like talking to my friends about people they know, even when I don't know them myself.
2. When I meet new people, I like wondering how they got to where they are in life.
3. If someone's actions do not relate to me directly, I generally do not concern myself with why they do what they do.
4. When I am conversing with more than one person, I like to think about how one person is interpreting what another person says in the conversation.
5. I don't tend to actively seek out other people's opinions, even when they probably agree with my own.
6. I rarely find myself wondering what other people are thinking.
7. There is just something intriguing about the insight different people can offer about someone else's motivations and perspective.
8. In a social group, I don't make any special effort to keep track of what each person thinks about the other people in the group.
9. When I see two strangers arguing, I often catch myself speculating on what their conflict is.
10. If I can tell where someone is coming from, I don't need other people's thoughts on the matter.
11. Everyone is pretty much the same.
12. If the way I define something works for me, I don't need to know what other people think about it.
13. I have little patience for listening to other people's problems.
14. People who disagree with me about important issues are generally just misinformed.

15. It is pointless to try to see things from other people's points of view.

Appendix D

Subtle Story

My accent was back. I hadn't even spoken to anyone yet except the receptionist, and I was already shortening "the" to "da" and dropping my Gs as if I had never left. It probably started happening the instant I drove past the "Welcome to Eddington, Ontario!" sign, like some kind of osmosis, and fifteen minutes later, my "where" became "whur" and there was an almost uncontrollable urge to end my sentences with that chipper, "right?" I didn't, but I think she could tell that I wanted to.

I was doing it again, that thing where I focus on anything in the world except what I should be thinking about. Language osmosis. It's cold. This place is really white. That man looks sick.

The sick man smiled at me, and I smiled back without thinking about it. Fifteen minutes, and I was already smiling at strangers, just like when I was a teenager. He had orange teeth, and I wondered how much we would have to know about one another before we would not want to smile anymore.

The door I wanted was the only open one in the entire hallway, which was perfect, of course. She was probably hoping for visitors to just come dropping in from all over town. I was a bit surprised that the room wasn't filled with flowers and cards, but it had only been a day. This town was loyal, but it moved slow.

She smiled when she saw me, and her teeth were gleaming white. Her skin was almost as pale, and her eyes were red as cherries around the blue part. She looked old. "Lizzie!" she purred. "Oh my, you didn't take your time, did you? Come here, girl."

I sat next to her dumbly. She spread her arms and I hugged her, and her bones felt like balsa wood. "You probably drove like a maniac, getting here so quickly," she said when we parted. "You didn't have to rush, you know!"

"Of course I did, mom," I said, and I realized that I didn't even know what osmosis was. I thought it might have something to do with... oxygen, maybe? Stupid of me to use it as a metaphor all the time and not even know what it is. "How are you feeling?"

"Oh, all right," she said briskly, but then held me out at arm's length and gazed at my face. "Lord, you look so pretty!" she said, and I couldn't avoid blushing like a kid. "And look at

me, looking some kind of ghoul. Gentlemen are going to visit, and they're going to pay attention to you and neglect little old me!" She laughed. "Well, some of us do care about that sort of thing," she added with a wink.

She laughed again. That was always the pattern, a few minutes into the visit and she would make some oblique reference to it, as if to remind me that it was still okay. I felt warm. "Don't be silly," I said. "The men around here can't ever keep their eyes off you."

"Well, maybe. Did you meet Mr. Jenkins outside?" I assumed she meant the sick man, and I nodded. "Well, he seems a bit taken. He's a very nice man."

I couldn't help laughing. I couldn't tell if she was really all that fearless, or if she was so desperately trying to keep up her reputation as the town character, the town beauty, even after her youthfulness had so suddenly deserted her.

It did more than desert her, I thought, it had betrayed her. Summer never lasted long up in Ontario, but she always squeezed out as much time in the sun as she could, and spent the rest of the year in those awful tanning salons. All those hours exposed to ultraviolet rays, all those beauty treatments, all those insistences that she took such good care of herself, she never needed to see a doctor... and here she was, an old, sick woman.

"Really, dear, you didn't have to come," she said when we stopped laughing. "There's nothing I can tell you that Miss Walker didn't say over the phone. They say it's not even so bad" (there was an audible pause where the "yet" should have gone) "and they'll have me starting some sort of treatment by next week."

Some kind of treatment. As if I wouldn't have spend hours on the internet doing research. "Can they do surgery, or will it have to be radiation? Or..."

"Honey, I don't know." She looked sad all of a sudden, and then it was gone. "It's fine. We'll know soon enough."

I imagined her getting weaker and weaker over the months, not telling anyone, ignoring the growth on her shoulder even as she could watch it gradually getting bigger.

Osmosis. It's Greek, I think. Everything with the osis ending is Greek.

She pulled the blankets up around her chin and shivered, and I decided it was time to change the subject. "Has Johnny been by, yet?"

She looked sharply up at me. "He drove me here, honey. Why do you ask about him?" Her tone was so casual.

"I was thinking of going to see him."

I knew she would be surprised, but she looked absolutely stunned; she literally froze in place and gaped at me. "Really?" she sputtered after a few moments. "It's not because of me, is it? I'm not *dying*, Lizzie..."

"No, it's not because of you," I replied, a bit annoyed she would be so shocked. "I mean, not entirely. It's just... the family, mom. It's just been too long for an old, stupid argument, right? The family is more important."

"Oh, honey." She smiled at me, and it was the kind of smile she always used to give dad. "Good luck, dear. He misses you, I can tell." She put her hand on top of mine, and kept smiling. She looked a hundred years old.

I had always called Johnny's neighborhood "Bachelorville," which was the exact kind of thing I needed to stop doing. Still, it fit: every house was small, cluttered, ugly, and utilitarian, and everyone was a plumber or a diner manager, and everyone fished on the weekends. Johnny laid pipe, and he loved to fish, and his house was the ugliest on his block. He had lived there since he was nineteen.

The last I saw him, he was scruffy and dirty, of course, and the charm of such things had officially worn off. I turned the engines and headlights off and lit a cigarette (but I officially quit; I just needed an excuse to sit there), just looking at the outside of his little green house. I noticed that he still drove that old pick-up truck, and there were what looked like oily rags on his driveway.

It made me mad, and I spent nearly an entire half-hour just sitting in my car trying to tamp that feeling down. This was all he had ever wanted for himself, even since we were kids. Almost six years since I had seen him, and the only thing different in his life was apparently that his forest green house had faded to a weird, pale turquoise.

I still remembered the smug, angry grin as we had argued, It was the stupidest thing. He had put those dumb reindeer antlers on mom's dog, and I thought it was the most idiotic thing,

and we argued, and then all of a sudden things just exploded. I was so *angry*. I was twenty-four and he was twenty-six, and I was just screaming these things that were old when we were in high school. Why couldn't he just accept me like mom did? Why couldn't he just try harder? Dumb, teenage things. And he started calling me some names, words I'd heard him use to his friends, but never to my face.

And then I kicked him. I am not proud of that, but it honestly seemed like the most reasonable course of action at the time. I had not been aiming for his knee or any part of his body at all, but I caught him right on his kneecap, and he buckled and fell right into the tree, pulling off half the garlands and breaking all of our favorite ornaments. It would have been a hilarious scene in a movie, but right then, I was legitimately afraid he was going to get up and try to kill me, and mom and Aunt Ruby were screaming, and the damn dog was barking, and it was the worst moment of my entire life. I grabbed those antlers and threw them at him and just stormed out. I heard he was on crutches for three months.

I had smoked half the damn pack by the time I was ready to go in. I thought it was reasonable to be hesitant, but not half-a-pack-hesitant. Even if he still hated me, I shouldn't have cared that much. Mom would understand; she always sided with me.

I got out and walked to his house and knocked on the door. I wondered for a moment if he would recognize me. When we last saw each other, I was still in my "alternative" phase, not the librarian I had become. I wasn't sure which would be the worse to bear, watching his dawning expression of recognition, or actually having to tell him who I was, that I was his damn sister.

He opened the door and looked at me blankly. He looked exactly the same. I smiled, and he did not. He eyed me up and down, sighed gently, and then kicked me in the shin.

"Ow," I said.

He had not kicked me hard, but it was very surprising. "You deserved it, right?" he grunted.

I found myself unable to argue with that. "Hey, Johnny." He did not respond. "Listen, can we get a drink or something?"

He blinked at me, then disappeared into the house. He returned a second later wearing a bulky coat. "Do you drink beer?" he asked.

"Um... not usually."

"Too bad."

It was a dark, sawdusty bar, the kind of thing us city-folks are supposed to find charming, but I was not removed enough from these woods to see it that way. Still, Johnny seemed at home here, and there was something cute about the way he walked over and graced our table with two dark, frothy glasses of our Canadian heritage. He had no limp at all.

I suddenly became very aware of how prim I must look in this messy place, especially next to Johnny, who just *fit*. For a second, it was almost blinding how badly I wanted things to just be okay again between us.

He sat down and took a long sip. I knew his game already: he was going to be cold and removed, and that was supposed to keep me from thinking about how nervous he was. "Did you see mom?" he asked gruffly, wiping the suds off his moustache.

I nodded. "I kind of expected her to look worse, the way Ms. Walker was talking."

"She looks pretty bad, Liz."

I nodded again. I hate beer. I hate all bitter things.

Johnny eyed me suspiciously. "Where's your... you know.... whatever the right word is?"

"She stayed home," I replied, glaring. He was going to start it all up again. But instead, he just sat back and drank more of his beer. "She's probably watching Jeopardy right now," I said, because I was stuck for something to say. "She loves that show."

"She smart?"

"Yeah, she's real smart. Too smart for me, probably."

He laughed. "Don't be stupid, Liz. Everyone loves you."

I blushed, and suddenly realized a third of my drink was gone already. We drank in silence for what felt like forever. I finally broke it. "Mom looks old."

"She is old," he said, smiling ruefully. "We're kind of old, too, right?"

He was right. His cheeks and eyes were creased. He must smile a lot. "Do you know how long the mole was getting bigger before this happened?"

He shrugged. "I pointed it out to her months ago, and she already knew about it then. Probably a long time."

"And she never went to the doctor?"

"You know how she is."

I did know. "She was always so proud of her skin. Remember how she used to say that dark, tan skin was a sign of being healthy?"

He laughed humorlessly and grunted, "Yeah. That's our mom. Spending all your time in the damn sun is healthy."

There was a very uncomfortable silence. Finally, I raised my glass in a mock toast. "Well," I said, "I'm glad we've finally come across one crisis in this family that I'm not to blame for."

"Oh, come on," he said in an oddly serene tone. "No one blames you for anything. You could give people the biggest reason in the world to hate you, and no one ever would. It's how you are."

It was the kind of thing he would have said bitterly ten years ago, but now there wasn't a trace of anything but mellowness. I looked down at my suds meekly. "So, does this mean you're okay with..."

He smiled oddly and cut me off. "I think we should just talk about other things for now, okay?"

Ten years ago, I would have yelled at him, but now I just returned his smile and nodded. He fidgeted with his dirty coat in a distinctly Johnny kind of way, a release of tension. Probably only someone who knew him since he was a kid would even notice.

"We have to figure out what to do," I said. "About her, I mean."

He nodded. "I've already thought about that. She should be at home, right? At least for as long as she can be."

"That means a nurse," I said.

"Yep. Or a few."

I set my beer down, and it was almost empty. "I guess I should handle that."

"You live in the city. You can't afford that much."

"Well, you can't," I snapped. "You don't even know how much it would be."

"Of course I do, I've researched it," he retorted. "Liz, I make plenty of money. You don't think I do, but I do. I can handle it."

"I've researched it, too, and *I* can handle it." We glared, and it felt very, very familiar.

"Please," I said. "You bought my beer. This is the least I can do."

He blinked in surprise, and then burst out in laughter. I guess he remembered me as being pretty humorless. "Look, can we just work something out?" I asked. "I just really want things to be okay. I can't handle this anymore, right? Not with mom sick."

He finished off his beer. He looked so comfortable all of a sudden. "Okay. We'll get together and go over the costs sometime next week. We'll know how things are going to go by then."

I finished off my own beer. It was vile, but it felt so right to be drinking such a thing in this kind of place, on this kind of day.

"She'll be okay, Lizzie," he said. "She's supermom." His smile slipped just a bit.

Damn it, I learned about osmosis in college. I remember it being on some test, I just forgot what it was after all these years.

I bought the second round, and he played a game of Ms. Pac-Man just like he always used to, and then it was time to go. We stood outside, freezing in the October night. I'd forgotten how dark it got in this town.

"I'm sorry I kicked you on Christmas," I said suddenly, and instantly felt mortified for living the kind of life where I would have to speak such a sentence.

He chuckled. "I'm sorry I called you all those names." We looked at each other for a moment, then he waved. "Next week," he said. We did not hug, but maybe we would the next time I came.

I walked to my car, got in, and instantly turned on the heat. I pulled out my phone and called the first number on my contact list.

"Hey," she said.

"Hey. How was Jeopardy?"

"I didn't watch. I was too worried. You okay?"

"Yeah. We'll know more next week, but for now things are okay. Hey, I have a question for you."

"Uh, yeah?" I could practically hear her chewing her lower lip in confusion.

"Do you know what osmosis is? It's been bugging me all day."

"Um. It's how amoebas drink, sort of. They engulf water and then absorb it through their cell walls. Are you sure you're okay?"

"Really, I'm fine. I'll be home in about two hours, okay?"

We said our goodbyes and I hung up. I sat in my car until it warmed up a bit, just watching the smoke come out of my tailpipe, watching people come and go from the bar. After a few minutes, I pulled out of the parking lot, the trees shading me from the nearly full moon, and I started the long trip home.

Appendix E

Blatant Story

My accent was back. I hadn't even spoken to anyone yet except the receptionist, and I was already shortening "the" to "da" and dropping my Gs as if I had never left. It probably started happening the instant I drove past the "Welcome to Eddington, Ontario!" sign, like some kind of osmosis, and fifteen minutes later, my "where" became "whur" and there was an almost uncontrollable urge to end my sentences with that chipper, "right?" I didn't, but I think she could tell that I wanted to.

I was doing it again, that thing where I focus on anything in the world except what I should be thinking about. Language osmosis. It's cold. This hospital is really white. That man looks sick.

The sick man smiled at me, and I smiled back without thinking about it. Fifteen minutes, and I was already smiling at strangers, just like when I was a teenager. He had orange teeth, and I wondered how much we would have to know about one another before we would not want to smile anymore.

The door I wanted was the only open one in the entire hallway, which was perfect, of course. Mom was probably hoping for visitors to just come dropping in from all over town. I was a bit surprised that the room wasn't filled with flowers and cards, but it had only been a day. This town was loyal, but it moved slow.

She smiled when she saw me, and her teeth were gleaming white. Her skin was almost as pale, and her eyes were red as cherries around the blue part. She looked old. "Lizzie!" she purred, all hospitality and sugar. "Oh my, you didn't take your time, did you? Come here, girl."

I sat next to her dumbly. She spread her arms and I hugged her, and her bones felt like balsa wood. "You probably drove like a maniac, getting here so quickly from Toronto," she said when we parted. "You didn't have to rush, you know!"

"Of course I did, mom," I said, and I realized that I didn't even know what osmosis was. I thought it might have something to do with... oxygen, maybe? Stupid of me to use it as a metaphor all the time and not even know what it is. "How are you feeling?"

"Oh, all right," she said briskly, but then held me out at arm's length and gazed at my face. "Lord, you look so pretty!" she said, and I couldn't avoid blushing like a kid. "And look at

me, looking some kind of ghoul. Gentlemen are going to visit, and they're going to pay attention to you and neglect little old me!" She laughed. "Well, some of us do care about that sort of thing," she added with a wink.

She laughed again. That was always the pattern, a few minutes into the visit and she would make some oblique reference to my homosexuality, as if to remind me that it was still okay. I felt warm. "Don't be silly," I said. "The men around here can't ever keep their eyes off you."

"Well, maybe. Did you meet Mr. Jenkins outside?" I assumed she meant the sick man, and I nodded. "Well, he seems a bit taken. He's a very nice man."

I couldn't help laughing. I couldn't tell if she was really all that fearless, or if she was so desperately trying to keep up her reputation as the town character, the town beauty, even after her youthfulness had so suddenly deserted her.

It did more than desert her, I thought, it had betrayed her. Summer never lasted long up in Ontario, but she always squeezed out as much time in the sun as she could, and spent the rest of the year in those awful tanning salons. All those hours exposed to ultraviolet rays, all those beauty treatments, all those insistences that she took such good care of herself, she never needed to see a doctor... and here she was, an old, sick woman with skin cancer.

"Really, dear, you didn't have to come," she said when we stopped laughing. "There's nothing I can tell you that Miss Walker didn't say over the phone." Miss Walker was her housekeeper, and was even more worried than I was. "They say it's not even so bad yet and they'll have me starting some sort of treatment by next week."

Some kind of treatment. As if I wouldn't have spent hours on the internet doing research. "Can they do surgery to cut out the melanoma, or will it have to be radiation? Or..."

"Honey, it's fine. We'll know soon enough."

I imagined her getting weaker and weaker over the months, not telling anyone, ignoring the melanoma on her shoulder even as she could watch it gradually getting bigger.

Osmosis. It's Greek, I think. Everything with the "osis" ending is Greek.

She pulled the blankets up around her chin and shivered, and I decided it was time to change the subject. "Has Johnny been by, yet?"

She looked sharply up at me. "He drove me here, honey. Why would you ask about your brother?" She was trying to sound so casual.

"I was thinking of going to see him."

I knew she would be surprised; I haven't seen Johnny since our big fight. But she looked absolutely stunned. She literally froze in place and gaped at me. "Really?" she sputtered after a few moments. "It's not because of me, is it? I'm not *dying*, Lizzie..."

"No, it's not because of you," I replied, a bit annoyed she would be so shocked. "I mean, not entirely. It's just... the family, mom. It's just been too long for an old, stupid argument, right? The family is more important."

"Oh, honey." She smiled at me, and it was the kind of smile she always used to give dad when he was alive. "Good luck, dear. He misses you, I can tell." She put her hand on top of mine, and kept smiling. She looked a hundred years old.

I had always called Johnny's neighborhood "Bachelorville," which was the exact kind of thing I needed to stop doing. Still, it fit: every house was small, cluttered, ugly, and utilitarian, and everyone was a plumber or a diner manager, and everyone fished on the weekends. Johnny laid pipe, and he loved to fish, and his house was the ugliest on his block. He had lived there since he was nineteen.

The last I saw him, he was scruffy and dirty, of course, and the charm of such things had officially worn off. I turned the engines and headlights off and lit a cigarette (but I officially quit; I just needed an excuse to sit there), just looking at the outside of his little green house. I noticed that he still drove that old pick-up truck, and there were what looked like oily rags on his driveway.

It made me mad, and I spent nearly an entire half-hour just sitting in my Volvo trying to tamp that feeling down. He was supposed to be my big brother, he was supposed to be this hero, but he never had any ambition. Almost six years since I had seen him, and the only thing different in his life was apparently that his forest green house had faded to a weird, pale turquoise. Couldn't he understand that he could do better? Didn't he know how sad it was that this was his life?

I still remembered the smug, angry grin as we had argued, It was the stupidest thing. He had put those dumb reindeer antlers on mom's dog, and I thought it was the most idiotic thing, and we argued, and then all of a sudden things just exploded. I was so *angry*. I was twenty-four and he was twenty-six, and I was just screaming these things that were old when we were in high school. Why couldn't he just accept me like mom did? Why couldn't he just try harder? Dumb, teenage things. And he started calling me a dyke, which I'd heard him say to his friends, but never to my face.

And then I kicked him. I am not proud of that, but it honestly seemed like the most reasonable course of action at the time. I had not been aiming for his knee or any part of his body at all, but I caught him right on his kneecap, and he buckled and fell right into the tree, pulling off half the garlands and breaking all of our favorite ornaments. It would have been a hilarious scene in a movie, but right then, I was legitimately afraid he was going to get up and try to kill me, and mom and Aunt Ruby were screaming, and the damn dog was barking, and it was the worst moment of my entire life. I grabbed those antlers and threw them at him and just stormed out. I heard he was on crutches for three months.

I had smoked half the damn pack by the time I was ready to go in. I thought it was reasonable to be hesitant, but not half-a-pack-hesitant. Even if he still hated me, I shouldn't have cared that much. Mom would understand; she always sided with me.

I got out and walked to his house and knocked on the door. I wondered for a moment if he would recognize me. When we last saw each other, I was still in my "alternative" phase, not the boyish but prim librarian I had become. I wasn't sure which would be the worse to bear, watching his dawning expression of recognition, or actually having to tell him who I was, that I was his damn sister.

He opened the door and looked at me blankly. He looked exactly the same. I smiled, and he did not. He eyed me up and down, sighed gently, and then kicked me in the shin.

"Ow," I said.

He had not kicked me hard, but it was very surprising. "You deserved it, right?" he grunted.

I found myself unable to argue with that. "Hey, Johnny." He did not respond. "Listen, can we get a drink or something?"

He blinked at me, then disappeared into the house. He returned a second later wearing a bulky coat. "Do you drink beer?" he asked.

"Um... not usually."

"Too bad."

It was a dark, sawdusty bar, the kind of thing us city-folks are supposed to find charming, but I was not removed enough from these woods to see it that way. Still, Johnny seemed at home here, and there was something cute about the way he walked over and graced our table with two dark, frothy glasses of our Canadian heritage. He had no limp at all.

It was almost blinding how badly I wanted things to just be okay again between us, for us to just be brother and sister again. It felt like the stupidest thing in the world that that might not be enough.

He sat down and took a long sip. "Did you see mom?" he asked gruffly, wiping the suds off his moustache.

I nodded. "I kind of expected her to look worse, the way Ms. Walker was talking."

"She looks pretty bad, Liz."

I nodded again. I hate beer. I hate all bitter things.

Johnny eyed me suspiciously. "Where's your girlfriend?"

"She stayed home," I replied, glaring. He was going to start it all up again, his snide comments, his haranguing. But instead, he just sat back and drank more of his beer. "She's probably watching Jeopardy right now," I said, because I was stuck for something to say. "She loves that show."

"She smart?"

"Yeah, she's real smart. Too smart for me, probably."

He laughed. "Don't be stupid, Liz. Everyone loves you."

I blushed, and suddenly realized a third of my drink was gone already. We drank in silence for what felt like forever. I finally broke it. "Mom looks old."

"She is old," he said, smiling ruefully. "We're kind of old, too, right?"

He was right. "Do you know how long the mole was getting bigger before this happened?"

He shrugged. "I pointed it out to her months ago, and she already knew about it then. Probably a long time."

"And she never went to the doctor?"

"You know how she is."

I did know. "She was always so proud of her skin. Remember how she used to say that dark, tan skin was a sign of being healthy?"

He laughed humorlessly and grunted, "Yeah. That's our mom. Skin cancer is healthy."

There was a very uncomfortable silence. Finally, I raised my glass in a mock toast. "Well," I said, "I'm glad we've finally come across one crisis in this family that I'm not to blame for."

"Oh, come on," he said in an oddly serene tone. "No one ever blames you for anything."

"Come on..."

"No, it's true, Liz. Why do you think I get so mad at you? Everyone has such a good reason to judge you, but when you came out, no one cared at all, right? But me, I can do everything normal, I can just work and have a regular life, and it's never good enough."

It was the kind of thing he would have said bitterly ten years ago, but now there wasn't a trace of anything but mellowness. I looked down at my suds meekly. "So, does this mean you're okay with my being gay?"

He smiled oddly. "I think we should just talk about other things for now, okay?"

I nodded. Ten years ago, I would have yelled at him, but now I couldn't feel anything but peace. "So how is your regular life?" I asked. "You happy?"

He shrugged and indicated our surroundings with a wave of his frothy mug. "It's not bad, right?"

I looked around and realized it probably wasn't. He looked so comfortable here. I had thought everything was awful about his life, and he had thought everything was wonderful about

mine, but nothing is ever that simple once you grow up. I suddenly felt terrible for being so worried about him and me. "We have to figure out what to do," I said. "About mom, I mean."

He nodded. "I've already thought about that. She should be at home, right? At least for as long as she can be."

"That means a nurse," I said.

"Yep. Or a few."

I set my beer down, and it was almost empty. "I guess I should pay for that."

"You live in the city. You can't afford that much."

"Well, you can't," I snapped. "You don't even know how much it would be."

"Of course I do, I've researched it," he retorted. "Liz, I make plenty of money. You don't think I do, but I do. I can handle it."

"I've researched it, too, and *I* can handle it." We glared, and it felt very, very familiar.

"Please," I said. "You bought my beer. This is the least I can do."

He blinked in surprise, and then burst out in laughter. I guess he remembered me as being pretty humorless. "Look, can we just work something out?" I asked. "I just really want things to be okay. I can't handle this anymore, right? Not with mom sick."

He finished off his beer. He looked so comfortable all of a sudden. "Okay. We'll get together and go over the costs sometime next week. We'll know how things are going to go by then."

I finished off my own beer. It was vile, but it felt so right to be drinking such a thing in this kind of place, on this kind of day.

"She'll be okay, Lizzie," he said. "She's supermom." We both knew it might not be true, but it was the right thing to say.

Damn it, I learned about osmosis in college. I remember it being on some test, I just forgot what it was after all these years.

I bought the second round, and he played a game of Ms. Pac-Man just like he always used to, and then it was time to go. We stood outside, freezing in the October night. I'd forgotten how dark it got in this town.

"I'm sorry I kicked you on Christmas," I said suddenly, and instantly felt mortified for living the kind of life where I would have to speak such a sentence.

He chuckled. "I'm sorry I called you all those names." We looked at each other for a moment, then he waved. "Next week," he said. We did not hug, but I knew that things were finally okay between us again.

I walked to my car, got in, and instantly turned on the heat. I pulled out my phone and called my girlfriend.

"Hey," she said.

"Hey. How was Jeopardy?"

"I didn't watch. I was too worried. You okay?"

"Yeah. We'll know more next week, but for now things are okay. Hey, I have a question for you."

"Uh, yeah?" I could practically hear her chewing her lower lip in confusion.

"Do you know what osmosis is? It's been bugging me all day."

"Um. It has to do with cells, I think. When there's an imbalance, water moves through a cell wall until there's equilibrium. Are you sure you're okay?"

"Really, I'm fine. I'll be back in Toronto in about two hours, okay?"

We said our goodbyes and I hung up. I sat in my car until it warmed up a bit, just watching the smoke come out of my tailpipe, watching people come and go from the bar. After a few minutes, I pulled out of the parking lot, the trees shading me from the nearly full moon, and I started the long trip home.

Appendix F

NFSC Scale for 2 Stories Experiment

1. I like talking to my friends about people they know, even when I don't know them myself.
2. When I meet new people, I like wondering how they got to where they are in life.
3. If someone's actions do not relate to me directly, I generally do not concern myself with why they do what they do.
4. When I am conversing with more than one person, I like to think about how one person is interpreting what another person says in the conversation.
5. I don't tend to actively seek out other people's opinions, even when they probably agree with my own.
6. I rarely find myself wondering what other people are thinking.
7. There is just something intriguing about the insight different people can offer about someone else's motivations and perspective.
8. In a social group, I don't make any special effort to keep track of what each person thinks about the other people in the group.
9. When I see two strangers arguing, I often catch myself speculating on what their conflict is.
10. If I can tell where someone is coming from, I don't need other people's thoughts on the matter.
11. Everyone is pretty much the same.
12. If the way I define something works for me, I don't need to know what other people think about it.
13. I have little patience for listening to other people's problems.

14. People who disagree with me about important issues are generally just misinformed.
15. It is pointless to try to see things from other people's points of view.
16. I sometimes try to understand my friends better by imagining how things look from their perspective.
17. When I'm getting to know someone, I usually try to "put myself in his shoes" for a while.
18. I sometimes find it difficult to see things from the "other guy's" point of view.
19. I like finding out how others "work."
20. To understand a person's personality/behavior I have found it is important to know how that person's attitudes, beliefs, and character traits fit together.
21. I tend to take people's behavior at face value and not worry about the inner causes for their behavior (e.g. attitudes, beliefs, etc.)
22. There is just something intriguing about the insight different people can offer about someone else's goals and intentions.
23. I rarely find myself wondering what other people's intentions are.
24. When I meet new people, I like wondering what their goals in life are.
25. When I see two strangers talking, I often catch myself speculating what each of them wants from the interaction.
26. I have little patience for listening to other people talk about their goals.

Appendix G

Attitude items for 2-stories experiment

1. People should keep in regular touch with their immediate family members, even if they don't personally like their family members all that much.
2. A person should always decide who is going to be their romantic partner, no matter what other people, like their family and close friends, think.
3. Siblings should always put aside their differences in order to maintain harmony within their family.
4. It's unrealistic for siblings to not make comparisons to each other or engage in sibling rivalry.
5. Wealth and power are important.
6. A child must always come through for his or her parents.
7. The family is the most important part of a person's life.
8. We should stick by our siblings even if we disagree with them.
9. Having a nice place to live is important.
10. You should put aside arguments for the sake of getting along with your family, even if the issues in question are important to you.
11. People without ambition are kind of pathetic.
12. Family conflict can be one of the most unpleasant and damaging things a person might experience.
13. Healthy relationships with family members are important for growth and well-being.
14. Family members should all get along.
15. Putting aside one's pride usually leads to a successful outcome in a given situation.
16. People should always plan for their retirement and not live in the moment so much.
17. Wearing sun block every day is important.
18. Too much sun causes skin cancer.

19. Parents should tell their children when they are sick.
20. Even in times of crisis, good things can happen.
21. People should see a doctor for regular check-ups, even if they might not be sick.
22. Spending too much time in the sun is unhealthy.
23. The quest to look "eternally young" can be bad for people's overall health.
24. If someone notices an unusual spot or blotch on his skin, he should go to the dermatologist immediately.
25. Homosexuality is unacceptable.

Appendix H
Final NFSC scale for 2-stories experiment

Curiosity subscale:

- 4. When I am conversing with more than one person, I like to think about how one person is interpreting what another person says in the conversation.
- 9. When I see two strangers arguing, I often catch myself speculating on what their conflict is.
- 19. I like finding out how others "work."

Engagement subscale:

- 5. I don't tend to actively seek out other people's opinions, even when they probably agree with my own. (r)
- 6. I rarely find myself wondering what other people are thinking. (r)
- 8. In a social group, I don't make any special effort to keep track of what each person thinks about the other people in the group. (r)
- 24. When I meet new people, I like wondering what their goals in life are.

Openness to perspectives subscale:

- 12. If the way I define something works for me, I don't need to know what other people think about it. (r)
- 13. I have little patience for listening to other people's problems. (r)
- 14. People who disagree with me about important issues are generally just misinformed. (r)
- 26. I have little patience for listening to other people talk about their goals. (r)

Endnotes

¹ Deletion of these items did not change levels of significance between NFSC and other scales.

² Once again, deletion of these items did not change levels of significance between NFSC and other scales.

³ There were two interesting significant results for the specific attitude items that made up this set. The openness to perspectives subscale predicted lower agreement with attitude 5, “Wealth and power are important,” in the subtle condition, and the engagement subscale predicted higher levels of agreement with attitude 11, “People without ambition are kind of pathetic,” in both conditions.

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