

Can you or will you imagine? Ability and willingness to imagine fictional scenarios
depends on the type of imaginary world

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Abstract

In this chapter we describe imaginative resistance—the perceived inability to entertain certain fictional propositions—and report research that sheds light on the phenomenon by comparing participants’ reported ability to imagine different types of fictional scenarios with varying degrees of context. In two studies, we presented participants with scenarios from fictional worlds that were morally deviant, unusual (conceptually contradictory or dystopian), and fantastical, and asked them to rate how easily they could imagine each story, and how *willing* they were to do so. Across studies, participants tended to find morally deviant worlds more difficult to imagine; context made it easier for them to imagine the different worlds, and they were generally more able than willing to imagine all types of scenarios. Self-reported imaginative resistance was most predictive of the ability to imagine morally deviant worlds, but was also related to the ability and willingness to imagine other fictional scenarios.

Keywords: IMAGINATION; MORALITY; IMAGINATIVE RESISTANCE; FICTION

Can you or will you imagine? Ability and willingness to imagine fictional scenarios depends on the type of imaginary world

The intersection of morality and imagination, although addressed to a greater extent by philosophers, has only recently become the focus of empirical investigations (e.g., Barnes & Black, 2016; Black & Barnes, 2020; Sabo & Giner-Sorolla, 2017; Shtulman & Tong, 2013; Whitaker & Godwin, 2013). Imagination clearly plays a part in empathic connections with others (see Batson et al., 2003), and fiction—with which most of us imaginatively engage on a regular basis—is believed to provide imaginative context for empathic and social simulation (Oatley, 1999, 2016). Imagination may also be involved in keeping us *from* reading: philosophers have speculated that people feel a reluctance to engage with certain fictional worlds, especially those that present immoral acts as if they were the right thing to do, despite feeling no such hesitation when it comes to the fantastical, nonsensical, or futuristic (dragons and space travel, for example); this feeling is called “imaginative resistance” (Gendler, 2000, 2006). Recent research in psychology lends credence to some of the philosophical claims and suggests intriguing avenues for empirical research on the workings of imagination. People *do* feel a particular aversion to morally deviant fictional worlds (Barnes & Black, 2016; Black & Barnes, 2017, 2020; Liao, Strohminger, & Sripada, 2014), as theorized by various philosophers (e.g., Gendler, 2000, 2006; Levy, 2005). They may be particularly reluctant to accept the truth of morally deviant claims (Kim, Kneer, & Stuart, 2018). This aversion may be lessened by context (Liao et al., 2014); several philosophers hold that imaginative resistance is at least in part due to lack of sufficient context provided by the author (Stock, 2005; Todd, 2009). For example, whereas readers might object to the killing of an innocent person presented with no backstory, they might readily accept its necessity in the context of a long narrative justifying the action. However,

despite recent research, there are many aspects of imaginative resistance that have yet to be explored. The purpose of this chapter is to highlight our ongoing research on the topic. In it, we review previous empirical research on imaginative resistance and describe two studies that investigate some of the less explored aspects of imaginative resistance by comparing the ease with which people imagine different types of fictional scenarios imagine different types of fictional scenarios, testing whether increased context can lessen resistance, and examining the distinction between ability and willingness to imagine different fictional worlds.

Although most of the philosophical discussion of imaginative resistance focuses on the aversion to engaging with morally deviant imaginary worlds (e.g., Currie & Ravenscroft, 2002; Driver, 2008; Gendler, 2000), some philosophers hold that people would also hesitate to accept *non-moral* claims that are not adequately justified by the fictional universe (Levy, 2005; Yablo, 2009) or that strike us as incoherent or confusing (Weatherson, 2004). For example, Yablo offers the example of beautiful monster trucks compared to an “awkwardly setting sun” (p. 485) as provoking resistance due to aesthetic claims, and a story where characters call a five-fingered maple leaf “oval” as causing resistance to evaluative claims, a story which we adapted for use in our research: “Kelly and Pat flopped down beneath the giant maple. One more item to find, and yet the game seemed lost. “Hang on,” Pat said. “It’s staring us in the face. This is a maple tree we’re under.” Pat grabbed a five-fingered leaf. Here was the oval they needed! They ran off to claim their prize.” On the other hand, Gendler (2000) argues that such examples simply lack sufficient context that would help overcome these types of resistance. Gendler provides an example of a longer story (“The Tower of Goldbach”) that she wrote as a demonstration in which, by God’s mandate, $7 + 5$ is both equal and unequal to 12, as an example of a story that,

though containing an impossibility (in the real world), should not cause people to experience imaginative resistance.¹

The first empirical study to explore responses to these non-moral examples was our investigation of improbability vs. impossibility (Barnes & Black, 2016)). In this study, adaptations of the Tower of Goldbach and Oval Leaf stories described above were categorized as “Conceptually Contradictory;” they were compared to Morally Deviant (e.g., “In killing her baby, Giselda did the right thing; after all, it was a girl” [Gendler, 2000; Walton, 1994]) and Factually Unlikely (such as mammoths stampeding through Las Vegas) scenarios. Participants were asked how easy it was for them to imagine a world in which the scenario was true, and then whether such a world was *improbable* or *impossible* (forced choice). Participants found the Contradictory scenarios significantly more difficult to imagine than the Deviant ones (the Unlikely stories were easiest to imagine). Although we did not report mean perceived imaginability for the separate scenarios, there did seem to be differences on this front: more participants considered the Tower of Goldbach impossible than improbable, whereas more rated the Oval Leaf improbable than impossible (though neither varied significantly from chance); participants were much more likely to rate the Deviant and Unlikely stories as improbable. In a more recent study, Kim and colleagues (2018) report evidence of imaginative resistance to violations of aesthetics and humor as well as morality (although they tested the difference in reactions to evaluative vs. descriptive claims and collapsed across type of scenario [moral, aesthetics, humor]). More research is needed, but the results reported by Kim et al. as well as our

¹ We used an abbreviated form of the Tower of Goldbach in our 2016 study and in Study 1 of this chapter: “So with great fanfare, the celebrated judge announced his resolution of the dispute: From that day on, twelve both was and was not the sum of five and seven. And the heavens were glad, and the mountains rang with joy. And the voices of the five and seven righteous souls rose toward heaven, a chorus twelve and not-twelve, singing in harmonious unity the praises of the Lord.” We used the full version, available in the Appendix, in Study 2.

2016 study suggest that people may experience resistance to non-moral fictions, particularly when they deviate from real-world evaluation and descriptive norms. Strikingly, we found that participants reported greater resistance to the Tower of Goldbach—offered as an example *unlikely* to provoke imaginative resistance—than to the Oval Leaf—offered as an example *likely* to cause it. Both scenarios were presented in abbreviated forms, however, so it may be that with added context, the philosophical predictions would be supported.

Research suggests that context matters (Liao et al., 2014). Liao and colleagues found that not only was immoral story content less objectionable if presented in the “right” genre (Greek myth), but that people familiar with the genre were less likely to experience imaginative resistance. These findings are in line with research in psychology that suggests a relationship between genre preferences and real-world moral judgment (Black, Capps, & Barnes, 2017), as well as with philosophical theorists who speculated that resistance results from lack of context (Stock, 2005; Todd, 2009). The classical examples used in the philosophical literature to illustrate imaginative resistance are short and devoid of context, such as Giselda rightfully killing her baby because it was a girl, whereas some of the stories used as examples where people would *not* experience resistance were longer (e.g., Gendler’s [2000] Tower of Goldbach is several paragraphs long). Liao and colleagues incorporated the relevant moral violation—killing a baby girl—from the Giselda example; in the right context—Greek myth—it was found more believable. However, responses to all the stories used were variable, suggesting that independently of context, there are individual differences in imaginative resistance.

Building on Liao et al. (2014), we began our research on imaginative resistance with scale development in order to assess individual differences (Black & Barnes, 2017). The resulting 13-item Imaginative Resistance Scale (IRS) was related to moral purity concerns and

disgust sensitivity, as well as to participant ratings of the imaginability of the five morally deviant scenarios adapted from the philosophical literature that we employed in Study 1 described in this chapter. Three scenarios were very short, including the well-known Giselda scenario cited above, and two similar one-line stories proposed as examples unlikely to provoke resistance ("In killing her baby, Giselda did the right thing; after all, it was born on January 19," and "In killing her baby, Giselda did the right thing; after all, it was a changeling."). The other two scenarios are longer, for example (adapted from Yablo, 2002): "The herding village of Trent was characterized by the citizens' fervent desire to uphold their moral values. The Wall family was ostracized after they turned away a homeless man looking for work, and children were regularly praised for kind behavior. Of course, no one objected when little Billy was starved to death since he had, after all, forgotten to feed the sheep. The result of such clear-cut decisions was a happier, safer community." Both IRS scores and imaginability ratings were normally distributed, providing strong evidence of individual differences in perceived and reported resistance to morally deviant fictional content; although five people rated the deviant scenarios at zero ("I absolutely cannot imagine such a world"), a few rated them at 100 ("I can very easily imagine such a world").

One of the proposed explanations for imaginative resistance is that morality is authority-independent and that readers therefore do not accept an author's right to dictate what is moral, even in a fictional world. In a recent study (Black & Barnes, 2020), we addressed the issue of authorship by asking participants to create their own fictional worlds (each participant described all three: Morally Deviant, Dystopian, and Fantasy) in which different statements would be true ("In killing her baby, Giselda did the right thing; after all, it was a girl;" "By the year 2020, packs of wolves were roaming the towns of England;" and "Carlos and Stacy made sure the

dragons were properly fed before riding them.”) In this way, we not only took out the potential authorial authority confound, but participants’ written responses could be used to gauge how much effort they put into imagining (word count), which was impossible to know when we simply asked participants to read a brief description and *imagine* the fictional world. We then operationalized imaginative resistance in two ways. First, we asked participants whether the prompt was true in the world they had described (e.g., “In the world you described, is it true that Giselda's killing her baby was the right thing to do?”). Second, we asked them how easy it had been for them to imagine that world. Results provided evidence that people do indeed find morally deviant worlds more difficult to imagine (compared with dystopian and fantasy): despite writing more in the Morally Deviant conditions, participants were more likely to say they had that it was *not* true that Giselda had done the right thing, and reported finding it much more difficult to imagine that world. Participants put more effort into *trying* to imagine the morally deviant world, although some did refuse to engage in the task, providing responses such as “I don't want to think about a young girl being killed.”

To the extent that some participants refused to try and others tried and failed, our 2020 paper did to some degree address what prior research (Barnes & Black, 2016; Black & Barnes, 2017; Liao et al., 2014) did not: whether this perceived imaginability (both Liao and colleagues and ourselves asked participants how easy it was for them to imagine the narrative stimuli) resulted from ability or willingness to imagine. Liao and Gendler (2015) provide a cogent explanation of what they call “cantian” and “wontian” theories of imaginative resistance. “Cantians”—those who believe resistance arises from an inability to imagine—may rely on cognitive models, such as Weinberg and Meskin’s (2006), according to which real world morality overrides any effort to conflicting moral claims in our “imagination box.” Other cantian

theorists believe that there is something special about morality that makes it independent of authors' attempts to dictate the contents of their fictional worlds either because of the nature of morality (e.g., Levy, 2005; Walton, 1994; Weatherston, 2004) or the nature of readers (e.g., Driver's [2008] appeal to psychological necessity). "Wontian" theorists (e.g., Currie & Ravenscroft, 2002; Gender, 2000, 2006; Stokes, 2006) hold that imaginative resistance occurs not because we *can't* imagine morally deviant fictions, but because we do not *want* to do so. Gendler defends the wontian paradigm, and her examples of resistance-provoking vs. non-provoking stories reflect her belief that it is unwillingness rather than inability. According to Gendler, Kipling's *If* (a product of its time that in ours rings racist), a short story that features responsible white mice and slovenly black mice, and Giselda being justified in killing her baby *because it was a girl*, should all cause imaginative resistance because of their implied evaluative claims, whereas Giselda killing her baby because it was a changeling (or born on January 19th) should not, presumably because we do not have the unequal treatment of changelings at the forefront of our moral conscience. Our 2020 paper suggested that some people *won't* try to imagine that an action immoral in their world could ever be the right thing to do, whereas others are willing to try, but still fail. However, we did not directly ask participants how they felt about it. What is more, we did not include the classic example thought not to cause imaginative resistance, Gendler's Tower of Goldbach.

The studies reported in this chapter were carried out just before (Study 1) and immediately after (Study 2) the writing study (Black & Barnes, 2020). In them, we specifically test the predictions of the philosophers regarding what is and is not likely to provoke resistance by asking participants to rate their perceived ability to imagine scenarios with different themes and varying context. In Study 1, we compared imaginability ratings for three types of scenarios:

Morally Deviant (the three Giselda scenarios, and the village of Trent story mentioned above, plus Levy's [2005] Jack and Jill story²), Unusual (unlikely to cause resistance on moral grounds: the Dystopian wolves scenario and the excerpt from the Tower of Goldbach, both described above), and, as a control condition, Fantastical (the abovementioned one-liner about dragons and two more: "Max stared at the glass of water, anger building up inside of him. He could feel something shift inside of him. He willed the glass to fall over. He willed it with every ounce of his being—and it fell;" and "Erin never expected to become a wizard. But on the morning of her eighteenth birthday, she woke up floating over her bed. That was when she knew: she had inherited her parents' powers"). The popularity of fantasy in books and film suggests that few people would have difficulty imagining dragons or magic (see also Gendler, 2000; Weatherson, 2004). In Study 2, we tested the effect of added context, and compared perceived *ability* with reported *willingness* to imagine the scenarios. In both studies, we compared self-reported imaginative resistance (using the IRS; Black & Barnes, 2017) with imaginability ratings.

What is Most Difficult to Imagine, Murder, Magic, or Illogicality?

The primary purpose of Study 1 was to test the predictions of the philosophers with respect to the types of scenarios that should provoke imaginative resistance and the types that should not (*cf.* Gendler, 2000; Mahtani, 2010; Levy, 2005; Yablo, 2002). To do so, we asked participants to rate the imaginability of moral and non-moral scenarios taken from the philosophical literature, plus a fantasy control condition, all described above. We then compared mean ratings across the categories of Morally Deviant, Unusual, and Fantastical. Finally, we

² "Jack and Jill had a fine old time up on top of that hill. Eventually, though, Jack tired of her and her whining. So he strangled her and left her body out in the open for the vultures. Jack shouldn't have left her body unburied, but he was right to kill her. She was boring." (Levy 2005; participants randomly presented with this version or Jill-kills-Jack version.)

compared their ability to imagine the different types of fictional worlds to their scores on the Imaginative Resistance Scale.

We expected participants to find the Fantastical scenarios easiest to imagine, but did not make directional hypotheses regarding Morally Deviant and Unusual scenarios. If people find fictional worlds with deviant moral paradigms *most* difficult to imagine, then mean imaginability for Morally Deviant scenarios would be significantly lower than the mean for Unusual scenarios. This would be our expectation based on the philosophical literature (e.g., Gendler, 2000; but see Yablo, 2009), because Unusual scenarios have generally been proposed as *unlikely* to provoke imaginative resistance on moral grounds (see examples below and appendix for all materials). However, in our first imaginative resistance paper (Barnes & Black, 2016) participants found Conceptually Contradictory stories more difficult to imagine than Morally Deviant ones. If people find Unusual fictional worlds more difficult to imagine as suggested by this prior paper, mean imaginability would be lowest for the Unusual category. It was also possible that these two categories would be seen as equally difficult to imagine.

Based on our scale development paper (Black & Barnes, 2017), we hypothesized a moderate negative correlation between imaginability ratings for the Morally Deviant scenarios and scores on the IRS. Of interest were the correlations between IRS scores and imaginability ratings for the Unusual and Fantastical scenarios. We developed the IRS to tap imaginative resistance to immoral fictional content, but there was similarity in the way participants treated Morally Deviant, Conceptually Contradictory, and Factually Unlikely scenarios in our 2016 paper. As such, at least two outcomes were possible: the IRS could be related only to perceived imaginability of morally deviant worlds, or it could be related to imaginability in general.

To test our hypotheses, we collected data from 144 participants (64% women) who completed at least half of a brief questionnaire offered online via Qualtrics. The online survey consisted of three parts. First, participants were presented with six short scenarios (2-5 lines of text). After each scenario, participants were asked, “How easily can you imagine a fictional world in which this is true?” They responded by pulling a bar from 0 (*I absolutely cannot imagine such a world*) to 100 (*I can very easily imagine such a world*). Both short and one-line scenarios belonged to one of three categories, Morally Deviant, Unusual, and Fantastical. For the Morally Deviant and Unusual categories, as described above. Each scenario and question were presented on separate pages, in random order. Second, participants were asked to rate five randomly presented *one-line* scenarios in the same fashion. Finally, they completed the Imaginative Resistance Scale ($r_\alpha = .91$ in this study).

Preliminary analyses showed that scores on the IRS were normally distributed with a mean of 35.07 ($SD = 10.71$). There were no statistically significant gender differences between means or correlations. Participants varied greatly in reported imaginability: for each scenario, the minimum was 0 and the maximum was 100. However, more people found the morally deviant worlds completely unimaginable than found fantasy unimaginable. For example, between 13% and 20% rated the imaginability of killing a baby at zero in the three scenarios, whereas only a few people—between 1% and 4%— in each fantasy scenario rated imaginability at zero (see Table 1).

Mean comparisons were the focus of our primary analyses.³ Participants found Morally Deviant worlds ($M = 46.5$) more difficult to imagine than both Fantastical ($M = 71.8$; $p < .001$, d

³ Repeated measures ANOVA revealed differences in imaginability amongst types of fictional world, $F(2, 276) = 63.95$, $p < .001$, partial $\eta^2 = .317$. Because there were five Morally Deviant scenarios and three each for Fantastical and Unusual, mean rather than total scores for each category were used. Pearson’s correlation was used to assess the

= 0.84) and Unusual ones ($M = 53.6$; $p = .002$, $d = 0.26$; see Table 1 for details). As expected, participants perceived Unusual worlds as more difficult to imagine than Fantastical worlds, ($p < .001$, $d = 0.70$; see Figure 1). However, it should be noted that the only Unusual world that was rated truly difficult to imagine was the Tower of Goldbach ($M = 36$); both the Oval Maple Leaf and the Wolves scenarios were rated almost twice as easy to imagine ($M = 62$), $d = 0.74$.

[insert Table 1 and Figure 1 near here]

Scores on the Imaginative Resistance Scale were most strongly and negatively correlated with mean imaginability for Morally Deviant worlds, $r = -.53$, 95% C. I. [-.66, -.38]. In other words, people with greater self-reported imaginative resistance were less able to imagine worlds in which the morally deviant scenarios would be true. People with greater imaginative resistance were also somewhat less able to imagine Unusual ($r = -.28$, [-.44, -.10]) and Fantastical ($r = -.28$, [-.45, -.11]) worlds, suggesting that the imaginative resistance scale, which focuses specifically on participants' comfort with immoral fictions, may also be related to the ease with which individuals can imagine different scenarios more broadly. It is worth noting that the differences in correlations were statistically significant for both the difference between Morally Deviant and Fantastical, Steiger's $z = 3.67$, $p < .001$, and the difference between Morally Deviant and Unusual, Steiger's $z = 3.35$, $p < .001$.

Finally, we ran some *post hoc* analyses. Our study was designed to use a mean score of 3-5 scenarios in order to test our hypotheses; however, our data also allows us to analyze the specific philosophical scenarios individually. In the philosophical literature, it has been

relationship of scores on the IRS and mean imaginability ratings for each type of scenario. Steiger's z assessed the statistical difference between separate correlations (Steiger, 1980). Bias-corrected and accelerated bootstrapping ($N = 5,000$) was used to estimate confidence intervals.

suggested that people should find it much more difficult to imagine that Giselda killing her baby was right because it was a girl than because it was either a changeling or born on January 19th (see Gendler, 2000). In our sample, people found it more difficult to imagine it being right to kill a baby for being born on January 19th ($M = 35.17$) than for being a girl ($M = 45.66$), $p < .001$, $d = 0.27$. Whereas two of the three Unusual scenarios were significantly easier to imagine than all of the five Morally Deviant ones, the Tower of Goldbach scenario was just as difficult for participants to imagine ($M = 35.89$) as the most difficult to imagine morally deviant story. Although IRS scores had a moderately strong correlation with all of the morally deviant scenarios, it was only weakly related to the Tower of Goldbach (See Table 2). Intriguingly, IRS scores were just as strongly correlated ($r = -.43$) with the Wolves scenario (“By the year 2020, packs of wolves were roaming the towns of England” [Mahtani, 2010]).

[insert Table 2 near here]

Study 1 Discussion: It’s Complicated

Results from Study 1 provide empirical evidence for the philosophical claim that people experience heightened imaginative resistance to morally deviant worlds. Mean imaginability ratings for Morally Deviant worlds were lower than those for Unusual or Fantastical worlds as a whole, and people were far more likely to find Morally Deviant worlds completely impossible to imagine. However, the results do not entirely line up with the philosophical predictions. When we compared mean imaginability at the level of individual scenarios, we found that the most difficult morally deviant philosophical scenario to imagine was Giselda being morally right in killing her baby because it was born on the 19th of January. Gendler (2000) had proposed that this scenario would be less likely to provoke imaginative resistance than a scenario in which Giselda killed a baby for being a girl. It is possible that real-world comparisons (such as the

culture surrounding childbearing restrictions in China) make the latter scenario easier to imagine, rather than decreasing participants' willingness to do so. We did not ask participants to report their nationality, so could not control for possible cultural differences

Another result that does not necessarily support philosophical predictions (e.g., Gendler, 2000), but is in line with our first paper on the topic (Barnes & Black, 2016) was that the Tower of Goldbach story was rated as just as difficult to imagine as the morally deviant scenarios. Interestingly, participants had far less difficulty imagining an oval (and five-fingered) maple leaf or wolves roaming the towns of England. Yablo (2009) offered the oval maple leaf scenario as an example of resistance to descriptive (rather than moral) inconsistencies; here, either participants generally did not care that the characters in the brief story called a five-fingered leaf "oval", or they simply didn't notice. Of course, some *did* experience resistance to the scenario: in line with past research, we found a wide variety of responses to all the scenarios as well as in self-reported imaginative resistance.

Scores on the Imaginative Resistance Scale had the strongest relationship with difficulty in imagining morally deviant fictional worlds. Interestingly, IRS scores were also significantly, if only moderately, related to the ability to imagine unusual and fantastical worlds. Imaginative resistance, as measured by the IRS, seems to be related to the ability to imagine non-morally deviant worlds also, if to a lesser degree (IRS scores only accounted for 7.8% of the variance in imaginability of fantasy and dystopian worlds, compared with 28.1% for morally deviant worlds). Thus, the IRS appears to capture individual differences in general imaginative ability, in line with Barnes and Black's (2016) suggestion that variations in responses to such imaginative tasks reflect generalized imaginative ability.

IRS scores were related to ease of imagining for all of the scenarios except the Oval Maple Leaf, but the correlations with the fantastical scenarios and the Tower of Goldbach adaptation were significantly weaker than those for the Morally Deviant scenarios. Intriguingly, the correlation between IRS scores and the Wolves scenario was as strong as those for the Morally Deviant scenarios; people who reported greater imaginative resistance had more difficulty imagining that wolves could be roaming the towns of England. Although the one-line scenario makes no direct reference to morality, it implies a dystopian future where human societal structures have broken down. Such a future could appear immoral to those who value the moral foundation of Authority as well as that of Sanctity, both moral domains that are important to people who base their moral judgment on the good of the community (Graham et al., 2011; Graham, Haidt, & Nosek, 2009). That people did not find it difficult to imagine a breakdown of human society is unsurprising, given the popularity of fiction featuring dystopian futures.

We categorized scenarios according to whether they could be expected to provoke imaginative resistance on moral grounds, but including the Wolves scenario—unusual but well within the reach of the popular imagination—with two scenarios that made contradictory logic claims raised more questions than it answered. Clearly, fictional worlds cannot be divided neatly into “imaginative resistance causing” and not. In our first (2016) study, we grouped shortened forms of both the Tower of Goldbach and the Oval Leaf in a category called “Conceptually Contradictory,” and classified the Wolves scenario as “Factually Unlikely” with a similarly dystopian story; most participants rated these dystopian fictional worlds improbable, but not impossible. It may be that although people *can* imagine such scenarios, they would rather *not*, because they are not, in fact, truly impossible, whereas $7 + 5$ being both equal and not equal to

12 is logically inconsistent (Nichols, 2006), and dragons and magic, although enjoyable fantasies, are blatantly inconsistent with the rules of physics.

Whether resistance arises from lack of ability or lack of willingness has been debated in the philosophical literature (*cf.* Gendler, 2006; Stokes, 2006; Weatherson, 2004; Weinberg and Meskin, 2006), and neither past research nor Study 1 can shed light on the question empirically. Although participants were asked how easily they could imagine the different scenarios in Study 1, it is unclear whether their responses reflect their willingness to imagine certain scenarios or their ability to do so. A person who reported maximal difficulty imagining a morally relevant scenario could reasonably do so because they *could not* conceive of a world in which that deviant scenario was true, or they could have simply reported that they could not do it because they did not want to. In Study 2 we address this limitation as well as adding context to the scenarios.

Can't or Won't?

The purpose of Study 2 was threefold. First, we wanted to examine the effect of adding additional context to each of the different categories of scenarios used in Study 1. In particular, we were interested in whether inclusion of the full, original text for Gendler's (2000) "Tower of Goldbach" would render it more easily imaginable than morally deviant stories for which context was also provided. Second, we wanted to compare *four* categories of scenarios, splitting Study 1's "Unusual" category into its two subsets: Conceptually Contradictory (following Barnes & Black, 2016) and Dystopian. Third, we wanted to contrast ability and willingness to imagine by asking participants to rate not only whether they *could* imagine the worlds, but also if they *wanted* to do so. By including a question that allowed participants to indicate if they did not want to imagine a scenario, we hoped to increase the likelihood that they were considering their ability

to imagine separate from their desire to do so (inasmuch as the concepts can be separated for the participants).

Thus, four stories (one each from the categories of Morally Deviant, Contradictory, Dystopian, and Fantastical) were presented with more context than was provided in Study 1, and participants were asked to rate both how easy they found it to imagine a world in which that story was true and, independently of their ability to do so, how much they *wanted* to imagine such a world.

To explore these questions, we recruited 168 people (57.7% women) on social networking sites (64 participants) and Amazon.com's MTurk (104 participants, paid \$0.25). There were no differences between data collection groups for IRS scores, reported ability to imagine any world, or the willingness to imagine the Morally Deviant or Contradictory worlds. MTurk participants were less willing to imagine the Dystopian and Fantastical worlds, but there was no interaction, so the two samples were collapsed for analysis. All participants completed a 5-minute survey offered on Qualtrics, in which they were presented representing (in random order) with the stories representative of the four types of worlds: Morally Deviant (Weatherson's [2004] *Death on a Freeway*), Dystopian (adapted from Mahtani, 2010), Conceptually Contradictory (Gendler's *Tower of Goldbach*, complete text), and Fantastical (see Appendix). On the same page as the story, participants were asked to rate their ability to imagine a world in which it would be true, using the same question as in Study 1. On the next page, they were asked, "Independently of whether you *can* imagine such a world, how much do you *want* to imagine a world in which "(title of story)" would be true?" They responded by pulling the bar from 0 (*I really do not want to imagine such a world.*) to 100 (*I am perfectly willing to imagine*

such a world.) Afterwards, they completed the Imaginative Resistance Scale ($r_a = .92$ in this study).

As in Study 1, scores on the IRS were normally distributed with a mean of 35.83 ($SD = 10.97$). Women ($M = 37.70$) reported higher scores on the IRS than did men ($M = 33.58$), $p = .017$, $d = 0.38$, but there were no gender differences in reported ability or willingness to imagine fictional worlds. Mean imaginability ($M = 45.24$, $SD = 34.44$) for the full version of Gendler's (2000) Tower of Goldbach was greater than that reported in Study 1 for the abbreviated version ($M = 35.93$, $SD = 30.09$), $p = .012$, $d = 0.29$. Strikingly, however, participants were more likely to rate their *ability* to imagine this scenario at zero (11.3%) than their ability to imagine the Morally Deviant (4.8%), Dystopian (4.2%) and Fantastical (3.6%) worlds. In contrast, far more people rated their *willingness* to imagine the Morally Deviant world at zero (31.5%) than they did the Contradictory (17.3%), Dystopian (13.7%), or Fantastical (4.8%) worlds, ($\chi^2 (df = 2) = 44.71$, $p < .001$). See Table 1 for details.

Means for ability and willingness to imagine were different across all groups.⁴ For each fictional world type, participants reported being far less *willing* than *able* to imagine the stories in all the worlds except Fantastical (see Table 3). The largest difference between ability and willingness was for the Morally Deviant world, Cohen's $d = 1.04$. Participants were least willing to imagine the Morally Deviant fictional world, $ps < .001$, $ds \geq 0.49$, and most willing to imagine the Fantasy world, $ps < .001$, $ds \geq 0.80$. There was no difference in reported willingness to imagine the Dystopian vs the Contradictory worlds. Participants were least *able* to imagine the Contradictory world, but this difference was not statistically significant when compared to the

⁴ Repeated measures ANOVA omnibus test: $F(7, 161) = 49.15$, $p < .001$, $\eta_p^2 = .68$.

Morally Deviant world ($p > .999$, $d = 0.15$). Participants were most able to imagine the Fantastical world, but it did not differ significantly from the Dystopian.

[insert Table 3 near here]

We also compared scores on the IRS to ability and willingness to imagine each type of world. IRS scores were most strongly related to the *ability* to imagine the Morally Deviant world ($r(166) = -.30$, 95% CI [-.44, -.16]), but they were not significantly related to the *willingness* to imagine it ($r = -.14$, [-.30, .01]). They were also negatively correlated with the ability to imagine both Contradictory ($r = -.22$, [-.37, -.06]) and Fantastical worlds ($r = -.19$, [-.35, -.03]). IRS scores were not significantly related to the willingness to imagine the Contradictory world, but they did have weak negative correlations with the willingness to imagine the Dystopian ($r = -.16$, [-.31, .001], $p = .043$) and the Fantastical world ($r = -.21$, [-.37, -.04]). When IRS scores were entered into the Repeated Measures ANOVA model, they were a significant predictor of all variables except for the ability to imagine the Dystopian world and the willingness to imagine the Contradictory world. The relation of IRS scores and the ability to imagine the Morally Deviant world was the strongest ($\beta = -0.96$), compared with $\beta = -0.68$ for the ability to imagine the Contradictory World, the next strongest relation.

Study 2 Discussion: It's Both, and Context Matters

Study 2 included two important additions: context and separate questions assessing ability and willingness to imagine. The results provide fascinating information that suggests answers to philosophical questions. First, context *and* content matter to the imagination. Although mean imaginability for the Morally Deviant, Dystopian, and Fantasy worlds was not different from that reported for similar worlds in Study 1, presenting participants with the full version of Gendler's (2000) Tower of Goldbach did make it easier for participants to imagine

that world. Further, with the addition of context, the percentage of people who rated their ability to imagine the Morally Deviant world at zero was significantly less in this study. Interestingly, contrary to some philosophical theories (Gendler, 2000, 2006), our data suggest that some people do also experience imaginative resistance to a fictional world that is incoherent and self-contradictory (see also Barnes & Black, 2016). Mean ability to imagine the Tower of Goldbach was not significantly different from mean ability to imagine the Morally Deviant world (Weatherson's [2004] Death on a Freeway). In fact, more than twice as many people reported being completely unable to imagine the world in Tower of Goldbach than the world in the Morally Deviant story.

When it came to *willingness* to imagine, participants were far less willing to imagine the Morally Deviant world than any other kind of world, including the incoherent Tower of Goldbach. However, their *ability* to imagine the Morally Deviant world was not different from their ability to imagine the Tower of Goldbach. Thus, the distinction between reader's reactions to different types of fictional worlds appears greater when it comes to willingness to imagine than when it comes to ability. In Study 1, participants reported greater ease of imagining Giselda killing her baby because it was a girl than because it was born on January 19th; it may well be that if asked how *willing* they were to imagine these scenarios, the responses would line up more neatly with Gendler's (2000) expectations: greater imaginative resistance to imagining killing because of sex.

Another intriguing result of Study 2 involves self-reported imaginative resistance. Although scores on the IRS were predictive of both willingness and ability to imagine a variety of scenarios, IRS scores had the strongest relationship with the *ability* to imagine the Morally Deviant world. Interestingly, IRS scores were not related to the willingness to imagine either the

Deviant or the Contradictory world. The only other variable that IRS scores did not predict was the ability to imagine the Dystopian world; this is particularly interesting given that the correlation in Study 1, with the one-line Wolves scenario, was strong. In both studies, there was a wide variety of responses to the ease of imagining question, and mean imaginability did not vary; perhaps the added context for a type of world often featured in popular fiction jump-started the imaginations of those who did not have such stories readily available to fictional conjecture. Why then were IRS scores related—though weakly—to the *willingness* to imagine the more contextualized Dystopian world? Possibly the significant correlation was due to chance in a small sample (Stangor & Lemay, 2016); alternatively, there could be a moral element to wanting to imagine a world where society has broken down. The fact that participants were significantly more able than willing to imagine the Dystopian as well as the Contradictory world lends credence to interpreting them morally (after all, the Tower of Goldbach may seem morally relevant to some insofar as it contains God). However, although results from Study 2 suggest that the IRS taps both ability and willingness to imagine across different types of fictional worlds, we only used brief examples of four types—out of many—fictional worlds.

General Discussion

At the outset of this investigation, we had various questions about the nature of imaginative resistance that built on our body of research on the phenomenon: Is there something special about morally deviant fictional worlds that makes people particularly prone to resist them? Does adding context change people's perceived ability to imagine fictional worlds? Can we differentiate between ability and willingness to imagine different scenarios? Finally, how does self-reported imaginative resistance (Black & Barnes, 2017) relate to perceived ability and willingness to imagine? In Study 1, we tested whether individuals indeed found certain fictional

scenarios more difficult to imagine than others and whether scores on the Imaginative Resistance Scale predicted participants' ease of imagining these worlds. In Study 2, we then explored the effect of context, attempted to tease out the difference between ability and willingness to imagine fictional worlds, and, finally, examined the relationship between scores on the IRS and reported ability and willingness to imagine.

We believe that the answer to the first question is clear: there *is* something special about the (im)moral content of fiction that can influence people's ability and, especially, willingness to engage with it. Currie (1995) argues that the most important learning accomplished through fiction is moral learning, precisely because the imagination is crucial to value exploration. Similarly, Nussbaum (1985; see also Gardner, 1977) holds that it is the responsibility of the author to ensure that a novel serve to inculcate moral sensibility in the reader. If such theories reflect real reader experience with fiction, it is unsurprising that participant responses to potentially as well as blatantly moral scenarios should be distinctive. In the current research, although participants had nearly as much difficulty imagining conceptually contradictory worlds, they were far less *willing* to imagine a morally deviant one. What is more, in Study 2, participants were much less willing than capable of imagining all but the Fantastical scenario. We speculate that *this* fantastical world at least is devoid of moral content; perhaps its patent fictionality increases its perceived distance from the real world and thus people's perception of its moral relevance (Roskies & Nichols, 2008). The Morally Deviant scenarios are purposefully moral, and we would argue that, especially in Study 2, the Contradictory and Dystopian scenarios are not only easy to view through moral lenses, but also potentially "real" to participants. Wolves roaming England in the near future is easily imagined as the result of a breakdown of societal order, often the subject of dystopian fiction, and perhaps readily available

in the popular imagination due to apocalyptic religion and scientifically predicted environmental threats, and societal breakdown is inherently moral. Stories referencing God and heaven, which the Tower of Goldbach does, are also immanently moral, especially for those familiar with biblical tradition; the illogical contradiction of $7 + 5$ being equal and unequal to 12 undoubtedly makes the Tower of Goldbach difficult to imagine (see Nichols, 2006; Weisberg & Goodstein, 2009; Yablo, 2009), but it could be that its less obvious moral connotations also influence willingness to imagine.

Presenting the Tower of Goldbach in its original version (Gendler, 2000) did make it much easier for participants to imagine. This was not the case for the other three scenarios, but it must be noted that we did not use a shortened version of Death on a Freeway in Study 1. It could be that adding context to the one-line Giselda killing her baby scenarios would make them much easier to imagine as well. Further research is needed to investigate the effects of context, not only to compare morally deviant scenarios, but also to test how people engage with stories presented in more realistic formats, such as short stories or full-length novels rather than a few brief paragraphs designed as philosophical thought experiments.

What is clear is that ability and willingness to imagine fictional worlds work differently, even when approximated with two simple rating scales. As mentioned above, the only scenario that participants reported being equally able and willing to imagine was the fantastical one. In general, these results suggest that both ability and willingness to imagine fictional worlds may be at play when people feel imaginative resistance, although there is bound to be some overlap across the two both in our self-report results and in people's real-world reactions. The reported inability to imagine the Tower of Goldbach may primarily reflect a rejection of the logical inconsistency of both p and $\sim p$ (Nichols, 2006), whereas, when it comes to resistance to

imagining morally deviant worlds, *willingness* to imagine may be more influential than ability (see Currie & Ravenscroft, 2002; Gendler, 2006; Todd, 2009). It may be that people tend to shy away from imagining morally deviant worlds precisely because the acts depicted therein are perfectly *possible* in the real world. Imagining fictional immoral acts may feel too much like wanting them to occur, thus making it much easier for the fictional morality to carry over into the real world (e.g., Currie, 1995; Gendler, 2006; Murray, 2001). However, distinguishing ability from desire to imagine will always be difficult, and this difficulty may in fact be protective: if people can acquire moral aspirations through fiction-inspired imaginings, so too may they learn *immoral* desires (Currie, 1995).

Finally, self-reported imaginative resistance, as assessed by the IRS, seems primarily related to perceived ability rather than willingness to imagine morally deviant worlds. Interestingly, although the relationship tended to be strongest with morally deviant worlds, scores on the IRS were also related to the extent to which people could—and wanted to—imagine other types of fictional worlds. However, IRS scores seemed to be most related to the ability rather than to the willingness to imagine in general, which is intriguing given that a self-report scale may reflect how participants *want* to be as well as how they are. In our scale development study (Black & Barnes, 2017) IRS scores were most strongly related to moral purity concerns, suggesting that fear of moral contagion may be what prompts the rejection—conscious or not—of deviant moral worlds. It would be interesting to explore whether people experience more imaginative resistance to immoral events they think likely to occur in the real world; people might actually kill babies because they are female, but they are not going to start taming dragons. A promising media for studying this might be video games: do those who object

to violent video games score higher in imaginative resistance? And are the video games they most object to closer to real life (e.g., Grand Theft Auto vs. Dark Souls)?

The studies reported in this chapter expand on recent empirical investigations of imaginative resistance and suggests important associations between morality and imagination, but it raises a variety of additional question, in part because, out of necessity, we used only a few scenarios, representing a limited selection of possible fictional worlds. Based on participant responses, some conceptually contradictory worlds (e.g., the Tower of Goldbach) are very difficult to imagine, but an oval 5-fingered leaf is not; people find a dystopian scenario easy to imagine but they might not *want* to imagine it), imaginative resistance arises in response to both inability and unwillingness (see Liao & Gendler, 2015). Morally relevant content appears to be the most important predictor of resistance, but non-moral stories may also be resisted. Individual differences in what people perceive as morally relevant (see Graham et al., 2009) may be driving such reactions. In short, much remains to be done before imaginative resistance is fully understood.

Several limitations of the studies reported in this chapter should also be considered. The measures used were self-reported. Thus, participants may or may not be accurately perceiving the difficulty they would have in imagining these scenarios. Although the results from our study in which we asked participants to describe their own fictional worlds (Black & Barnes, 2020) reveal similar patterns of imaginative resistance, the fact that in these studies participants were not required to give any proof that they had indeed imagined—or even attempted to imagine—the scenarios introduces potential measurement error. Future research could measure how long it takes participants to imagine a given world to the fullest extent of their ability, or whether participants' ability and willingness to imagine morally deviant worlds vary significantly when

participants are morally contaminated or put under time pressure prior (see Phillips & Cushman, 2017). Such research could greatly inform philosophical debates on imaginative resistance as well as psychological research on the nature of imagination.

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Table 1

Ratings of ability and willingness to imagine each world in Studies 1 and 2, along with the percent rated at zero for each case.

	Study 1		Study 2			
	<i>Ability to imagine</i>		<i>Ability to imagine</i>		<i>Willingness to imagine</i>	
	<i>M (SD)</i>	<i>% rated at 0</i>	<i>M (SD)</i>	<i>% rated at 0</i>	<i>M (SD)</i>	<i>% rated at 0</i>
Morally Deviant	47 (31)					
Giselda: girl	46 (39)	15.4				
Giselda: born Jan. 19	36 (39)	20.3				
Giselda: changeling	48 (38)	12.5				
Jack & Jill: boring	55 (37)	7.6				
Jack & Jill: freeway			50 (35)	4.8	18 (28)	31.5
Trent	49 (35)	9.8				
Unusual	54 (23)					
Tower of Goldbach	36 (35)	13.3	45 (34)	11.3	32 (32)	17.3
Oval leaf	62 (35)	4.2				
Wolves	62 (35)	4.9	61 (33)	4.2	37 (35)	13.7
Fantastical	72 (29)					
Dragons	73 (31)	3.5	65 (34)	3.6	64 (33)	4.8
Wizard	70 (34)	4.2				
Telekinesis	73 (31)	1.4				

Note. Study 1: $N = 144$; Study 2: $N = 168$. Proportions rated at zero were significantly different for each study, and across studies for the same scenario, at $p < .01$.

Table 2

Zero-order Pearson's correlations between scores on the Imaginative Resistance Scale and reported ease of imagining (ability) in Studies 1 and 2, and willingness to imagine in Study 2.

	Ability to Imagine		Willingness to imagine
	Study 1	Study 2	(Study 2)
Morally Deviant			
Giselda: girl	-.46***		
Giselda: born Jan. 19	-.41***		
Giselda: changling	-.48***		
Jack & Jill: boring	-.47***		
Jack & Jill: freeway		-.30***	-.14
Trent	-.38***		
Unusual			
Tower of Goldbach	-.19*	-.22**	-.09
Oval leaf	.07		
Wolves	-.43***	-.08	-.16*
Fantastical			
Dragons	-.19*	-.19*	-.21**
Wizard	-.28**		
Telekinesis	-.26**		

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 3

Means, standard deviations, and pairwise comparison information for reported ability and willingness to imagine each type of fictional world in Study 2.

	<i>M</i>	<i>SD</i>	<i>p</i>	<i>d</i>
Morally Deviant				
Able to imagine	50.35	34.99	< .001	1.04
Willing to imagine	17.64	27.79		
Conceptually Contradictory				
Able to imagine	45.24	34.44	.001	0.39
Willing to imagine	32.30	31.61		
Dystopian				
Able to imagine	64.83	32.51	< .001	0.84
Willing to imagine	37.55	32.21		
Fantastical				
Able to imagine	69.46	33.09	> .999	0.17
Willing to imagine	63.85	33.48		
<u>Statistically significant comparisons across worlds</u>				
Ability				
Morally Deviant vs. Dystopian			< .001	0.43
Morally Deviant vs. Fantastical			< .001	0.56
Contradictory vs. Dystopian			< .001	0.58
Contradictory vs. Fantastical			< .001	0.72
Willingness				
Morally Deviant vs. Contradictory			< .001	0.49
Morally Deviant vs. Dystopian			< .001	0.66
Morally Deviant vs. Fantastical			< .001	1.50
Contradictory vs. Fantastical			< .001	0.97
Dystopian vs. Fantastical			< .001	0.80

Note. *p* values for pairwise comparisons reflect the Bonferroni adjustment for family-wise alpha error. *d* = Cohen's *d* with pooled standard deviations.

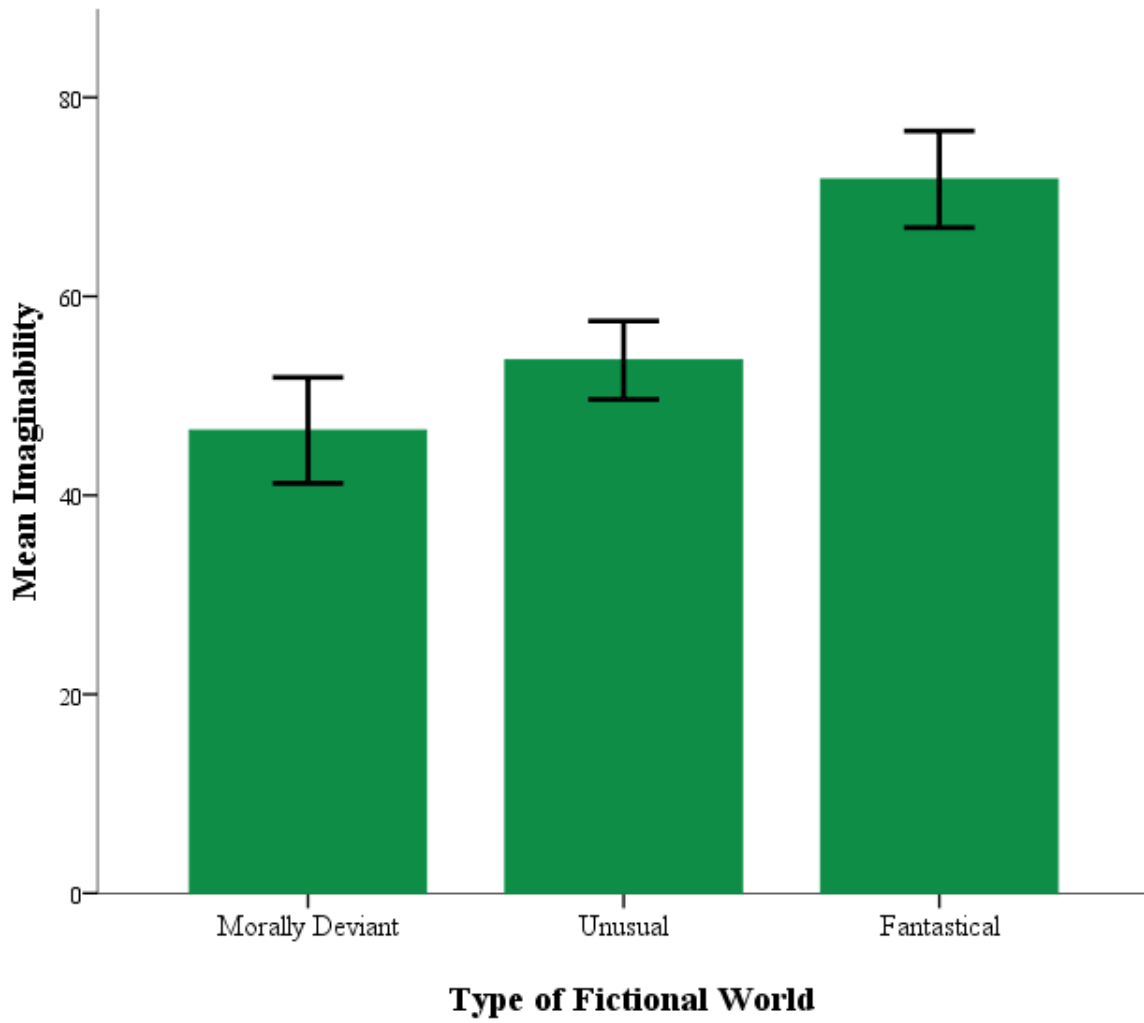


Figure 1. Reported ease of imagining in Study 1. People found it easiest to imagine Fantastical scenarios and most difficult to imagine morally deviant ones. Error bars represent +/- two standard errors.

Appendix

Study 1

Fictional scenarios presented to participants.

* After each scenario, participants were asked, “How easily can you imagine a fictional world in which this is true?” They respond by pulling a bar from 0 (*I absolutely cannot imagine such a world*) to 100 (*I can very easily imagine such a world.*) Each scenario and question were presented on separate pages, in random order.

Morally deviant worlds

“Jack and Jill had a fine old time up on top of that hill. Eventually, though, Jack tired of her and her whining. So he strangled her and left her body out in the open for the vultures. Jack shouldn’t have left her body unburied, but he was right to kill her. She was boring.” (Levy 2005; participants randomly presented with this version or Jill-kills-Jack version.)

“The herding village of Trent was characterized by the citizens’ fervent desire to uphold their moral values. The Wall family was ostracized after they turned away a homeless man looking for work, and children were regularly praised for kind behavior. Of course, no one objected when little Billy was starved to death since he had, after all, forgotten to feed the sheep. The result of such clear-cut decisions was a happier, safer community.” (adapted from Yablo, 2002)

"In killing her baby, Giselda did the right thing; after all, it was a girl."

"In killing her baby, Giselda did the right thing; after all, it was born on January 19."

"In killing her baby, Giselda did the right thing; after all, it was a changeling." (All three Giselda scenarios from Gendler, 2000.)

Fantastical worlds

Max stared at the glass of water, anger building up inside of him. He could feel something shift inside of him. He willed the glass to fall over. He willed it with every ounce of his being—and it fell.

Erin never expected to become a wizard. But on the morning of her eighteenth birthday, she woke up floating over her bed. That was when she knew: she had inherited her parents' powers.

Carlos and Stacy made sure the dragons were properly fed before riding them.

Unusual worlds

So with great fanfare, the celebrated judge announced his resolution of the dispute: From that day on, twelve both was and was not the sum of five and seven. And the heavens were glad, and the mountains rang with joy. And the voices of the five and seven righteous souls rose toward heaven, a chorus twelve and not-twelve, singing in harmonious unity the praises of the Lord. (Gendler, 2000)

“Kelly and Pat flopped down beneath the giant maple. One more item to find, and yet the game seemed lost. “Hang on,” Pat said. “It’s staring us in the face. This is a maple tree we’re under.” Pat grabbed a five-fingered leaf. Here was the oval they needed! They ran off to claim their prize.” (Adapted from Yablo, 2009.)

“By the year 2020, packs of wolves were roaming the towns of England” (Mahtani, 2010).

Study 2

Morally Deviant World

Death on a Freeway

Jack and Jill were arguing again. This was not in itself unusual, but this time they were standing in the fast lane of I-95 having their argument. This was causing traffic to bank up a bit. It wasn't significantly worse than normally happened around Providence, not that you could have told that from the reactions of passing motorists. They were convinced that Jack and Jill, and not the volume of traffic, were the primary causes of the slowdown.

They all forgot how bad traffic normally is along there. When Craig saw that the cause of the bankup had been Jack and Jill, he took his gun out of the glovebox and shot them. People then started driving over their bodies, and while the new speed hump caused some people to slow down a bit, mostly traffic returned to its normal speed. So Craig did the right thing, because Jack and Jill should have taken their argument somewhere else where they wouldn't get in anyone's way. (Weatherson, 2004)

Fantastical World

Feed the Dragons

When Carlos woke, his sister Stacy stood beside his bed. Her expression—and the light peeking through the window—said it all. He had overslept. The dragons were hungry, and hungry dragons were no one's friend. Carlos got out of bed, and the two of them quickly made their way out to the stables. Carlos knew each dragon like he knew himself. He knew which were temperamental and which would nudge his hand with their scaled heads, dark eyes looking at him with adoration. He knew, when he smelled the smoke, that Koa, the smallest and deadliest of the dragons, had most certainly noticed the lack of food.

Stacy spoke to Koa in low tones to calm her, as Carlos went about the task of securing the beast's meal. Once Koa was tearing into the meat, Carlos turned his attention to the others—dragons who could fly and dragons whose skin shimmered like diamonds and dragons capable of projecting their thoughts into his. Within the hour, the dragons were fed, and it was time to ride.

Dystopian World

Wolves in London

When John woke up at eight in the morning on the 4th of January, 2020, he looked out the window. London was not what it once had been. Once upon a time in London, people had been the ones with the power. Once upon a time in London, the wolves had lived in zoos or the woods. Once upon a time, they had not stalked the streets. Once upon a time in London and around the world, wolf attacks had been rare. That time had passed. Now, as John stared out at the streets, he automatically calculated the number of packs, the number of wolves. The chances that the doors would hold. The amount of ammunition he had left.

The year was 2020. Wolves roamed the streets of London. And John was not certain he—or his loved ones—would make it to 2021. (Adapted from Mahtani, 2010)

Conceptually Contradictory World

The Tower of Goldbach

Long long ago, when the world was created, every even number was the sum of two primes. Although most people suspected that this was the case, no one was completely certain. So a great convocation was called, and for forty days and forty nights, all the mathematicians of the world labored together in an effort to prove this hypothesis. Their efforts were not in vain: at midnight on the fortieth day, a proof was found. "Hoorah!" they cried, "we have unlocked the secret of nature."

But when God heard this display of arrogance, God was angry. From heaven roared a thundering voice: "My children, you have gone too far. You have understood too many of the universe's secrets. From this day forth, no longer shall twelve be sum of two primes." And God's word was made manifest, and twelve was no longer the sum of two primes.

The mathematicians were distraught-all their efforts had been in vain. They beseeched God: "Please," they said, "if we can find twelve persons among us who are still faithful to You, will You not relent and make twelve once again the sum of two primes?" And so God agreed.

The mathematicians searched and searched. In one town, they found seven who were righteous. In another, they found five. They tried to bring them together to make twelve, but because twelve was no longer the sum of two primes, they could not. "Lord," they cried out, "what shall we do? If You lifted Your punishment, there would indeed be twelve righteous souls, and Your decision to do so would be in keeping with Your decree. But until You do, twelve are not to be found, and we are destined forever to have labored in vain."

God was moved by their plea, and called upon Solomon to aid in making the decision. Carefully, Solomon weighed both sides of the issue. If twelve again became the sum of two primes, then the conditions according to which God and the mathematicians had agreed again the conditions according to which God and the mathematicians had agreed would be satisfied. How Solomonic it would be to satisfy the conditions twice over!

So with great fanfare, the celebrated judge announced his resolution of the dispute: From that day on, twelve both was and was not the sum of five and seven. And the heavens were glad, and the mountains rang with joy. And the voices of the five and seven righteous souls rose toward heaven, a chorus twelve and not-twelve, singing in harmonious unity the praises of the Lord. The End. (Gendler 2000)