

A Systematic Review of the Theory of Mind Studies and the Potential for Replications in Linguistics

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Abstract

The theory of mind is a psychological concept that refers to the awareness of one's mental states and others'. In the seminal study by Kidd and Castano (2013), the researchers found that reading literary fiction led to better performance in the theory of mind test relative to reading popular fiction, nonfiction, or reading nothing at all. This paper collates seven subsequent replications of the original study: five direct replications and two indirect ones using other media, namely the visual narrative of television and movies. The findings of these replications are then compared to the original findings in terms of whether they successfully replicated the results. After that, key differences between the genres of the media used in the original study and its replications are elaborated, namely the writerly and readerly texts. For discussion, this paper further argues the case for replicating the original study in linguistics. This paper explores two main points pertaining to second language acquisition and emotions. The first one is that the original study and its replications were carried out exclusively with native speakers of English. Accordingly, this necessitates replicating the original study with participants other than the first speakers. Meanwhile, considering the call for more replications, this paper makes the argument that since songs are short and elicit emotions, they present another viable medium for indirect replications.

Keywords: *theory of mind, empathy, emotions, second language acquisition, songs*

1. Introduction

The main tenet of the theory of mind, or emotional intelligence, underscores empathy and our ability to recognize and interpret the mental states of the people we interact with (Black & Barnes, 2015). However, to claim that the theory of mind is only unique to the human experience would be an understatement due to its all-encompassing nature — an umbrella term used in various disciplines, including, but not limited to, child development and cognitive neuroscience (Wellman, 2017, 2018), psychological research on autism in children (Attawibulkul et al., 2018) and adults (Baron-Cohen et al., 2001), the approximation to human-to-human interactions in robotics (Attawibulkul et al., 2018; Vinanzi et al., 2019), and also studies on primates and dogs (Schmelz & Call, 2018; Wellman, 2017).

In particular, Vinanzi et al. (2019) sought to manufacture trust in human-to-robot interactions through the artificial dissemination of the theory of mind. Meanwhile, Attawibulkul et al. (2018) conducted a study to help boost the theory of mind among children with autism using robots that told stories. In their paper, Schmelz and Call (2018) further argue the case for the theory of mind in primates, citing the vast studies especially done with chimpanzees (e.g., Kaminski et al., 2008; Köhler, 1925; Premack & Woodruff, 1978). From the outset, these examples thus allude to the collective human curiosity when it comes to the

theory of mind — the giving and taking of social cues that underlie the human experience (Kidd & Castano, 2016), albeit attempting to replicate it in robots and primates.

With regards to humans, however, Kidd and Castano (2013) were prompted to carry out psychological research to look into the relationship between reading different types of fiction and the effects on the theory of mind. As a result, the researchers found that reading literary fiction enhanced the performance in the theory of mind test more than reading popular genre fiction and nonfiction did. Since then, their seminal research has inspired a growing number of replications, both direct (Kidd & Castano, 2018; Kidd et al., 2016; Panero et al., 2016; Samur et al., 2017; van Kuijk et al., 2018) and indirect (Black & Barnes, 2015; Castano, 2021), indicating that the theory of mind is an area of collective interest among many scholars.

2. The theory of mind

Why do parents read their children bedtime stories? Why do little children idolize Marvel superheroes and want to be them for Halloween? Why, when the ocean starts to pull Jack under like the *Titanic* before him, can we tell that this makes Rose particularly heartbroken? And why, much like made-up characters, can we tell when someone in real life is sad? Happy? Confused? Characters that we read about in books and watch on-screen communicate to us their emotions, and when we get back to reality, we recognize these emotions in the people we interact with on a daily basis, and we can thus empathize with them. It is no wonder, for example, that researchers have attempted to design a computer game for children based on *The Magic Swan Geese*, a traditional Russian fairytale, in order to not only combat racism issues prevalent in the United States by cultivating intercultural competence among young children but also to enhance their empathy (Muravevskaia et al., 2016). Thus, it is this empathy and our ability to understand others' feelings that constitute the theory of mind.

According to Black and Barnes (2015), the theory of mind revolves around “the awareness of and the ability to interpret the mental states and emotions of others.” As humans, not only do we recognize that we have our own mental states, but we also understand that we may not share similar mental states with others around us (van Kuijk et al., 2018). Moreover, according to Kidd and Castano (2016), it is exactly this ability to grasp others' mental states that immensely contributes to the development of our empathy, prosocial behaviour, and comprehension of social cues. Kidd and Castano (2016) further argue that the theory of mind can be achieved through social interactions and by consuming fiction — but what type of fiction?

2.1 A summary of the original study

In the study conducted by Kidd and Castano (2013), the researchers set out to answer the aforementioned question by dividing participants into groups and instructing each group to read several book excerpts taken

from either literary fiction, popular genre fiction, nonfiction, or no reading at all. After that, the groups were asked to complete the Reading the Mind in the Eyes Test (RMET; Baron-Cohen et al., 2001), a test specially designed to gauge the theory of mind. In this test, the participants had to choose the adjective that best described the emotion in the set of eyes in each picture. There were 36 black-and-white pictures overall, each with four adjective choices. In the final analysis, the researchers found that the literary group performed better than the other groups in the theory of mind test. Consequently, the researchers encouraged the replications of their study using other media — or, according to the researchers, “works of art” — as well, such as films and plays.

Figure 1 An example of an RMET item. Adjective choices for this item were: *playful*, *comforting*, *irritated*, and *bored*; *playful* was the correct answer.



3. Methodology

The use of everyday media like the book excerpts taken from different genres in the original study has since sparked the interest for replicating the research. Therefore, this paper intends to identify the primary trends in the RMET performance across the original study by Kidd and Castano (2013) and its subsequent replications thus far by answering the following research questions (RQs):

RQ1. In what ways did the replications differ from or were they similar to the original study in terms of the media used?

RQ2. How did the RMET performance of the participants in the replications compare to the original study?

RQ3. What set the genres of the media used apart from each other in the original study and its replications?

3.1 Literature search process

The search for the replications of Kidd and Castano’s (2013) study has been a longitudinal and meticulous effort. Since 2018, the author has queried Google Scholar periodically for newly published replications using the keywords *theory of mind* and *Kidd and Castano*, filtering for articles published, initially, since 2013. The last query took place in August 2022, filtering for new replications published from 2021 onwards (the query prior to this yielded the most recent replication published in 2021). Additionally, this paper also cites

other influential articles to corroborate the evidence in answering the research questions, especially RQ3, and in making a case for replicating the research in linguistics.

3.2 Eligibility criteria

In the pool of articles that showed up for each query, only papers that fit these criteria were actively considered: (1) articles detailing the empirical findings of *explicit* replications of Kidd and Castano's (2013) study; (2) articles detailing replications involving 100 or more adult human participants; and (3) articles published in reputable journals in English. In further refining the first criterion, replication articles that extensively cited and/or engaged in scholarly discourse with the original article and with one another in the review of literature or an additional meta-analysis were deliberately looked for.

4. Results

According to Panero et al. (2016), the original research by Kidd and Castano (2013) has gained a lot of traction and attention for providing empirical evidence pertaining to the relationship between reading different types of fiction and the effects on the theory of mind. This has since paved the way for its replications. However, in adhering to the eligibility criteria asserted above, this paper has collated seven articles emblematic of the upper-crust circle of Kidd and Castano's (2013) replications, which are discussed next, apropos of the original study.

4.1 A closer look at the original study

Kidd and Castano's (2013) original research consisted of five experiments involving a grand total of 697 participants recruited online. The participants were native speakers of English. In Experiment 1, 86 participants were instructed to read either one of three excerpts from literary fiction or one of three from nonfiction. Experiment 2 was similar to Experiment 1, but it involved 114 participants and set literary fiction against popular fiction instead, in the presence of a no-reading control group. Meanwhile, 69 participants in Experiment 3 were instructed to read either three excerpts from literary fiction or three from popular fiction. Experiment 4 echoed its precedent with 72 participants, keeping two excerpts from each genre, but adding two new stories, one for each. Lastly, Experiment 5 was the most consequential since it involved a large sample of 356 participants and also utilized a no-reading control group, setting three excerpts from literary fiction against three from popular fiction. As the overarching result, the researchers found that there was a clear positive relationship between reading literary fiction, as compared to reading the other types of fiction or nothing at all, and the theory of mind, as measured by the performance in the RMET.

4.2 The subsequent replications

To date, this paper has identified seven replications of Kidd and Castano's (2013) theory of mind study, and these are by Black and Barnes (2015), Castano (2021), Kidd and Castano (2018), Kidd et al. (2016), Panero et al. (2016), Samur et al. (2017), and van Kuijk et al. (2018). They are further delineated chronologically below, in accordance with answering RQ1 and RQ2.

4.2.1 Answering RQ1: Direct and indirect replications

The replications conformed to or diverged from the original study in terms of the media used. On the one hand, five replications conducted by Kidd et al. (2016), Panero et al. (2016), Samur et al. (2017), van Kuijk et al. (2018), and Kidd and Castano (2018) similarly focused on reading fiction, namely book excerpts taken from literary fiction, nonfiction, popular fiction, or nothing at all.

On the other hand, in the remaining two replications carried out by Black and Barnes (2015) and Castano (2021), the researchers employed different media entirely, namely the visual narrative. Instead of reading, participants in Black and Barnes' (2015) replication study were instructed to watch either television (TV) dramas or TV documentaries. Meanwhile, the replication by Castano (2021) looked into the relationship between watching art or Hollywood films and the theory of mind.

Therefore, to answer RQ1, the replications were similar to or differed from the original study in terms of the media used in two ways: *directly* and *indirectly*. To recapitulate, the replications by Kidd et al. (2016), Panero et al. (2016), Samur et al. (2017), van Kuijk et al. (2018), and Kidd and Castano (2018) followed the original study by Kidd and Castano (2013) directly using book excerpts. Meanwhile, Black and Barnes (2015) and Castano (2021) indirectly replicated the original study using TVs and movies respectively.

4.2.2 Answering RQ2: Replications of results and inconsistent results

In this section, each individual replication is chronologically explained at greater length in order to arrive at the answers to RQ2, namely the findings, first the direct replications, afterwards indirect.

Firstly, in the direct replication carried out by Kidd et al. (2016), the participants were 403 native speakers of English. Even though they added new book excerpts to the ones used in the original study, the replication researchers still found, similarly, that the literary group performed better than the other experimental and control groups did in the RMET.

Next, in the direct replication conducted by Panero et al. (2016) with 792 participants strictly from the United States, the researchers reported the findings of three independent research groups. Research Group 1 underwent the exact replication of the original study, namely Experiments 1 to 5. For Research

Group 2, the researchers incorporated instructional manipulation, by which their participants were told whether their texts were fiction or nonfiction; understandably, this was not an exact replication. Meanwhile, instead of online participants, the researchers recruited college undergraduate psychology students for Research Group 3 and compensated them with course credit rather than with financial reward; accordingly, this was a conceptual replication. However, confining the results within the scope of answering RQ2 presently, Panero et al. (2016) found that reading literary fiction did not significantly enhance RMET performance relative to reading nonfiction, popular fiction, or nothing at all. This then spurred the researchers to assert that reading only little snippets of literary fiction did not necessarily guarantee positive effects on the theory of mind. Following this, Kidd and Castano (2017) issued a commentary criticizing Panero et al.'s (2016) replication, pointing out their methodological flaws regarding the exclusion criteria. According to the original researchers in their critique, a reanalysis of the replication data adhering to the original exclusion criteria, mainly reading time longer/shorter than average, produced results consistent with the original findings. In response to this, Panero et al. (2017) nevertheless stood by their replication findings and reasserted their scepticism concerning the relationship between brief exposure to fiction and the theory of mind.

Similarly, replication results produced by another group of researchers also deviated from the original findings. Samur et al. (2017) executed four experiments in their direct replication of Kidd and Castano's (2013) study. Whereas Experiments 1 and 2 followed the original first experiment, Experiment 2 also added a popular fiction group and new texts to the original pool. Meanwhile, the original first and second experiments were replicated in Experiment 3, with the addition of a no-reading control group, as well as using a different page format for the texts and utilizing pre-and post-tests. Finally, Experiment 4 was a direct replication of the original third experiment, with the addition of a nonfiction group and a control group. However, Samur et al.'s (2017) replication boasted 1006 total participants compared to the 697 recruited in the original research. Predominantly, the replication researchers found that, in all four experiments, the literary group did not significantly perform better than the other groups. This led the researchers to corroborate the concluding remarks by Panero et al. (2016), namely that brief exposure to little snippets of fiction did not necessarily guarantee better performance in the theory of mind test.

Furthermore, in yet another direct replication of Kidd and Castano's (2013) study, van Kuijk et al. (2018) found similar results to the ones found in the original research. Specifically, the researchers directly replicated the original Experiment 5 with 558 native speakers of English recruited online. Not only that, but the replication researchers also further conducted a small-scale meta-analysis of Kidd and Castano's (2013) original study, the replication studies by Panero et al. (2016) and Samur et al. (2017), and their direct replication. As a result, they found no strong recurring patterns to warrant a definitive conclusion, although they did concur with Kidd and Castano (2017), that when the original exclusion criteria were applied to the replication data produced by Panero et al. (2016) and Samur et al. (2017), the original results were also replicat-

ed. Accordingly, van Kuijk et al. (2018) called for more replications of Kidd and Castano's (2013) study so that a resounding relationship between reading literary fiction and its effects on the theory of mind could potentially be drawn.

Additionally, Kidd and Castano (2018) classified the direct replication of their original study as the three extensions of the original Experiment 5. These extensions involved a total of 969 participants, all first speakers of English. The first extension involved reading either one of three texts taken from literary fiction or one of three from popular genre fiction, with a control group present. The second and third extensions both eliminated the no-reading control group, although the third one further implemented additional questionnaires for exploratory purposes. Consequently, the researchers found that while the results in the first two extensions were inconclusive, the final one offered a positive outcome, namely that the literary group outperformed the popular genre group in the RMET.

As for Kidd and Castano's (2013) call for indirect replications of their study using other media, there have been only two such attempts identified so far, the first of which was conducted by Black and Barnes (2015) using the visual narrative. This replication was broken down into two studies and the participants consisted of undergraduate students at the researchers' university. There were 100 participants in Study 1 and 116 in Study 2, with 61 extra students recruited as a control group for the latter. All participants were fluent in English. In both studies, the researchers assigned two groups of participants to watch TV dramas and TV documentaries respectively, after which they took the RMET. However, the TV exposure was longer for Study 2 participants. In their final analysis, the researchers found that, in both studies, the drama group performed better than the documentary group did in the theory of mind test. The researchers further postulated that exposing Study 1 participants to dramas or documentaries until only the halfway mark possibly caused "exaggerated" theory of mind test results since this did not reflect the real-world practice. Accordingly, their Study 2 participants were exposed to their respective visual narrative for 42 minutes because this was how a standard TV episode was supposed to be consumed. In the end, their replication findings prompted the researchers to infer that while documentaries contained information in abundance, dramas, conversely, overflowed with narrative complexity much like literary fiction.

Finally, none other than one of the original researchers also reported another indirect replication recently. In particular, Castano (2021) used the first 20-minute clips of art films and Hollywood movies to observe the effects on the theory of mind. 232 participants were recruited online for this research, all American. Interestingly, the researcher found that the group assigned to watch art films outperformed the group assigned to watch popular Hollywood movies in the RMET.

Essentially, to answer RQ2, three direct replications of Kidd and Castano's (2013) original study similarly found that their results were also replicated, namely that reading literary fiction produced the most positive theory of mind outcomes. The three replications were by Kidd et al. (2016), van Kuijk et al. (2018),

and Kidd and Castano (2018). Meanwhile, two direct replications by Panero et al. (2016) and Samur et al. (2017) found no significant difference in RMET performance between the experimental groups. However, reanalyzing the replication data using the original exclusion criteria, particularly longer/shorter reading time than average, yielded results consistent with the original findings (Kidd & Castano, 2017; van Kuijk et al., 2018). As for the two indirect replications involving the visual narrative, Black and Barnes (2015) found that watching TV dramas enhanced RMET performance more than watching TV documentaries did. On the other hand, Castano (2021) found that watching art films fostered the theory of mind more than watching popular Hollywood movies did. The next section further summarizes the findings for RQ1 and RQ2 coherently.

4.2.3 Summarizing the findings for RQ1 and RQ2

Of the seven replications identified in this paper, five were direct replications of Kidd and Castano's (2013) original study using book excerpts and two were indirect replications using the visual narrative, namely TVs and films respectively. The five direct replications were conducted by Kidd et al. (2016), Panero et al. (2016), Samur et al. (2017), van Kuijk et al. (2018), and Kidd and Castano (2018). Meanwhile, Black and Barnes (2015) and Castano (2021) replicated the original study indirectly. These constitute the answers to RQ1.

Table 1: Summary of the original study and its subsequent replications

Study by	Type/Medium	Participants	Findings
Kidd and Castano (2013)	Original study using book excerpts from literary fiction, nonfiction, popular fiction, or none	697 native speakers recruited online	Literary group outperformed other groups in RMET
Kidd et al. (2016)	Direct replication	403 native speakers recruited online	Replication of results
Panero et al. (2016)	Direct replication	792 American participants	No significant difference
Samur et al. (2017)	Direct replication	1006 American participants recruited online	No significant difference
van Kuijk et al. (2018)	Direct replication (plus meta-analysis)	558 native speakers recruited online	Replication of results
Kidd and Castano (2018)	Direct replication (3 extensions of the original study)	969 native speakers	Replication of results in one extension

Black and Barnes (2015)	Indirect replication using TV dramas or TV documentaries	277 undergraduate students fluent in English	Drama group outperformed documentary group in RMET
Castano (2021)	Indirect replication using art films or Hollywood movies	232 American participants recruited online	Art film group outperformed Hollywood movie group in RMET

Meanwhile, Table 1 shows the findings of the seven replications, both direct and indirect, and how they compare to the original findings produced by Kidd and Castano (2013). On the one hand, three direct replications by Kidd et al. (2016), van Kuijk et al. (2018), and Kidd and Castano (2018) aligned themselves with the original study, namely that reading literary fiction led to better RMET performance compared to reading nonfiction, popular fiction, or reading nothing at all. Conversely, Panero et al. (2016) and Samur et al. (2017) found no significant difference in RMET performance between the experimental groups. However, a reanalysis of Panero et al.’s (2016) replication data by Kidd and Castano (2017) following the original exclusion criteria resulted in the replication of outcomes as well. Similarly, van Kuijk et al. (2018) also re-analyzed the replication data from both direct replications by Panero et al. (2016) and Samur et al. (2017) using the original exclusion criteria; these reanalyses produced successful replications. van Kuijk et al. (2018) further posited that a replication should adhere to the original exclusion criteria, especially regarding the reading-time exclusion. On the other hand, better RMET performance was achieved through the exposure to TV dramas than through TV documentaries in Black and Barnes’ (2015) indirect replication. Lastly, Castano (2021) reported a positive relationship between watching art films and RMET performance, relative to watching popular Hollywood movies. These, essentially, conclude the answers to RQ2.

4.3 Answering RQ3: Writerly and readerly texts

This section explains in depth the differences between the genres of the media used in Kidd and Castano’s (2013) original study and its seven replications, so as to provide the answers to RQ3. Specifically, these differences pertain to two categories of texts: *writerly* and *readerly*.

To start off, the predominant trend in Kidd and Castano’s (2013) study and its subsequent replications is that reading literary fiction enhanced the theory of mind more than reading popular genre fiction or nonfiction did. The reason for this is that literary fiction revolves more around character development, while popular genre fiction focuses more on the development of the plot (Kidd et al., 2016; van Kuijk et al., 2018). Hence, literary fiction readers tend to not only consider the many perspectives presented to them through the story (Black & Barnes, 2015; Miesen, 2004), but also to put themselves in the characters’ shoes and become emotionally invested (Djikic et al., 2013). In addition to this, fiction also encourages readers to play with

their imagination (Djikic et al., 2013; Mar & Oatley, 2008; Zunshine, 2006) and project interpersonal connection with the characters (Zunshine, 2006). Therefore, through the words that we as readers read on pages about made-up characters, we allow ourselves the luxurious prerogative of gaining multiple perspectives and understanding others different from us, in a way that we cannot do otherwise.

Furthermore, according to Kidd and Castano (2013), literary fiction offers a vast array of challenging texts and characters that are as complex as real-life individuals. Following this logic, as fictional characters mirror real-life human beings, understanding the former, therefore, is the same as understanding the latter (Mar, 2018; Mar et al., 2006). In addition to that, interactions between the characters in fiction also imitate the ones in real life (Mar & Oatley, 2008). Hence, fiction is a simulation of the real world (Mar, 2018; Mar & Oatley, 2008; Mar et al., 2006; Oatley, 1995). This, according to Oatley (1995), explains why readers feel a gratifying connection with and genuinely care for fictional characters. In contrast, Kidd and Castano (2018) argue that characters in popular genre fiction are more formulaic than those in literary fiction. Thus, the predictability quality of the characters in popular genre fiction makes them less relatable than their equivalents in literary fiction because real life is so full of unexpected things.

Moreover, Kidd and Castano (2013) postulate that literary fiction fosters the intricate three-way communication between the readers, the writer, and the characters, and therefore demands active participation from the readers; readers are themselves involved in the construction and growth of the story. This is why literary fiction is the inexhaustible mine of writerly texts (Black & Barnes, 2015; Kidd & Castano, 2013). Together with the author, readers also build the narrative, engaging back and forth in indirect dialogues between one another about ideas metaphorized and personified by the characters. Thus, Kidd and Castano (2013) infer that since they demand readers to gauge the mind of the characters, writerly texts promote the development of the theory of mind. Djikic et al. (2013) further support this, after having found in their research with 100 students from the University of Toronto that writerly texts in the form of short stories enhanced empathy more than nonfiction essays did.

Conversely, if on the one side of the token are writerly texts, then readerly ones are on the other. According to the participants in Kidd and Castano's (2013) study, literary fiction was less enjoyable than popular genre fiction, even though they recognized the former as quality literature. In other words, readers gain entertainment from popular genre fiction (Kidd & Castano, 2013; Miesen, 2004) and this is the distinctive feature that sets readerly texts apart from writerly. Additionally, another key feature that constitutes readerly texts is that reading them involves a passive process because they require no level of engagement from the readers (Kidd & Castano, 2013); readerly texts have no other merits than being entertaining. Thus, it is a small wonder that whereas frequent readers of writerly texts feel a sense of belonging with the society, frequent readers of readerly texts feel isolated from it (Mar et al., 2009). Characters, further add Black and Barnes (2015), demand to be felt, even more so the writerly ones since they pose quite a challenge to under-

stand; readerly texts, meanwhile, tend to cover nonsocial materials such as documentaries or nonfiction books about animals or objects. Interestingly, in doctoral research conducted by Mar et al. (2006) with the community at the University of Toronto, the researchers found that avid readers of writerly texts were more adept at reading social cues, while avid readers of readerly texts were more likely to be socially awkward.

Accordingly, the features of both writerly and readerly texts are summarized in Table 2. Based on these features, book excerpts taken from literary fiction in Kidd and Castano’s (2013) original study and the five direct replications by Kidd et al. (2016), Panero et al. (2016), Samur et al. (2017), van Kuijk et al. (2018), and Kidd and Castano (2018) fell under the writerly category, while excerpts from popular fiction and nonfiction were classified as readerly. Meanwhile, TV dramas and art films in the indirect replications by Black and Barnes (2015) and Castano (2021) respectively also fell under the writerly category, whereas TV documentaries and popular Hollywood movies were readerly texts.

Table 2: Features of writerly and readerly texts

Writerly texts	Readerly texts
<ul style="list-style-type: none"> ● Support character development ● Encourage imagination ● Demand an active participation from readers ● Promote the theory of mind ● Foster a sense of social belonging ● Provide quality literature ● Simulate the real world 	<ul style="list-style-type: none"> ● Support plot development ● Entertain ● Involve a passive process ● Promote a sense of social awkwardness ● Cover nonsocial materials ● Do not simulate the real world

5. Discussion

This part of the paper discusses the results in terms of the replicability and also several identified caveats, chief of which inform us those native speakers of English took centre stage in the original research by Kidd and Castano (2013) and its subsequent replications. Consequently, this creates the potential for linguistic replications. Hence, this section makes the arguments for the opportunities and challenges to replicating the theory of mind study in linguistics.

5.1 The call for more replications

Although multiple replications of Kidd and Castano’s (2013) study have been reported over the years, not all of them succeeded in replicating the results. While Kidd et al. (2016), van Kuijk et al. (2018), and Kidd and Castano (2018) found similar results in their replications, Panero et al. (2016) and Samur et al. (2017) found otherwise, namely that there was no significant difference between the experimental groups in the RMET

performance. The latter two groups of researchers further attributed this to the fact that brief exposure to fiction did not necessarily guarantee positive effects on the theory of mind. This also prompted van Kuijk et al. (2018) to point out the urgent need for more replications, so that a tangible relationship between exposure to different types of fiction and the theory of mind could eventually be established. Below, the arguments are carefully laid out for these replications, albeit in terms of linguistic research.

5.2 The case for replicating the theory of mind study in linguistics

5.2.1 Native speakers as the focal point in prior studies

Prior studies on the theory of mind thus far have focused solely on native speakers of English. Of the participants recruited in the original study and the replications by Castano (2021), Kidd and Castano (2018), Panero et al. (2016), Samur et al. (2017), and van Kuijk et al. (2018), those whose first language was not English or whose nationality was not American were excluded. Moreover, Black and Barnes (2015) highlighted that their participants were all fluent in English. In the replication by Kidd et al. (2016), the researchers deliberately filtered out respondents who were not native speakers. In short, researchers have yet to conduct a theory of mind study that does not explicitly involve native speakers of English.

5.2.2 Emotions and second language acquisition (SLA)

According to Teimouri (2016), emotions play a herculean role in SLA but — with the exception of anxiety — have been omitted in studies on second language (L2) motivation. Historically, it was not until in the 1970s that emotions became an observable phenomenon by measuring “the movement of facial muscles or the acoustic qualities of the voice of an actor or an emoter” (Campos et al., 2018). However, while it is true that scholarship has so far concentrated on anxiety as negative emotion in formal learning (Gkonou et al., 2017), researchers in recent years have also begun to champion the principal role positive emotions play in foreign language classrooms (Dewaele & MacIntyre, 2014; MacIntyre & Gregersen, 2012), primarily enjoyment that promotes the successful mastery of a target language (Dewaele & Alfawzan, 2018; Dewaele & MacIntyre, 2014).

Saarni (as cited in Campos et al., 2018) proposes that emotion is relational, meaning it is contagious in that the emotion of one individual influence that of another, not isolated — “no man is an island,” wrote the English poet John Donne. Accordingly, this illuminates why emotional competence is defined as “the demonstration of self-efficacy in emotion-eliciting social transactions” (Saarni, 1990, 1999; Saarni et al., 2008). According to Dörnyei (2012), individuals with high emotional competence can manage their L2 anxiety over time and handle stress better than those with low emotional competence. Dörnyei (2012) further

clarifies that physical manifestations of emotions include fast-beating heart, stiffening of the muscles, clammy palms, and hyperventilation.

With regards to the two primary emotions commonly investigated in SLA research, Dewaele and MacIntyre (2014) approach anxiety and enjoyment as the two faces of Janus, the Roman two-faced god: the negative face and the positive face respectively. Focusing on the positive, enjoyment in learning a new language is achievable through music, among others. Indeed, music induces relaxation and creativity (Fonseca-Mora, 2000). Notably, not only do authentic and meaningful materials like songs bolster the learners' sense of creativity and imagination (Džanić & Pejić, 2016), but they also augment learner motivation (Džanić & Pejić, 2016; Peacock, 1997), resulting in successful SLA (Džanić & Pejić, 2016).

Furthermore, MacIntyre and Gregersen (2012) assert that positive emotion, namely enjoyment, is an enabler to the capital imagination, which is intrinsic within Dörnyei's (2012) proposed framework for the L2 motivational self-system, namely the two future-self guides: the Ideal self and the Ought self. In acquiring a new language, Dörnyei (2012) postulates that a lucid and elaborate imagination of a future self optimizes motivation — a future self-able to converse fluently in that language, able to see and experience the world through that language. In simple words, the use of authentic materials like songs in SLA lowers anxiety and increases enjoyment, which improves imagination, which also boosts motivation. Incidentally, Waldorf schooling, a progressive brand of education that advocates the faculty of imagination, harnesses learners' imagination in achieving emotional literacy; consequently, this explains why Waldorf students are empathetic and morally cognizant (Wylie & Hagan, 2003).

To sum up, the glaringly native-centric feature necessitates the replications of Kidd and Castano's (2013) study with English speakers outside of the inner-circle barrier of Kachru's (1982, 1985) three-circle model of World Englishes. In particular, how would English speakers in the outer and expanding circles fare in the theory of mind research and compare to their native counterparts in the previous original and replication studies? Would they follow the native trends and fit in with the literature, and if so, how? Essentially, the ensuing results would contribute to our understanding of SLA, especially with regard to emotions, thereby shifting the existing literature from psychology- to psycholinguistics-centric. Considering the nature of the theory of mind test, the RMET, that measures empathy or emotional competence, the case for linguistic replications is further strengthened using songs as the stimuli, which is discussed next.

5.3 The case for replicating the theory of mind study indirectly using songs

5.3.1 Short format of songs

To date, there have been only two indirect replications of Kidd and Castano's (2013) study identified, one carried out by Black and Barnes (2015) using the visual narrative of TV dramas and documentaries, and the

other by Castano (2021) using art and Hollywood movies. However, it is important to point out that these replications, along with the original and the direct replication studies, were well-funded, large-scale research. Their participants spanned remarkable age ranges: 19 to 82 (Kidd et al., 2016); 18 to 76 (Panero et al., 2016); 18 to 66 (Samur et al., 2017); and 18 to 81 (van Kuijk et al., 2018). They were also remunerated for their time and participation, either financially or, in the case of Black and Barnes' (2015) participants, with course credit.

Alternatively, linguistic replications of the theory of mind research would be facilitated immensely on a smaller case-study basis with more homogenous sets of participants, for example, students in English as a second language (ESL) classroom. Songs, therefore, are the perfect medium for these potential indirect replications. Although the same argument used by Panero et al. (2016) and Samur et al. (2017) can also be applied concerning songs being short, namely that brief exposure to fiction does not guarantee better effects on the theory of mind, the opposing argument is that that is how songs are supposed to be consumed: short. In fact, with the modern-day advent of streaming services like Spotify and Apple Music, songs are now becoming shorter than they used to be (Chadwick, 2020; Harding & Sloan, as cited in Mack, 2019), one reason being the dwindling attention span of the younger listeners (Chadwick, 2020). Essentially, songs are short, and conveniently so.

5.3.1 Song lyrics as a vehicle to communicate emotions

Songs are a mine rich with emotions. There are happy songs, sad songs, lonely songs, songs for people who are falling in love, and also songs for those falling out of it. According to Zentner et al. (2008), listening to songs induces emotions in the listeners. A key component that constitutes any given song is its lyrics. Gladding et al. (2008) define lyrics as “the words of a song.” Usually, lyrics have the characteristic element of storytelling (Gladding et al., 2008) and poetic qualities like figurative language, rhyme, and alliteration (Kennedy, 2013). As such, in their research, Gladding et al. (2008) found that lyrics were pivotal in counseling because they helped clients heal emotionally. For example, the lyrics of Taylor Swift's *Picture to Burn* offered clients a different perspective on coping with the end of a romantic relationship (Gladding et al., 2008).

Furthermore, in another research carried out by Morton and Trehub (2007), the researchers found that while adults were emotionally hooked on a song by its sound, children, conversely, used the lyrics to grasp the emotions central to that particular song. Moreover, Kennedy (2014) posits that lyrics can be used as a source of literary texts, especially in a language classroom. As a consequence, this makes learning a new language more fun, meaningful, and accessible. Not only that, using lyrics as literary texts also allows the recognition of the self in the storytelling of cultures different from one's own, which then results in an

upsurge of comprehension and empathy (Kennedy, 2014). Similarly, Greitemeyer (2009a, 2009b) found that listening to songs with prosocial lyrics like Michael Jackson's *Heal the World* and The Beatles' *Help!* fostered the development of prosocial behaviour and empathy. Additionally, Elvers (2016) also agrees that as a key component of songs, lyrics help boost one's empathy and a deep-rooted sense of belonging with society. One singer-songwriter particularly notorious for writing heartfelt lyrics is Taylor Swift. According to Hirschberg (2009), Swift writes her songs the way she does her diaries. After all, Swift (2006) herself even confesses in *A Place in This World*: "And I'm wearing my heart on my sleeve." Chittenden (2013) further adds that Swift writes songs as a means to cope with her emotions, especially the ones hurting. Rather than fictional ones, Swift narrates through her lyrics her own complicated real relationships, both social and personal, and emotionally these words engage her listeners, especially teenage girls (Chittenden, 2013). Forming the colossus of Swift's fanbase, these teenage girls often feel that her lyrics resonate with them, as though Swift narrates their own real-life experiences, for example about not fitting in at school through her songs *Fifteen* and *The Outside* (Chittenden, 2013).

Moreover, according to Chittenden (2013), teenage girls tend to project themselves into the stories told in Swift's songs and claim ownership over their prospective relationships. Swift, argues Chittenden (2013), allows teenage girls to recall their "nostalgia in reverse" and imagine their future selves. Cheung et al. (2013) further add that nostalgia is not only limited to the past; it is also possible to feel nostalgic about the future, especially a positive one. It stands to reason, therefore, to suggest that Chittenden's (2013) conceptual "nostalgia in reverse" lies in the same realm as the future self-outlined previously in Dörnyei's (2012) L2 motivational self-system. Cheung et al. (2013) also state that nostalgic texts, including lyrics, help heighten the sense that one is a part of society as a whole, consequently inducing optimism. Thus, through Swift's lyrics, teenage girls feel hopeful for their future and the role they play in their community.

However, not all song lyrics are as real and intense as Swift's because not all lyrics are created equal. There, too, exists the kind of songs intentionally manufactured for the sole purpose of becoming famous: popular songs — entertaining, yet meaningless. According to Hayward (2016), the aim of popular songs like *Uptown Funk* by Mark Ronson and Bruno Mars is to maintain the consumer culture. It is no secret that as people, we like to follow the trend, buying things like cars, clothes, jewelry, and shoes, hoping that when we finally have enough, we will feel good about ourselves, but we rarely do. We listen to popular songs so that others consider us cool — the modern definition of survival of the fittest — but popular songs do not last because they are meaningless. Hayward (2016) puts it best: that "in a capitalist society art's purpose is to make money." Hence, unlike the writerly lyrics of Taylor Swift's songs, the lyrics of popular songs fall under the category of readerly texts because they entertain yet provide no simulation of reality. These distinctions between writerly and readerly lyrics further facilitate potential replications of Kidd and Castano's theory of mind study in linguistics using songs as the indirect medium.

5.4 Significance of replications for postgraduate research

Plucker and Makel (2021) identify the rarity of published replication research in such disciplines as psychology, educational psychology, education, gifted education, special education, and criminology. However, since it is rather indisputable that “a single observation cannot be trusted” (Schmidt, 2017, p. 236), Collins (1985) lauds replications as the Supreme Court of science. Therefore, this underscores the extremely crucial role replications play in developing and evaluating a theory (Guest & Martin, 2021; Irvine, 2021; van Rooij & Baggio, 2021). Moreover, external organizations are nowadays more likely to fund replication research (Plucker & Makel, 2021). Similarly, Howe and Perfors (2018) argue that “grant agencies greatly value novelty, but they even more great value reliable science; a novel finding can have a long-term impact only if it is true” (p. 25). Makel and Plucker (2014) further make the convincing case that an idea — and yes, even a creative one (Plucker et al., 2004; Simonton, 2012) — ceases to be useful if it is irreplicable, especially in an applied field like educational psychology. Hence, it is no surprise, for example, that Kochari and Ostarek (2018) advocate making direct replications compulsory for doctoral students as research activity.

6. Limitations

In assembling the original study and its seven subsequent replications identified in this paper as the upper-crust circle, the sole focus on the relationship between the temporary exposure to different types of fiction and the theory of mind leaves that of lifetime exposure out of account. In addition to this, this paper also limits the findings to include only explicit replications of the original study by Kidd and Castano (2013). Articles reporting studies that made significant methodological changes or cited the original researchers only in passing instead of extensively are therefore excluded. Regardless, this review paper should be sufficient in facilitating the understanding of Kidd and Castano’s (2013) theory of mind study and its replications, and also in making the case for replicating the research in linguistics.

7. Conclusions

Capitalizing on our shared twenty-first-century over fixation with everything pop culture, studies on the theory of mind effects are rather engaging due to their accessibility to both scholars and the general public alike. According to Delaney (2007), pop culture, or popular culture, refers to “the vernacular or people’s culture that predominates in a society at a point in time,” ranging widely from fashions to even foods. Examples of pop culture in 2021 include the Free Britney movement, Netflix’s *Squid Game*, and the British royal family drama, mainly Meghan and Harry’s bombshell interview with Oprah (Schaak, 2021). Accordingly, this illustrates the diverse options when it comes to the media used in testing the theory of mind effects, namely books, films, and TVs, as evident in the original study and its replications. To conclude, the highly

acclaimed film critic, Roger Ebert, once mused films as being “a machine that generates empathy,” so this paper ends by leaving this particular question to ponder: would this extend to songs as well?

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