

THE RELATIONSHIP BETWEEN DIFFERENT TYPES OF SOCIAL MEDIA USE AND
THEORY OF MIND PERFORMANCE

by

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Abstract

There is some limited research showing that social media usage may be related to Theory of Mind (ToM) abilities in young adults. ToM is the concept that people can have viewpoints, beliefs, and emotions that are distinct from our own. However, further study is needed to elucidate the relationship between social media and ToM performance, and also to determine the type of social media usage (active vs. passive) that may be related to ToM. The current study explored the relationship between passive and active media use and ToM abilities for a sample of 51 college students. Social media engagement was measured through a series of questions about levels of frequency and agreement with their social media habits. ToM was assessed using the Reading the Mind in the Eyes Test (RMET), the Interpersonal Reactivity Inventory (IRI), and Faux Pax test. Results overall found no correlation between frequency of social media use and ToM performance, along with no significant findings that active social media use enhanced ToM scores. However, our study did present a trend where passive social media use was positively linked with Interpersonal Reactivity Inventory Test (IRI) scores. Implications for further research are discussed.

Keywords: Theory of Mind, Fictional Engagement, Social Media use, Active vs Passive

SOCIAL MEDIA USE & THEORY OF MIND

Relationship between different types of Social Media Use and Theory of Mind Performance

Theory of mind (ToM) is the understanding that other people can have different perspectives, beliefs, and emotions other than our own. It's developed at the early stages of childhood and becomes an essential skill that gives us the ability to interpret behaviors of others. The development of ToM has been of interest to researchers as this is an important capacity for successful interpersonal relationships (Gentina et al. 2021). Recent research investigating factors related to ToM competence have highlighted individual engagement with fiction as critical (e.g., Goldstein et al., 2011; Cates & Nicolopoulou, 2019). The argument is that practice with these fictional experiences is prompting a unique type of practice with perspective taking of characters that may be important for developing ToM capacities. Another activity in society that may require similar distancing of perspectives and widely used by adolescents and young adults is active social media use. For example, creating posts, liking and commenting on posts and direct messaging. There is some limited evidence that online social media use is related to ToM performance (Gentina et al. 2021). However, it is unclear what types of social media engagement are important for ToM. For example, individuals may get different practice with perspective-taking during social media use depending on whether they are engaging actively or passively, or in other words whether they are consuming or creating. Passive use is taking in information while using social media like browsing and reading. Active use is the act of participating and taking part in social media like posting, messaging, and liking posts- and potentially may recruit more active perspective-taking. The current study aims to replicate these recent findings about the relationship between ToM and social media and further delineate the relationship between types of social media engagement (active vs. passive) and ToM.

Fictional/Narrative Engagement & Theory of Mind

SOCIAL MEDIA USE & THEORY OF MIND

Numerous studies have examined the relationship between exposure to narrative fiction and the development of ToM, finding that fiction can stimulate emotional understanding by having readers identify with what the characters are feeling. By telling stories, we are able to coordinate the perspectives of different characters and make meaning of their goal-directed pursuits (Bruner, 1986; Cates & Nicolopoulou, 2019).

As reported by Kidd & Castano (2013), literary fiction, as opposed to other genres, is linked to improved social cognition or social perception. Fictional narratives allow readers to easily tap in and connect with characters in storybooks. Kidd and Castano (2013) argued that reading literary fiction forces readers to adopt a writerly perspective on the creation of a story's characters, encouraging them to engage in conversation with the author and compelling them to fill in blanks in the narrative to deepen their understanding of characters' mental lives, relationships, and emotions. We can see narrative exposure's influence on narrative language in children and how it can help them organize their thoughts about the world while also being able to imagine how others might be thinking about the world.

There has been some experimental data regarding the relationship between narrative engagements and ToM. Cates & Nicolopoulou (2019) investigated the effects of book reading training in preschoolers and whether the presence of mental state themes within storybooks differentially impacts gains in ToM abilities over time. The two criteria for book reading involved reading books: (1) that featured themes related to mental states, such as characters who hold false beliefs or actively deceive another character to gain something from them or characters who come across objects that falsely appear to be one thing but are in fact entirely different; (2) that excluded such mental state themes. Children in the no-treatment group completed their regular school activities as the control condition. The study included 67 children

SOCIAL MEDIA USE & THEORY OF MIND

ages 4 and 5 from low-income preschools. Firstly, four to five children were randomly assigned to one of the two book reading group conditions. The children participated in 12 experimenter-led storytelling sessions that had six books each being read twice a week for two months. For the mental state book group, the books included themes like false belief, acts of deception and appearance and reality. In the non-mental state book group, it included storytelling with books that did not involve any mental state themes but instead focused on problem solving, friendships and good behavior lessons. On the other hand, both reading conditions had children engage in conversational exchanges during and after book reading. All ToM measures tackled three key points of ToM understanding like beliefs and desires of others, appearance-reality distinction, and deception abilities. Results showed that children who participated in interactive book reading training improved in ToM abilities, including understanding of belief-desire, appearance-reality distinction, active deception, and in overall ToM score, to a greater extent than children in the control condition. Results, however, provided only partial support for the impact of mental state themes on ToM outcomes.

Mar et al (2010) investigated whether different forms of narrative media can influence children's ToM development. The study recruited 55 children (ages 4;1 to 6;11 months) and one parent for each child for measure testing. They assessed exposure to media with the Author Recognition Tests (ART) that was completed by parents. They were asked to indicate from a list of names that they recognized as belonging to an author. They also used measures like Children's Title Checklist (CTC-PR), Children's Film Recognition Test (CFLM-PR), Children's Television Recognition Test (CTV-PR), and all measures were also reported by the parents. They employed these measures to gain a better understanding of how children interact with books, films, and television. To test ToM, researchers used a five-item version (i.e., Diverse Desires, Diverse

SOCIAL MEDIA USE & THEORY OF MIND

Belief, Knowledge Access, Contents False-Belief, and Real-Apparent Emotion) created by Wellman & Liu (2004). Briefly, the Diverse Desires measured the child's comprehension that others can have different desires from our own regarding the same objects. Diverse Beliefs examines the different beliefs about the same object when the truth is not known. Knowledge Access tests the comprehension that others do not necessarily know what one knows. Contents False-Belief measures whether the child can correctly judge another person's false belief by overcoming their own knowledge. The last measure Real Apparent Emotions tested whether a child understood that a person can feel one way on the inside but be portraying a different emotion on the outside. Results indicated that children who have parents who are more proficient at identifying children's storybooks score higher on ToM tasks. This could be due to the partaking of shared book reading and the important ToM skills it enhances. The development of ToM may be facilitated by discussions about mental states between parents and children. During shared book reading of a wordless storybook, it has been discovered that discussions about mental states take place. ToM scores in this study demonstrated a 26% increase indicating a significant degree of prediction. This study additionally discovered that children's movies can predict theory-of-mind skills, increasing prediction of theory-of-mind scores by 33% above other indicators.

Kidd & Castano (2013) further investigated evidence that reading literary fiction leads to better ToM performance. Researchers investigated the comparison of reading literary fiction, reading nonfiction and or popular fiction and its effect on ToM development. This study consisted of 5 different experiments to concentrate on the different measures of analysis and hypothesis. Experiment 1 recruited 86 participants that were randomly assigned to read one of six short texts (three fiction and three nonfiction). For ToM testing, all participants completed a

SOCIAL MEDIA USE & THEORY OF MIND

false belief task and Reading the Eyes in the Mind Test (RMET). To test familiarity with fiction researchers used the Author Recognition Test. Results found that reading literary fiction as opposed to non-fiction, improved performance on an effective ToM task. They also found that Author Recognition scores predicting RMET scores, additionally supporting that fictional engagement is correlated with ToM.

In a second experiment, these researchers obtained similar results but using different texts and ToM measures, the Diagnostic Analysis of Nonverbal Accuracy 2- Adult Face Test. To test the effects of popular versus literary fiction participants were assigned to read one of three excerpts. They chose a literary fiction book from the National Book Award, one of three excerpts from recent bestsellers on Amazon.com for popular fiction, or nothing at all (no-reading condition). Results showed that participants scored higher RMET scores in the literary fiction condition than in the popular fiction condition.

A third experiment further investigated the different relationship between literary fiction and popular fiction with ToM ability. The literary fiction texts were three stories from a compilation of the 2012 PEN/O, while the popular fiction texts were three pieces from a chosen collection of popular fiction. Participants were all randomly assigned to either the literary fiction condition or the popular fiction condition. Results found that RMET scores were higher in literary fiction conditions than in the popular fiction condition.

In experiment 4 similar narratives were brought from experiment 3 (literary fiction and popular fiction). For ToM testing RMET and the Yoni test were completed by 72 subjects. Participants in the Yoni test must infer a character's thoughts and emotions from a limited number of linguistic and visual cues for the 24 cognitive and 24 affective ToM trials. Results

SOCIAL MEDIA USE & THEORY OF MIND

showed that the literary fiction condition had higher RMET ratings than the popular fiction condition.

With a larger sample size of 356 participants, a 5th experiment attempted to duplicate experiment 4 while examining the effects of subject factors (such as education, age, and gender) and potential confounds. Participants in the two reading conditions filled out two extra questionnaires in addition to the transportation scale that measured how much they enjoyed reading the text and how much they believed it was "excellent literature." RMET scores showed similar findings to other tests, which showed that literary fiction had higher RMET ratings than the nonfiction condition.

To sum up the Kidd & Castano (2013) findings, all experiments demonstrated similar outcomes that positively related to literary fiction instead of nonfiction or popular fiction through the high scores of Reading Eyes in the Mind tests. The discovery that ToM processes are only made easier by literary fiction raises the possibility that reading literary fiction can help ToM steadily advance. Therefore, the outcomes of all five experiments thus confirm that reading literary fiction improves ToM abilities.

Acting/Enactment and Theory of Mind

Another crucial form of narrative engagement that influences ToM development is in the form of acting. Acting is the reenactment of narrative scenarios that have been demonstrated to increase ToM skill, according to some empirical evidence. Activities related to theater creation, such as taking acting classes or drama lessons, are linked to an increase in ToM, a type of cognitive empathy in which individuals can recognize or infer others' mental states, such as emotions and desires (Goldstein & Winner, 2011; Kou et al, 2020). Through a variety of viewpoints, thoughts, and emotions, actors build their ToM abilities in the manner necessary to

SOCIAL MEDIA USE & THEORY OF MIND

fully embody their role. They become the beliefs, value systems, physical characteristics, and facial expressions of their characters by altering their behavior and becoming them. For these actors, the ability to infer the mental states of others takes an act of imagination. Children also exhibit this when they pretend-play since it gives them an opportunity to further develop their ToM skill. Early pretending is seen to be a forerunner to ToM comprehension, and socially interactive pretending involves an awareness of the other person's mental state (that the other is pretending) as well as the capacity to change viewpoints in order to assume other roles (Goldstein & Winner, 2011). When actors accurately embody their characters' emotions and mental processes convincingly helps the audience to emotionally connect with fictional characters.

A study conducted by Goldstein & Winner (2011) investigated whether participation in role play and pretense predicts ToM competence in middle childhood the same way it does in early childhood. This study also sought to determine whether other types of proclivities, such as participation in acting classes, may also be linked to advanced ToM skill. This study had thirty-six children (31 girls and 5 boys) between ages 7- and 9- years participating in some sort of extracurricular activity like dance, acting class or summer camp. They were all administered two ToM tests: (1) the Faux Pas Test, in which they listened to vignettes and asked questions to test their understanding of the faux pas present in each story; and (2) the RMET which required them to select the appropriate mental state conveyed from a series of black and white images of the eye region. Finally, parents were questioned regarding their kids' involvement in dramatic play, interest in others, and absorption in make-believe worlds. According to the findings, taking acting classes is associated with higher ToM scores than taking dance or summer camp. These

SOCIAL MEDIA USE & THEORY OF MIND

results imply that the proclivity for role play is correlated with the capacity to comprehend and sense the internal states of others.

Brockmeyer (2009) explored the engagement of story enactment and how it could enhance ToM abilities. The study included 67 preschool children from low-income classrooms. The study conducted four types of narrative training conditions, two of them being engaging in story enactment and two of them assigned to them to a control coloring activity. Results indicated that children who participated in narrative enactment had more gains in belief-desire knowledge, awareness of the appearance/reality distinction, and overall ToM than children who undertook basic art activities like drawing/coloring story characters.

Social Media Use and Theory of Mind

Another activity in society that may require similar levels of perspective taking and widely used by adolescents and young adults is social media use. ToM, as previously said, is the understanding that people view the world from a range of viewpoints that are different from our own. The numerous outlets that social media has given the general population exclusively for the purpose of sharing their opinions, ideologies, and personal lives with others make it the ideal illustration of what ToM is. Children can comprehend that fictional characters have distinct worldviews from their own, and we can draw the same conclusion when we look at other people's social media profiles, postings, and likes and dislikes. Social media gives us the chance to communicate our own ideas as well as a greater understanding of how others' beliefs, emotions, and thoughts may differ from our own. Online social networks (OSNs) bring together individuals from all over the world, creating forums where adolescents can pick up knowledge from people with diverse frames of reference and thought processes. Such exposure to other viewpoints encourages ToM (Gentina et al, 2021). In other words, social media can help enhance

SOCIAL MEDIA USE & THEORY OF MIND

teenagers' ToM in a way that they can appreciate multiple perspectives and worldviews to better understand the world they live in.

In fact, there is some limited evidence that social media use is related to ToM performance but in a study done by Gentina, et al. (2021) researchers analyzed how young teenagers can utilize online social media to develop their ToM. They hypothesized that with the development of ToM it could help young teenagers interpret and decipher dangerous ads and scams to protect themselves. This study recruited 409 participants who were French teenagers from public and private schools. All participants were tested on their friendship quantity, ToM, youth materialism and Online Social Network (OSN) activity. By asking participants to name ten peers, they were able to estimate how many offline friendships they had based on their in-person interactions. To test their OSN usage, teens used a 5-point Likert scale to test how frequently they used social media. Finally, a 10-item scale was employed to assess materialism. They were questioned about the types of professions they desired that would specifically pay well and whether they preferred to spend their time shopping rather than doing anything else. Results demonstrated that teenagers' ToM is positively correlated with their use of OSNs. Furthermore, OSNs have largely taken the role of offline friendship as a significant factor in the development of ToM, channeling the positive effects of offline friendship on ToM.

Social Media Engagement: Active vs Passive. We must recognize the significance of how people choose to participate in social media when assessing people's social media engagement whether that be active or passive use. For instance, sharing and creating content, like postings, and communicating are all examples of actively using social media. Whether it be liking a Facebook post, commenting on a TikTok video, or posting on your Instagram story. Comparatively, passive social media use consists of merely viewing/browsing and taking in what

SOCIAL MEDIA USE & THEORY OF MIND

other users post on their profiles. Online social networks serve as the only source of knowledge on consumption opportunities for certain adolescents (Gentina et al, 2021). There has been extensive research, primarily on Facebook, Burk, et al. (2010) studied the differences between passive and active Facebook use and discovered that passive Facebook use is linked to worse relationships with Facebook friends and elevated feelings of loneliness. Nevertheless, it is argued that active social media use is linked to higher levels of wellbeing. Therefore, it is possible to predict that since active social media use has beneficial effects, it may also have a positive impact on a person's ToM skills. Active vs. passive use can also be seen in relation to narrative engagement. Passive use of fictional engagement means absorbing a narrative and reflecting on it as it progresses, and active use of fictional engagement means bringing a narrative to life through writing and enactment (Kou, Konrath, & Goldstein, 2019). However, this has not yet been discussed in relation to social media engagement (active vs. passive) and ToM performance.

The Current Study

The current study aims to further investigate the relationship between social media use and ToM abilities by investigating how these different types of social media engagement may be linked with these skills. It is hypothesized based on prior research findings that increased social media use will be associated with enhanced college students' ToM performance. It is further hypothesized that this relationship will be stronger for “active” social media use rather than “passive social media use”.

Methods

Participants

A total of 51 college students from the Psychology Participant Pool at SUNY Purchase College in New York participated in this study. All participants were compensated with two

SOCIAL MEDIA USE & THEORY OF MIND

research credits for their Intro to Psychology course. Participant ages ranged from 18 to 49 years old ($M = 19.6$, $SD = 4.9$). The study included 62% females, 20% males, 12% non-binary and 4% that preferred not to answer. In terms of ethnicity/race participants were 35.2% White, 23.5% Black, 27.5% Hispanic/Latino, 5.9% Asian/Pacific Islander and 7.8% other.

Procedure & Materials

All participants were virtually recruited through the Intro to Psychology participant pool. Once clicking a link to enroll in the study, participants provided informed consent and completed an online questionnaire developed on Qualtrics.

Theory of Mind Measures

Participants were assessed on ToM using three measures: (1) *Reading the Mind and the Eyes Test (RMET)*, (2) the Faux Pas Test, and (3) the Interpersonal Reactivity Index.

Reading the Mind and the Eyes Test (RMET). The RMET is a 36-item questionnaire that measures ToM (Bischoff & Peskin, 2014). Each item consists of a cropped photo of adult eyes along with four feeling words such as “terrified,” “amused,” “regretful,” and “flirtatious.” Participants were instructed to choose the word that they believe most accurately describes what the person is thinking or feeling based on the expression in the eyes of the photo. *The scores were calculated by having one point awarded for each correct answer.*

Faux Pas Test. The Faux Pas test is a ToM measure used to test social understanding and peer relations that are not addressed in commonly used ToM tasks (Goldstein & Winner, 2011). This test was created in the context of working with high-functioning autistic individuals; research has shown this population can successfully perform on standard ToM tasks but still display clear socio behavioral impairments. The Faux Pas Test uses 10 Faux Pas stories and 10 control stories. For length purposes, this study will use 5 Faux Pas stories and 5 control stories

SOCIAL MEDIA USE & THEORY OF MIND

for a total of 10 stories (Faux Pas & control). Using simple language, the stories include two to three characters and at least two separate statements. The stories have been designed that the Faux Pas occurred in either the last, second to last, or two phrases before the end to ensure participants do not simply cite the last phrase heard. After reading each story, participants were prompted to answer: (1) a *Faux Pas Detection question* (In the story did someone say something that they should not have said? Yes/No), (2) an *Identification Question* presented only if the participant clicks “yes” for the detection question (What was said that should not have been said?), (3) a *Comprehensive Question* (answer specific to stories), and (4) a *False Belief Question* (Did they know/remember that?). The coding of the Faux Pax task is ongoing and therefore the data from this task is not reported in the current investigation.

The Interpersonal Reactivity Index (IRI). The IRI is a 28-item questionnaire that measures empathy/emotional perspective taking, which can be conceptualized as an aspect of ToM (Maslej et al., 2017; Mar et al., 2006). The questionnaire prompts participants to indicate how much they relate to each item on a 5-point Likert scale (A = “does not describe me well,” E = “describes me very well”). Examples of item statements include, “I often have tender, concerned feelings for people less fortunate than me,” and “after seeing a play or movie, I have felt as though I were one of the characters.” We computed IRI PT (Perspective Taking) which specifically looked at the perspective taking scale questions. Examples of these statements include, “I sometimes find it difficult to see things from the "other guy's" point of view,” and “I try to look at everybody's side of a disagreement before I make a decision”. After some reverse coding, total scores were calculated by adding the numeric value of responses (1-5). The benefit of using the IRI is that it is a reliable and widely used measure of multidimensional empathy in community and clinical samples.

SOCIAL MEDIA USE & THEORY OF MIND

After this, participants moved onto the next task which tapped into their daily active and passive online social media usage/habits using a 25-item questionnaire that was an adaptation from study, Gentina et al. (2021) measure of OSN use (see Appendix A). The questionnaire asked participants to indicate their level of frequency using a 5-point Likert scale (1= “Never” 5= “Always”). Statements included “How often they used social media platforms: Instagram, Tiktok, Facebook, Snapchat or Twitter?” and “How often do they comment on posts publicly”. For participants that reported using social media we asked, “how often they post on their profiles”, “if and when they post how often do they select friends only when posting on their story”. Lastly, we asked participants how much they agreed on statements using a 5-point Likert scale (1= “Strongly disagree”, 5= “Strongly agree”). Statements included were “I feel comfortable creating posts on social media that others will see”, “I feel comfortable publicly reacting to posts” and “I am able to share thoughts on social media more easily than in person interactions”. We also computed public comfort which specifically looked at how comfortable participants were with being public on their social media platforms. Example of question includes, “If ever reported using social media, are your accounts set to public or private?” After some appropriate reverse coding, scores were calculated by how publicly or privately participants engaged in social media, public being scored as 1 and private being scored as 0.

After participants are done being tested on their ToM skills, they were presented with Reading Questions that ask to compare their reading habits and television habits to those of other college students which will be the subject of a later investigation. This questionnaire prompted participants to compare how much they related to each item on the 7-point Likert scale (1= “much less than other college students,” 7= “much more than other college students”). Examples of these statements include, “how much time do you spend reading all types of materials?” and

SOCIAL MEDIA USE & THEORY OF MIND

“compared to other students how much time do you spend watching movies or television?”

Participants were also asked questions about their reading preferences by ranking reading genres from (1= “most preferred; 15= “least preferred”). Similarly, they were asked to rank television genres based on what they preferred to watch in their free time (1= “most preferred”; 11= “least preferred”). Lastly, participants were asked about the genres of fiction they preferred to write about (1= “most preferred”; 11= “least preferred”).

Finally, participants were presented with demographic questions that asked about their race/ethnicity, age, and gender. Inclusive of the Social Media use questionnaire and ToM measures this questionnaire took participants approximately 40 minutes to complete. After completing the study, participants were debriefed and compensated with course credit for their participation.

Results

Regression analyses were run to evaluate the hypothesis that social media engagement was related to enhanced ToM performance in college students. Counter to predictions, social media engagement was not significantly related to ToM (Table 1) as measured using the MIE ($\beta = .06$, $t(47) = 1.13$, $p = .26$), or the IRI ($\beta = .182$, $t(35) = 1.2$, $p = .28$), and IRI PT (perspective taking) ($\beta = .07$, $t(44) = 1.4$, $p = .16$).

We also used regression analyses to evaluate the second hypotheses regarding the differential relationship between active vs passive social media usage and ToM outcomes (Table 2). For active engagement there was no significant relationship with ToM performance as measured using the MIE ($\beta = .08$, $t(48) = .55$, $p = .58$), IRI ($\beta = .45$, $t(35) = 1.2$, $p = .24$), IRI PT ($\beta = .16$, $t(45) = 1.6$, $p = .11$). In regard to passive social media usage there was also no significant relationship with ToM scores as measured by the MIE ($\beta = .12$, $t(48) = .70$, $p = .49$), IRI ($\beta = 1.01$,

SOCIAL MEDIA USE & THEORY OF MIND

$t(35) = 1.8, p = .074$), and IRI PT ($\beta = .16, t(45) = 1.0, p = .30$). Although our results didn't conclusively support either of our hypotheses on social media engagement in relation to ToM, we did find a trend where passive social media usage positively predicted IRI scores, $p = .072$.

Relatedly, we also explored whether individual comfort with "public" social media usage was related to ToM. Results also yielded no significant relationships between this variable and ToM as measured with the MIE ($\beta = -.12, t(48) = -.86, p = .395$), IRI ($\beta = .19, t(36) = .44, p = .66$), IRI PT ($\beta = -.03, t(45) = -.23, p = .82$).

As aforementioned, coding of data from the Faux Pax test is still in progress and therefore cannot yet be reported at this time.

Discussion

The purpose of this study was to examine the various forms of social media use (active vs passive) and how it may relate to college students' ToM performance. We hypothesized that social media usage overall would be linked positively with ToM performance. We further hypothesized that "active" social media usage would be related more strongly to ToM performance than "passive" social media usage. We came to this hypothesis because we believe that social media usage can be linked to a form of perspective taking which is a key skill in ToM development. The development of ToM has been extensively studied through fictional engagement and enactment, but little is known about how social media usage can predict ToM development. Our results failed to support our hypotheses on how social media usage can improve ToM scores or that active use can raise ToM scores more than passive use. In other words, results did not indicate a significant relationship between social media usage overall and ToM abilities. Similarly, active use had no correlation to the ToM tasks. Our study did demonstrate a trend where passive use was positively linked with higher levels of empathy on

SOCIAL MEDIA USE & THEORY OF MIND

the Interpersonal Reactivity Inventory Test (IRI). Despite the lack of statistically meaningful evidence, we suspect that with greater power this trend may have been uncovered.

Even though we did not discover a connection between social media and ToM, the study by Gentina, et al. (2021) discovered a significant relationship between these factors. The current study aimed to replicate and extend Gentina, et al. (2021) study by using different measures of affective ToM and social media engagement. While Gentina et al. (2021) conducted a 5-point Likert scale of questions relating to ToM, the current study elaborated this by administering ToM measures: (1) (RMET) and (2) Interpersonal Reactivity Inventory (IRI). For social media engagement Gentina et al. (2021) presented participants with three item questionnaires that measured the frequency of teen engagement on online social network (OSN) usage and a 5-point Likert scale on OSN concerns. However, the current study considered active and passive usage to quantify social media involvement/participation in a different way. Unlike Gentina et al. (2021), this study did not go into detail or incorporate research on materialism or measure the number of offline friendships. However, we can consider that the ToM measures we used to analyze ToM development were perhaps not the most relevant aspects of ToM that one might expect to be related to social media usage. For instance, the Reading the Eyes in the Mind Test (RMET) required measuring participants' level of eye reading; however, because online social media usage is all about being virtual and having zero face-to-face interactions, we perhaps should not expect RMET to bring impacted by online social network usage. These factors could have contributed to the lack of significance correlation between social media interaction and ToM performance in the current study.

Limitations and Future Research

SOCIAL MEDIA USE & THEORY OF MIND

Future researchers should take into consideration the limitations of the current work. For starters, the sample size, while decent for statistical analysis, may have not provided enough power to find a relationship between ToM and social media usage. The results found in this study only represent the population of students that attend Purchase College in New York, which had the disadvantage of giving us an inadequate population that did not fairly reflect our society at large. Purchase College student population can be characterized as artistic, with many attending students having concentrated efforts in theatre, performance, arts, and music; this could have potentially limited variability in our outcomes. Future studies can incorporate questions about acting/performance/arts experience and how those factors can be factoring into variance related to ToM scores. To provide a more realistic picture of how these factors relate in the real world, researchers should consider increasing the sample size and aim toward diversifying it for future studies. These efforts may help us to gain a more precise understanding of how social media use/habits in society connect to ToM abilities.

Limited variability could also be caused by the methods used to obtain data about frequency of social media usage. We asked participants to rate frequency with Likert scale; however, this could have restricted the full range of responses. It is possible that asking participants open ended questions about the frequency (eg. number of days per days/week or number of times throughout the day/week) with which they engage in specific social media usage behaviors could have yielded greater variability in responses and helped to uncover any relationships with ToM. Additionally, this study neglected to examine the possibility that the same individuals can be high/low on both active and passive social media use, while others may be high on one and low on the other. Future research should pay close attention to participant

SOCIAL MEDIA USE & THEORY OF MIND

scores on both active and passive social media participation and whether participants scored higher or lower levels on the type of engagement.

Despite the lack of support for our main hypothesis this research is still important due to social media's prominent growth in our society. As interactions on social media are increasingly replacing our in-person interactions, we need to continue to consider how these experiences are affecting (enhancing or limiting) interpersonal skills, in this case ToM skills. Ongoing research is thus needed to sharpen our understanding of how online social networks may help (or hinder) our social connections with others.

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SOCIAL MEDIA USE & THEORY OF MIND

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SOCIAL MEDIA USE & THEORY OF MIND

Table 1. Does Social Media engagement enhance Theory of Mind Performance in college students?

ToM	Beta (β)	P-Value
MIE	.163	.264
IRI	.182	.282
IRI PT	.212	.157

Table 2. Does Active vs Passive Social Media engagement enhance Theory of Mind Performance in college students?

ToM	MIE		IRI		IRI PT	
	β	P	β	P	β	P
Active	.080	.583	.196	.244	.236	.111
Passive	.101	.487	.298	.074	.153	.304
Public Comfort	-.137	.364	.073	.662	-.035	.818

SOCIAL MEDIA USE & THEORY OF MIND

Appendix A: Social Media Use Questions

For the following questions, please indicate a response from 1-5 on how frequently you engaged in each behavior on social media with (1 representing that you NEVER do the behavior and 5 representing that you ALWAYS do the behavior).

1. How often do you use social media platforms like Instagram, Tiktok, Facebook, Snapchat, Twitter?
2. How often do you post on social media platforms like Instagram, Tiktok, Facebook, Twitter?
3. How often do you use social media platforms like Instagram, Tiktok, Facebook, Twitter to connect with friends using direct messaging?
4. How often do you go on social media platforms like Instagram, Tiktok, Facebook, Twitter to read posts, tweets and/or stories created by others?
5. How often do you analyze the well-being of others by reading the posts on social media?
6. After reading posts/tweets/stories created by others, how often do you send comments directly and privately to the person who created the posts?
7. After reading posts/tweets/stories created by others, how often do you react to (like/love) posts?
8. How often do you respond to Q&A's that others post on social media platforms?

After the following questions if you report EVER posting to social media (1= Never and 5= Always).

1. If you post to social media, how often do you post to your story?
2. If you post to social media, how often do you post to your story?
3. When you post on social media, how often do you select that the post be seen by "friends only" when the option is present?
4. When you post on social media, how often do you select that the post be seen by "all followers to see" when the option is present?
5. If you post to social media, how often do you check for likes and views on your posts/tweets/stories?
6. If you report using social media, are your accounts set to public or private?

On a scale of (1=Strongly Disagree to 5= Strongly Agree), please indicate how much you agree that these statements reflect your own experiences with social media.

1. I feel comfortable creating posts on social media that other people will see.
2. I feel comfortable commenting on posts that other people make on social media.

SOCIAL MEDIA USE & THEORY OF MIND

3. I feel comfortable publicly reacting to (liking/loving) posts that other people make on social media platforms.
4. I am able to share thoughts on social media more easily than I can in my every day in-person interactions.
5. I only post on social media platforms if I can post anonymously.
6. I often worry about how my posts/stories/comments/reactions on social media will be perceived by others.
7. I often worry about how my posts/stories/comments/reactions on social media will be perceived by others.
8. I often refrain from making comments/posts/reactions that others may find to be “opinionated”.
9. I feel bad about myself when nobody makes comments on my posts/stories/tweets.
10. I worry about people posting negative posts/messages and tagging me in them.