Moving to Digital-Healthy Society: Empathy, Sympathy, and Wellbeing in Social Media

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Abstract

Background: *This research aims to explore the impact of individuals' demographics and their social media use on empathy, sympathy, and wellbeing in Saudi Arabia. This paper can fill an untapped gap in a developing country (i.e., the Arab context) by shedding light on sympathetic and empathetic behavior and its effect on wellbeing in social media.*

Method: *We manage to obtain a sample of 431 responses across all Saudi regions. Data were analyzed to evaluate reliability and validity of the study's constructs while the hypotheses were tested using a structural equation modeling (SEM) technique.*

Results: *SEM regression results suggest that there is a significant relationship between both age and income and social media use. In addition, social media use has an indirect relationship to individuals' wellbeing. This indirect relationship is better manifested through sympathy rather than empathy.*

Conclusion: *Theoretically, this study furthers our understanding of the role of empathy and sympathy on wellbeing in social media among Saudis, whereas practically provides insights to industry experts about what matters to social media users to increase their wellbeing.*

Keywords: Social Media Use, Wellbeing, Empathy, Sympathy.

Introduction

Social media platforms are primarily used for posting informative or sensational content and exchanging personal stories (Alam, 2016; Refaee & Rieser, 2014). These platforms help to connect people from different backgrounds and cultures and allow them to share their views and opinions (Dang et al., 2018). However, as social media is embedded with less in-person communication and a lack of context, it could be considered a less emphatic environment (Patton et al., 2014; Zaki, 2020). In particular, behavioral misconduct on social media such as verbal violence (Patton et al., 2014) or cyberbullying (Mouheb et al., 2019) can lead to a lack of empathy (Andalibi et al., 2016; Vossen & Valkenburg, 2016). Understanding what others are experiencing, feeling, and acting accordingly is defined as empathy (Zaki, 2020). Empathy is a major determinant of psychological wellbeing of social media users (Dhir et al., 2018). Psychological wellbeing is referred to psychological comfort, happiness, and health derived from good mental health (Scott et al., 2020)

Owing to the shortage of research in exploring the role of empathy and sympathy on wellbeing in social media (Scott et al., 2020), there has been a call for further investigation about such effect (Errasti et al., 2017; Morelli et al., 2017). As well, Saudi Arabia has been considered among the top countries in using social media platforms on the global chart, making it a good fit for our study context. Motivated by such facets, this study aims to explore the status of empathy, sympathy, and wellbeing among Saudis' social media users. Hence, we raise two research questions; 1) would demographic factors affect social media users' empathy and sympathy; and 2) would empathetic and sympathetic behaviors lead to social media users' wellbeing. We draw on the hyper-personal communication theory (Vossen & Valkenburg, 2016) to answer the two questions where some social media users communicate their intellectual and emotional feelings to enhance their health states.

This study can contribute to theory by shedding light on what extent people demographics may influence their usage of social media and so their respective empathy, sympathy, and wellbeing. This can significantly enrich the theoretical knowledge of this domain in the Arab world. Across the Middle East, mental health research has been limited because of the stigma attached to discussing emotional topics (ALrukban, 2014). In Saudi Arabia, research about wellbeing and mental-health gains attention but deserves more investigation effort (Al-Habeeb et al., 2020). In this light, this study can contribute to the literature of psychological wellbeing. Besides this, it can contribute to practice by providing empirical link between empathetic and sympathetic behaviors and wellbeing under the umbrella of social media. This would give valuable insights to professionals and society through spreading awareness around social media-empathy and sympathy. As well, it would increase understanding to develop healthier interaction and socially-supported conversations with people on social media to enhance their wellbeing.

The remaining of this paper is organized as follows; first, we highlight the usage of social media in the COVID-19 era and review social media research related to demographics, empathy, sympathy, and physiological wellbeing in the theoretical background section. Second, we develop the study's research with a set of hypotheses. Third, we explain the method used and data analysis conducted. Fourth, we communicate the study's findings and discuss their implications. Finally, we conclude with limitations and future research directions.

Theoretical Background

COVID-19 and Social Media

The COVID-19 pandemic has caused widespread and unprecedented disruption of lives in the social, economic, and political sense. Accordingly, there have been psychological issues aggravated by the inevitable changes because of the pandemic (Zhong et al., 2020). Loss of livelihoods, lockdowns, and isolation practices have affected both infected and non-infected members of society. Constant reportage of the novel pandemic in the News accompanied by misinformation in social media platforms has caused widespread mental stress in society (Niblock, 2020). Mental stress can be attributed to heightened levels of confusion, fear, anxiety, and uncertainty feelings amongst social media users.

Social media platforms have been used extensively to obtain news on the pandemic. As a result, there is a mixture of accurate and inaccurate information being consumed by users. For instance, a study of 917 participants discovered that there was a significant correlation between excessive social media use with depression, death fears, empathy, and sympathy for the COVID-19 victims (Xue et al., 2021). The situation is worse for people practicing self-quarantine since social media has been among the primary channels to access Covid-19-related information. A study demonstrated that media usage was highly linked with death anxiety, and sympathy, empathy amongst research participants (Chen et al., 2020). There is a potential possibility of lifelong trauma for the consumers of social media information.

Demographics as Influencing Factors

The demographic characteristics of a society affect how its members emotionally approach various distressing events. Demographics aspects determine the kind of people found on different social media platforms. A recent study demonstrated that the frequency of giving "likes" on Facebook is strongly correlated to public self-consciousness and interpersonal generosity with high markers in women and young people (Hong et al., 2017). Empathetic social media users build resiliency, which helps them absorb the additional stress associated with traumatic events (Dailey et al., 2020). A recent study on social media use on adolescents has shown that cognitive and affective empathy levels increase with usage (Vossen & Valkenburg, 2016). Therefore, the demographics of society could determine the number of empathetic persons found online.

The levels of sympathetic and empathetic responses vary from country to country. Research demonstrates that foreign coverage of events such as terror attacks in the Middle East or famine in Africa elicits different emotions in the Western social media hashtags (El Ali et al., 2018). Age, gender, and race of police brutality victims may heighten their perceived innocence leading to outpouring emotional empathetic and sympathetic hashtags (Zhang et al., 2019). Other victims may elicit feelings of schadenfreude where the social media users think they deserve what befalls them (Wei & Liu, 2020). However, there is a growing body of evidence that social media addiction lowers empathy levels for long-term users (Stockdale & Coyne, 2020). Thus, there is a need to understand the different biological, social, and psychological aspects in the society for effective social media usage in mediating sympathy and empathy.

Empathy and Sympathy in Social Media

The terms empathy and sympathy are used interchangeably. However, they have different meanings in psychology. Sympathy is an emotional response in which an observer is aware of another person's feelings but does not absorb them (Keskin et al., 2017). While empathy is an emotional response to other people's conditions, absorbing their distress. Hence, the

responses can be either sympathetic or empathetic depending on how the audience will interpret the message. For instance, with using social media as either a socializing tool or a business-related tool (Ye et al., 2016), Facebook could be utilized to increase the market value of businesses through online advertisements (Ahmed & Ibrahim, 2016). And so, if clients respond positively to the advertisements, that shows empathy. However, if the clients respond because the business is probably about to be bankrupt, that is a sympathetic response.

Literature around sympathy and empathy in social media appears to be less focused on exploring psychological wellbeing. For instance, El Ali et al. (2018) examined the inherent sympathy bias in social media platforms, which determines the number of reactions a post attracts. DiStaso et al. (2015) investigated the effect of the type of post on receiving favorable responses, indicating, social media users have a sympathy filter depending on the messages they come across. On the other hand, social media users may empathize with persons experiencing a misfortune. There are three theories of empathy, namely: cognitive, affective, and associative empathies (Wei & Liu, 2020). Cognitive empathy takes into account the perspective while affective empathy considers the shared effect of the misfortune. Associative empathy, however, is identifying with the target of the emotional response. People respond differently to empathy-eliciting situations. Trait empathy is an aspect that demonstrates how people are wired to empathize while state empathy is the immediate response to a person in distress (Weiss & Cohen, 2019). The hyper-personal communication theory states that social media users share a lot of personal information (Vossen & Valkenburg, 2016). Therefore, through interactions with family, friends, and strangers one can garner help from the empathizing audience.

Empathy and sympathy are essential aspects of emotional intelligence that allow a person to relate appropriately with their correspondents (Gkintoni et al., 2017). Howard Gardener dedicates two sections of his multiple intelligences theory to attaining emotional stability to facilitate proper communication (Sahyaja & Rao, 2018). Both sections of intrapersonal and interpersonal intelligence allow empathy by emulating another person's emotions and sympathy by understanding people's feelings (Abele et al., 2016). Gentina et al. (2021) conceptualize that social media has positive impacts on the theory of mind that helps establish substantive interpersonal communications for individuals in different settings.

Psychological Wellbeing

Psychological wellbeing is a state influenced by surrounding events. It is measured in terms of happiness, life satisfaction, and self-esteem (Twenge et al., 2018). A recent study discovered that heavy use of social media is associated with unhappiness, which may increase depression and suicidal ideation (Twenge & Campbell, 2019). Social comparisons and self-objectification were shown to increase body shame and mental distress while reducing self-esteem, which affects young adults in Facebook (Hanna et al., 2017). Lack of privacy and susceptibility to peer pressure exacerbate anxiety and depression in young adults (Kim, 2016). The increase of online scamming in social media websites like Facebook and Twitter (Jäger & Leitner, 2015) makes people less inclined to purchase online using these sites due to their dwindled wellbeing affected by such a bad experience.

Social media platforms enhance connectivity amongst communities. 59.7% of Saudi students were found to be anxious, nervous, and depressed when going offline (Taha et al., 2019). As a result, they have become addicted to social media, which in turn reduces their psychological wellbeing as well as academic performance. Another study discovered that female research participants had physical and general appearance anxiety, low self-esteem, depressive symptoms, and body dissatisfaction on the Instagram platform (Sherlock & Wagstaff, 2019). Frequent Instagram usage has negative psychological outcomes mediated by unfair social comparisons. As noted, prior research has ignored the mediating factors between social media

use and psychological wellbeing, especially those that may increase individuals' psychological wellbeing like empathetic and sympathetic behaviors.

Research Model and Hypotheses

Research Model

As we present in Figure 1 below, our research model posits that age, income, and education level impact social media use, which in turn affects psychological wellbeing through affective and cognitive empathy and sympathy. In specific, the selected demographic factors have a negative effect on social media use. Social media use is negatively associated with affective empathy, cognitive empathy, and sympathy, which have a positive effect on psychological wellbeing.
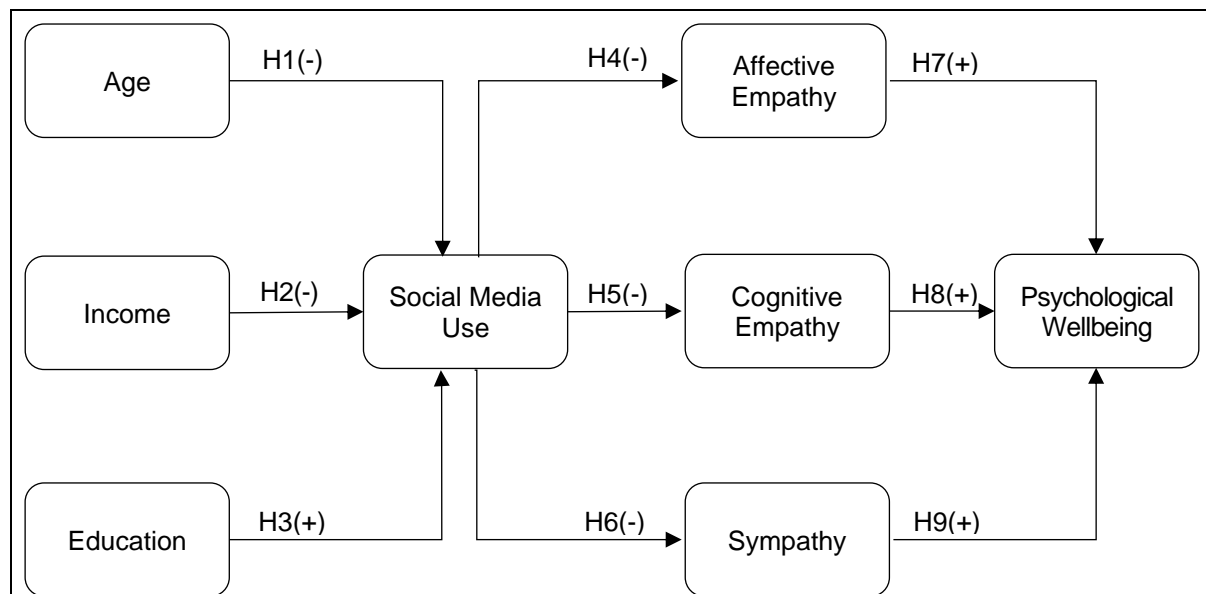

Figure 1 – Research Model

The Effect of Demographic Factors on Social Media Use

Younger people, especially teenagers, adopt new technologies earlier than their older counterparts (Chan et al., 2016; Ratten, 2013). Due to the tendency of early adoption, they appear to become easily accustomed to being online and enjoy activities or interactions through social media (Andreassen et al., 2017). Besides, social media plays an essential role in the formation of young people's self-identity by facilitating the process of reflecting on how they see themselves and how others see themselves and helping them to observe and learn social behavior or norm (Villanti et al., 2017). Hence, the desire to develop their identities especially without interruption from parents leads them to use social media more actively (Mazzoni & Iannone, 2014). According to Pew Research Center (2019), over 90% of people aged between 18 and 29 used at least one social media site, which is higher than the percentage of older groups. Moreover, the report shows the negative association between the use of social media and age: younger people are more likely to use social media.

Income and education are important predictors of social media use as well (Witte & Mannon, 2010). Some previous studies suggest the negative association between income and the use of social media (e.g., Blank, 2013; Micheli, 2016). Low-income people are more likely to take advantage of features of social media than their high-income counterparts, due to their

perceived isolation. Low income tends to restrict people to participate in various social activities or maintain social ties, which leads to social isolation, the lack of social support or belongings (Hawthorne, 2008; Stewart et al., 2009). However, social media such as Facebook can help people to initiate and maintain social interactions at substantially lower cost and thus alleviate the social isolation of low-income people (Primack et al., 2017; Steinfield et al., 2008). Especially, low-income teenagers are more likely to appreciate the usefulness of social media for social connections and actively take advantage of it (Micheli, 2016). Besides, the limited opportunities of social activities for low-income people drive to participate in activities through social media (Hawthorne, 2008). On the same note, we posit a negative association between education and social media use. The lack of education facilitates social isolation by preventing people from establishing strong social connections and participating in activities (Stewart et al., 2009). Hence, low-educated people attempt to develop a social connection and experience various activities by using social media. Haight et al. (2014) observe that less-educated people show higher social media usage than their higher-educated counterparts. With this reasoning, we hypothesize:

H1: Age is negatively associated with social media use.
H2: Income is negatively associated with social media use.
H3: Education is negatively associated with social media use

The Effect of Social Media Use on Empathy and Sympathy

The use of the Internet or social media can dwindle empathy because people spend much time online and their interactions with others become superficial (Konrath, 2013). The use of social media such as watching YouTube significantly limits social interactions with others (Small & Vorgan, 2008). In particular, the lack of non-verbal elements in online communication such as facial expression, gestures, eye contact, or touch, makes it significantly difficult to understand each other (Carrier et al., 2015). As a result, the use of social media leads to be less sensitive to how others feel and think and thus attenuates empathy (Konrath et al., 2011). Moreover, the constant use of social media can lead to a negative experience such as cyberbullying or unintentional exposure of their private life, which makes people more difficult to express their emotions, resulting in a lack of empathy (Alloway et al., 2014). In their examination of the change of empathy in college students from 1979 to 2009, Konrath et al. (2011) observed a significant decrease in empathy level especially in the last decade, which coincides with the growing use of social media. The use of social media affects affective and cognitive empathy both (Vossen & Valkenburg, 2016).

In addition, we posit a negative effect of social media use on sympathy. According to attentional mechanism proposed by Slovic (2007), sympathetic responses are driven by mental image and attention toward other people. That is, people are able to generate more sympathetic responses as they are more likely to create a mental image and hold strong attention. Those vital precursors of sympathy can be more apparent for individual than for groups of people because mental images of single are more solid and concrete (Dickert et al., 2009). However, spending time on social media tends to restrict interactions with others, which hinders attention to other people and thus diminishes the ability to be sympathetic. Besides, the interactions through social media featured by the lack of nonverbal cues and anonymity can restrict the creation of mental image toward people involving the interactions. Finally, people commonly interact with multiple people at the same time instead of a specific person in social media, which leads to a lower level of mental image and attention. Consequently, people who use social media heavily tend to show lower levels of sympathetic responses. With the reasoning, we hypothesize that the use of social media is likely to decrease affective empathy, cognitive empathy, and sympathy.

H4: The use of social media is negative associated with affective empathy
H5: The use of social media is negative associated with cognitive empathy
H6: The use of social media is negative associated with sympathy

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The Effect of Affective Empathy, Cognitive Empathy, and Sympathy on Psychological Wellbeing

According to Rosen et al. (2012) and Ivcevic and Ambady (2013), cognitive empathy appeared to be a significant determinant of psychological wellbeing among individuals using instant messaging with empathic expressions. Also, it has been revealed that individuals with higher scores on cognitive empathy show positive signs on psychological wellbeing (Taylor, 2017). On the other hand, prior research (e.g., Creswell, 2014; Cummins & Martin, 2015; Mannar & Peddiboyina, 2016) indicate that there is a positive relationship between affective empathy and psychological wellbeing across various contexts such as loving homes, hospitable environments, and sound religious institutions. In the same vein, Vossen and Valkenburg (2016) found that affective empathy can predict psychological wellbeing positively. Sympathy is also examined as an important determinant of psychological wellbeing (Karmiyati et al., 2020; Park & Baek, 2018). According to the above, we suggest that:

H7: Affective empathy is positively associated with psychological wellbeing
H8: Cognitive empathy is positively associated with psychological wellbeing
H9: Sympathy empathy is positively associated with psychological wellbeing

Research method

Data Collection and Measurement

We first conducted a pilot run with 19 social media users, which helped us in revising the constructs' items and improving their clarity. For the full study, we collected the data using an online survey distributed to social media users in Saudi Arabia. The survey introduction explained the study's purpose and highlighted that survey is voluntary and participants can leave the questionnaire anytime. To encourage participation, follow-up reminders were sent to the target population and an incentive was provided to the study's participants.

We included an attention-check question in the survey where participants need to leave it blank. Hence, those who failed this question by providing an answer were removed. In addition, we removed few participants because they were hard to classify in terms of their demographics. Because of such, we had a total of 431 valid responses, compared to an initial sample of 470+ responses.

Measurements of the study's constructs were derived from prior established research. We adjusted and adapted psychological wellbeing from Shevlin and Adamson (2005); social media use from Vossen and Valkenburg (2016); affective empathy, cognitive empathy, and sympathy from Vossen et al. (2015). We used a Likert-scale with 7 "strongly agree" and 1 "strongly disagree".

Participants' Demographics

With a sample of 431 valid participants, female appears to be the majority group with 56.4%. While participants' age is divided into three generations; generation Z with ages from 6 to 24 years old, generation Y with ages from 25 to 40 years old, and generation X with ages from 41 to 56 years old, both generation Z and Y are quite equally represented in the sample. For education and income, the largest groups are bachelor's degree holders with 55.2% and middle-income class with 50.8%, respectively. Most of the sample are single and full-time employees with 58% and 42.5%, respectively (Table 1).

Table 1 – Participants profile		
Characteristics	No.	%
Gender		
Male	188	43.6
Female	243	56.4
Age		
Generation Z	197	45.7
Generation Y	198	46.0
Generation X	36	8.3
Education		
High School	61	14.2
Associate Degree	26	6.0
Bachelor Degree	238	55.2
Graduate Degree	106	24.6
Income		
No Income	63	14.6
Low-Income	79	18.3
Middle-Income	219	50.8
High-Income	70	16.2
Marital Status		
Single	250	58.0
Married	167	38.7
Divorce	14	3.2
Work		
Full-Time Employee	183	42.5
Part-Time Employee	4	0.9
Self-Employed	21	4.9
Unemployed	38	8.8
Retired	5	1.2
Student	180	41.8

Reliability and Validity Indicators

We evaluated various indicators of validity and reliability to ensure the study's constructs are valid and reliable enough before moving to test the structural model. We used SmartPLS for our data analysis. As per Table 2, all variables show Cronbach's alpha (CA) values greater than 0.7 and items' loadings greater than 0.6, confirming good reliability (Albashrawi and Motiwalla, 2019). Both values of composite reliability (CR) and average variance extracted (AVE) are greater than 0.7 and 0.5, respectively, which indicates good convergent validity (Fornell & Larcker, 1987). This means that all constructs' items are theoretically sound and related.

Table 2 - Psychometric properties and constructs' items			
Construct	**No.**	**Items**	**FL**
Psychological Wellbeing CA = 0.862 CR = 0.906 AVE = 0.707	PW1	Able to concentrate.	0.829
	PW2	Play a useful part in things.	0.847
	PW3	Capable of making decisions	0.888
	PW4	Face up to problems	0.797
Affective Empathy CA = 0.820 CR = 0.877 AVE = 0.642	AE1	When a friend is scared, I feel afraid.	0.845
	AE2	When my friend is sad, I become sad too.	0.871
	AE3	When a friend is angry, I feel angry too.	0.727
	AE4	When people around me are nervous, I become nervous too.	0.753
Cognitive Empathy CA = 0.911 CR = 0.937 AVE = 0.789	CE1	I can often understand how people are feeling even before they tell me.	0.909
	CE2	I can tell when a friend is angry even if he/she tries to hide it.	0.880
	CE3	I can tell when someone acts happy, when they actually are not.	0.860
	CE4	I can easily tell how others are feeling	0.903
Sympathy CA = 0.884 CR = 0.920 AVE = 0.742	SY1	I feel sorry for someone who is treated unfairly.	0.893
	SY2	I feel concerned for other people who are sick.	0.891
	SY3	I am concerned for animals that are hurt.	0.780
	SY4	I feel sorry for a friend who feels sad.	0.876
Social Media Use	SMU1	On the days that you use social network sites, how much time do you spend on these sites per day on average?	1.000

Note: FL: factor loading; CA: Cronbach's alpha; CR: composite reliability; AVE: average variance extracted

However, Table 3 shows the correlations among the variables and variance inflation factor (VIF). The sum square of AVE values (bold in diagonal) is greater than the correlation values of the same variable, which denotes good discriminant validity (Fornell & Larcker, 1987). This means that the measured variables do not reflect some of the other variables. VIF values appear to be lower than a threshold of 10 and hence there are no collinearity issues between the variables (Hair et al., 1998). Overall, the measurement model is supported by the reliability and validity results

Table 3 – Correlation matrix						
Constructs	**AE**	**CE**	**PW**	**SMU**	**SY**	**VIF**
AE	**0.801**					1.655
CE	0.411	**0.888**				1.700
PW	0.260	0.555	**0.841**			N/A
SMU	0.024	-0.040	-0.096	**1.000**		1.020
SY	0.624	0.641	0.541	-0.091	**0.861**	2.350

Note: VIF: variance inflation factor

Results and Discussion

Structural Model

Due to its immunity for normality assumption and its capability to work with a single item measurement, structural equation modeling-partial least square (SEM-PLS) was used for testing the study's hypotheses (Hair et al., 2014). The tested structural is depicted in Figure 2 below and the detailed SEM-PLS regression results are summarized in Table 4.

Table 4 – SEM regression results				
Path Coefficient		**Estimate**	***t*- statistic**	**Supported**
H1: Age ⟶ SMU		-0.167***	3.695	Yes
H2: Income ⟶ SMU		-0.157**	3.237	Yes
H3: Education ⟶ SMU		-0.017	0.362	No
H4: SMU ⟶ AE		0.024	0.439	No
H5: SMU ⟶ CE		-0.040	0.820	No
H6: SMU ⟶ SY		-0.091[†]	1.892	Yes
H7: AE ⟶ PW		-0.132**	2.838	No
H8: CE ⟶ PW		0.356***	6.428	Yes
H9: SY ⟶ PW		0.396***	6.426	Yes
Adjusted R-Square in PW		0.373		
R-Square in PW		0.377		

Note: ***p < 0.001; **p < 0.01; *p < 0.05; †p < 0.10

Regression results showed that both age (β = -0.167, p < 0.001) and income (β = -0.157, p < 0.01) are negatively related to social media use, and hence supporting H1 and H2. While education (β = -0.017, n.s.) has no effect on social media use and so H3 is not supported. This means that when people get older and wealthier, they are most likely to use social media less. On the other hand, the usage of social media does not affect either affective empathy (β = 0.024, n.s.) or cognitive empathy (β = -0.040, n.s.), but it has a marginal negative effect on sympathy (β = -0.091, p < 0.10), and hence H4 and H5 are not supported whereas H6 is supported. H6 leads us to believe that more use of social medial could decrease the level of sympathy among individuals. Lastly, affective empathy (β = -0.132, p < 0.01) influences psychological wellbeing negatively while cognitive empathy (β = 0.356, p < 0.001) and sympathy (β = 0.396, p < 0.001) influences psychological wellbeing positively. Hence, H7 is not supported because of the negative direction, but H8 and H9 are supported. Both H8 and H9 suggest that people with an increased level of cognitive empathy and sympathy are associated with better wellbeing. Overall, the amount of variance explained in psychological wellbeing accounts for 37.7%, confirming good quality of the tested model.

Additional Analysis

We conducted further regression analysis to find whether 1) social media use has a direct effect on psychological wellbeing; and 2) social media use has an indirect effect on psychological wellbeing when employing two mediating factors, namely, sympathy and empathy. The regression results showed that the usage of social media does not relate directly to psychological wellbeing, but could be related indirectly. Sympathy has a very significant influence on both affective empathy (β = 0.625, p < 0.001) and cognitive empathy (β = 0.642, p < 0.001) and hence social media use could influence wellbeing through the following path: SMU > SY > CE > PW, not though SMU > CE > PW. This may be attributed that people usually show their sympathetic behaviors, then empathetic behaviors.
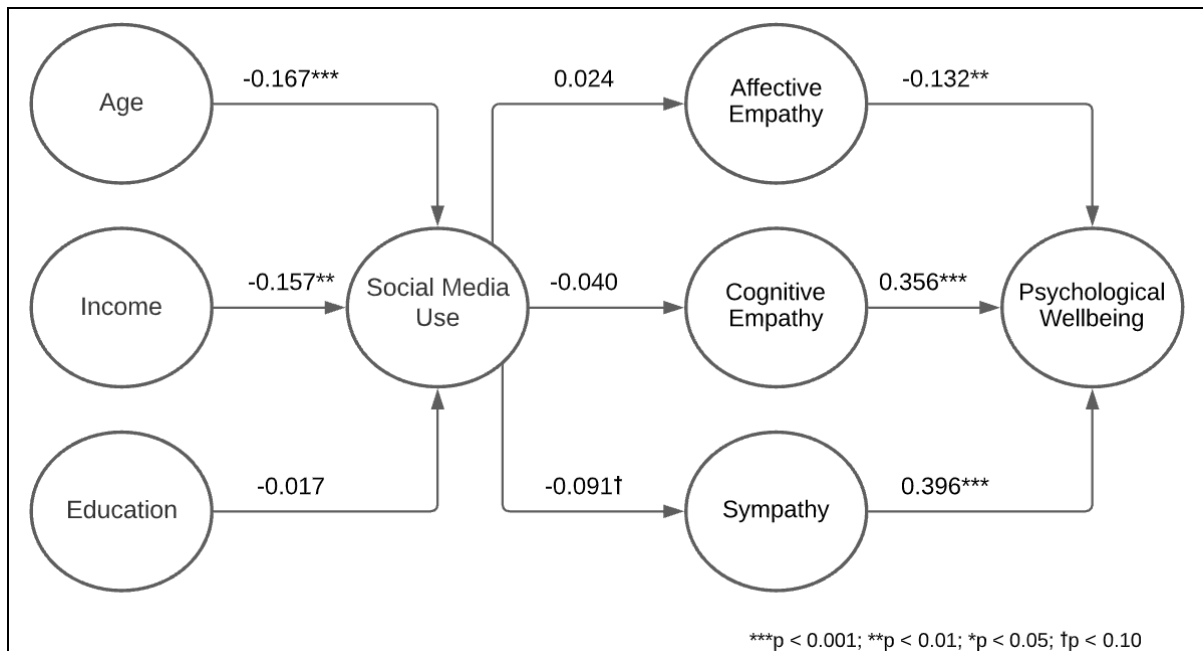
Figure 2 – PLS results of structural model

Discussion

This paper aims to investigate the impact of demographic factors on social media use, which in turn affects empathy, sympathy, and wellbeing in the Arab context. Regression results suggest that both age and income can play a major role in affecting the usage of social media among individuals, but education is not a determinant factor. This indicates that people of younger ages are most likely to be heavily engaged in using social media platforms, which aligns with Mazzoni and Iannone's (2014) study that the young generations are often regarded as early adopters of IT innovations, including social media, to form their digital self-identities. On the other hand, people with more wealth tend to have less engagement and use of social media, consistent with Micheli's (2016) findings.

Contrary to prior research (Alloway et al., 2014; Vossen & Valkenburg, 2016), the usage of social media appears not to influence either affective or cognitive empathy, however, it has a marginal negative effect on sympathy. This means individuals who are heavily using social media show a lower level of sympathetic behaviors and kindness.

With the support of previous studies (Cummins & Martin, 2015; Mannar & Peddiboyina, 2016;Taylor, 2017), affective and cognitive empathy and sympathy are related positively related to wellbeing. This indicates that individuals develop better health and wellbeing when they show higher levels of intellectual and emotional understanding.

According to the hypothesized results, social media use does not relate directly to empathy. Therefore, further analysis has been performed by employing sympathy as a mediating factor to both affective and cognitive empathy. These analyses showed that the impact of social media use on individuals' wellbeing appears to be indirect. Social media use influences individuals' wellbeing through two mediating factors, namely, sympathy and then cognitive empathy.

Theoretical and Practical Implications

This study has several theoretical implications. First, our study shows the necessity of examining important factors that affect the relationship between social media use and psychological wellbeing for a better understanding. While previous studies often focus on the direct effect of social media use on psychological wellbeing (e.g., Twenge and Campbell, 2019), such examination of a direct effect of social media is limited in capturing the variation of the effect. For example, different from our finding, some previous studies (e.g., Guan et al., 2019) suggest a positive relationship between social media use and empathy. In this light, future studies are recommended to identify other key mediators or moderators and examine their effects to reconcile the mixed results. Second, our results exhibit sympathy as an essential factor in building psychological wellbeing. When considering its explicit and implicit effect on psychological wellbeing, the role of sympathy in building psychological wellbeing deserves to receive more investigation effort. For instance, future research can examine the effect of different types of sympathy on psychological wellbeing and provide a fuller explanation of the role of sympathy. Finally, the significant indirect effect of sympathy through empathy on psychological wellbeing may suggest that sympathy is a foundation of cognitive and affective empathy. That is, by understanding others' suffering or difficulty, people are more likely to appreciate the feeling of others. In this vein, sympathy is an important antecedent of both cognitive and affective empathy.

This study also offers multiple practical implications. First, the harmful effect of social media use on psychological wellbeing by diminishing sympathy highlights the necessity of learning how to use social media in a proper way, especially to a younger group of people. The younger people are immature and hard to control themselves in using social media, which can more detriment their psychological wellbeing. One way to lessen the negative effect of social media use, younger people can be instructed to use more bidirectional social media, than unidirectional social media such as YouTube. Second, the negative association between income and social media use may suggest that income is less predictable of the digital gap related to the usage of social media. It is commonly assumed that wealthy people are more likely to use social media because their economic condition enables them to easily have digital devices and have more chances to learn information technology. However, our results show that low-income people are more likely to use social media, probably for overcoming their restrictions of social connections. In this light, the digital social connection gap can be a more important factor than the digital division for social media use and deserves to receive more attention. Finally, the important role of sympathy in building psychological wellbeing suggests that government and schools should make more effort to develop programs or activities for younger people to have opportunities for increasing their sympathy toward other people.

Limitations, Future Research Directions, and Conclusion

This work has some limitations that can be deemed as potential opportunities for future research. First, as the analyzed sample consists of Saudi users who were deliberately picked, the findings may not be generalizable to other social media users either those residing in Saudi Arabia who are not Saudis or the Saudi community living in a foreign country. Hence, future research should pursue broader scope and collect more diverse sample in order to enhance external validity. As well, it would be interesting that the future samples are separated into Saudis and non-Saudis to provide a better insight comparing the two samples' differences. Second, this study is based on correlation analysis, hereby; it could not show the causality between the study's various variables. Conducting experimental or longitudinal studies could be a good future avenue to obtain more accurate results and so interpretation.

Social media platforms allow users to share and exchange information and feelings, which could help for more insights concerning digital transformation for individuals' behaviors in social media. With the shortage of research in this area, this paper tackles a literature gap and investigates the effect of empathy and sympathy on the wellbeing of Saudi users on social media platforms. We develop a theoretical model to demonstrate less-explored relationships between the various components, such as demographic variables, empathy, sympathy, and wellbeing. The results of this study could be a promising area that looks at the influence of social media on wellbeing in the light of users' empathy and sympathy in the Arab context and opens a door for more investigation for further knowledge enrichment.

Acknowledgment

References

Abele, A.E., Hauke, N., Peters, K., Louvet, E., Szymkow, A., & Duan, Y. (2016). Facets of the fundamental content dimensions: Agency with competence and assertiveness—communion with warmth and morality. *Frontiers in Psychology*, *7*, 1-17.

Alam, S. L. (2016). Empirical analysis of posts and interactions: A case of Australian Government Facebook pages. *Pacific Asia Journal of the Association for Information Systems*, *8*(4), 91-110.

Albashrawi, M., & Motiwalla, L. (2019). Privacy and personalization in continued usage intention of mobile banking: An integrative perspective. *Information Systems Frontiers*, *21*(5), 1031-1043.

Al-Habeeb, A., Altwaijri, Y. A., Al-Subaie, A. S., Bilal, L., Almeharish, A., Sampson, N. A., Liu, H., & Kessler, R. C. (2020). Twelve-month treatment of mental disorders in the Saudi National Mental Health Survey. *International Journal of Methods in Psychiatric Research*, *29*(3), 1-15.

Ahmed, A., & Ibrahim, M. (2016). Business value of Facebook: A multiple case study from a developing country. *Pacific Asia Journal of the Association for Information Systems*, *8*(4), 53-68.

ALrukban, A. (2014). The health-related uses of social media among users in Saudi Arabia. *International Journal of Medical Science and Public Health*, *3*(12), 1492-1497.

Alloway, T., Runac, R., Quershi, M., & Kemp, G. (2014). Is Facebook linked to selfishness? Investigating the relationships among social media use, empathy, and narcissism. *Social Networking*, *3*(3), 150-158.

Andalibi, N., Haimson, O. L., De Choudhury, M., & Forte, A. (2016). Understanding social media disclosures of sexual abuse through the lenses of support seeking and anonymity. In the *Proceedings of the 2016 CHI conference on human factors in computing systems*, San Jose, California, USA.

Andreassen, C. S., Pallesen, S., & Griffiths, M. D. (2017). The relationship between addictive use of social media, narcissism, and self-esteem: Findings from a large national survey. *Addictive Behaviors*, *64*, 287-293.

Blank, G. (2013). Who creates content? stratification and content creation on the internet. *Information, Communication & Society*, *16*(4), 590-612.

Carrier, L. M., Spradlin, A., Bunce, J. P., & Rosen, L. D. (2015). Virtual empathy: Positive and negative impacts of going online upon empathy in young adults. *Computers in Human Behavior*, *52*, 39-48.

Chan, T., Cheung, C., Shi, N., Lee, M., & Lee, Z. (2016). An empirical examination of continuance intention of social network sites. *Pacific Asia Journal of the Association for Information Systems*, *8*(4), 69-90.

Chen, X., Liu, T., Li, P., Wei, W., & Chao, M. (2020). The relationship between media involvement and death anxiety of self-quarantined people in the COVID-19 outbreak in China: The mediating roles of empathy and sympathy. *OMEGA - Journal of Death and Dying, 0*(0), 1-16.

Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (4th ed.). SAGE Publications: Thousand Oaks, California.

Cummins, J. I., & Martin, L. (2015). Social media, public opinion, and security cooperation in Saudi Arabia. *Journal of International Security Assistance Management*, *4*, 115-125.

Dailey, S., Howard, K., Roming, S., Ceballos, N., & Grimes, T. (2020). A biopsychosocial approach to understanding social media addiction. *Human Behavior and Emerging Technologies*, *2*(2), 158-167.

Dang, M. Y., Zhang, G. Y., & Chen, H. (2018). Adoption of social media search systems: An IS success model perspective. *Pacific Asia Journal of the Association for Information Systems*, *10*(2), 55-78.

Dhir, A., Yossatorn, Y., Kaur, P., & Chen, S. (2018). Online social media fatigue and psychological wellbeing—A study of compulsive use, fear of missing out, fatigue, anxiety and depression. *International Journal of Information Management*, *40*, 141-152.

Dickert, S., & Slovic, P. (2009). Attentional mechanisms in the generation of sympathy. *Judgment and Decision Making*, *4*(4), 297-306.

DiStaso, M., Vafeiadis, M., & Amaral, C. (2015). Managing a health crisis on Facebook: How the response strategies of apology, sympathy, and information influence public relations. *Public Relations Review*, *41*(2), 222-231.

El Ali, A., Stratmann, T., Park, S., Schöning, J., Heuten, W., & Boll, S. (2018). Measuring, understanding, and classifying news media sympathy on Twitter after crisis events, In the *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*, Montréal, Canada.

Errasti, J., Amigo, I., & Villadangos, M. (2017). Emotional uses of Facebook and Twitter: Its relation with empathy, narcissism, and self-esteem in adolescence. *Psychological Reports*, *120*(6), 997-1018.

Fornell, C., & Larcker, D. (1987). A second generation of multivariate analysis: Classification of methods and implication for marketing research. In M. J. Houston (ed.), *Review of marketing* (pp. 407-450), American Marketing Association: Chicago.

Gentina, E., Chen, R., & Yang, Z. (2021). Development of theory of mind on online social networks: Evidence from Facebook, Twitter, Instagram, and Snapchat. *Journal of Business Research*, *124*, 652-666.

Gkintoni, E., Papavasileiou, N. C., Antonopoulou, H., Halkiopoulos, C., & Stamoulis, G. (2017). Decision making with machine learning techniques in consumer performance: Empathy, personality, emotional intelligence as mediators. In the *Proceedings of the 5th International Conference on Contemporary Marketing Issues (ICCMI)*, Thessaloniki, Greece.

Guan, S. S. A., Hain, S., Cabrera, J., & Rodarte, A. (2019). Social media use and empathy: A mini meta-analysis. *Social Networking*, *8*(4), 147-157.

Haight, M., Quan-Haase, A., & Corbett, B. (2014). Revisiting the digital divide in Canada: The impact of demographic factors on access to the internet, level of online activity, and social-networking site usage. *Information, Communication & Society*, *17*(4), 503-519.

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate Data Analysis (5th)*. Prentice-Hall, Upper Saddle River.

Hair, J.F., Hult, G.T.M., Ringle, C.M., & Sarstedt, M. (2014). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Sage Publications: Thousand Oaks, California.

Hanna, E., Ward, L., Seabrook, R., Jerald, M., Reed, L., Giaccardi, S., & Lippman, J. (2017). Contributions of social comparison and self-objectification in mediating associations between Facebook use and emergent adults' psychological well-being. *Cyberpsychology, Behavior, and Social Networking*, *20*(3), 172-179.

15

Hawthorne, G. (2008). Perceived social isolation in a community sample: Its prevalence and correlates with aspects of peoples' lives. *Social Psychiatry and Psychiatric Epidemiology*, *43*(2), 140-150.

Hong, C., Chen, Z., & Li, C. (2017). "Liking" and being "liked": How are personality traits and demographics associated with giving and receiving "likes" on Facebook?. *Computers in Human Behavior*, *68*, 292-299.

Ivcevic, Z., & Ambady, N. (2013). Face to (Face) Book: The two faces of social behavior?. *Journal of Personality*, *81*(3), 290-301.

Karmiyati, D., Rahmadiani, N., & Hasanati, N. (2020). Life review therapy for improving the psychological wellbeing of elderly retired women in Indonesia. *Journal of Social Studies Education Research*, *11*(4), 257-274.

Keskin, H., Akgun, A., Ayar, H., & Etlioglu, T. (2017). Persuasive messages and emotional responses in social media marketing. *Pressacademia*, *4*(3), 202-208.

Kim, H. (2016). The Impact of online social networking on adolescent psychological Well-Being (WB): A population-level analysis of Korean school-aged children. *International Journal of Adolescence and Youth*, *22*(3), 364-376.

Konrath, S. (2013). The empathy paradox: Increasing disconnection in the age of increasing connection. In R. Luppicini (Ed.), *Handbook of research on technoself: Identity in a technological society* (pp. 204-228), IGI Global: Hershey, Pennsylvania.

Konrath, S. H., O'Brien, E. H., & Hsing, C. (2011). Changes in dispositional empathy in American college students over time: A meta-analysis. *Personality and Social Psychology Review*, *15*(2), 180-198.

Jäger, B., & Leitner, P. (2015). Innovative approaches and solutions to understand, identify and tackle social media crime. *Pacific Asia Journal of the Association for Information Systems*, *7*(4), 1-10.

Mannar, I. S., & Peddiboyina, V. (2016). Religion and global media: Impact of arabic TV channels on Lowland eritrean youth. *Journal of Arab & Muslim Media Research*, *9*(2), 221-235.

Mazzoni, E., & Iannone, M. (2014). From high school to university: Impact of Social networking sites on social capital in the transitions of emerging adults. *British Journal of Educational Technology*, *45*(2), 303-315.

Micheli, M. (2016). Social networking sites and low-income teenagers: Between opportunity and inequality. *Information, Communication & Society*, *19*(5), 565-581.

Morelli, S. A., Ong, D. C., Makati, R., Jackson, M. O., & Zaki, J. (2017). Empathy and well-being correlate with centrality in different social networks. *Proceedings of the National Academy of Sciences*, *114*(37), 9843-9847.

Mouheb, D., Abushamleh, M.H., Abushamleh, M.H., Al Aghbari, Z., & Kamel, I. (2019). Real-time detection of cyberbullying in Arabic Twitter Streams. In the *Proceedings of the 10th IFIP International Conference on New Technologies, Mobility and Security (NTMS),* Canary Islands, Spain.

Niblock, S. (2020). Towards a psychosemiotics of journalism, mental distress, and COVID-19. *Social Semiotics,* 1-6.

Park, S. Y., & Baek, Y. M. (2018). Two faces of social comparison on Facebook: The interplay between social comparison orientation, emotions, and psychological well-being. *Computers in Human Behavior*, *79*, 83-93.

Patton, D. U., Hong, J. S., Ranney, M., Patel, S., Kelley, C., Eschmann, R., & Washington, T. (2014). Social media as a vector for youth violence: A review of the literature. *Computers in Human Behavior*, *35*, 548-553.

Pew Research Center (2019). Social media fact sheet. *Pew Research Center*. https://www.pewresearch.org/internet/fact-sheet/social-media/

Primack, B. A., Shensa, A., Sidani, J. E., Whaite, E. O., yi Lin, L., Rosen, D., Colditz, J. B., Radovic, A., & Miller, E. (2017). Social media use and perceived social isolation among young adults in the US. *American Journal of Preventive Medicine*, *53*(1), 1-8.

Ratten, V. (2013). Cloud computing: A social cognitive perspective of ethics, entrepreneurship, technology marketing, computer self-efficacy and outcome expectancy on behavioral intentions. *Australasian Marketing Journal*, *21*(3), 137-146.

Refaee, E., & Rieser, V. (2014). An Arabic Twitter corpus for subjectivity and sentiment analysis, In the *Proceedings of the 9th International Conference on Language Resources and Evaluation. European Language Resources Association,* Reykjavik, Iceland.

Rosen, L. D., Cheever, N. A., & Carrier, L. M. (2012). *iDisorder: Understanding Our Obsession with Technology and Overcoming Its Hold on US.* Palgrave Macmillan, New York.

Sahyaja, C., & Rao, S. (2018). New leadership in the digital era—A conceptual study on emotional dimensions in relation with intellectual dimensions. *International Journal of Civil Engineering and Technology*, *9*(1), 738-747.

Scott, G. G., Brodie, Z. P., Wilson, M. J., Ivory, L., Hand, C. J., & Sereno, S. C. (2020). Celebrity abuse on Twitter: The impact of tweet valence, volume of abuse, and dark triad personality factors on victim blaming and perceptions of severity. *Computers in Human Behavior*, *103*, 109-119.

Sherlock, M., & Wagstaff, D. (2019). Exploring the relationship between frequency of Instagram Use, exposure to idealized images, and psychological well-being in women. *Psychology of Popular Media Culture*, *8*(4), 482-490.

Shevlin, M., & Adamson, G. (2005), Alternative factor models and factorial invariance of the GHQ-12: A large sample analysis using confirmatory factor analysis. *Psychological Assessment*, *17*(2), 231-236.

Slovic, P. (2007). If I look at the mass I will never act: Psychic numbing and genocide. *Judgment and Decision Making*, *2*(2), 79-95.

Small, G., & Vorgan, G. (2008). *IBrain: Surviving the Technological Alteration of the Modern Mind*. HarperCollins, New York.

Steinfield, C., Ellison, N. B., & Lampe, C. (2008). Social capital, self-esteem, and use of online social network sites: A longitudinal analysis. *Journal of Applied Developmental Psychology*, *29*(6), 434-445.

Stewart, M. J., Makwarimba, E., Reutter, L. I., Veenstra, G., Raphael, D., & Love, R. (2009). Poverty, sense of belonging and experiences of social isolation. *Journal of Poverty*, *13*(2), 173-195.

Stockdale, L., & Coyne, S. (2020). Bored and online: Reasons for using social media, problematic social networking site use, and behavioral outcomes across the transition from adolescence to emerging adulthood. *Journal of Adolescence*, *79*, 173-183.

Taha, M., Shehzad, K., Alamro, A., & Wadi, M. (2019). Internet use and addiction among medical students in Qassim University, Saudi Arabia. *Sultan Qaboos University Medical Journal*, *19*(2), 142-147.

Taylor, S. E. (2017). *Social support: A Review, Oxford Handbook of Health Psychology.* Oxford University Press, New York.

Twenge, J., Martin, G., & Campbell, W. (2018). Decreases in psychological well-being among American adolescents after 2012 and links to screen time during the rise of smartphone technology. *Emotion*, *18*(6), 765-780.

Twenge, J., & Campbell, W. (2019). Media use is linked to lower psychological well-being: Evidence from three datasets. *Psychiatric Quarterly*, *90*(2), 311-331.

Villanti, A. C., Johnson, A. L., Ilakkuvan, V., Jacobs, M. A., Graham, A. L., & Rath, J. M. (2017). Social media use and access to digital technology in US young adults in 2016. *Journal of Medical Internet Research*, *19*(6), 1-14.

Vossen, H. G., Piotrowski, J. T., & Valkenburg, P. M. (2015). Development of the Adolescent Measure of Empathy and Sympathy (AMES). *Personality and Individual Differences*, *74*, 66-71.

Vossen, H. G., & Valkenburg, P. M. (2016). Do social media foster or curtail adolescents' empathy? A longitudinal study. *Computers in Human Behavior*, *63*, 118-124.

Wei, L., & Liu, B. (2020). Reactions to others' misfortune on social media: Effects of homophily and publicness on schadenfreude, empathy, and perceived deservingness. *Computers in Human Behavior*, *102*, 1-13.

Weiss, J. & Cohen, E. (2019). Clicking for change: The role of empathy and negative affect on engagement with a charitable social media campaign. *Behaviour & Information Technology*, *38*(12), 1185-1193.

Witte, J. C., & Mannon, S. E. (2010). *The Internet and Social Inequalities*. Routledge, New York.

Xue, D., Liu, T., Chen, X., Liu, X., & Chao, M. (2021). Data on media use and mental health during the outbreak of COVID-19 in China. *Data in Brief*, *35,* 1-6.

Ye, Q., Wu, P., Alam, S. L., & Campbell, J. (2016). PAJAIS special issue on social media and social commerce. *Pacific Asia Journal of the Association for Information Systems*, *8*(4), i-vi.

Zaki, J. (2020). *The War for Kindness: Building Empathy in a Fractured World*, Crown publishing.

Zhang, Y., Shah, D., Foley, J., Abhishek, A., Lukito, J., Suk, J., Kim, S., Sun, Z., Pevehouse, J., & Garlough, C. (2019). Whose lives matter? Mass shootings and social media discourses of sympathy and policy, 2012–2014. *Journal of Computer-Mediated Communication*, *24*(4), 182-202.

Zhong, B., Jiang, Z., Xie, W., & Qin, X. (2020). Association of social media use with mental health conditions of nonpatients during the COVID-19 outbreak: Insights from a National Survey Study, *Journal of Medical Internet Research*, *22*(12), 1-15.

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