# **Literature Review**

## **The Growing Importance of Online Communication**

93% of Americans today claim to have used the internet at least once, vastly surpassing the numbers reported in 2000 (52%) and flagging this generation as one rich in freedom of communication and network expansiveness (Pew Research Center, 2021). The increase in connectedness entails a higher level of social support distribution across all members of society, though preexisting inequalities can persist through secondary aspects of socioeconomic and racial inequalities, such as internet broadband access, technological education, and choice of primary tech use (Le-Phuong et al., 2022). Regardless, gaps in age, race, and gender have been closing up when considering modern internet use[[1]](#footnote-1), and the pandemic has accelerated this trend due to the physical restrictions of social isolation and the consequent rise in connectivity needs. Particularly among young adults, internet participation has become more essential than ever (increasing from 62% of daily task consumption in 2020 to 72% in 2021; McClain et al., 2021), due to its function as an information sharing platform and distant communication method, as well as a research and emotional sharing tool (Wong et al., 2021).

To this point, online communication has become more and more associated with offline communication within relationship building and social network expansion, even if the two methods produce and manage social interactions in entirely different ways. In fact, platforms like social media allow us to remain connected at all times with our family, friends, colleagues and acquaintances, while also increasing the size of our social sphere, but the perceived social engagement of online interactions does not necessarily reduce one’s feelings of social isolation (Steafnone et al., 2011). Without taking into account the negative aspects of online communication[[2]](#footnote-2), online interaction remains inferior to face-to-face interaction in its ability to provide strong and intimate relationships without the need for external support (Ahn & Shin, 2013). In fact, online communications systems that are supported by real life interactions provide great wellness benefits to all social groups, but the independent effect of online communication itself is hidden by its attachment to real life relationships (Kim, 2019; Bekalu, 2021; Scott et al., 2021).

For this reason, the role that online communication alone plays in affecting face-to-face interactions is ambiguous. Some researchers believe it directly enhances relationships (Lee & Lee, 2010; Yu et al., 2016) and increases the positive effect of potential areas of connection within neighborhoods and existing relationships across residents (Fong et al., 2021; Bergefurt et al., 2019). Further, the lack of physical limitations allows for a diversification in one’s own close tie network, mixing people whose distance would have normally precluded any form of interaction (Hampton et al., 2021), and allowing for an easier introduction to community norms (van Eldik et al., 2019). Others, like Kearns and Whitley (2019), as well as Fawcett and Karastoyanova (2022), note that, though internet-based communication does allow for a consolidation of social norms and a reconnection of vulnerable groups (i.e. seniors, minorities etc.), it does so through unstudied effects that differ from the known relationships between offline communication and wellness factors.

## **Misunderstanding Relationship Quality and Social Network Strength**

As stated before, while acting as a support tool for offline communication, online interaction and its consequently formed relationships only superficially reproduce the cognitive and physical benefits of social interactions. For example, Biester’s (2020; 2021) studies on online mental health support groups revealed how easy it was for these to be misdirected by real life events such as COVID-19. The research showed that discussions intended to be abstracted from real life political and contemporary matters quickly devolved towards issues common to the pandemic: anxiety, fear of the new normal, depression etc.; common diagnoses like loneliness even came to be substituted by new terminology, such as isolation fatigue or forced quarantine (Low et al., 2020). In essence, the independence of online networks seems fragile when faced with the presence of offline networks, and the former come quickly to rely on the latter to strengthen the relationship ties of which they are formed.

The reason cycles back to the prevalence of weak, bridging, ties of relationship which are easier to form, maintain, and reconstruct within online communication. These exist along strong, bonding, ties deriving either from the offline transposition of pre-existing relationships or from the weakening of an individual preference for offline identities (Filiposka et al., 2017), negatively impacting an individual’s happiness and increasing marginalization due to age, race, relationship status, or income (Forthman et al., 2021). As discussed, weak ties can benefit individuals by increasing the feeling of connectedness, but the lack of a real output of social capital (i.e., trustworthy social nets, emotional support, physical aid etc.; Lee & Lee, 2010; Vacchiano & Bolano, 2021) creates a sense of disengagement that is not rationalized as a consequence of online presence. In some cases, the discomfort is misattributed to a deficiency of online social engagement, especially among lonelier, unhealthy, or unwell individuals, which continue to increase their online presence, without directly attributing the disengagement they feel to it. (Kim, 2017; Pittman, 2018).

Contradictions are then formed among those who benefit from prioritizing either their online counterpart (Chopik, 2016) or their offline identity (Shakya & Christakis, 2017), and those that misinterpret their need for offline connectedness, often due to high loneliness, as a drive for online network expansion (Kim, 2017; Wirtz et al., 2021; Pittman, 2018). The misattributed benefits of online interaction can lead people to prefer it over offline interactions (Zhang & Sung, 2021), increasing the number of communities united by interests, rather than reciprocity (Gil de Zúñiga & Valenzuela, 2011)[[3]](#footnote-3). However, this creates a problem in correctly quantifying the profitability of engaging in online communities versus physical ones. In fact, the unrestrained access of online communication exacerbates issues[[4]](#footnote-4) of causality and personal judgement of well-being in a community context (Atkinson et al., 2020), and people come to be unable to understand whether their discomfort comes from feeling lonely or just being disengaged. Nevertheless, the misattribution of loneliness is not exclusive to everyday people, as academia has also struggled to create proper measures of social disengagement when considering both strict social isolation and perceived social isolation.

## **Distinguishing Physical from Emotional Loneliness**

Due to the subjectivity of respondent loneliness, and the variety of definitions assigned by questionnaire-based research, social analysts find it difficult to quantify loneliness on a national scale. This is because loneliness is based both on the situational perception of the studied individual’s relationship circle, and the societal expectation of communication networks. As such, operationalizing loneliness requires a simultaneous consideration of internal and external expectations of social connections, which can become complex when synthesized onto a simple survey questionnaire.

Omitting any of the two causes researchers to focus on either physical or emotional loneliness, the latter being a lack of meaningful connections, or an accumulation of what Putnam defines as bridging social capital as opposed to bonding social capital (common in online networks)[[5]](#footnote-5), while the former is a more concrete loss of connections paired with a restriction in establishing new ones (similar to pandemic social isolation measures; Holt-Lunstad & Steptoe, 2022). Since there are overlapping features between both, measurement of one tends to undermine measurement of the other, because direct questioning may cause respondents to prioritize thinking about one, due of primacy, or misinterpret the intention of the question due to their being unaware of the existence of two different types of loneliness. Accordingly, the functions of physical/emotional loneliness scales vary depending on their concentration on measuring feelings or the extension of one’s social network (Cramer & Barry, 1999). Of these, the UCLA Loneliness Scale (Russel, 1996) is the most widely used, along with the Social and Emotional Loneliness Scale for Adults (SELSA; DiTommaso & Spinner, 1993) and de Jong-Gierveld Loneliness Scale (Jong-Gierveld, 1987) standing in at a close second. Most of these scales do indeed try to measure loneliness (Figure 1) while balancing objectivity (physical loneliness) and subjectivity (emotional loneliness), by distinguishing the structural necessity to be connected in a digital world versus the general functionality of engaging in social relationships. However, they still fail to take into account the possibility that, even in a context where people are connected at all times, they might still feel as if they were alone (Marlowe et al., 2017).

To be clear, loneliness is not just connected to the active establishment of connections, but also to the passive cognitive evaluation of our existing ones. For instance, DiJulio, Hamel, Muñana, and Brodie (2018) found that people with debilitating conditions, or who were low income, single, or divorced, but who still reported extensive friend networks were more likely to report feeling lonely than similar, but less downtrodden individuals; in fact, the former’s rates were almost equal to those with a lower number of friends within their social group. This doesn’t mean that having many friends does not contribute to a person’s wellness, but a perceived lack of social support and trust, which typically hints at a deficiency in social capital, especially for people who require higher levels of both, can make current relationships feel empty (Putnam, 2000). In addition, the relationship between an individual’s number of friends and wellness is not as linear as many people think, but instead curvilinear, with Russel, Cutrona, McRae & Gomez (2012) noting that individuals who extend past their optimal social network extension[[6]](#footnote-6) will actually begin to experience decreases in wellness. The problem then rises from trying to capture this feeling while addressing a person’s own unawareness of what being alone means, either by concentrating on simpler counts of friend groups and relative engagement, thus ignoring the problem, or by omitting physical loneliness altogether (Prohaska et al., 2020).

This study specifically addresses emotional loneliness while still trying to relate it to physical manifestations of social connections like social engagement. In specific, the paper tries to demonstrate that consideration of one aspect of loneliness does not preclude another: and that the effect of loneliness on wellness is based both on different ideals of social network depth, and one’s own way of engaging with said network. In fact, preexisting values, such as cultural differences (DiJulio et al., 2018), residential location (Van Beek & Patulny, 2021), and dramatic life events (i.e., COVID-19; Luchetti et al., 2020) may cause people to both experience and act our loneliness differently, and an evaluation of the behavioral, rather than emotional outputs of loneliness may allow for a more comprehensive study of social wellness.

## **Social Engagement as a Mediator between Health and Social Isolation**

Community and social engagement can be used as a measure of effective social cognition and identification, bridging the differences between online and physical communication by associating feelings of connectedness with willingness to participate in the community. As a matter of fact, a good way to track how loneliness affects relevant wellness factors, such as individual health and relational outcomes, can come from the inclusion of perceived social belonging and community-based identity setting within the evaluation of personal wellbeing (van Eldik et al., 2019); in other words, determining the degree to which an individual’s commitment and assigned trust to a community, real or online, leads to their direct participation to it, and the emotional consequences that such participation brings back to the individual. To further elaborate, what usually drives civic engagement and member health is the combined perception of a functional community, and the degree to which it allows the coexistence and interdependence of its members (Bjornstrom et al., 2013), meaning that strong, participating communities are often associated with strong social capital, which in turn is also connected with strong relationship ties. This makes it easier to detect an individual’s social and emotional wellbeing, without necessarily relying on personal evaluation (Collins et al., 2014; Procentese et al., 2019).

Quite, contrary to typical measures of emotional and physical loneliness, civic engagement measures do not depend on subjective, and thus variable, opinions of social cohesion and social capital, and can be traced back to active political activities such as volunteering, charitable giving, political donation, political representative engagement, voting, citizenship, political expression etc. (Atkinson et al., 2020). In addition, causal research surrounding civic engagement makes it easier to pinpoint its specific effect on individual wellness, as potential confounding effects that could inflate the role of communities within perceptions of social trust and connectedness are more clearly outlined than research directly addressing loneliness. Of these, the most prevalent are religion (Whitehead & Stroope, 2015), cultural and national context (Crocetti et al., 2012), temporal engagement[[7]](#footnote-7) (Wray-Lake et al., 2020), political ideology (Ferrucci et al., 2019), and group heterogeneity (Costa & Khan, 2003). To give an example, the latter two unite the areas of civic engagement, online communication, and well-being, since political affairs tend to discourage the forming reciprocity based groups over interest based groups, which in turn creates more heterogenous and disconnected relationship ties, and thus reduced wellness (Johnson et al., 2010).

Regardless, online groups have the possibility of creating strong reciprocity-based ties as long as the personal self and the online self remain congruent (Cover, 2012)[[8]](#footnote-8). Verily, merging one’s real identity with the online one allows for a simple transfer of social network benefits between online and offline relationships, meaning that increasing one’s social capital online is equal to doing so offline (Holmberg, 2014). As established, civic engagement and well-being are directly correlated with the perceived intimacy and strength of a person’s close relationship net (Lee et al., 2018), therefore the internet and social media could allow both the reinforcement of offline relationships and their diversification according to individual interests (Wellman et al., 2002; McCully et al., 2011).

The advantage of using civic engagement as a mediator between loneliness and wellbeing is that it detects a person’s individual feeling of connectedness rather than its real physical connectedness (Bjornstrom et al., 2013). In other words, engagement can indicate if a person values the intimacy of their social network enough to identify with it and thus participate in it (Subramanian et al., 2006); a relationship which can also be detected within online communities. However, in an online context where heterogeneity is common and weak relationships prevail, the absence of meaningful offline support may hinder the positive effect of community participation, even if engagement remains high, and while online communication finds prevalent use in information sharing and peer communication, the activity itself does not directly increase a person’s involvement in the community, rather the quality of the established relationship does (Moy et al., 2005).

## **The Detrimental Effect of Loneliness on Health**

The study of chronic loneliness does not concern just the realm of mental health, but also behavioral and psychosomatic determinants of wellbeing such as strokes, suicidal thoughts, depression, anxiety, chronic health conditions, and dysfunctional health behaviors (Park et at., 2020; Figure 2)[[9]](#footnote-9). In fact, in their 2018 Kaiser Foundation report, DiJulio et al. found that most people in the U.S. considered declines in mental and physical health to be the worst consequences of prolonged loneliness (58% and 55% of respondents, compared to the 49% prioritizing declines in personal relationship quality), while meta-analyses by Holt-Lunstad and his research groups (2015, 2022) confirmed that social loneliness, emotional loneliness, and physical loneliness each increase the risk of mortality by 29%, 26%, and 32%. In essence, problematic internet use is a worrying determinant of the country’s health, as individuals crave to experience more without perceiving the negative effects it brings. Dysfunctional communication patterns then cause a higher reliance on problematic use, falling within an exacerbating cycle which has dire consequences on an individual’s wellness and social wellbeing. The literature surrounding the relationship between wellness and loneliness specifically mentions cardiovascular diseases, cognition declines, increases in depression and anxiety, and a worsening of chronic and dysfunctional health behaviors as the most worrying effects on individual health:

***Cardiovascular Diseases****.* Individuals with higher levels of self-reported loneliness experience increases of up to 14.4 mmHg of systolic blood pressure, leading to severe hypertension, and higher chances of atherosclerosis (Xia & Li, 2018). In addition, their incidence of coronary heart diseases and stroke was 1.29 times higher lower levels of self-reported loneliness (Paul et al., 2021). Rates remain the same across age and gender, but older adults are reported to feel these effects more from real rather than perceived social isolation (National Academy of Sciences, Engineering, and Medicine [NASEM], 2020).

***Cognition and Self-Reported Health****.* The worst outcomes are found across seniors and people with underlying mental conditions, such as schizophrenia, obsessive compulsive disorders, bipolar disorder etc., with higher loneliness being associated with an increased rate of impairment and longer times of disease remission (Wang et al., 2018; NASEM, 2020). People over 65, in particular, tend to be burdened by the most troublesome consequences of prolonged loneliness, with 30% of the senior sample in Hämmig’s (2019) study of loneliness’s generational health effects reporting a general decline in self-rated health. This finding was also confirmed by Launaigh & Lawlor (2008), which attribute loneliness to higher rates of Alzheimer’s Dementia, with higher ranges of effect being detected among abandoned elderly (Luanaigh & Lawlor, 2008)

***Depression and Anxiety****.* The association between loneliness, social isolation, and mental health comes both from a biomedical explanation of hormonal and organic dysfunction, such as cortical accumulation and HPA axis inflammation, and a maldeveloped social cognition framework, which can be addressed with therapy or pharmaceuticals (Park et al., 2020). In fact, emotional, rather than social and physical loneliness, is associated with higher incidences of major depressive disorders and generalized anxiety disorders (Hyland et al., 2019). Other reports denote an association between increases in suicidal ideation and attempted suicides, and individuals afflicted by both real and perceived isolation (30.44 and 4.37 Odds-Ratio respectively; Stickley & Koyanagi, 2016)

***Chronic Health Conditions and Health Behaviors***. People suffering from higher levels of emotional loneliness also report greater comorbidity with pre-existing conditions and increased engagement in dysfunctional activities such as smoking, drinking, drug use, unhealthy diets, and physical inactivity; specifically, prevalence rates increase by 15% or 20% depending on higher and lower loneliness distributions (Hämmig, 2019). The isolation forced by the pandemic did not aid those who were trying to improve their coping strategies, as opportunities for change were limited during quarantine and stay-at-home orders (Brewer et al., 2022). To this point, elders experienced severe interruptions in therapeutic activities which resulted in greater losses in functional mobility and independency (NASEM, 2020).

All studies addressing the relationship between health and loneliness incur in the same problem of separating emotional from physical loneliness (Holt-Lunstad et al., 2015, Luanaigh & Lawlor, 2008), usually addressing one or the other without considering the connection between the two. Furthermore, the changes in communication patterns witnessed during the 2000s (Norris, 2002)[[10]](#footnote-10), and during the pandemic, makes it even more difficult to exactly determine isolation, thus guiding research towards subjective determinants of loneliness. Social media helps track connectedness in part, with specific attention given to the increase in use within the older age bracket, and the trend of smaller site-based groups being absorbed by larger platform-based communities (Mander et al., 2020). To this point, seniors have actually benefited from the increased connectivity afforded by online communication, and positive health outcomes can be attributed to its capacity to compress otherwise isolated communities. Yet, it can be difficult to determine if that is the result of a reestablishment of previously held social connections, or an overall expansion of their original support network. What is clear then is that “feeling alone” is not quite the same as “being alone” anymore, and happiness and health factors could come to be mediated by quality, rather than expansiveness of social connections (Pittman, 2018).

## **Is all Engagement Created Equal**

Thus, the area of online communication is not as straightforward as it may seem: the position of physical and emotional loneliness within the effect of increasing or decreasing wellbeing, health, and civic engagement can change depending on its analytical definition, subjective existing networks, and established level of societal belonging. Even the interactivity of social networks can cause significant confounding when analyzing the role of weaker peer relationships on wellness. In fact, Kaufman, Rodriguez, Walsh, Shafranske and Harrell (2022) found that the influence of intimate relationships on wellbeing may potentially mask the beneficial effect of online ties, as they become only significant when individuals feel more detached from partners and family (Figure 3). The change in the subjective importance of the relationship itself explains why this occurs, since satisfying one needs for connecting with people (Demir et al., 2013; Demir & Davidson, 2013)[[11]](#footnote-11) occurs at all levels of intimacy, but becomes more valuable with a preexisting appreciation of the ones we interact with (Demir, 2009).

A final note is then provided by High and Colleagues (2022), whose meta-analytical work on online communication and wellbeing represents the fundamental basis of this paper. In fact, the main reason behind the contradictory reports on the positive versus negative effects of social media may come from differences in perspective between communication-based and psychology-based research; thus, they identify a bias in both study methods and measures. Meier and Reinecke (2021) further elaborate this point by reporting that current research lacks on pattern analysis of internal communication (within social network) compared to external communication (across social networks), with a greater focus being given to straightforward counts of messaging and social interaction streams. To be clear, omitting context and individual patterns of interaction can cause severe bias in the study of online and civic engagement. For example, studying political ideology extremism within online forums by counting engagement instead of intent could misattribute those that just wish to participate for the sake of discussion, or want to see what is going on, close to individuals that do support the relevant ideology.

As such, this paper embraces a behavioral approach to the social and technical effect of social media on a person’s well-being, as well as its relationship network quality (Ellison et al., 2022). It values the contextual need for online engagement when considering the current intent of the agent/user, evaluating if this falls within the area of social engagement, social capital or social support. By doing so, the paper is able to capture the lost nuances of why a person engages in online versus offline communication, while also maintaining the overall count of how they do it, and what they gain or lose from doing so.

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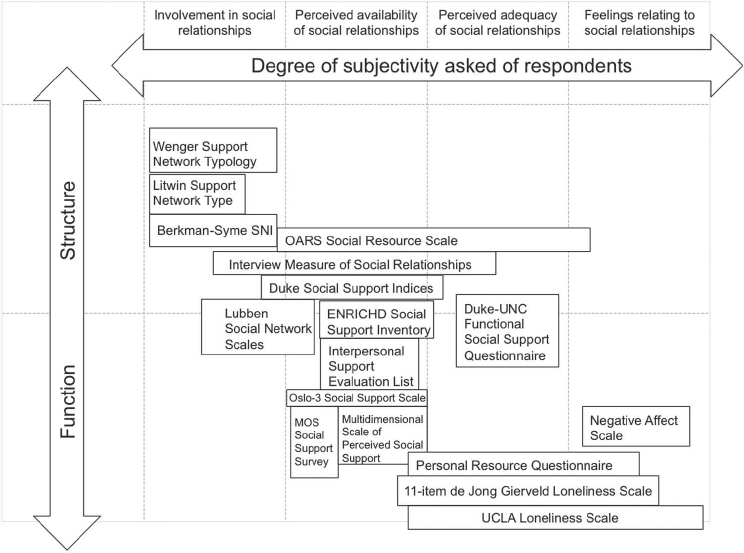
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**Tables and Figures**

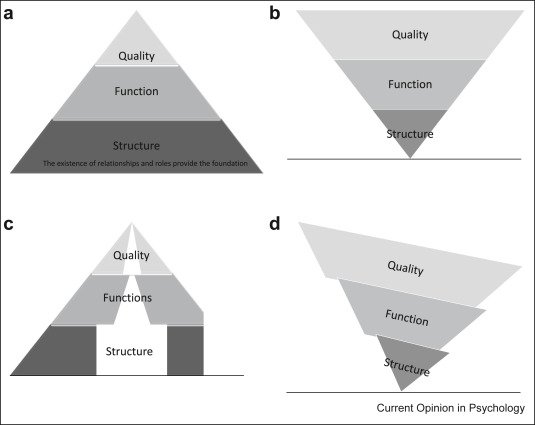


**Figure 1.** LonelinessScales ordered by study of relationship structure versus function, and subjectiveness of questionnaire (Valtorta et al., 2016).

Diagram

Description automatically generated

**Figure 2.** Possible biochemical explanations of social isolation and loneliness effects of well-being and perceived health (Park et al., 2022).



**Figure 3.** Different types of social networks based on functionality and structure: **a)** bonding and bridging equilibrium, with little discomfort for the individual; **b)** prevalence of bonded relationships, but with sufficient support; **c)** large social network of shallow quality, typical of online interactions; **d)** prevalence of low quality bonded relationships, which destabilize the individual (Holt-Lunstad & Steptoe, 2022).

1. While the view of digital equality here is optimistic, the literature also contends that focusing on praising growth rather than reinforcing it will lead to dangerous complacency, as new risks from the developing digital age remain unadressed (Gui & Büchi, 2021) [↑](#footnote-ref-1)
2. Cyberbullying, upward comparisons, fear of missing out, overuse, problematic internet use (Gioia et al., 2021) [↑](#footnote-ref-2)
3. Ren, Kraut and Kiesler (2007) specifically reference Bond theory and the presence of common identity groups, which simplify their identity over the group’s existence, and bond groups, which function under intercommunicative relations across members. Topic-based groups are a simplification of the former, as norm guided entities with little empathy for existing members but attraction towards newcomer growth [↑](#footnote-ref-3)
4. Spatial and social inequalities, belonging to multiple communities at once, and temporal changes in well-being, as well as community structure types. [↑](#footnote-ref-4)
5. “Bonding social capital refers to connections between members of a network who are similar to each other with respect to social class, race/ethnicity, or other attributes. By contrast, bridging social capital is defined as the connections between individuals who are dissimilar (or heterogeneous) with respect to socioeconomic and other characteristics” (Villalonga-Olives et al., 2016) [↑](#footnote-ref-5)
6. Cognitive Comparison Level (Thibaut & Kelley, 1959) [↑](#footnote-ref-6)
7. Time spent is the only factor that may vary between offline and online engagement. For details see Moy, Manosevitch, Stamm & Dunsmore (2005) [↑](#footnote-ref-7)
8. Cover (2012) specifically discusses the work that goes into creating and maintaining cognitive consistency across one’s friends and identity online, which directly copies our real-life work to avoid cognitive dissonance. [↑](#footnote-ref-8)
9. See Luchetti et al. (2020) and DiJulio, Hamel, Muñana, & Brodie (2018) for specific interrelationship characteristics [↑](#footnote-ref-9)
10. See Auxier and Anderson (2021) for specific site use [↑](#footnote-ref-10)
11. In both papers the sense of uniqueness is referenced as individuality within a shared community, which can be interpreted as usefulness without entailing intermember dependency. [↑](#footnote-ref-11)