# **Literature Review**

## **Social Isolation vs. Loneliness**

The difficulty of quantifying loneliness within a country-wide analysis stems from the subjective interpretation that researchers might assign to it, considering how it bases its roots on the specific conditions of the studied individuals, as well as the overall perception of what it means to feels alone. For instance, DiJulio, Hamel, Muñana, and Brodie (2018) found that people with debilitating conditions, or who were low income, single, or divorced, were more likely to report feeling lonely even with extensive self-reported friend networks; in fact, their rates were almost equal to those with an objective low number of friends within their social group. This type of “crowded” loneliness could be interpreted as a perceived lack of social support and a loss of cohesion and trust for both established institutions and the community at large, which was further defined by Putnam as a deficiency in social capital rather than simple social isolation (Putnam, 2000). Literature based on this initial definition further distinguishes social loneliness from emotional loneliness, the former being what was just described, while the latter being a factor of intimacy and depth of relationships that is more difficult to pinpoint (Prohaska et al., 2020).

This study specifically addresses emotional loneliness, which varies depending on the individual’s preferences of relationships rather than socio-physical needs. To be specific, a person’s satisfaction is defined by their cognitive Comparison Level (CL) of friendship needs (Thibaut & Kelley, 1959); in other words, the number and depth of intimate relationships required for the fulfillment of a satisfying level of connectedness. As pointed by Russel, Cutrona, McRae and Gomez (2012) there exists a non-liner relationship between the number of friends one possesses and their cognitively desirable CL, as social groups extended past this limit may result in decreases in satisfaction equal to a lack of intimate relationships. It should also be noted that consideration of one aspect of loneliness does not preclude another: prolonged physical and social isolation may condition individuals to prefer smaller network groups. Accordingly, development conditions may lead people to have different ideals of social network depth, and other 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 temper these expectations due to exogenous limitations.

Nevertheless, there should be a clear distinction between loneliness, which is caused by a lack of meaningful connections, or an accumulation of what Putnam defines as bridging social capital as opposed to bonding social capital[[1]](#footnote-1), and social isolation, which is a loss of connections paired with a restriction in establishing new ones (Holt-Lunstad & Steptoe, 2022). Although there are overlapping features between both, measurement of one tends to undermine measurement of the other, with functions of loneliness/social isolation scales varying depending on the concentration of feeling versus network extension subscales (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. It’s important to notice how most of these scales measure loneliness (Figure 1) while balancing objectivity and subjectivity, but also by distinguishing the structural necessity to be connected versus the functionality of engaging in social relationships; the former relating to the contextual inability to truly be socially disconnected from others in an age of digital information (Marlowe et al., 2017).

## **Lonely Connections**

The continuous rise of connectivity rates across the U.S. might have been the reason why social isolation scales have progressively become outdated, as the 93% of Americans who claim to have used the internet in 2021 vastly outsource their 2000 counterparts (52%) in freedom of communication and network expansiveness (Pew Research Center, 2021). This 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[[2]](#footnote-2), and the pandemic has accelerated this trend due to the physical restrictions of social isolation and the consequent rise in connectivity needs. In particular among young adults, internet participation has become more essential than ever (from 62% 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).

Nevertheless, offline and online communication operate in entirely different ways when considering relationship building and social network expansion. While platforms like social media allow us to remain, at least in part, connected with our family, friends, colleagues and acquaintances, and increase the size of our social sphere, their relational outputs allow for a simulated perception of connectedness without necessarily reducing social isolation (Steafnone et al., 2011). Even if we don’t take into account the negative aspects of online communication[[3]](#footnote-3), online interaction remains inferior to face-to-face interactions in its ability to provide strong and intimate relationships without the need for offline support (Ahn & Shin, 2013). In fact, both Bekalu (2021) and Kim (2019) only report the positive effect of social media engagement on social cohesion and efficacy within neighborhoods whose social network system was already embedded with local infrastructure (e.g., Integrated Community Storytelling Networks) confining online communications systems as internet supported integrations of offline relationships (Scott et al., 2021).

However, the role that online communication has in reducing or advancing face-to-face interactions is ambiguous, as some papers do demonstrate that public internet access can enable greater chances for the enhancement of offline interactions (Lee & Lee, 2010; Yu et al., 2016), and redirect attention to the positive effect of potential areas of connection within neighborhoods and across residents (Fong et al., 2021; Bergefurt et al., 2019). Further, online tools provide opportunities for diversification of private clusters of communication within one’s close-tie network (Hampton et al., 2021), and represent an avenue for the introduction of community norms and identity for otherwise disconnected individuals or groups (van Eldik et al., 2019). Still, Kearns and Whitley (2019), as well as Fawcett and Karastoyanova (2022), while recognizing the internet’s potential to “reconnect” vulnerable groups such as seniors, especially during the pandemic, continue to point at the fundamental differences between patterns of online and offline communication, which bring differential benefits within similar contexts of interaction.

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

Since personal evaluations of loneliness are untrustworthy and objective analysis of social isolation can be misleading, it becomes urgent to find a measure of effective social cognition and identification that may bridge the differences between online and physical communication. To this point, a good way to track how social isolation/loneliness affects relevant 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 process (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 his direct participation to it, and the consequences that such participation brings back to the individual. As a matter of fact, 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 high levels of shared social capital will only improve general well-being, and positive community participation, if it is composed of strong relationship ties. In a similar fashion, happy cohesive communities will continue to increase their social capital, therefore increasing their overall participation, in a repeating cycle (Collins et al., 2014; Procentese et al., 2019).

Contrary to loneliness and social isolation, civic engagement measures do not depend on subjective, and thus variable, opinions on social cohesion and social capital, and can be traced back to active political activities such as volunteering, charitable giving, political donation, contact of political representatives, voting, citizenship, political expression etc. (Atkinson et al., 2020). In addition, the causal research surrounding civic engagement also specifies which potential confounding effects could inflate the role of communities within perceptions of social trust and connectedness, with the most prevalent being religion (Whitehead & Stroope, 2015), cultural and national context (Crocetti et al., 2012), temporal engagement[[4]](#footnote-4) (Wray-Lake et al., 2020), political ideology (Ferrucci et al., 2019), and group heterogeneity (Costa & Khan, 2003). Accordingly, the latter two unite the areas of civic engagement, online communication, and well-being, since the openness of online communities tends to render them heterogeneous, and thus, as discussed in concurrent research, prone to less community involvement (Johnson et al., 2010).

**H1**: *Loneliness has a significant negative relationship with perceived social cohesion.*

As established, social effectiveness and well-being is directly correlated with the perceived intimacy and strength of a person’s close relationship net (Lee et al., 2018), and the internet and social media allows both the reinforcement of offline relationships and their diversification according to individual interests (Wellman et al., 2002; McCully et al., 2011). However, social cohesion serves as a mediator towards the effect of perceived community disorder and self-rated well-being only if it is perceived at an individual level (Bjornstrom et al., 2013), or, in other words, if we just count the individual feeling of connectedness to the community rather than his real level of connectedness; the former being more prevalent within homogenous group types (Subramanian et al., 2006). In an online context where heterogeneity is common and weak relationships prevail, the absence of meaningful offline support may hinder community participation, even if real cohesion remains high, and while online communication finds prevalent use in information sharing and peer communication, the activity itself does directly increase a person’s involvement in the community, rather the quality of the original relationship does (Moy et al., 2005).

**H1b**: *Online interaction has a significant negative relationship with perceived social cohesion, but only at high levels of physical social cohesion (low levels of loneliness).*

## **Social Media, Health and Feeling Alone**

The risks of continued loneliness and social isolation do not only affect 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)[[5]](#footnote-5). In fact, in their 2018 Kaiser Foundation report, DiJulio et al. (2018) found that people in the U.S. considered declines in mental and physical health to be the worst consequences of prolonged loneliness (58% and 55%, compared to the 49% of declines in personal relationship quality), while meta-analyses by Holt-Lunstad and his research groups (2015, 2022) confirmed the causal mortality of social isolation, loneliness, and living alone (increases of 29%, 26%, and 32% respectively). The self-fulfilling cycle of problematic internet use is a worrying determinant of the country’s health, as already negative aspects of both social isolation and perceived loneliness are worsened by the individuals’ engagement in dysfunctional communication patterns. Other literature goes deeper into the specific effects per each condition:

***Cardiovascular Diseases****.* Individuals at the higher spectrum of loneliness can 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 than people in the lower part of the spectrum (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., finding an increased rate of impairment and longer times for remissions (Wang et al., 2018; NASEM, 2020). People over 65, in particular, tend to find most troublesome consequences, 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; a finding confirmed by increasing rates of Alzheimer’s dementia across 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 maladaptive social cognition framework, which can be addressed with therapy or pharmaceuticals (Park et al., 2020). In fact, emotional, rather than social loneliness, is associated with higher incidence of major depressive disorders and generalized anxiety disorders (Hyland et al., 2019). The combined effect of previous mental conditions further reports an increase of suicidal ideation and suicide attempts when combined with both real and perceived isolation (30.44 and 4.37 Odds-Ratio respectively; Stickley & Koyanagi, 2016)

***Chronic Health Conditions and Health Behaviors***. The cognitive disassociation of social isolation and loneliness creates higher risk for worsening of pre-existing conditions and engagement in dysfunctional activities such as smoking, drinking, drug use, unhealthy diets, and physical inactivity, with prevalence rates increasing by 15% to 20% between 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); an even more worrying fact for elders, whose interruption therapeutic activities could result in greater losses in functional mobility and independency (NASEM, 2020).

A severe limitation common to all studies of health and loneliness associations is the focus and misinterpretation that occurs between determining what constitutes loneliness and what constitutes social isolation (Holt-Lunstad et al., 2015, Luanaigh & Lawlor, 2008), usually addressing one or the other without considering the connection between the two. The expansion of support groups online, and the change in ratios of bonding and bridging groups not only across platforms but also across time (Norris, 2002)[[6]](#footnote-6), renders determining “isolation” even more difficult, thus guiding research towards subjective determinants of loneliness. A noteworthy facilitator of this approach is the rise of social media, with specific attention given to the increase in use within the older age bracket, and the inglobation of smaller site-based groups within 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 connection, 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).

**H2**: *Loneliness has a significant negative relationship with perceived physical health.*

**H2b**: *Online interaction significantly reduces the negative relationship between perceived physical health and loneliness at all levels of the latter.*

## **The Unicity of Online Talk**

As stated before, while acting as a support tool for offline communication, online interaction and its consequently formed relationships represent a static copy of the former, with a distorted reproduction of the cognitive consistencies needed for an effective relationship. For example, Biester’s (2020; 2021) groups of research found that, even across different online communities, real-life aggregative events like COVID-19’s social isolation measures modified topic and word choice towards similar clusters of reference even if they conflicted with the original intent of the group. An example of this being the redirection of mental health support discussions towards worries common to the pandemic: anxiety, fear of the new normal, depression etc.; a change that can be verified even at a linguistic level (Low et al., 2020). This phenomenon points at a congruence between the personal self and the online self, and a consequent production of reciprocity groups that form across similar individuals within the network (Cover, 2012)[[7]](#footnote-7). Through these, the merging of 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).

However, this implies an initial duality of identity that does not seem sustainable in the long run, and its benefits can only be enjoyed through continued commitment of both, more so of one’s online counterpart (Zhang & Sung, 2021). Neglecting the latter leads to the observed prevalence of weak ties across online interactions, and the preference of topic-based communities over reciprocity groups (Gil de Zúñiga & Valenzuela, 2011)[[8]](#footnote-8), which creates a problem in correctly quantifying the profitability of engaging in online communities versus physical ones. In fact, having already cited the limitations of face-to-face interaction, in particular regarding its requirement of geographical proximity, the unrestrained access of online communication exacerbates issues[[9]](#footnote-9) of causality and personal judgement of well-being in a community context (Atkinson et al., 2020). 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 reason cycles back to the unperceived inferiority of online over offline communication; that is, the prevalence of online bridging, weak, ties of relationship which are easier to form, maintain, and reconstruct. Considering the concurrent presence of outlier bonding, strong, ties deriving from either offline transposition or weakening of the benefits of offline identities (Filiposka et al., 2017), online engagement negatively impacts an individual’s happiness and increases marginalization due to age, race, relationship status, or income (Forthman et al., 2021). In fact, while weak ties can benefit individuals by increasing perceived connectedness, as already discussed, 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, but as a deficiency of the latter (Kim, 2017; Pittman, 2018). In other words, the more lonely, unhealthy, or unwell a person feels while using social media, or other online communication apps, to reduce their discomfort, the less they will attribute this discomfort to this use.

**H3**: *Loneliness has a significant negative relationship with perceived emotional happiness.*

**H3b**: *Online interaction significantly reduces the negative relationship between perceived emotional happiness and loneliness, but only at high levels of loneliness.*

## **Is all Engagement Created Equal**

We can see then how contradictory the area of online communication study can be, and how the position of loneliness and social isolation 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. A further driver of study being the assumed roadway of influence that each type of relationship has on another. 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 weaker peer relationships, as they become only significant with higher detachments from partners and family (Figure 3). An explanation for this is the change in the interpretative importance of the relationship itself, as the satisfaction of personal needs of connection and effectiveness (Demir et al., 2013; Demir & Davidson, 2013)[[10]](#footnote-10) occurs at all levels of intimacy, yet changes relevance depending on context (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, it is claimed that 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, a difference in focus between devices and users. Meier and Reinecke (2021) further elaborate that current research lacks on intercommunicative pattern analysis, with a heavier concentration on message influx count and a significant omission on message content aggregation. For example, studying political ideology extremism within online forums by counting engagement instead of intent could miscategorize those that wish to engage for the sake of discussion and not to instill their support for the ideology itself.

As such, this paper embraces a socio-technical perspective to the effect of social media on well-being and a person’s relationship network quality (Ellison et al., 2022). It values contextual need of the 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, we are able to capture the lost nuances of why a person engages in online versus offline communication, while also maintaining the overall count of how he/she does it, and what they gain or lose from doing so.

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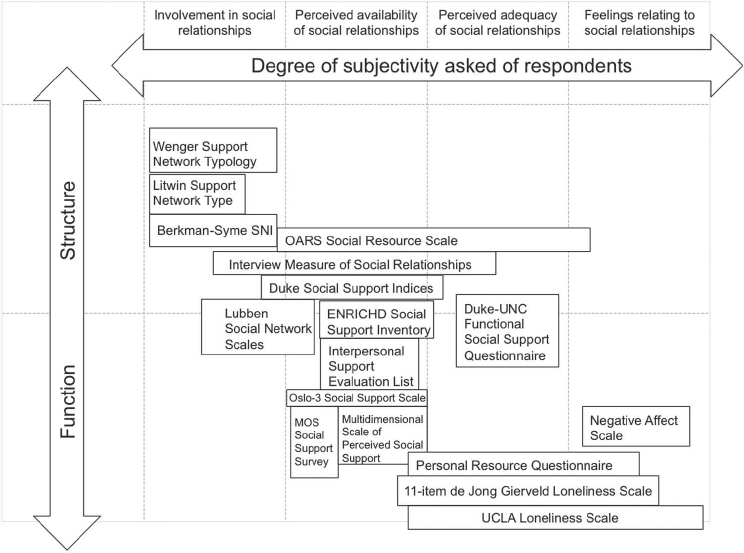
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**Tables and Figures**

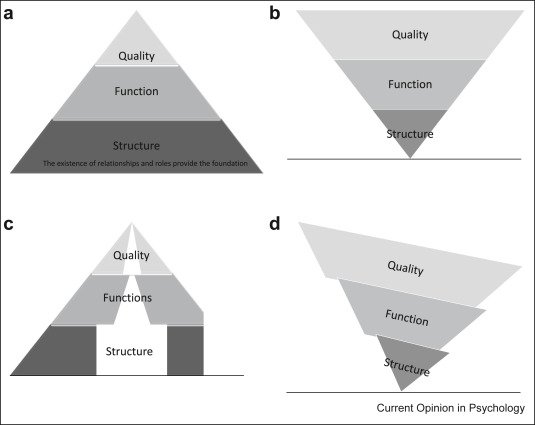


**Figure 1.** LonelinessScales ordered by study of relationship structure versus function, and subjectiveness of questionnaire (Valtorta et al., 2016).

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. “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-1)
2. 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-2)
3. Cyberbullying, upward comparisons, fear of missing out, overuse, problematic internet use (Gioia et al., 2021) [↑](#footnote-ref-3)
4. Time spent is the only factor that may vary between offline and online engagement. For details see Moy, Manosevitch, Stamm & Dunsmore (2005) [↑](#footnote-ref-4)
5. See Luchetti et al. (2020) and DiJulio, Hamel, Muñana, & Brodie (2018) for specific interrelationship characteristics [↑](#footnote-ref-5)
6. See Auxier and Anderson (2021) for specific site use [↑](#footnote-ref-6)
7. 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-7)
8. 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-8)
9. Spatial and social inequalities, belonging to multiple communities at once, and temporal changes in well-being, as well as community structure types. [↑](#footnote-ref-9)
10. 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-10)