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THE ASSOCIATION BETWEEN DATING APPLICATION USE AND HAPPINESS IN FINLAND

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ABSTRACT

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While the popularity of dating apps is undeniable, research examining their impact on users remains limited. Dating applications are location-based software facilitating romantic and sexual encounters, simulating meeting venues. According to sociologists, they reshape dating culture and socialization to sex, creating an atmosphere of uncertainty. Evidence suggests that these applications can lead to choice overload, compulsive usage, anxiety, and social comparison, all of which may negatively affect well-being. However, peer-reviewed research on dating apps in Finland is scarce, necessitating further exploration of their impacts.

This study focuses on user well-being in the context of dating applications. It does this by combining theoretical perspectives from subjective well-being and happiness studies, and combining literature from social psychology, sociology, and population studies. It employs robust hierarchical multiple linear regression to evaluate happiness levels among users and examines how social belonging influences this relationship. The study poses two primary questions: 1) How does the use of dating apps relate to happiness? 2) Does social belonging mitigate the possible negative link between dating app usage and happiness? The research utilizes data from the Self & Technology project at Tampere University's Emerging Technologies Lab, focusing on a cross-sectional sample from 2022, reflecting a representative population of Finland.

The study revealed a significant negative association between happiness and online dating app usage, particularly among active users. However, a positive moderating effect of family belonging was noted on the adverse relationship between dating app usage and happiness, while belonging to friends or romantic partners did not exhibit any buffering influence. Additional tests were done to examine the buffering effect of age and to assess the relationship between marital status and happiness. Young age was found to have a buffering effect, and singlehood was positively associated with happiness. Age and all three subcategories of social belonging showed a strong, positive main effect on happiness.

In conclusion, the well-being effects of online dating on happiness appear to be dose-dependent, with the most pronounced negative impact observed among those who engage with these apps weekly or daily. However, the mechanism underlying this association requires further investigation. The pioneering results provide novel information to address a contemporary social issue and advance the understanding of the intersection of digital intimacy and well-being in Finland, playing a foundational role by offering early empirical evidence.

Keywords: online dating, dating applications, well-being, happiness, social belonging

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LIST OF ABBREVIATIONS

This thesis utilizes a few repeated concepts that are referred to by their abbreviated names. Here is a list of the most frequently used abbreviated concepts in this thesis.

ODA = Online dating application
SWB = Social well-being
SELSA = Social and emotional loneliness scale for adults

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1 Introduction

Recent Finnish and U.S. research indicates that dating applications and online platforms are the most popular avenues for meeting new people in a romantic context, surpassing the popularity of traditional locations and connections such as schools, workplaces, hobbies, bars, and friends (Rosenfeld et al., 2019; Sorsa et al., 2024). Until the year 1990, Finnish individuals most often met their partners at bars (33 %) and through friends (23 %). However, in 2024, 47 % of Finnish people reported meeting their current partner online or through social media, decreasing the popularity of bars and friends to 4 % and 16 %, respectively. This transition applies to all age groups. (Sorsa et al., 2024.) Similar findings were reported by Rosenfeld et al. (2019) in the United States, where 40 % of heterosexual individuals stated they had met their significant other online in 2019. Online dating has displaced conventional methods of forming relationships (Rosenfeld et al., 2019), leading to the normalization of this trend. These numbers communicate the extent to which dating applications and social media have impacted our social lives.

Online dating applications (ODAs) are app-based platforms that facilitate romantic and sexual encounters among users (Finkel et al., 2012; Kaakinen, 2021). While matchmaking is not a new phenomenon (Finkel et al., 2012; Illouz, 2012), transitioning to online platforms has significantly altered romantic encounters, sexual scripts, and cultures of union formation (Bergström, 2022; Illouz, 2012). Initially, the telephone and later the Internet enhanced communication within existing social networks; however, the Internet has notably increased the efficiency of searching for and discovering new people outside one's established social network (Rosenfeld & Thomas, 2012).

Despite this cultural shift, research on online dating's effects on the users has only recently proliferated. The significance of online dating applications (ODAs) in contemporary society is widely recognized in both international academic research (Blanco et al., 2024; Finkel et al., 2012; Rosenfeld et al., 2019; Sharabi et al., 2024) and public discussion and newspapers (Burn-Murdoch, 2024; Laine, 2025; Stacey, 2024) however, peer-reviewed evaluations with representative samples, meta-analyses, and longitudinal assessments are scarce (Sharabi et al., 2024). Despite

popular use, academic and journalistic discussions on online dating presuppose a negative association with well-being (Burn-Murdoch, 2024).

Recently emerged international research indicates that the effects of online dating on well-being include a plethora of negative effects, such as victimization experiences (Kaakinen et al., 2021) increased anxiety (Holtzhausen et al., 2020), compulsive behavior (Bonilla-Zorita et al., 2021; Orosz et al., 2016; Orosz et al., 2018, Jennings et al., 2023), loneliness, (Her & Timmermans, 2021; Blanco et al., 2024), social comparison (Strubel & Petrie, 2017), dating anxiety (Swami, 2022), rejection leading to hostile and aggressive thoughts towards other dating app users (Andrighetto et al., 2019), and decreased joviality (Her & Timmermans, 2021). In addition, evidence shows that singlehood can situate an individual in a vulnerable state due to social expectations, stigma, and unmet social needs (DePaulo, 2006; Kolehmainen, 2023).

Due to preliminary findings indicating negative associations between the use of dating applications and well-being, juxtaposed with the fact that Finnish research on them is minuscule, it is rather alarming that Finnish academia has not addressed this before. This thesis addresses this research gap and is the first attempt to disentangle whether negative associations between dating application use and well-being are tenable in the Finnish context.

The influence of social contexts, whether physical, institutional, or digital, is understood in social psychology; hence, this thesis focuses on dating applications as social contexts that have the potential to facilitate human connection and well-being. In addition, it considers how the experience of social belonging, which is crucial for human well-being, interacts with online dating and its association with happiness, as the quality and presence of social relationships profoundly affect an individual's physical and emotional health (Finkel et al., 2012), nominated as the "fundamental human motivation" (Baumeister & Leary, 1995) and the essence for human thriving (Ryan & Deci, 2017). This thesis adopts a social psychological approach to happiness and well-being, framing them as reflections of a rewarding and fulfilling social life in the footsteps of the pioneer of subjective well-being researcher Ed Diener (SWB; Diener 1984; 2012).

In this research, happiness, which denotes a positive emotional state (Diener, 1984; 2012), is used as an indicator of well-being. In academia, happiness relating to something is understood as a reflection of a sense of satisfaction or as an individual's evaluation of one's life or a specific phase in it (Suojanen, 2021; Summa, 2020; Veenhoven, 2017). Happiness encompasses the experience of positive emotions like joy, pleasure, and gratitude, alongside the absence of negative feelings such as depression or anxiety. While happiness may occur intermittently, it is viewed in academia as a broader indicator of well-being. Therefore, subjective well-being (SWB) is understood as an overarching term that incorporates happiness as a measure of individual evaluations of one's life. (Diener, 1984; 2012; Saari, 2012; Suojanen, 2021.)

This thesis contrasts these evaluations between dating app users and non-users to determine if dating applications influence well-being. It asks two research questions: *How does the use of dating apps relate to happiness? Does social belonging mitigate the possible negative link between dating app usage and happiness?* Given that Finland has been recognized as the world's happiest country for eight consecutive years (Helliwell et al., 2025), it is both intriguing and essential to analyze how happiness varies across demographics.

The thesis begins with a literature review that consolidates recent research on dating applications, with particular attention to cultural and demographic relevance. The objective of the literature review in Chapters 2 and 3 is to understand the current state of the field and the various effects of online dating on well-being identified in previous studies. A more in-depth examination of happiness research, well-being frameworks, and the importance of social relationships to happiness is undertaken. Drawing from the literature review and related theoretical perspectives, the foundations for the research questions and hypotheses presented in Chapter 4 are established. In Chapter 5, the data, variables, and methods employed in the analysis are introduced, followed by the implementation of robust hierarchical linear regression in Chapter 6. Finally, conclusions are drawn in Chapter 7, where findings are interpreted through the lens of social psychological well-being frameworks.

2 Online Dating

2.1 Online Dating and Matchmaking

Online dating applications (ODAs) are location-based mobile software designed primarily to facilitate micro-level interactions with potential romantic and sexual partners, simulating a meeting venue (Finkel et al., 2012; Kaakinen et al., 2021; Sevi et al., 2018). Unlike browser-based dating sites, ODAs are portable and often "swipe-based," allowing users to approve or reject communication opportunities (Heino et al., 2010; Holtzhausen et al., 2020). Attraction assessment is central to online dating; swiping, which denotes accepting or rejecting potential partners, occurs based on the evaluation of pictures and profile information (Bergström, 2022; Lamont, 2020).

Despite online dating applications' recent emergence and their heralding as the vessel of a relationship revolution (Stacey, 2024), the introduction of new technologies has shaped dating culture throughout history. There have been times in history when romantic novels were criticized for creating false assumptions about marriage, or when "men with cars" were something to watch out for, as the automobile introduced driving as an alternative to picnic dates. Movie theatres and dance halls were shunned for "blatant eroticism", and romantic fiction received backlash for creating a false reality. (Illouz, 1997.) Hence, the role of different technologies in shaping and catalyzing romantic love is distinct yet debated throughout history.

Today's dating sites and applications imitate a concept of self-advertisement, a form of marriage brokerage popularized in the nineteenth-century English and French-speaking world. Purchasing a newspaper entry space to express a desire for partnership opened a new outlet for the search for potential partners, particularly for individuals lacking appropriate social connections, enlarging the reach. (Bergström, 2022.) Rinnekangas (2013) has studied Finnish and German self-advertisements from the 20th century, focusing on linguistic choices and inspecting differences in wording, self-presentation, and cultural climate. She found that self-advertisements can reflect the individual's state of happiness and perceived chances of personal luck, and these reflections differ between cultures in terms of modality, modesty, and descriptions of identity.

Despite their popularity, Bergström (2022) highlights those self-advertisements had a contradictory reputation, depending on the magazine and the advertisement's content, either as brave or desperate. Currently, online dating applications are comparable to their predecessors in terms of culture and norms. Tinder, one of the most popular dating applications, with 10 million monthly users in 2018 and 75 million in 2024 (Priori Data, 2025; Sevi et al., 2018), has gained an infamous reputation like that of self-advertisements, dance halls, movie theaters, and cars. Dating apps are described as "hook-up apps", as they enable users to participate in sociosexual activities without the expectation of commitment (Carpenter & McEwan, 2016; Sevi et al., 2018).

Research has attempted to explain dating applications' popularity, predominantly reasoning that wide acceptance with accessibility, which increased as mobile phones became popular (Kaakinen et al., 2021). Finkel et al. (2012) outline three distinctive services online dating sites offer, making them more convenient than offline dating. These are *access, communication,* and *matching*. Access refers to users' increased ability and opportunities to encounter new potential partners that they would not otherwise meet. Communication refers to individuals' opportunities to use technology to communicate and gather information before face-to-face encounters, which is a new feature in human encounters in the digitalized world, not just on dating apps. For example, this applies to job markets as well. Lastly, matching denotes the algorithm-based feature that suggests the user potential partners amongst other users.

In addition to Finkel et al.'s outline (2012), research has proposed other application-specific software characteristics that dictate popularity. For example, accessibility also comprises ubiquity and mobility, as the application software is installed on one's phone, making it possible to integrate into daily life. Profile information, including pictures, age, location, and other personal information such as desires, interests, hobbies, and personality types, is available for assessment and filtering. (Heino et al., 2010; Jung et al., 2019.)

In interviews, a plethora of reasons for ODA use have emerged. According to Sumter and colleagues' (2017) study, the most popular reasons to use ODAs are to find love, to have casual sex, and to get excitement and validation. Respondents also admitted to using online dating applications because using them is trendy and communicating on them is considered convenient (Sumter et al., 2017). Sevi et al. (2018) investigated

sex differences in motivations to use Tinder. They found that men were more likely to use Tinder for casual sex and women for love; however, finding love was reported as a popular motivation for both genders. They also investigated the prevalence of sociosexual attributes, meaning the willingness and attitudes towards casual sexual encounters without romantic attachment, and concluded that men's sociosexual attributes are highly associated with sex-related Tinder use. (Sevi et al., 2018.) These findings indicate the existence of sex differences in user cultures and methods, which is not surprising, as there is convincing evidence for sex differences in mate-seeking and partnering behaviors spanning from evolutionary psychology to social sciences (Buss & Barnes, 1986; Lamont, 2020).

In other studies, the reasons for online dating app use include anonymity and the wish to keep dating somewhat of a secret. People like to keep their dating preferences and activities private, and dating applications offer a vessel to seal privacy. These reasons are especially prevalent among women, who are often victims of dating violence. (Bergström, 2022; Rosenfeld et al., 2019; Swami, 2021.)

A benefit of ODAs, and according to critics, their inherent fault (Pronk & Denissen, 2019), is that online dating applications offer a larger pool of people from which to find partners and facilitate conversation. This efficiency is one of the reasons for the recognized popularity of dating applications, as people whose dating pool is originally "thin" can access more people than their physical location would initially allow (Rosenfeld & Thomas, 2012; Rosenfeld et al., 2019).

Accessing detailed up-to-date information about the dating pool is a relatively new phenomenon, as throughout history, people have relied upon information that their family or friends have on dating candidates (Rosenfeld et al., 2019; Swami, 2021). As Rosenfeld et al., (2019, p. 17754) aptly describe: *"The architecture and ubiquity of the Internet make it easier -- to have up-to-date information on 10 million people, than for a mother or a friend to have up-to-date information on 20 people",* when comparing the Internet and the family as matchmakers. This information about potential partners' remarks suggests a significant change in dating culture and changes in interactions.

2.2 Demographics and Interactions on Dating Apps

Research on online dating applications has attempted to explain the mechanisms that relate to dating success on the applications and how this success differs among user groups. Research presents contradicting results, however, some conclusions can be made. Due to my interest in dating app users' well-being, this chapter will synthesize some of the recent research on the dynamics within dating applications to conclude who uses dating apps and with what consequences on the self.

Dating applications have received criticism due to the abundance of possible partners and their status as "hook-up apps" (Carpenter & McEwan, 2016; Sevi et al., 2018). This all considers the well-being effects of dating application use due to a common worry that dating applications might cause something colloquially called "the relationship recession" (Burn-Murdoch, 2024), signifying short-lasting and fragile relationships, the increase in singles, and ambivalent feelings towards dating (Burn-Murdoch, 2024; Pronk & Denissen, 2019; Rahnu & Jalovaara, 2023; Sorsa et al., 2024). These phenomena indicate that there could be broader well-being effects stemming from dating application use, which are complex and affect the current cultural climate and dating.

One cause of frustration, and a topic of interest among social scientists, is the dynamic of matching and messaging on dating applications. There tends to be differences in dating goals and strategies between genders, both in online and offline worlds (Lamont, 2020). Lamont (2020) discusses in detail how heterosexual women wait for the male participants to take initiative and assume they plan for the dates, ask them out, and pay, and these strategies are applied to offline interaction as well. These assumptions are explained by differences in dating scripts, which lead male users to be more straightforward and operative in mate searching, for example, by initiating more matching requests.

There is evidence of online dating's adverse effects on users, which are also gender related. Andrighetto et al. (2018) conducted an experiment that simulated rejection experiences on an online dating application. The researchers found that male, but not female participants, who were rejected, displayed increased hostility. These included aggressive emotions, attitudes towards dating violence, and aggressive tendencies

against online counterparts. These attitudes and tendencies were measured with the Illinois Rape Myth Acceptance Scale (McMahon & Lawrence, 2011), the Attitudes Toward Dating Violence Scale (Price et al., 1999). Andrighetto et al. discuss romantic rejection's effects on well-being, which seem gender dependent. The consequences of romantic rejection can have negative effects on the individual (Baumeister & Leary, 1995), and might put an individual in a vulnerable state, as the risk of experiencing rejection increases the more an individual dates. These vulnerabilities are discussed in detail later in this thesis.

It has been proposed that dating applications do not favor men due to a lack of female clientele. Men's user experiences are described as frustrating, especially among the youngest users (under 25), as they receive significantly less attention after sending their initial messages to women compared to the messages sent by older male users. Similarly, young men are the least likely to be directly contacted by women. Interviews also show that many young men simply stop using online dating services after failing to make any real connections. (Bergström, 2022.)

The disconnect in male-female user experiences and young men's difficulty in attracting attention, making contacts, and meeting women in person can be attributed to female users' tendency to prefer older men. This age gap between partners is a particularly strong demographic trend worldwide (Lamont, 2020; Sorsa et al., 2024). By contrast, female users are more likely to be cautious in taking the initiative on dating apps. In addition, by no means are women immune to rejection, but they experience and display emotions differently, often as sadness or confusion (Anrighetto et al., 2018). These phenomena have been explained with the proactive/reactive framework in which men's role is to take the lead and women's role is to respond (Lamont, 2020). Young men are often encouraged to take an active role in romantic and sexual interactions (Bergström, 2022; Lamont, 2020). This all culminates in different experiences on dating online, leading to frustration and negative experiences, especially for men (Anrighetto et al., 2018).

Rosenfeld and Thomas (2012) found that younger respondents were not the most likely to form romantic partnerships online, challenging the assumption that technological familiarity, which is presumably highest among the youngest birth cohorts, would directly translate into greater representation in online union formation.

They explain this with social contexts: young people do not necessarily need to search for people online, as they meet other single people in their local environments, where the number of single people is higher, such as school. Heterosexual men and women are more likely to form unions at later ages, and especially for men, as they get older, their success on dating applications keeps increasing. Rosenfeld and Thomas explain this age trend with “thin” dating pools.

According to Bergström (2022), women tend to couple up sooner than men; men tend to settle down later, hence giving one explanation for the slight imbalance of the sex ratios on dating apps. Thus, there would be more single men than women in the dating market. Bergström highlights that if young women use these platforms slightly less than men, it is not because they are less interested in online dating but because they are more often already in a relationship (Bergström, 2022). This changes among older age cohorts: over 50-year-old women outnumber same-aged men on dating applications in global statistics (Bergström, 2022; Pew Research Center, 2019).

While it is intriguing to believe in Bergström’s analysis, the Finnish data from Sorsa et al. (2024) differ from the USA data and suggest that single women feel more ambivalent towards partner-seeking. Among the youngest age cohort, 18-29-year-old women, 25 percent of single women answered that they are not looking for a partner, and 68 percent are not looking actively, but are open to possibilities if they encounter someone. Only 6 percent say that they are actively seeking a partner, whereas the respective percentages for same-aged men are 13 %, 66 %, and 18 %. A similar sex ratio applies to all age groups, in comparison to Bergström’s claim that older women are more active on dating applications: Finnish men are more active in partner-seeking at all ages (Sorsa et al., 2024), which could explain possible gender ratios on online dating apps. In the Finnish context, such gender ratios are not even available.

2.3 The Age of Singles

Despite the existence of polyamorous and open relationships, the general assumption is that single people use dating applications, and are predominantly curated for single people, to get out of the state of singlehood (Rosenfeld et al., 2019; Sharabi et al., 2024). However, contemporary academia is worried about the duration and strength

of contemporary romantic relationships and asks whether dating applications are sufficient in what they promise. Two trends are visible: the growing popularity of dating applications across over a decade (Finkel et al., 2012; Rosenfeld et al., 2019; Sorsa et al., 2024), and the number of singles is growing globally (Burn-Murdoch, 2024; Kolehmainen et al., 2023; Pronk & Denissen, 2019; Rosenfeld et al., 2019). Some blame dating apps for this phenomenon (Pronk & Denissen, 2019).

The worry about the increasing number of singles in society, according to Kolehmainen et al. (2023), is a sign of "singlism," which means the process of stigmatization, marginalisation, and discrimination against single people (DePaulo, 2006). Singlism presents itself in requirements for single people to give reasons why they are single, prove their happiness (Suojanen, 2021), and defend their single status (Lahad, 2017). Therefore, the link between singlehood and well-being issues is both evident and relevant in the realm of online dating.

Previous research has indicated that single adults, on average, experience worse well-being compared to coupled adults (Girme et al., 2022). Diener and colleagues (2000) have found that, based on single people's self-reports, they score lower in subjective well-being measures and life satisfaction. In a recent Finnish study, single people scored lower on all well-being measures than their coupled counterparts (Sorsa et al., 2024). These between-group differences seem robust, as they are visible in longitudinal evidence as well (Purol et al., 2020).

Girme et al. (2022) ask whether this is due solely to singlehood or because single people are unsupported and stigmatized. Girme and partners found that single adults reported experiencing lower life satisfaction than adults with a partner. They explained this with unavailable social support: single adults also reported that they had less access to social support than their coupled counterparts, and that they received more negative treatment and experienced discrimination. The conclusion seems rather evident: singlehood places an individual at a vulnerable state, whether it is due to loneliness, stigma, or both.

Kolehmainen et al. (2023) describe a lucid example of how societies exclude single people, creating affective inequalities, which signify subtle mechanisms of inequality that are registered in the body through affect that stems from statuses and institutions,

here, singleness. “Happiness highlights” (Kolehmainen et al., 2023) are milestones that occur in the normative life course, that, regarding romantic life, include finding “the one”, marriage, and having a “happily ever after” experience in a monogamous relationship. Kolehmainen et al. argue that affective inequalities can manifest as a lack of single-specific celebrations of life events similar to those of coupled ones, but also as belittling single people’s well-being and as tendencies to question the happiness of living without a partner. However, a Finnish happiness researcher, Suojanen (2021), notes that singlehood and other people’s expectations for partnering can create pressure for single people to present themselves as happy.

Döring and Mohseni (2018) note that the recently emerged literature on dating applications and other sexuality-related technologies has increasingly attracted critical attention. They suggest that numerous scientific articles primarily emphasize the harmful consequences of online sexual behaviors, categorizing them largely as deviant or risky behaviors among youth that require prevention (Döring, 2014; Döring & Mohseni, 2018). This bias is worth recognizing, as existing research also points to potential negative impacts of a negativity bias on well-being and relationship dynamics. Sharabi and Dorrance-Hall (2024; see also Pitcho-Relorentzos et al., 2020) indicate that individuals who meet online often encounter heightened scrutiny from their social circles, influenced partly by prevailing societal norms regarding online dating.

Sharabi and Dorrance-Hall (2024) cite Wildermuth (2004), who aptly argues that online dating relationships are often perceived as distinct from traditional ones and may be undervalued for not aligning with conventional courtship norms. Since its emergence, online dating has been subject to public criticism, with users frequently stereotyped as lonely, socially anxious, or “desperate” for companionship. (Sharabi & Dorrence-Hall, 2024; Wildermuth, 2004.)

People who use dating applications are stigmatized based on their identity as well, not solely based on their dating app use, but because of their sexuality or marital status. As stated by Rosenfeld et al. (2019). They highlight that online dating applications are popular and successful meeting venues among members of the LGBTQ community, who face discrimination globally. Research also indicates that married individuals tend to be viewed more favorably than singles in experimental settings. Participants are

often more likely to perceive discrimination against single people as more acceptable compared to nearly all other social groups (Morris et al., 2007).

Therefore, living against the “couple norm” can have both social and economic consequences, but most importantly, emotional consequences, which seem evident in decades of research (Budgeon, 2008). As I am studying dating application users, presumably single, it is central to understand the multiple effects that can cause a single person to feel dissatisfied. As discrimination and stigma have been shown to have substantial negative effects on both physical and mental health (Haslam et al., 2018), there is compelling empirical evidence to claim that both singlehood and dating application use can have adverse effects on well-being.

2.4 Online Dating and Society

As addressed earlier, dating culture and socialization to sex are undergoing a significant metamorphosis as dating applications have become mainstream. This significant change, which shows itself as increased emphasis on reason, choice, consumerism, sociosexuality, self-realization, dating as the predominant form of romantic interaction, and taking distance from traditional family values, has been acknowledged by researchers (Bergström, 2022; Illouz, 2012). It is not only an issue for sociologists, but for population and gender researchers as well.

Bergström (2022) argues that socialization to sex and cultures of dating have changed to the extent that romantic stable relationships are difficult to form. The emerged forms or sociosexual behaviors, such as hookups or situationships, are typically not intended to evolve into committed relationships. Lamont (2021) writes that since these encounters lack commitment, participants must navigate subtle negotiations to move towards a serious relationship. Much of the hookup culture revolves around an unspoken absence of communication, with the expectation that things should simply unfold. According to Lamont, this ambiguity influences modern dating attitudes and fosters uncertainty.

Although not explicitly stated in Finnish academic studies, this uncertainty is reflected in recent statistics regarding Finnish singles. Sorsa et al. (2024) report that most single

Finns (82 %) express a desire for a relationship, yet only 2–18 % of these respond that they are looking for a partner. With the internet and social media emerging as the primary venues for meeting potential partners in Finland, Sorsa and partners (2024, p. 30) suggest, based on open- ended responses, that individuals may be guarding themselves: *“By admitting they are searching for a partner actively, individuals expose themselves to the risk of failure and disappointment. Many might feel it is wiser to wait and trust chance."*

Despite changing values and dating cultures that appreciate women’s freedom, choice, and, at least, the dissolution of the “partnering imperative”, Lamont (2021) claims dating remains gendered. She analyzes that despite the ideals of freedom, empowerment, and choice, the ideals of gendered dating are rigid and remarkably resistant to changes in society. This combination of gendered dating practices and emerging social ideals creates confusion:

> *“The cultural uncertainty and perceived abundance shape a new social network with unwritten rules and hybrid customs that blend traditional gender roles with modern technologies. This system is relatively new, potentially impacting individuals navigating this evolving framework of social norms. Such ambivalence and uncertainty can lead to stress.”* (Lamont, 2021, p.4).

Bergström (2022) argues that online dating has become *disembedded*, meaning that activities that have previously been embedded in ordinary social relations become detached from society and form an autonomous market sphere. The customizability of algorithms, and the ability to set search restrictions by choosing the gender, sexual preferences, age, and distance, sometimes even race, religious background, ethnicity, and vaccination status, making the application display only profiles that match the preselected criterion (Solovyevva et al., 2022) have been criticized for creating a phenomenon named “relationshopping” (Heino et al., 2010). Relationshopping refers to dating’s transactional nature and the sense of marketing the self and selecting possible partners from what is available. Online dating applications’ gamification and market-like functioning have also been criticized (Illouz, 2012), and they face accusations that they promote superficiality, as profiles reduce people to a list of traits that “can check all the boxes” (Finkel et al., 2012).

Yet, it seems disembeddedness and relationshopping initiated well before dating applications emerged. Illouz (1997) acknowledged this change in modern romanticism before dating applications became mainstream. She writes that modern culture values autonomy, tolerance, freedom, equality, and self-actualization, and that an individual's growth is something to be maximized in all spheres of life, already at the end of the 90s. Illouz claims that these contemporary values have led romance and love to become something that we can and must consume. Romance becomes a lifestyle choice, whether it is how we choose partners (emphasis on the word choice), how romance is performed, or how we interpret signs of love. Illouz argues:

> *"Postmodern affairs have become significantly different from the 1960s, after sexual liberation. Underlying the postmodern affair is a definition of identity based on lifestyle choices and consumer rationality. -- One might even venture to suggest that the "commitment phobia" so remarked on in this population is a by-product of an identity largely based on the affirmation of autonomy through lifestyle choices, resulting in a reluctance to give up freedom to choose and the prospect of "finding a better mate".* (Illouz, 1997, p. 173).

Illouz's writing from 1997 is proof that the struggles of modern dating, "shopping for partners", and commitment phobia, which we blame on dating apps, existed long before. Illouz (1997) continues that modern dating encompasses three distinct cultural features, which combine sexuality, consumerism, and social class. These are the increased legitimacy of sexual pleasure and sociosexuality for its own sake, that dating processes and the ritual of forming romantic bonds are forged through the repetitive consumption of rituals of leisure, and last, mobilize habitus' role in the consumption of leisure activities, making romanticism part of social class performatives.

By introducing Illouz's (1997) work, I aim to highlight that the cultural and sexual shifts we are realizing and concerned about are not new phenomena nor exclusively the result of dating apps. Instead, they stem from a broader cultural transformation linked to consumerism, individualization, and sexual revolution, which secularize and normalize sexual practices. I argue that dating apps emerge from the same cultural evolution, emphasizing values such as equality, consumerism, and personal freedom in choice. Ultimately, dating applications serve yet another means for us to engage with and embody these values, rather than being the sources of their creation.

3 Happiness and Subjective Well-Being

3.1 Online Dating and Subjective Well-Being

Before investigating online dating's effect on subjective well-being (SWB), I must define what I mean by subjective well-being. In this thesis, I will utilize Ed Diener's (1984; 2012) subjective well-being framework and definitions. According to Diener, subjective well-being reflects individuals' perceptions and emotional responses regarding the quality and satisfaction of their lives (Diener, 2012).

SWB consists of three components: positive effect, negative effect, and life satisfaction. Positive effects signify pleasant emotions and feelings, such as happiness or enjoyment, and rewarding experiences. Negative effects and the absence of them signify the lack of negative emotions like sadness or anger. Life satisfaction signifies the global judgements of one's life (Diener, 2012; Taylor & Barzanova, 2018). I will use Diener's definition and framework in this research, as it is widely accepted and investigated, and focuses on both micro-level emotions and the cultural setting.

One of the strengths of Diener's framework is its comprehensive approach to subjective well-being. It emphasizes personal evaluations while also recognizing that broader societal and cultural contexts, including objective life circumstances, can significantly influence levels of well-being. The significance of context is acknowledged in social psychological studies, not only in Diener's work, but also, for instance, in the Self-Determination Theory (SDT; Ryan & Deci, 2017). In social psychology, contexts, such as work environments, family, school, and romantic relationships, are investigated for well-being effects. The cultural factor at stake is online dating; the core of my research is to investigate subjective well-being in the context of dating applications.

Current peer-reviewed research on dating apps has recently proliferated; however, synthesizing ODA use's well-being effects is difficult because meta-analyses are scarce. In addition, Finland-specific peer-reviewed literature is minimal, most relevant to this topic being Kaakinen et al.'s (2021) work. Therefore, conclusions on generalizability and applicability to the Finnish context must be made with caution.

The overall message of recent peer-reviewed research on ODAs is that they do not seem to give out the benefits that users seek from them. Kaakinen and colleagues (2021) studied adolescent victimization experiences and concluded that the use of dating apps was associated with a higher likelihood of being a victim of harassment, sexual harassment, other cybercrimes, or segregation in online environments. The perpetrators were other internet users of the same age and adults. Kaakinen and colleagues consider dating apps to be internet locations where the risk of falling victim to crime increases significantly. While they do not comment on well-being effects, it is evident that victimization experiences can have effects on one's well-being, especially when victimization occurs during adolescence (Lahti et al., 2023).

International studies have assessed the relationship between ODA use, well-being, and behavioral consequences. The conclusions are rather grim. For example, Jennings et al. (2023) assessed the relationships between online dating and signs of poor mental health and found significant associations with substance addictions, compulsive sexual behavior, and sexual risk-taking. While these behaviors are not solely measurements for well-being, substance addictions and compulsive sexual behaviors have been shown to have associations with co-occurring mental illnesses (Heyman, 2009; Snaychuk et al., 2022). Online dating applications have been shown to create compulsiveness, revealing that frequent use can negatively affect well-being, correlating with addictive behaviors both individually and relationally. Dating applications can act as sources of immediate gratification, encourage unhealthy coping mechanisms to manage negative emotions, and distort affective and cognitive responses. (Bonilla-Zorita et al., 2021; Orosz et al., 2016; Orosz, 2018).

In their survey study of Belgian Tinder users, Her and Timmermans (2021) found that feelings of failure on the platform and engaging in self-conscious social comparisons were linked to increased levels of sadness and anxiety, and decreased levels of joviality. Similarly, Lenton-Brym and colleagues (2021) reported that symptoms of social anxiety and depression were positively correlated with dating app use among a Canadian sample. Associations with depression were also found by Holtzhausen et al. (2020): while they also examined anxiety and low self-esteem, no significant associations were found for these variables. According to the univariate logistic regression analysis, dating application users were three times more likely to

experience psychological distress and twice as likely to suffer from depression compared to non-users. Notably, increased frequency of app use was associated with heightened risk: daily users were nearly four times more likely to report distress or depression than those who had never used dating apps. Holtzhausen et al. conclude that ODA use and mental health outcomes could be dose-dependent, as frequent use and longevity of use indicated more severe psychological distress and depression outcomes. A similar conclusion has been presented by Sharabi et al. (2024).

While Holtzhausen and partners did not observe a significant relationship between online dating apps and self-esteem, a study by Pitcho-Relorentzos et al. (2020) involving Israeli dating app users found that negative worldviews significantly predicted higher levels of interaction anxiety, self-evaluation anxiety, and perceptions of personal inefficacy. They explain this result with suspicious attitudes: online dating application users might not trust each other. There is some evidence of internalized suspicion toward other dating app users; for instance, Silva et al. (2019) found that Tinder users were perceived as less trustworthy compared to users of platforms like Parship and Facebook.

Strubel and Petrie's (2017) study found that Tinder usage can affect users' self-perception negatively, suggesting that dating applications function as mediums of body surveillance and create appearance pressures that exacerbate worries about the self and one's attractiveness. They discuss online dating's self-sexualizing effects, parasociality, and self-promotion-centered function, which places users in a constant evaluative mindset, not just of others, but of themselves. Swami et al. (2022) discuss that appearance-focused orientation could be associated with dating anxiety, creating a pattern that ends up isolating emerging adults.

Sharabi et al. (2024) hypothesized in their longitudinal study, that negative well-being outcomes stem from social compensation, where individuals use dating apps to offset difficulties in forming offline relationships. While dating apps may not directly cause mental health issues, they could exacerbate existing conditions. Supporting this, Rydahl et al. (2020) found that half of the participants with affective disorders reported worsening symptoms due to online dating. Sharabi et al. (2024) also found that dating application use was linked to increasing burnout symptoms over time. They defined ODA-specific burnout as rising emotional exhaustion, inefficacy, and

depersonalization. Throughout their study, participants reported growing fatigue and a decline in emotional and functional well-being.

Despite Sharabi and partner's convincing longitudinal assessment, there is no clear consensus regarding the negative impact of online dating on well-being. Some studies suggest the opposite: forming connections and friendships through dating apps can enhance happiness and alleviate loneliness (Sumter et al., 2017). Additionally, research has highlighted a potential buffering effect of Tinder's design on anxiety. For individuals with high rejection sensitivity, the app's swipe-based interface may obscure explicit negative feedback, as users are only notified when a match occurs, thus reducing the salience of rejection. (Orosz et al., 2016; Orosz et al., 2018.)

While there is an increasing amount of evidence for the poor well-being effects of ODA use, conclusions should be drawn with care, as there are some limitations to these studies. Causality and representation remain key challenges in online dating research. Many studies report associations without clarifying underlying mechanisms. For instance, Jennings and colleagues (2023) did not explain whether online dating causes compulsive sexual behavior or if individuals with such tendencies are more likely to use these platforms. Lenton-Brym and colleagues (2021) and Strubel and Petrie (2017) admit their studies had similar issues.

Sharabi et al. (2024) criticize contemporary studies on online dating apps studies for their cross-sectional nature, and as causality cannot be deduced from cross-sectional studies, lacking explanatory power. Moreover, Holtzhausen et al. (2020) acknowledged that their sample was not representative and may be subject to selection bias, particularly concerning women and LGBTQ+ individuals, groups that research shows experience higher levels of psychological stress, anxiety, and depression compared to men and heterosexual individuals. The extent to which similar biases affect other ODA studies remains unclear.

One suggestion for an underlying mechanism is a phenomenon called choice overload. It has gained significant attention in happiness studies even before dating applications were popular. Choice overload (D'Angelo & Toma, 2017) goes with synonyms "*rejection mindset*" (Pronk & Denissen, 2019), "*decision paralysis*" and sometimes in the context of online dating, as "*dating app burnout*" (Sharabi et al., 2024) or "*tinder*

fatigue" (Solovyeva et al., 2022). What it means is a phenomenon where an individual faces an abundance of alternatives, and this abundance makes it difficult to decide. If one decides, one becomes pessimistic about their choice (Pronk & Denissen, 2019; Suojanen, 2021).

Finkel et al. (2012) argued that online matchmaking does not always enhance romantic outcomes and may, in some cases, hinder them. The abundance of potential partners can foster an evaluative mindset, leading users to objectify others and reducing their willingness to commit. This idea was empirically tested by Pronk and Denissen (2019) using Duch data, which showed that, particularly among women, a rejection-oriented mindset decreased the likelihood of forming romantic connections, indicating that prolonged exposure to online dating may gradually diminish openness to new relationships.

Hence, the issue with abundance has quite plausible evidence and is a timely topic. It seems that the reasons why online dating might not be satisfactory are not just because of increased vulnerability or heartbreak, but are intertwined with delicate social psychological phenomena. It is also a matter of well-being, as choice overload and decision mindset affect mood. This body of research highlights that singlehood and active dating can be cognitively burdening activities, not only because of stigma as discussed earlier, but because of the issue with choice and abundant options.

To summarize, there is some, but inconsistent, evidence that ODA use is associated with poor well-being or behaviors that might lead to poor well-being. While there have been studies on online dating's well-being effects, these studies are mostly cross-sectional and often fail to explain why these associations might exist. However, there is compelling evidence that ODA use has exacerbating effects on well-being if one has preexisting issues with mental health or if the phenomenon of choice overload emerges. Therefore, online dating applications' well-being effects seem dose-dependent, context-driven, and bound in social psychology.

3.2 Happiness and Happiness Studies

In this study, happiness is employed as an indicator of well-being. It is conceptualized as an emotional state that reflects either a sense of satisfaction, a positive evaluation, or contentment experienced during a specific period (Summa, 2020; Veenhoven, 2017). It refers to the prevalence of positive emotions, like joy, pleasure, and gratitude, and the lack of negative states such as depression or stress (Diener, 1984; 2012; Kesebir & Diener, 2009; Saari, 2012; Suojanen, 2021).

What makes happiness an interesting yet difficult concept to study is that while it seems essential to well-being, it is difficult to define and operationalize. In academia, happiness is often used synonymously and colloquially with life satisfaction, quality of life, and subjective well-being (Cohn et al., 2009; Diener, 1984; Helliwell, 2025; Maddux, 2018; Ryan & Deci, 2017; Taylor & Barzanova, 2018; Veenhoven, 2017). For example, the pioneer of the subjective well-being framework, Ed Diener (1984; 2012), refers to subjective well-being as the affective experiences and subjective evaluations of life quality. Similarly, synonymity is unambiguous when social psychologists attempt to define happiness: Diener et al. (2009) define happiness as high subjective well-being, and Ryan and Deci (2017) define happiness as a symptom of wellness. All these refer to the same phenomenon in different wording – happiness and well-being are treated in parallel.

Both happiness and well-being are considered hypothetical constructs, which signifies conceptual frameworks that organize and connect various observations or ideas through shared underlying characteristics. Hypothetical constructs are often nonobservable entities inside people's minds but can be observed by various symptoms or manifestations (Fiske, 2018). Here, happiness can be observed by survey items, or, as in Helliwell et al. (2025), via the Cantril Ladder, that are based on manifestations of happiness, thoughts, and moods. The nature of hypothetical constructs creates issues with replication and observation accuracy (Fiske, 2018), especially in the case of happiness, due to its especially subjective nature. One criticism of happiness studies is that the manifestations of happiness and self-reports of happiness can sometimes have high interindividual discrepancies (Veenhoven, 2017).

Because of this discrepancy, happiness is thought to have components. In literature, these are overall happiness, hedonism, and contentment. Veenhoven (2017) defines these components as follows: overall happiness refers to the encompassing judgement of life, the life satisfaction part of happiness. One might decide that their mood is good yet feel dissatisfied with life. Hedonism refers to the extent to which a person's emotional experiences are pleasant, encompassing the enjoyment of feelings, emotions, and moods that, while they are temporary, can have a strong impact. Finally, contentment is the degree to which an individual perceives his/her aspirations being met. Therefore, the academic understanding of happiness is significantly different than the colloquial understanding of happiness, sometimes creating confusion.

Nilsson et al. (2024) point out this issue with conceptualization and operationalization in The World Happiness Report by Helliwell et al. (2025), which has ranked Finland as the happiest country in the world for eight consecutive years. They criticize the World Happiness Reports for operationalization issues and for using the Cantril Ladder as the central measurement. The Cantril Ladder asks the respondent to "*imagine a ladder with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you, and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?"* Nilsson et al. (2024) interpret that the reliance on the Cantril Ladder creates validity issues in the study, as people interpret it to measure wealth and power, not happiness or life satisfaction.

By this example, I want to highlight that defining and operationalizing happiness and well-being and differentiating adjacent concepts is principal. This is not only because of the academic ideal that defining measurements and appreciating measurement validity is imperative, but also because individuals associate a plethora of materialistic and post-materialistic values with happiness, making interpretation challenging. If these concepts are theoretically too overlapping and operationalized poorly, researchers no longer know what they are studying.

Happiness studies often use direct self-reports, and according to Veenhoven (2017), it is the only suitable technique in the cases of "overall happiness" and "contentment" components of happiness, because happiness is difficult to assess using peer ratings. This study, as well, uses self-reporting to assess happiness, utilizing a single-item

question: *"All things considered, how happy would you say you are?"* The item is rated on a 7-point Likert-type scale, ranging from 1 (extremely unhappy) to 7 (extremely happy). This question measures happiness but asks the responder to judge the overall stance of their life. Hence, this question does not strictly measure happiness as an emotional state or periodic feeling but has a nuance of life satisfaction rooted in it, making it fall in the "life satisfaction" component of happiness (Veenhoven, 2017).

Therefore, in this research and in the vein of happiness and well-being research, reflecting on the item I am working with, I understand happiness as: A subjective stance that signifies a positive judgement of one's life, that can be interpreted so that the individual lacks negative emotions and experiences to the extent that they consider themselves to be happy.

The connection between happiness and well-being has been proven in numerous studies, making it a central measure in well-being studies, appreciated by governments and global institutions. For example, the United Nations encourages nations to prioritize improving happiness (Suojanen, 2021). Therefore, happiness has become so important that various happiness indices are used in research, psychology, medicine, economics, public health, organizational research, and public policy (Hellén & Sääksjärvi, 2011; Helliwell et al., 2025; Martela, 2024). This institutional shift denotes that happiness is no longer solely an individual's responsibility, but a societal question that can be addressed through politics (Saari, 2012).

Happiness has historically gained ethical and moral connotations, stemming from Aristotle's eudaimonia (Deci & Ryan, 2017). This association with ethical and moral connotations can be seen in social policy and academia, as we understand happiness as something that belongs to everybody (Helliwell, 2025). Suojanen (2021) argues that happiness has become so important in our society that it has become an obligation, unintentionally yet ironically causing unhappiness.

The sociologist and happiness researcher Veenhoven (2010) thinks people defend their egos while answering surveys. He thinks people want to convey them as "socially pleasing", and answer on a scale of 1–10 that their current happiness is at 8, when a 6 would be closer to their real experience. There is also evidence that the way happiness is measured alters the answers: people who answer anonymously on the

internet report their happiness levels lower, whereas people who answer on the phone report themselves happier. This has been explained due to phenomena called “license to lie” and “happiness wall”, which enable the participant to seal their true emotions and present themselves in a positive light, as the social norm requires them to do. (Suojanen, 2021; Veenhoven, 2010).

To summarize, happiness and well-being studies, where this thesis situates itself, are important, multidisciplinary frameworks that attempt to quantify and explain what constitutes happiness. However, the framework suffers from atheoreticality, multiple overlapping theories, and synonymity that contribute to operationalization issues. Despite these issues, happiness and well-being are conceptually closely tied together, and in the subsequent chapters, I will present the most compelling evidence for their association, justifying why researching happiness is important in terms of digital and social contests.

3.3 Human Relationships: Fostering and Refraining Happiness

The association of happiness with overall well-being has been proven to be undeniable, yet complex. In this chapter, I will introduce some extensive evidence of the connection between happiness and social relationships, and why they are imperative to research in digital contexts, such as dating applications.

Empirical evidence and a vast body of research communicate that contented and happy people have higher function than unhappy people: they are more productive when working, socially engaged and driven, and possess higher earnings. It has been investigated that happiness has positive health effects, such as a stronger immune system, fewer disease incidences, and greater life longevity (Argyle, 1996; Diener & Chan, 2011; Lyubomirsky et al., 2005; Sirgy, 2012; Veenhoven, 2017). Sirgy (2012) suggests that subjective well-being has a strengthening effect on health: the happier people are, the longer they live, and vice versa.

Happiness’s effect on well-being seems to be circular, or self-empowering: According to the Broaden-and-Build Theory (Fredrickson, 1998; Fredrickson & Cohn, 2008), positive emotions have evolved as people who possessed them were able to gather and build lasting resources. Happiness makes individuals act in well-being-supporting

ways, like cooperating, socially, curiously, and showing affection, creating further health benefits such as social bonds, resources, and safety, which further enhance positive emotions. In this reasoning, social belonging and social relationships play a central role in maintaining happiness and creating resilience.

The need for social relationships is recognized by most need theories (Baumeister & Leary, 1995; Maslow, 1943; Martela, 2014; Ryan & Deci, 2017). Social psychologists Baumeister and Leary (1995) proposed the “belongingness hypothesis”, which suggests that humans have a fundamental and pervasive need to form and sustain a minimum number of enduring, positive, and meaningful interpersonal relationships. A lack of belongingness often causes severe ill effects on an individual. (Baumeister & Leary, 1995). For instance, loneliness and strained interpersonal relationships have been shown to increase the risk of depression and physical illness (Cacioppo et al., 2002).

Numerous studies have identified the quality of social relationships as the most robust predictor of subjective well-being (SWB), a pattern that holds consistently across the lifespan and various types of family relationships, including parent-child bonds and marital partnerships (Diener & McGavran, 2008; Diener, 2009). Consequently, I understand that human relationships’ effect on happiness and well-being is bidirectional: their presence and good quality constitute significant and imperative well-being effects, and the lack of them, or their poor quality, creates suffering. This directionality is also discussed by Diener and Seligman (2002), parallel to Clark et al.'s (2017) notion on social network sites and their role in well-being. Clark et al. (2017) postulate that social network sites benefit users when they are used to making meaningful social connections. However, they can harm their users if they cause negative experiences like isolation and negative social comparison. Therefore, social networking, no matter the medium, has the potential for both negative and positive well-being effects.

In a similar vein, Baumeister and Leary (1995) in their work define that for social connections to fulfill the need to belong, they must satisfy two requirements:

> *First, there is a need for frequent, affectively pleasant interactions with a few other people, and, second, these interactions must take place in the context of*

> *a temporally stable and enduring framework of affective concern for each other's welfare.* (Baumeister & Leary, 1995, p.497)

According to Baumeister and Leary (1995), if these criteria are not fulfilled, the need for social belonging will not be satisfied, and loneliness will emerge (Baumeister & Leary, 1995; Nguyen et al., 2023). In this study, loneliness refers to the subjective experience of social disconnection or the perceived absence of meaningful social relationships. In contrast, social isolation denotes an objective condition characterized by a lack or minimal level of social contact with others. It is possible for a person to be socially isolated yet not experience loneliness, and vice versa. (Nguyen et al., 2023.)

In this paper, I understand social belonging both as a structural component that entails the existence of connections and as functional entities, as social relationships are institutions that support individuals. Social belonging should evoke feelings in an individual that one is accepted and fits in one's social circles (DiTommaso et al., 2004). Additionally, this paper investigates the functionality of relationships as a buffer against the negative associations between happiness and dating application use.

As previously noted, happiness can create a circular and bidirectional impact based on context. Additionally, I would like to introduce the buffering hypothesis, which highlights the crucial role of social relationships as a protective factor. Research spanning decades in social psychology has shown that social support and high-quality relationships positively influence well-being in two main ways: a direct effect, where the impact is straightforward and causal, and a buffering effect, where strong social ties help shield individuals from the potentially harmful effects of stressful situations (Cohen & Wills, 1985). Social support refers to the perception that individuals within one's network genuinely care about one's well-being (Maulik et al., 2011).

The buffering hypothesis is conceptually close to the psychological concept of resilience. Psychological resilience is recognized as a vital internal resource, reflecting an individual's ability to adapt effectively to adversity, trauma, significant stress, or life challenges (Cohn et al., 2009). Those with high resilience tend to have greater capacity to manage stressful situations. While resilience serves as an intrinsic protective factor rooted in personal traits, it differs from social support in its mechanism. Social support is an external effect that depends on the quality of one's social networks (Cohen &

Wills, 1985). In contrast, resilience is an internal quality that is fundamentally shaped by individual characteristics (Cohn et al., 2009). In addition, networks are seen as mediators or moderators in stressful situations, whereas resilience promotes growth and adaptation. To phrase it simply, a person can have strong, supporting networks, but due to individual reasons, struggle to cope. Despite differences, both are important aspects of human well-being and are related to happiness as well (Cohn et al., 2009; Fredrickson et al., 2003; Maulik et al., 2011).

There is a plethora of routes through which social resources can operate as buffers, listed by Cohen and Wills (1985). These include *emotional support*, involving feelings of acceptance and value through social interactions. *Informational support* provides guidance and understanding to help individuals navigate and cope with challenging situations. *Social companionship* refers to engaging in leisure or recreational activities with others, fostering a sense of connection. Lastly, *instrumental support* includes tangible assistance such as financial help, material goods, or services. Each type of support has been shown to buffer against loneliness, helplessness, or stressful events, promoting emotional well-being. However, Cohen and Wills highlight that, depending on the quality of a stressful life event, for the social buffering to take place, the stressor and buffer must apply to each other: "*if stress is created by a loss of companionship, then it would be best reduced by social companionship*." (Cohen & Wills, 1985, p. 314).

Thus, social belonging addresses various social and emotional needs based on the type and purpose of the relationship. This concept stems from Weiss's (1998) exploration of relationship taxonomies, suggesting that different forms of social belonging discrepancies are fundamentally distinct (DiTommaso et al., 2004). The proposed qualitative distinction lies between social loneliness and emotional loneliness. Weiss (1998) asserts that social relationships can be categorized into two main types, each possessing unique meanings and impacts on interpersonal connections: those that provide social belonging and those that offer emotional belonging. A perceived absence of friendships or workplace connections often manifests as feelings of social loneliness. In contrast, attachments formed in close and intimate relationships, such as romantic partnerships and caregiver-child bonds, are fundamentally different; according to Weiss, shortcomings in these connections can result in emotional loneliness.

Single people have been proposed to suffer from prominent emotional loneliness and decreased well-being and happiness, explained by their singlehood. Recent data from Illouz (2012) comments that in the global context, it has been proposed that men especially benefit from stable romantic and family relationships, as they earn more, have closer family ties, and are overall healthier than their single counterparts. (Illouz, 2012). Therefore, it is rather evident that romantic relationships are essential for personal happiness (Diener & Seligman, 2002), yet the lack thereof can cause a state of vulnerability. This outlook has been criticized by sociologists (Chapter 2.4), but due to compelling evidence across decades (Budgeon, 2008; DePaulo, 2006; Kolehmainen et al., 2023; Lahad, 2017;) it would be bold to claim that singlehood would not set people to a vulnerable state, whether it is due to a lack of partner and looser network that would buffer against life stressors, or stigma and singlism.

To summarize, happiness, well-being, and romantic relationships are closely related in multiple ways: their good quality is strongly associated with various forms of well-being, and the lack of romantic relationships has been associated with ill health and less satisfaction with life. The sense of social belonging in its various forms has been proven to have protective effects against stressful life events, constituting a classical social psychological buffering hypothesis. Also, to conclude the entirety of Chapter 3, it is rather compelling that dating applications and a lack of romantic relationships together form complex routes to ill well-being and decreased life satisfaction.

4 Research Questions and Hypotheses

This research is interested in inspecting well-being in the context of dating applications. Due to a significant literature gap in the Finnish domain and wide public discussion that speculates on the well-being effects of online dating applications, this research asks:

Q1. How does the use of dating apps relate to happiness?

Question 1 is tested with two subsequent hypotheses:

H1. Dating application users report lower happiness than non-users.

H2. A higher frequency of dating application use is associated with decreased happiness.

I propose these hypotheses, as I have discussed in the previous chapters, there is some evidence that dating apps are emerging technologies that reshape dating culture by creating a culture of uncertainty (Bergström, 2022; Lamont, 2021), however, the extent of this cultural change could be debated (Illouz, 1997). In addition, recent academic research has shown evidence for various harmful well-being effects caused by dating applications, such as increased anxiety, social comparison, loneliness, and choice overload, which can all relate to happiness. Hence, this research tests hypotheses that suggest a negative link between happiness and online dating.

Frequent use and signs of compulsive use have been associated with decreased well-being. There is some evidence that ODA use's well-being effects are dose dependent, meaning that infrequent or brief interactions with dating applications have less severe well-being effects than extended and frequent use (Holzhausen et al., 2020). In addition, the most prominent research bodies regarding dating applications investigate compulsive use and risk behaviors (Orosz et al., 2012; 2018), which indicates that increased use could have more severe effects on happiness. Thus, based on academic research, it is reasonable to hypothesize that higher dating app use is associated with lower happiness.

Evidence shows that humans need stable, fulfilling bonds to flourish (Baumeister & Leary, 1995; Diener, 1984; 2012; Ryan & Deci, 2017). Research shows that social

belonging strengthens resilience and happiness and can act as a buffer against aversive life experiences (Cohen & Wills, 1985). Thus, if someone has strong social bonds, they might be protected against the stress of dating apps. Therefore, the second question investigates social belonging:

> *Q2. Does social belonging mitigate the possible negative link between dating app usage and happiness?*

Question 2 is tested with three subsequent hypotheses:

> *H3. Social belonging to family buffers the negative association between dating application use and happiness.*
>
> *H4. Social belonging to friends buffers the negative association between dating application use and happiness.*
>
> *H5. Social belonging to romantic partners buffers the negative association between dating application use and happiness.*

The Social and Emotional Loneliness Scale for Adults (SELSA; DiTommaso et al., 2004) separates different domains of social life into separate categories, as it proposes that the feelings of belonging or loneliness are qualitatively different. It proposes that deprivation from friendships creates social loneliness, whereas deprivation from romantic and family bonds creates emotional loneliness. Due to this theoretical differentiation and the difference in nature of these different relationships, the hypotheses are tested separately.

Before data access, hypotheses 1–5 were preregistered on the Open Science Framework (Lehtola, 2025). After analyses, I conducted two additional analyses that investigated whether age has a buffering effect against the negative association of dating app use, and whether singlehood is associated negatively with happiness. These analyses emerged after surprising results regarding age, as age interacted in a contradictory manner in the initial analyses. According to prior knowledge, age should improve emotional well-being, as age and life experience enhance emotional stability, confidence, and decrease neuroticism (Cartstensen et al., 2011; Roberts et al., 2006), but due to changes in dating culture and the emergence of digitalized space (Bergström, 2022), age might not subject one to well-being in these contexts.

Additionally, after coming across the strong message from sociological literature of singlehood studies that singlehood itself can cause issues with well-being, I wanted to test whether the negative association is solely due to dating application use or because of singlehood. This analysis improved the validity of other results, as I isolated two overlapping phenomena and inspected them separately.

Hence, the additional hypotheses are:

H6: Singlehood is negatively associated with happiness.

H7: Young age has a mitigating effect on the negative association between online dating application use and happiness.

5 Method

5.1 Data

The thesis utilizes the *Self & Technology* data by the *Emerging Technologies Lab* (PI: Atte Oksanen, Tampere University, Finland, see https://projects.tuni.fi/selftechnology/). Self & Technology *EU-6* project includes a longitudinal cross-national survey (2022–2024). The survey has been designed by Professor Atte Oksanen and his team and is funded by Tampere University from the internal funds directed to Atte Oksanen. The data collection for the 2024 sample was also funded by the Finnish Cultural Foundation.

This thesis focuses on the Finnish representative cross-sectional sample from 2022, comprising adults aged 18 to 75 (N = 1541) from Mainland Finland. The data were collected in October-November 2022 by Norstat with a structured online survey. Norstat contacted participants randomly via email from a geographically comprehensive panel of volunteers. Quotas were set for gender and age group. The response rate was 40 %. (Oksanen et al., 2022.)

The survey data investigates the issues of self and identity in technologically mediated environments and aims to analyze how emerging technologies have an effect on people's perceptions and identities, and how these effects differ across nations. Publications from this dataset have focused on online identity bubbles and addictive internet use (Savolainen et al., 2025), reactions to internet abuse (Celuch, 2024), predictions for dark web use (Sirola et al., 2024), and artificial intelligence (Bergdahl et al., 2023). This is the first publication regarding online dating from that dataset.

5.2. Ethical Considerations

The Finnish National Board on Research Integrity (TENK, 2023) defines the basic principles of research integrity in the Finnish Code of Conduct. These principles are reliability, honesty, respect, and accountability. Their purpose is to assure the quality of all organizations in the research community and to ensure research integrity is

maintained throughout the lifespan of any research. The guidelines apply to all academic and other research activities, including, but not limited to, RDI projects, methods, tools, data, computer software, and materials. (TENK, 2023.)

Researchers are required to comply with current data protection legislation and obligations related to non-disclosure, confidentiality, and secrecy, as well as truthful and respectful reporting concerning participants (TENK, 2023). In addition, despite criticizing previous academic work, the criticisms and representation should be truthful and presented with good taste (Vilkka, 2024).

I want to highlight that I will follow the research integrity principles and show precision and care in my work, and respect the bilateral non-disclosure agreement. I have also considered the ethicality of this research and assessed the issues with the current topic. The research at hand faces minimal problems regarding ethicality, as the data is pre-gathered, participation has been voluntary, and has been accepted and reviewed by the Ethics Committee of the Tampere Region, which has deduced that the project does not face ethical issues (115/2022). I will not handle personal information that would enable me to identify any participants, and the data has been anonymized before my access, which both improve the ethicality of this research.

Vilkka (2024) highlights that typical cases of disregard are situations where the researcher does not master the research methods or misinterprets the literature. A researcher must ponder, recognize, and admit which methods they are able and skilled to use to do ethical research. Poor skills might hamper the research team's action and reputation. As this is a master's thesis and my first attempt to employ robust linear regression, the analysis is closely supervised by my Professor to ensure a reliable and truthful analysis.

To improve credibility, increase transparency, and facilitate trust, this research's hypotheses have been preregistered on Open Science Forum before data access (Lehtola, 2025). Preregistering is a method to prevent p-hacking and hypothesizing after results are known (HARKing; Bones, 2012; Kerr, 1998; Valtonen & Hankonen, 2019), and to alleviate publication biases (Valtonen & Hankonen, 2019).

In the process of this research, I have considered some of the publication and negativity biases that are prevalent in humanistic sciences. Sheldon and Ryan (2010)

note that psychology has often portrayed humans negatively, viewing them as flawed creatures troubled by issues, deficiencies, and self-serving behaviors. Seligman and Csikszentmihalyi (2000) argue that psychology's fixation on pathology has led to a diminished understanding of humanity, neglecting the positive qualities that make life meaningful, creating a negativity bias.

The negativity bias in psychological sciences has received considerable attention (Döring & Mohseni, 2018; Finkel et al., 2012; Seligman & Csikszentmihalyi, 2000; Sheldon & King, 2001; Sheldon & Ryan, 2010; Spišák, 2019). The negativity bias is also evident in sexuality- related research, where the use of dating apps and sexual behaviors are often misinterpreted as risky, and associated with signs of compulsiveness, developmental issues, psychopathology, or even causes of sexual aggression and poor peer relationships (Döring & Mohseni, 2018; Spišák, 2019). In sex research, a common perspective tends to focus on “What is wrong with this person for engaging in this behavior," rather than “How does this behavior fulfill needs or satisfy the individual?” Media and technology studies lack complexity and sometimes refuse to see what meanings and pleasures people derive from them (Buckingham & Bragg, 2004). Researchers' internalized negative assumptions and moral panics on sex-related technology are projected in their studies (Spišák, 2019) and intensified as they are shared. Spišák (2019, 25) aptly argues: *“The fashionable narrative of the sexualization of culture puts forward exaggerated claims of the harmful impact of sexual media.”* This academic confirmation bias reinforces sex and sexuality’s role as something deviant.

This is also my attempt to express my ethical understanding and respect for the topic: dating applications and users are discriminated against based on technology use (Chapter 3.3), and I wish not to create further harm. Due to this negativity bias that I have also noticed, I wanted to employ measures that focus on the positive and inspect the complexities of dating application use on happiness. To master this, I aim to conduct a thorough investigation and report all my findings with good precision and accuracy.

5.2 Measures

The study analyzed the association between dating application use and happiness. In this analysis, happiness was the dependent variable that was inspected by dating activity, and assessed for moderation effects by social belonging. Control variables, age and gender, were included in the analysis.

Happiness

The dependent variable I explored in the context of dating applications was happiness. Happiness was assessed using a single-item question: *"All things considered, how happy would you say you are?"* This item was rated on a 7-point Likert-type scale, ranging from 1 (extremely unhappy) to 7 (extremely happy). The item is widely accepted and demonstrates high validity in various empirical research studies among other similar happiness indices (Veenhoven, 2017).

Online dating application use

Dating application use was assessed through a question that asked respondents to identify which social media services they use, providing a list of services along with an estimate of usage frequency. Online dating applications were included as one option: *"How often do you use the following internet or social media services? Dating apps (for example, Tinder)."* The answer options ranged from 0 to 5: Never (0), less than once a month (1), monthly (2), weekly (3), once a day (4), and many times a day (5).

Responses were categorized into two new variables. A dummy variable was established, in which those who responded "never" were classified as non-users, assigned a code of 0. Conversely, respondents who reported using dating apps less than monthly or more often were coded as 1, and termed "users." I recognize that users can differ greatly, as dating app users do not represent a uniform demographic: an individual using dating apps less than monthly may have a distinct perspective and experience related to them. However, to simplify comparative descriptive analysis, which employs the dummy variable, utilizing a measure that comprises all users is justified.

A second variable was constructed to account for the strong skewness in the responses and to enable a more nuanced analysis of dating app use based on activity level (Table 2). Dating app use was recategorized into four categories: 0 for never, 1 for less than once a month or monthly (monthly from now on), 2 for weekly, and 3 for daily or many times a day (daily from now on). The skewness of the new categories was slightly weaker than that of the previous categories, measured at 2.78.

Social Belonging

Social belonging was measured using items derived from the Social and Emotional Loneliness Scale for Adults (SELSA; DiTommaso & Spinner, 1993; DiTommaso et al., 2004). The study employed items that evaluate loneliness in interpersonal contexts, such as within the family, with romantic and sexual partners, and among friends, rated on a 7-point Likert-type scale from 1 (strongly disagree) to 7 (strongly agree). In this research, the SELSA items were categorized into three sets based on topic: familial, romantic, and friendly belonging.

The Familial sum of variables included questions from the familial subscale. In the survey, familial belonging was gauged by three questions using a Likert-type scale: "*I really belong in my family," "My family really cares about me,"* and "*My family is important to me."* The Romantic subscale consists of these questions: *"I have a romantic partner with whom I share my most intimate thoughts and feelings," "I am in love with someone who is in love with me,"* and *"I have someone who fulfills my needs for intimacy."* The Friend subscale includes the following three questions: *"I can depend on my friends for help," "I have friends with whom I can discuss the pressures in my life,"* and *"I have a friend(s) with whom I can share my views."* Means, standard deviations, ranges of these items, and the sums of variables based on them are presented in Table 1.

All subscales were combined into sums of variables, ranging from 3 to 21, with 3 indicating no sense of belonging and 21 a strong sense of belonging. The subscales seem reliable with Cronbach's alpha scores of .92, .95, and .94, respectively. There were no missing cases, so together with Cronbach's alphas, the sums of variables seemed internally consistent and highly reliable. Missing cases can often pose challenges when creating sums of variables (Nummenmaa, 2023).

Table 1. *Summary Table of The Items of Social and Emotional Loneliness Scale for Adults (SELSA), and the Sums of Variables*

	Mean	SD	Range	α
Familial subscale				
I really belong in my family	5.54	1.61	1–7	
My family really cares about me	5.75	1.47	1–7	
My family is important to me	6.17	1.30	1–7	
Sum of variables	17.5	4.06	3–21	.92
Romantic subscale				
I have a romantic partner with whom I share my most intimate thoughts and feelings	4.78	2.29	1–7	
I am in love with someone who is in love with me	4.78	2.35	1–7	
I have someone who fulfills my needs for intimacy	4.95	2.21	1–7	
Sum of variables	14.5	6.53	3–21	.95
Friend subscale				
I can depend on my friends for help	5.28	1.64	1–7	
I have friends with whom I can discuss the pressures in my life	5.22	1.78	1–7	
I have a friend(s) with whom I can share my views	5.48	1.62	1–7	
Sum of variables	16.0	4.79	3–21	.94

Note. *All values are rounded to three significant figures.*

Age

Age was assessed as a continuous variable; however, in descriptive statistical analyses, age was used as a categorical variable for convenience and simplicity. Participants' ages ranged from 18 to 75, with a mean age of 46 years (Table 2). When age was used as a categorical variable, the age groups were 18–29, 30–45, 46–61, and 62–75. I have chosen these categories based on the stage of life and legal means. The youngest category comprised adolescents, 18–29-year-old respondents, as the Finnish Youth Act (Nuorisolaki, HE11/2016) defines an adolescent as an 18–29-year-old person. The second category comprised adults of working age, where people often get married and have children, and the third category, 46–61-year-olds, comprised

working people who traditionally have children who are close to adulthood. Finally, the oldest category comprised retired participants. The retirement age in Finland often initiates around ages 61–64 for both men and women. According to SHARE data (Auero & Lahtela, 2024), the most popular ages to retire are 62–63 and 64–65.

Table 2. *Descriptive Statistics*

	n	%	Range	Mean	SD	Skewness	Kurtosis	α
Dependent variable								
Happiness			1–7	4.85	1.22	−.69	3.43	
Independent variables								
Dating app use	1528	100	0–3	.27	.68	2.78	10.1	
Non-user	1281	83.8						
Monthly user	139	9.10						
Weekly user	58	3.80						
Daily user	50	3.27						
Social Belonging								
Family			3–21	17.5	4.06	−1.21	3.91	.92
Romantic			3–21	14.5	6.53	−.60	1.88	.95
Friends			3–21	16.0	4.79	−.88	3.08	.94
Control Variables								
Age	1528	100	18–75	46.5	16.3	−.01	1.80	
18–29	292	19.1						
30–45	446	29.2						
46–61	276	28.2						
62–75	359	23.5						
Gender	1258	100	0/1					
Male	766	50.1						
Female	762	49.9						
Marital status	1505	100	0/1					
Single	610	40.5						
Relationship	895	59.5						

Note. *All values are rounded to three significant figures.*

Gender

Participants were asked to identify as male, female, or other. Because of the small sample size of the "other" category, these cases were deleted from the dataset, decreasing the sample size from 1541 to 1528. After this adjustment, the data's gender distribution was relatively even, with 50.1 % male respondents and 49.9 % female respondents (Table 2). The survey did not ask about the participants' sexual orientation.

Marital status

Marital status was assessed briefly in this study. The original question asked about current marital status and asked participants to choose one of the following: single, domestic partnership, married or registered partnership, widowed, and other. Participants in categories "single" and "divorced" were coded as 0 (single), and categories "domestic partnership" and "married or registered partnership" were coded as 1 (in a relationship). Widowed and other participants were excluded from this measure, as widowhood is conceptually different from previous categories, and the "other" category did not possess informational significance and was hence omitted. Therefore, the analysis where this variable is used has a smaller sample (n = 1505) than the original (N = 1528).

Standardization

All continuous variables were *standardized*, also called *centering*. Standardization sets all variables on a similar scale that measures changes in standard deviations. A standardized regression coefficient measures how many standard deviations the dependent variable changes when the independent variable increases by one standard deviation. (Kaakinen & Ellonen, n.d.; Tabachnic & Fidell, 2014.) Therefore, the results from standardized values should be kept separate from their original scale and interpreted as standard deviations (Cohen et al., 2003). Kaakinen and Ellonen (n.d) encourage standardization when employing interactions. Tabachnick and Fidell (2014; also Cohen et al., 2003) discuss that standardization is important if IVs correlate with each other, which is the case with social belonging's subscales (discussed in results). Cohen et al. (2003) recommend that all continuous predictors be standardized before

regression analysis, as standardization does not change the estimates and enhances internal coherence and interpretation.

The continuous variables, happiness, age, and all subscales of social belonging, were standardized. Gender, however, remains unstandardized as it was coded as a dummy variable. Online dating app use was treated as a categorical variable and retained on its original scale (0–3). This is because this study is interested in finding differences between user groups, and by standardizing, categorical investigation would not be possible.

5.4 Statistical Methods

Spearman's Rank Correlation Coefficient

Spearman's rank correlation coefficient was utilized to explore the relationships between key variables. This nonparametric statistic measures the strength and direction of the monotonic association between ranked variables. Rank correlation evaluates a variable's rank or order by assigning the smallest value the number 1, the next smallest the number 2, and so forth. The calculation involves determining how much each value's rank differs from the others, squaring these differences to eliminate any potential negative values. The squared differences are then summed, multiplied by six, and divided by $(n \times (n^2 - 1))$. The result is subtracted from 1, yielding the rank correlation coefficient r_S. (Nummenmaa et al., 2019.)

Spearman's rank correlation coefficient is suitable for both continuous and discrete ordinal values, which are both utilized in this thesis. A high value results if the values are perfectly aligned and show a monotonic relationship and have a similar ranking (whether monotonic or linear). (Nummenmaa et al., 2019; Nummenmaa, 2023.) Spearman does not require normally distributed data or linear distribution, but it works with monotonic distributions too. Monotonic distribution means that as the x value increases, the change in y value is not even, but might, for example, slow down or accelerate. (Nummenmaa et al., 2019; Nummenmaa, 2023).

Several key variables, including measures of happiness and social belonging, showed skewed distributions, deviating from the normality assumptions of linear regression,

and ordinal-scaled, justifying Spearman's rank correlation coefficient's suitability for this analysis for bivariate assessment.

Robust Linear Regression

I used a robust regression model with MM-estimation to investigate the link between dating app use and self-reported happiness. Regression analyses refer to a collection of statistical methods that evaluate the relationship between one dependent variable (DV) and multiple independent variables (IVs) to forecast the outcome of a dependent variable (Nummenmaa, 2023; Tabachnick & Fidell, 2014). Multiple linear regression (MLR) builds upon bivariate regression by integrating several independent variables to predict the dependent variable's value for each participant. (Nummenmaa, 2023.) In multiple regression analysis, the specific coefficients reveal how much the dependent variable changes when an independent variable alters by a single unit, while keeping other variables constant (Kaakinen & Ellonen, n.d.; Tabachnick & Fidell, 2014). Unlike correlation coefficients, which indicate the relationship between two variables, regression models forecast and assess the strength of the association. (Nummenmaa, 2023).

The basic assumption is that the relationship of dependent and independent variables is linear (Nummenmaa, 2023; Verardi & Croux, 2009). Although ordinary least squares (OLS) regression is a widely used method, it rests on several assumptions: normally distributed residuals, homoscedasticity, and absence of influential outliers. To evaluate whether these assumptions hold in my data, I conducted diagnostic tests including residual scatterplots, Cook's distance analyses, DFBETA tests, and tests for heteroskedasticity (UCLA, 2003; UCLA, n.d.). When employing a linear regression, the residuals should be normally distributed; however, if the sample size is large, the assumption of normal distribution is not fixed. The sample size should be at least 50, preferably over 100. (Cohen et al., 2003; Nummenmaa, 2023.) In this thesis, the sample was N = 1528, which is sufficiently large for linear regression despite slight skewness.

However, the diagnostics revealed evidence for outliers and heteroskedasticity. Outliers in linear regression signify observations with large residuals, meaning the observation is unusual given its value on the predictor values, indicating sample

peculiarity, or an accurate and real description of a rare case (Cohen et al., 2003; UCLA, n.d.). Despite the source, outliers can have a profound impact on the analysis. To test this, Cook's distance values were computed to identify influential data points. According to Cohen et al. (2003), observations with Cook's distance greater than 4/*N* are potentially influential. In this study, 107 cases exceeded this threshold, suggesting that some individual responses may have a disproportionate effect on the regression estimates.

Similarly, the Dfbeta diagnostics test, an alternative to Cook's distance, was employed. Dfbetas provide information on how a case affects each beta value, and Cook's distance describes how a case influences the overall characteristics of the equation. (Cohen et al., 2003.) Dfbeta cutoff points were calculated by using the formula $\frac{2}{\sqrt{n}}$. For the sample at hand, the equation was $\frac{2}{\sqrt{1528}} \approx \pm 0.0512$. The cutoff point was small, making the diagnostic tool quite conservative, judging small effects as influential. The scatter diagram conveys cutoff points and cases that exceed the cutoffs in Appendix 11. The Breusch-Pagan and Cook-Weisber test for heteroskedasticity in Stata with the command *estat hettest*. The diagnostic result (X^2 = 34.1; $p < .001$) indicates that the model violates the assumption of homoskedasticity, meaning that the residuals do not have a constant variance across levels of predictors.

In response to these violations, I weighed two alternatives: either to delete the outliers or to use robust regression. Deleting outliers would have reduced the sample size by 7.13 % based on Cook's distance diagnostics, and possibly more due to the Dfbeta's conservative diagnostic cutoff point. Outliers and scatter diagrams on residual distribution are conveyed in Appendices 7–11. To preserve information and the sample size, I chose a robust regression model with MM-estimation, implemented in Stata via the *robreg mm* command. MM-estimation is well-suited to data containing outliers or non-normal residuals, as it combines a high breakdown point, which signifies that it tolerates a high proportion of outliers without losing validity, with high statistical efficiency when OLS assumptions do not hold. (Jann, 2012; UCLA, n.d.; Verardi & Croux, 2009.)

Comparisons between OLS and robust models revealed only slight shifts in coefficients and standard errors (Appendix 12), however, weekly and daily dating application use

showed notable changes. To ensure reliable results, robust regression was employed. This approach allowed for more stable and reliable estimates in the presence of problematic data points, while still conserving the sample size and capturing the overall trends in the data.

Hierarchical Model

In addition to using a robust estimation technique, I also structured the regression analysis hierarchically. In a hierarchical linear model, the items are tested sequentially, revealing their effect on all previous items (Jokivuori & Hietala, 2014). It should be noted that hierarchical regression is different from *stepwise regression* (Tabachnic & Fidell, 2014). There are three categories of stepwise analysis: *forward selection*, *backward deletion*, and *stepwise regression*. They are conducted automatically by statistical software based on a pre-selected criterion, which is often to reach the best explanatory power. A forward selection happens when an equation starts empty, and independent variables are added sequentially based on some prespecified criterion and remain in the equation. A backward deletion starts containing all pre-chosen independent variables and is deleted by the software one at a time. A statistical regression creates a subset from the pre-selected independent variables (Nummenmaa, 2023; Tabachnic & Fidell, 2014).

A forward-moving hierarchical model is different from stepwise regression analysis because in a hierarchical model, the researcher has full control of the order. This method is highly recommended over stepwise regression because stepwise regression is controversial and criticized for its weaknesses, including that the theoretical basis of the resulting model can sometimes be weak (Nummenmaa, 2023). However, when the researcher has full control of the model, they end up more often significant, logical, and theoretically justified. (Nummenmaa, 2023; Tabachnick & Fidell, 2014).

In this thesis, the criterion is that the preselected IVs are added in such a way that, at each step, the model should have an increased explanatory power (Robust R-squared) and finalize when all chosen IVs are in the model. However, this addition happens by the researcher, not automated by the software, as this allows the researcher to have full control of the results and hold on to the theoretical basis (Nummenmaa, 2023). Therefore, no additional or random IVs are used in the model. In the first step, I

inspected the simple association between happiness and dating application use. In the second and third steps, I added covariates individually to better understand how different predictors contribute to happiness, together with dating application use. Finally, I sequentially introduced the subscales of social belonging.

Moderation

Three interaction terms testing all three subscales of social belonging were constructed and tested in separate models to investigate social belonging's moderation effect on happiness. Moderation indicates a situation where the dependent variable X's association with the independent variable Y depends on a specific interaction term M's value (Kaakinen & Ellonen, n.d.). The interaction term is the multiplication of the independent variable, dating app use, and the moderator, social belonging (X*M). (Kaakinen & Ellonen, n.d.; Tabachnick & Fidell, 2014)

This decision is grounded in both theoretical reasoning and methodological practices for exploring psychological processes. Here, the solution is based on a vast body of social psychological literature stating that social relationships can have buffering effects against life stressors, which in this case could be online dating. Methodologically, including an interaction term allows for testing conditional associations that would otherwise remain hidden in main effect models. Moderation analysis is appropriate when theory or prior evidence suggests that the strength or direction of an effect may vary across levels of a third variable, which, according to Cohen et al. (2003), is at the very heart of social sciences.

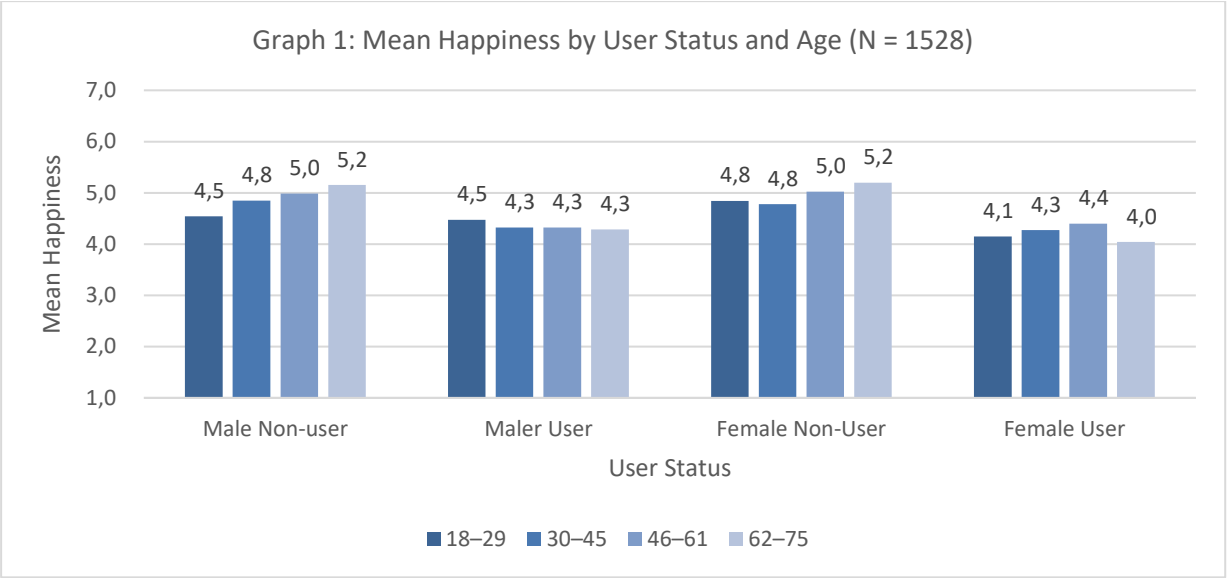
6 Results

6.1 Descriptive Results

Online dating application users in the Finnish Self & Technologies data were predominantly unmarried, living in southern Finland, and 18-34 years old. Appendices 1–3 convey the dating users' distribution across age groups and genders. Expectedly, the youngest age group, the 18–29-year-olds, formed the greatest part of the frequent, weekly, and daily users. Dating apps were used less frequently among older age groups. Men and women engaged with dating applications quite equally; however, non-users were more commonly women across age groups.

Despite the common assumption that online dating application users are predominantly single, and that online dating is predominantly associated with single individuals seeking romantic and sexual partners (Rosenfeld et al., 2019) a notable proportion (18.6 %) of users in this dataset reported being married, in a registered relationship, or cohabiting with a partner. Whether they were in an open relationship, polyamorous, or cheating could not be concluded. However, ODA users who were in a relationship formed 3 % of the whole sample population (non-users and users together), which is analogous to the Family Federation of Finland's finding (Sorsa et al., 2024) that 3.5 % of Finnish respondents were in open or polyamorous relationships. However, this is not the focus of this study, but a brief description of the users' demographic characteristics.

Graph 1 presents a bar graph of mean happiness by dating app user group, gender, and age (conveys values rounded to one decimal for better readability). It communicates that dating app users were unhappier than non-users in all age groups. The happiest groups were the retirement-aged non-users, both men and women; men's mean happiness is 5.15, and women's is 5.20. Mean happiness increases as age increases, but only if the responder does not use dating applications. This preliminary result is noteworthy and is examined further in subsequent analyses. Nevertheless, conclusions should be drawn with caution due to the small sample sizes in the oldest user groups (Appendices 2 and 3).



In the previous chapter, Table 2 provided descriptive statistics for the key variables. The overall mean happiness score was 4.85, with a standard deviation of 1.22. Remarkably, no user categories surpassed the mean happiness, while all except two categories of non-users exceeded the mean score of 4.84. These two categories that did not exceed the mean score of happiness were male non-users aged 18–29 and female non-users aged 30–45.

As Saari (2012) describes, happiness studies often focus on means and standard deviations to assess the levels and distributions across populations. The ideal is that the mean happiness is high, and the standard deviation is low, indicating an equal distribution of happiness. The standard deviation of happiness was moderate (1.22) in the whole data; however, when inspected by ODA user category (Table 3), the mean happiness decreased, and standard deviations increased. This indicates that happiness was not equally distributed among users and non-users but differs by use activity.

Table 3. *Means and Standard Deviations of Happiness by ODA User Group*

ODA use activity	Mean	SD
Never	4.95	1.17
Monthly	4.41	1.23
Weekly	4.28	1.33
Daily	4.12	1.42
Total	4.85	1.22

Self-reported happiness's distribution in other research is often skewed; most people would rather report themselves as happy than unhappy. Moreover, if responders consider themselves unhappy, people often give a neutral answer (Diener 1984; Diener et al., 2009). The data followed this trend, with the mean estimation of happiness being 4.84 (on a scale of 1–7), mode 5, and skewness −.694. These results reflect the skewed distribution of happiness in this dataset, which is common in well-being research, signifying validity.

Table 4 conveys the Spearman's Rank correlation coefficients between key variables utilized in this research. All correlations were either weak or moderate, which is normal in behavioral sciences. The correlation between happiness and dating app use was slightly negative. Happiness had a positive and significant correlation with all subscales of social belonging. Belonging to friends and family correlated with each other the strongest (r =.484), indicating that these forms of social networking often occur simultaneously. Hence, correlations are not strong but indicate parallel trends to hypotheses: that dating app use's association with happiness is negative, and social belonging's association with happiness is positive. Marital status and romantic belonging correlated the strongest (r = .608), which is intuitive, but only weakly with ODA (r = −.358), indicating that not all single users in this dataset use dating apps.

Table 4. *Spearman's Rank Correlation Coefficient (N=1528)*

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Happiness	--							
(2) Dating app use	−.191	--						
(3) Gender	.018	−.048	--					
(4) Age	.186	−.292	.01	--				
(5) Marital status	.203	−.358	−.067	.145	--			
(6) Belonging to Family	.361	−.180	.108	.101	.216	--		
(7) Romantic Belonging	.384	−.277	−.015	−.011	.608	.420	--	
(8) Belonging to Friends	.332	−.073	.175	−.036	.080	.483	.368	--

Note. *All values are rounded to three significant figures*

I further tested how users' and non-users' happiness correlates with age, as Graph 1 initially indicated that happiness is higher among older participants, but only if they are non-users. Spearman's Rank Correlation between happiness and age is presented in Appendices 4 and 5. The correlation between age and happiness when the person is an ODA user is $r = -.034$ and not statistically significant. However, the correlation between happiness and age, when the person is a non-user, is $r = .162$ and statistically significant ($p < .01$). Therefore, based on correlations, the increase in age increases happiness too, but dating app use disturbs this association.

It is intuitively evident that dating app users have a lower sense of romantic belonging, as they are seeking romantic and sexual partners online. Despite this, the median score for non-users for romantic belongingness is 10 for men and 8 for women, compared to 18 for non-users for both genders, indicating some intimate and romantic belongingness, but which is still notably lower than non-users. The mean score in overall data for romantic belonging was 14.5, which is lower than the other subscales' means, and the standard deviation was 6.53, which is higher than the family and friend subscales means (Table 2). These results indicate that more people feel emotionally than socially lonely.

6.2 Robust Hierarchical Linear Regression

Table 4 presents a hierarchical robust linear regression. The hierarchical model comprises six stages. ODA variable is used categorically, which means that user categories are compared to the non-user category. This is crucial for the interpretation of the results. In the first model, the association between ODA use and happiness was significant and negative among all user groups, compared to non-users, and strongest among weekly users.

In Model 2, age had a significant positive association. This was not unexpected based on earlier descriptive inspection (Graph 1) and correlations (Table 2; Appendix 4; Appendix 5). Age explains the changes in happiness significantly, but when inspected against ODA user categories, ODAs' influence on happiness decreased, especially among the most active users, reducing its significance from $p = .006$ to $p = .068$.

Table 5. *Hierarchical Robust Linear Regression Analysis Predicting Happiness by User Group, Covariates and Social Belonging*

Happiness	Model 1				Model 2				Model 3			
	B	*SE*	*95% CI*		*B*	*SE*	*95% CI*		*B*	*SE*	*95% CI*	
			LL	*UL*			*LL*	*UL*			*LL*	*UL*
Dating app use												
Monthly	**−.468*** **	.103	−.669	−.267	**−.374*** **	.104	−.577	−.169	**−.371*** **	.105	−.577	−.166
Weekly	**−.684*** **	.151	−.981	−.388	**−.552*** **	.162	−.870	−.234	**−.551*** **	.161	−.869	−.233
Daily	**−.575*** **	.207	−.983	−.168	**−.386***	.211	−.802	−.029	**−.390***	.213	−.809	.029
Age					**.134*** **	.023	−.068	.185	**.135*** **	.025	−.085	.185
Gender									.025	.05	.073	.123
SELSA Family												
SELSA Friends												
SELSA Romantic												
Constant	**.215*** **	.028	.159	.271	**.193*** **	.028	.137	.249	**.155***	.083	-.007	.317
Pseudo R2		.029			.043				.043			
Wald Chi2		**39.6*** **				**24.8*** **				**75.6*** **		
Chi2		1.57				2.67				3.42		

Happiness	Model 4				Model 5				Model 6			
	B	*SE*	*95% CI*		*B*	*SE*	*95% CI*		*B*	*SE*	*95% CI*	
			LL	*UL*			*LL*	*UL*			*LL*	*UL*
Dating app use												
Monthly	**−.216** **	.101	−.416	−.018	**−.219** **	.99	−.412	−.023	−.138	.094	−.321	.045
Weekly	**−.346***	.182	−.702	.010	−.309	.190	−.682	.062	−.099	.197	−.486	.228
Daily	**−.370** **	.146	−.654	−.079	**−.307** **	.156	−.613	−.002	−.030	.175	−.374	.314
Age	**.113*** **	.024	.066	.160	**.129*** **	.023	.083	.175	**.152*** **	.023	.105	.199
Gender	−.035	.047	.294	.057	**−.084***	.046	−.173	.006	−.030	.045	−.119	.159
SELSA Family	**.362*** **	.034	.195	.429	**.247*** **	.038	.173	.321	**.195*** **	.037	.122	.269
SELSA Friends					**.252*** **	.032	.189	.315	**.198*** **	.032	.133	.262
SELSA Romantic									**.221*** **	.029	.163	.280
Constant	**.185*** **	.076	.036	.335	**.249*** **	.074	.105	.394	**.137** **	.075	−.010	.293
Pseudo R2	.126				.161				.190			
Wald Chi2		**51.3*** **				**126*** **				**179*** **		
Chi2		6.69				9.54				**17.4** **		

*** p < .01, ** p < .05, * p < .1*

Note. *N = 1528; CI = confidence interval; LL = lower limit; UL; upper limit. All continuous variables (happiness, age, and subscales of social belonging) are standardized. All values are rounded to three significant figures. MM-estimator used in robust regression with 85% efficiency.*

In Model 3, gender revealed no significant association with happiness, but decreased the constant. Gender's insignificance in the model is rather surprising given the literature that proposes gender differences in online dating, and that dating is a rather gendered practice.

Model 4 presents all control variables and social belonging to a family. The association between happiness and social belonging to family was positive and significant. Online dating's negative association with happiness remained negative and significant, but all user categories had a reduced impact, and the significance level suffered.

In model 5, the inclusion of social belonging to friends showed a positive and significant correlation with happiness. While the strongest link to weekly dating app usage was noted initially, it was also the first to lose significance. Additionally, although the coefficient for daily use increased slightly, weekly usage exhibited the largest decrease. This fluctuation suggests that social belonging could be a confounding variable, which means that it affects both dependent and independent variables. Speculation aside, belonging to friends explains the changes in happiness, which decreases ODAs' association with happiness.

In model 6, all variables were included. Romantic belonging had the strongest association with happiness (B = 0.221, p < .001, SE = .029, CI [.16, .28], Table 6). When all subscales of social belonging were analyzed together, the negative associations related to online dating diminished. Both age and social belonging had positive correlations with happiness, with the association of age increasing when all SELSA subscales were incorporated. This points to the idea that age and social belonging together enhance happiness, particularly as the relevance of dating app usage declines.

It is important to note that the romantic subscale behaved unexpectedly within the model. As previously mentioned, the hierarchical model allows researchers to arrange the order of introduced items. I conducted separate tests to determine at which stage romantic belonging should be integrated into the model, as its influence appeared to significantly diminish the explanatory power of dating app usage, regardless of when it was added in the process. This can be due to three reasons: multicollinearity, mediator effect, or overlapping conceptualization.

To assess the validity of the results, I inspected the *VIF* (Variance Inflation Factor). *VIF* is a diagnostic tool used in regression analysis to detect multicollinearity, which means that two or more independent variables are highly correlated with each other, indicating how much the variance of a regression coefficient is inflated due to multicollinearity. Earlier in this study, it was found that happiness and social belonging correlate strongly with each other (Table 3), however, this is different from multicollinearity, as *VIF* assesses all independent variables, whereas correlation inspects the association between only two variables. The diagnostics did not indicate issues with multicollinearity. Therefore, from a multicollinearity perspective, the results can be considered reliable.

Theoretically, romantic belonging is different from familial and friendly belonging and should not be influenced by other SELSA variables. However, social belongings correlate highly with each other (Table 2) and had the strongest correlation coefficient with happiness (r = .415). This strong correlation between happiness and romantic belonging could explain why all other predictors lose significance: romantic belonging and happiness were so strongly related that they render others redundant.

Unlike OLS regression, robust models do not report traditional R^2 or F statistics. Instead, the *Wald chi²* and *Chi²* statistics indicate whether the model is statistically significant. They should be interpreted cautiously, as they are not directly comparable to those from OLS. In all six models, the *Wald chi2* values were significant (p < .001), which indicates the models overall explain a significant portion of the variability of happiness. The *Chi²* statistic reflects the joint significance of predictors under the robust estimator framework. Through models one to six, the *Chi²* value increased systematically, and was significant in the last model, indicating the best significance out of all six models.

The standard error (*SE*) measures how much the estimated coefficient is expected to vary if the study is repeated multiple times with different samples, indicating how precise the estimate is. The standard error is often compared to the coefficient: if the standard error is large compared to the coefficient, the estimate is less reliable. The closer the *SE* is to zero, the more reliable the result is. In the model, the standard error values were low for all significant variables (age and all subscales of social belonging),

but higher for dating app use. This indicates some issues with the interpretation of user activity and happiness.

6.3 Moderation

Table 6 conveys a linear regression investigating the social belonging's moderating effect. Each model has one interaction term that tests separately all three subscales of social belonging. The first model conveys the interaction variable with family, the second interaction variable with friends, and the third interaction variable with a romantic partner. The interactions are tested separately to ensure more reliable and transparent results.

Based on the three models, belonging to family was the only one to have a significant moderation (*B* = .019, *p* = .048, *SE* = .009, *CI* [.000, −.037]). In model 1 (Table 6), the ODA's negative effect on happiness was significant, daily use possessing the strongest negative association (*B* = −.996, *p* = .49, *SE* = .491, *CI* [−1.92, −.003]). It is also interesting that the coefficients in Model 1 (Table 6) are quite high compared to Model 6 in the hierarchical analysis (Table 5). Although all subscales of social belonging had strong main effects in Table 5, belonging to friends or a romantic partner did not show a buffering effect on the negative effect between dating application use and happiness in Table 6.

The *Wald chi²* statistic was significant; however *Chi²* statistic is significant in Models 2 and 3, but not in Model 1. Multicollinearity diagnostics demonstrated elevated *VIF* scores for ODA use and the interaction term (Appendix 6). It indicates that ODA use and the moderator were strongly associated, possibly inflating the standard errors. Weekly (.402) and daily use's (.491) standard errors were quite high.

Table 6. *Robust Multiple Linear Regression Testing the Moderating Effect of Social Belonging Subscales. (N=1528)*

	Model 1 ODA*Family				Model 2 ODA*Friends				Model 3 ODA*Romantic			
			95 % CI				95 % CI				95 % CI	
Happiness	B	SE	LL	UL	B	SE	LL	UL	B	SE	LL	UL
ODA use												
Monthly	**−.451****	.188	-.820	−.083	−.083	.154	−.385	.121	−.055	.197	−.441	.332
Weekly	**−.697***	.402	−1.48	.092	−.025	.254	.219	.268	.057	.371	−.670	.785
Daily	**−.966****	.491	−1.92	.136	−.071	.261	−.523	.132	−.219	.566	−.891	1.33
Gender	−.032	.045	−.003	.262	−.028	.045	.475	.261	−.029	.045	−.118	.059
Age	**.155*****	.023	−.121	.167	**.152*****	.023	−.442	.165	**.151****	.024	.105	.199
Social Belonging												
Family	**.168*****	.038	.056	.284	**.195*****	.037	.584	.288	**.195****	.038	.121	.268
Friends	**.199*****	.032	.109	.000	**.197*****	.033	−.118	−.02	**.205****	.035	.135	.274
Romantic	**.225*****	.030	.202	.037	**.227*****	.031	.061	.012	**.220****	.029	.161	.279
Interaction	**.019****	.009	.094	−.003	−.094	.008	.106	−.014	−.005	.011	−.026	.016
Coefficient	**.144*****	.075	.244	.291	**.133***	.075	.199	.281	**.135****	.075	−.012	.282
Pseudo R2	.192				.190				.190			
Wald chi²	**323.8*****				**320.03*****				**312.03*****			
Chi²	10.6				**20.3****				**17.0****			

**** p < .01, ** p < .05, * p < .1*

Note. *N = 1528; CI = Confidence Interval; LL = lower limit, UL = upper limit. All continuous variables are standardized. All values are rounded to three significant figures. MM-estimator used in robust regression with 85% efficiency.*

6.4 Margin effect

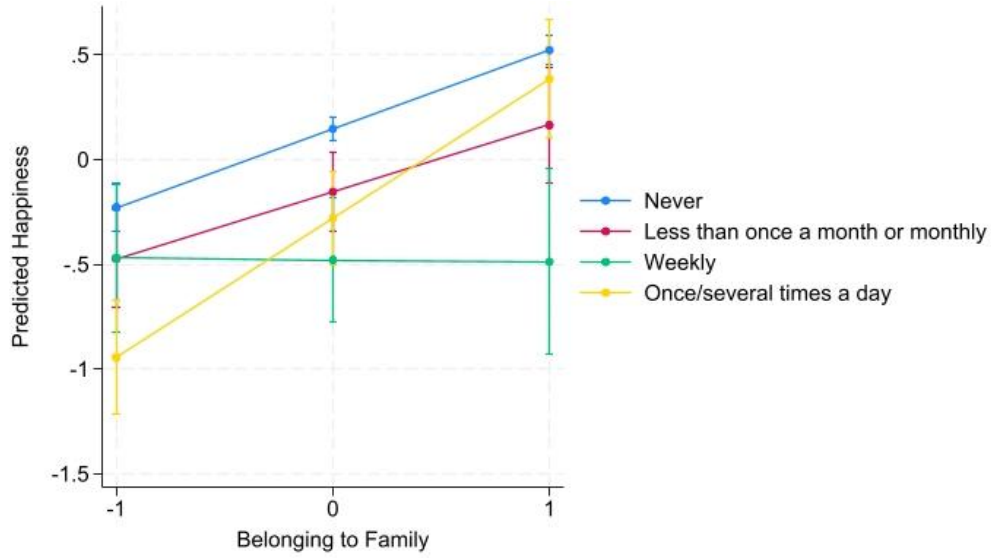
The margin effect (AME, average marginal effects) predicts how the independent variable affects the changes in the dependent variable. Graph 2 presents the margin effects of the family subscale's interaction with dating app use. The margin effect graph conveys how happiness behaves under the influence of familial belonging. When inspecting dating app use categorically, it is evident that people who reported that they do not use dating applications are happier than any user group.

The user groups behave differently from each other, as noted earlier in Chapter 6.2. Especially weekly and daily users behaved in a volatile way, which indicated that their well-being effects are not straightforward.

From Graph 2, together with Table 5 results, we can deduce that online dating applications' negative effect on happiness is most severe with daily use (B = −.996, p = .049), but the buffering effect of family has a strong effect. Monthly (B = −.451, p = .016) and weekly (B = −.697, p < .83) use's negative effects on happiness were not as

severe, and it seems that belonging to a family does not have a buffering effect on weekly users. However, in Table 5 Model 1, a family's buffering effect and the negative association with happiness are significant.

Graph 2. *Predicted Happiness by Dating Application Use Frequency and Belonging to Family N=1528)*



6.5 Additional Analyses

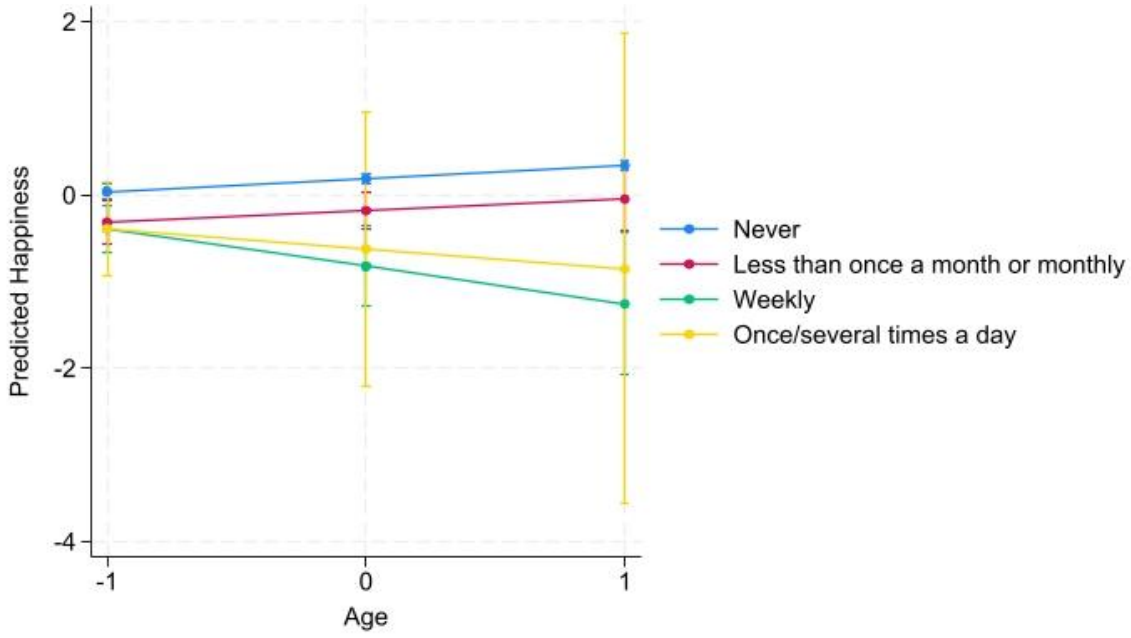
After careful investigation, based on the literature, two questions that I had not considered in my original plan had emerged. The first question is, is the negative association between ODA use and happiness truly a result of dating apps or due to a lack of romantic relationships? In this data, dating app users scored lower on romantic belonging, and literature indicates that singlehood can be a vulnerable state due to stigma. I wanted to briefly test this and conducted a robust regression including marital status as a binary variable (single/relationship). The results are shown in Appendix 13.

Based on the regression model in Appendix 13, an opposite effect emerged. Singlehood was associated positively with happiness (*B* = .266, *p* = .001, *SE* = .071, *CI* [.088, .365]). The result is somewhat contradictory, as one would assume that singlehood and dating app use are overlapping categories. As earlier noted in chapter 6.1, in this data, 18.6 % of ODA users did not report themselves as single, and not all single people in the dataset used dating applications. This finding enhances the validity of the study, as the analysis was able to isolate the effects of singlehood and dating app use on happiness, demonstrating that their impacts on well-being are distinct.

The second question that left me pondering was how age interacts with happiness and ODA use. Both descriptive analyses and robust regressions communicated positive and significant associations between age and happiness. However, Graph 1 in Chapter 6.1 conveyed a flat mean happiness trend among dating app users regarding age, whereas non-users' mean happiness gradually increased towards older responders. Appendix 14 conveys the results of a robust regression where age interaction was tested, and Graph 3 conveys the marginal effects.

The results in Appendix 14 communicate that age's moderating effect is negative and significant (*B* = −.128, *p* < .001, *SE* = .064, *CI* [−.254, −.001]). This indicates that a young age has a buffering effect on the negative association between happiness and ODA use. However, this association was significant only among monthly users, further indicating that use activity's association with happiness is rather complex.

Graph 3. *Predicted Happiness by Dating App Use Frequency and Age (N = 1528)*



7 Discussion

7.1 Summary of the Main Results

This study aimed to examine the relationship between dating app use and users' happiness. The research problem focused on how the use of dating applications influences perceived happiness and whether social connectedness can mitigate potential negative effects. The research questions were: *1. How is dating app use associated with happiness?* and *2. Does social belonging serve as a protective factor in weakening this association?*

The theoretical framework of the study was grounded in research on social belonging, subjective well-being, and happiness studies. Using a cross-sectional design and robust linear regression analysis, the study assessed happiness differences among user categories, considering the influence of age, gender, and marital status on happiness.

In the context of social belonging and well-being, the results indicated that active use of dating applications was associated with lower levels of happiness. All three dimensions of social belonging, family, friends, and romantic partners, along with older age and being single, were independently associated with happiness. In the moderation analysis, feelings of belonging derived from family relationships and younger age were found to buffer the negative association between dating app use and happiness. This protective effect was observed among monthly and daily users, but not among weekly users. Belonging with friends or romantic partners did not offer a similar buffering effect.

In conclusion, the impact of dating app use on subjective well-being appears to be complex and dose-dependent: the level of usage made a clear difference, and the relationship was not linear. These findings contribute new insights into the intersection of digital well-being in the Finnish context and provide a foundation for future research.

Based on previous empirical research and literature, I proposed seven hypotheses.

H1. Dating application users report lower happiness than non-users.

Hypothesis 1 is partly accepted. All user categories had a significant negative association with happiness in comparison to non-users in descriptive comparisons, as users' mean happiness was lower than non-users' happiness. When tested categorically (Table 6), the negative association was significant throughout testing but suffered when social belonging's subscales were added to the model. ODA's negative associations lost significance when the romantic subscale was added to the model. I propose this is because social belonging, especially romantic belonging, has a strong positive association with happiness, outweighing dating applications' negative influence.

> *H2. A higher frequency of dating application use is associated with decreased happiness.*

Hypothesis 2 is also partly accepted. The negative association between happiness and use frequency was not straightforward (Table 4). The negative association between happiness and use frequency was strongest among weekly dating app users, not daily users. In addition, the association disappeared when more variables were added to the hierarchical regression model, and weekly usage's significance was the first to diminish, despite the largest negative association. However, the overall conclusion was that weekly and daily use had the strongest negative associations with happiness, confirming the hypothesis.

> *H3. Social belonging to family buffers the negative association between dating application use and happiness.*

Hypothesis 3 is partly accepted. The Interaction term with social belonging to family was significant and had a positive association with happiness (B = .092, p < .05, SE = .047, CI [.001, .184]) (Table 7). The experience of social belonging to family buffers the negative association between dating application use and happiness, however, it seems that this buffering effect was small among weekly users.

The two other hypotheses that assessed a buffering effect were:

> *H4. Social belonging to friends buffers the negative association between dating application use and happiness.*

H5. Social belonging to romantic partners buffers the negative association between dating application use and happiness.

These hypotheses were not accepted, as interactions with the friend subscale (*B* = −.004, *p* = .642. *SE* = .008, *CI* [−.020, .012]) and romantic subscale (*B* = −.005, *p* =.627 .1, *SE* = .011, *CI* [-.026, -.016]) were not significant (Table 7).

The additional hypotheses formulated after data access were:

H6: Singlehood is negatively associated with happiness.

H7: Young age has a mitigating effect on the negative association between online dating application use and happiness.

Hypothesis 6 is rejected, as the separate robust linear regression indicated that singlehood was positively associated with happiness, which was surprising and contradictory to both Finnish and international research findings. Hypothesis 7 is partly accepted, as young age had a buffering effect against the negative association between happiness and dating applications use, but this association was only significant among monthly users.

7.2 Validity, Limitations, and Future Research

This study employed validated and widely used measurement instruments. However, due to theoretical considerations, methods, and the nature of the data, the conclusions remain limited. For instance, happiness research encompasses a variety of perspectives that depend on the quality and nature of the measurement tools. Theoretically, happiness consists of three components: life satisfaction, hedonism, and subjective happiness. This study did not distinguish between these theoretically distinct forms of happiness but instead adopted a holistic approach focused on life satisfaction, as determined by the available measurement instrument.

The use of hierarchical regression analysis enhances the study's validity by increasing transparency and allowing for a step-by-step examination of the regression model. Additionally, this study aimed for thoroughness by exploring the relationship between

dating app use and happiness through a range of demographic variables, including age, gender, and marital status.

External validity concerns the generalizability of the findings. This study utilized a cross-sectional dataset based on a representative Finnish sample. However, due to the nature of the cross-sectional design, causal relationships cannot be inferred, as the temporal dimension is lacking. Furthermore, the sample was collected during the COVID-19 pandemic, which was characterized by unique social, psychological, and economic conditions, such as lockdowns and social distancing. The unconventional situation may have affected participant behavior or responses. Longitudinal and intervention-based research would be better suited to uncovering the causal links between dating app use, happiness, and overall well-being in non-pandemic contexts to increase external validity.

While this thesis found a negative association between online dating and happiness, it does not explore the underlying reasons for this relationship. The mechanisms driving this association remain unclear and require further investigation. Furthermore, given the research design, it is not possible to determine the direction of the negative association between dating app use and happiness. This is due to the theoretical nature of multiple regression, as it cannot deduce causality (Tabachnik & Fidell, 2014). In other words, it remains unclear whether dating app use leads to decreased happiness or individuals who are already less happy are more likely to turn to dating apps.

Another methodological limitation is that the chosen IVs correlated moderately with each other, especially the subscales of social belonging. According to Tabachnick and Fidell (2014), it would be ideal if the independent variables correlate strongly with the dependent variable, but not with other independent variables. Therefore, in future research, better focus should be employed when deciding which IVs to choose.

Existing research on online dating has proposed the existence of phenomena such as ghosting, rejection mindset, and “relationshopping”, all of which may contribute to a broader culture of uncertainty with potential consequences for user well-being (Bergström, 2022; Heino et a.,2010; Konings et al., 2023; Pronk & Denissen, 2019).

However, the presence or impact of these phenomena cannot be determined within the scope of this study.

As well-being consists of multiple dimensions, including existential, social, and clinical indicators of full functioning (Diener, 2012; Ryan & Deci, 2017), its assessment should extend beyond the measurement of happiness alone. To enhance the accuracy and validity of well-being research in the context of dating applications, future studies should incorporate a broader range of indicators and measurement items.

7.3 Conclusion

It is important to consider what the found associations signify within the current theoretical framework and its intersections. Interaction on dating apps is not solely a social-psychological phenomenon, but is shaped by psychological, sexological, socio-political, and demographic dilemmas.

At the individual level, the findings suggest that despite living in an individualistic and fragmented world, family relationships continue to have a positive impact on well-being. Dating apps have been argued to foster individualism, consumerism, and a climate of uncertainty, all of which may hinder users' well-being and their ability to navigate interactions with others on these platforms. However, the results indicate that a sense of connectedness with one's family can buffer against the negative effects of dating app use, underscoring the enduring importance of familial bonds and societal networks for the hypersocial *homo sapiens.* This result aligns with the vast body of subjective well-being and happiness studies (Baumeister & Leary, 1995; Diener & Seligman, 2002).

Despite the proposal of many gender-dependent phenomena that relate to online dating (Bergsrtröm, 2022; Carpenter & McEwan, 2016; Lamont, 2021), gender did not show a significant role in the models. This is surprising, taken the gendered nature of dating, proposed in international research. This could indicate, for example, that the Finnish context is more equal in terms of dating practices.

The protective effect of age on the relationship between dating app use and happiness may reflect digital nativity, suggesting that younger individuals, being more

accustomed to and comfortable with digital platforms, are less affected by the features or interaction culture of dating apps than older users. Research on dating apps and romantic relationships has highlighted trends such as the short duration of relationships, low resilience, and a growing number of single individuals. These are not only demographic but also cultural shifts in sexuality, which may be difficult to adapt to, especially for those who previously experienced more linear, traditional relationship trajectories marked by socially recognized “happiness milestones” (Kolehmainen et al., 2023) that may be absent from postmodern romance. I speculate that we are witnessing the precarization of romantic relationships, characterized by their brevity, fragility, and high likelihood of dissolution, in the vein of Rahnu and Jalovaara (2023). In such a climate, seeking a partner through dating apps may understandably have adverse effects on individual well-being.

The findings suggest there may be an optimal level of dating app use, monthly or occasional use, at which the negative association with happiness is weakest, and users benefit most from the protective effects of age and family belonging. More frequent use, such as weekly or daily engagement, was associated with stronger negative effects on happiness, and the buffering effects of age and family were less pronounced. This supports previous literature indicating that the differences in well-being exist not only between users and non-users but also among users themselves, creating affective inequality. While earlier research has linked singlehood to affective inequality compared to those in relationships, this study suggests that dating app use may generate similar disparities among single individuals. This is also a sexological issue, as the digitalization of intimacy and the formation of relationships through online platforms reshape our understanding of romance, sex, closeness, and care. It raises the question: does digitalization alter how intimacy is experienced, and how do these shifts affect both current and future relationships?

At the societal level, we must ask: What happens when a large group of unhappy individuals interact with one another on dating apps? What becomes of our perception of humanity when our view of others is marked by distrust and suspicion? What kind of society are we building when we struggle to build even romantic relationships, and become unhappy in the process, or even before it begins? These questions, along with the causal impact of dating apps on well-being, warrant further investigation. We are

facing a significant demographic and social-psychological phenomenon with far-reaching implications for our population structure and national attitudes. A cross-sectional study alone is insufficient to fully understand such a complex and consequential issue.

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9 Appendix

Appendix 1. *Frequency of online dating app use*

Tabulation of ODA

Dating app use	Male	Female	Total	Frequency
Never	41.16	42.67	83.8	1281
Monthly	5.04	4.06	92.1	139
Weekly	2.23	1.57	3.80	58
Daily	1.70	1.57	3.27	50
Total	50.13	49.87	100	1528

Appendix 2. *Crosstabulation of Dating App Use Frequency by Age and Gender, Column Percent (%, N = 1528)*

ODA Use activity	18–29		30–45		46–61		62–75		
	Male	Female	Male	Female	Male	Female	Male	Female	Total
Never	62.9	68.5	79.3	84.2	86.9	88.5	95.9	97.3	1281
Monthly	18.2	17.3	13.1	7.7	7.0	8.3	2.9	2.1	139
Weekly	10.5	6.7	4.2	4.8	3.3	1.4	1.2	.5	58
Daily	8.4	8.7	3.4	3.3	2.8	1.8	0.0	0.0	50
total	143	149	237	209	214	217	172	187	1528

Appendix 3. *Crosstabulation of Dating App Use Frequency by Age and Gender, Row Percent (%, N = 1258)*

ODA use frequency	18–29		30–45		46–61		62–75		
	Male	Female	Male	Female	Male	Female	Male	Female	Total
Never	7.0	8.0	14.7	13.7	14.5	15.0	12.9	14.2	1281
Monthly	18.7	17.3	22.3	11.5	10.8	12.9	3.6	2.9	139
Weekly	25.9	17.2	17.2	17.2	12.1	5.2	3.4	1.7	58
Daily	24.0	26.0	16.0	14.0	12.0	8.0	0.0	0.0	50
total	143	149	237	209	214	217	172	187	1528

Appendix 4. *Spearman's Rank Correlation Coefficient Between Age and Happiness When an ODA User*

Pairwise correlations

Variables	(1)	(2)
(1) Age	1	
(2) happiness when an ODA user	−.034	1

**** p<0.01, ** p<0.05, * p<0.1*

Appendix 5. *Spearman's Rank Correlation Coefficient Between Age and Happiness When a Non-User*

Pairwise correlations

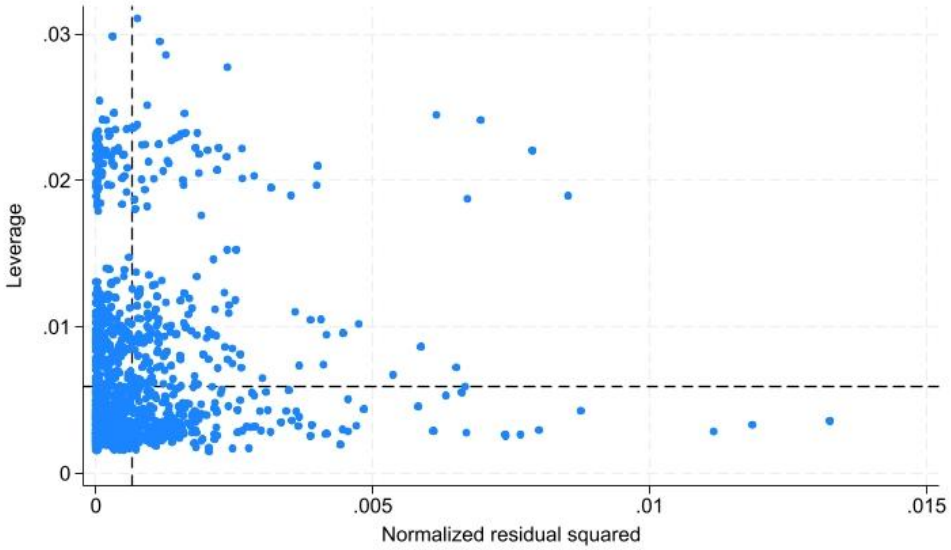
Variables	(1)	(2)
(1) Age	1	
(2) Happiness when a non-user	**.162*****	1

**** p<0.01, ** p<0.05, * p<0.1*

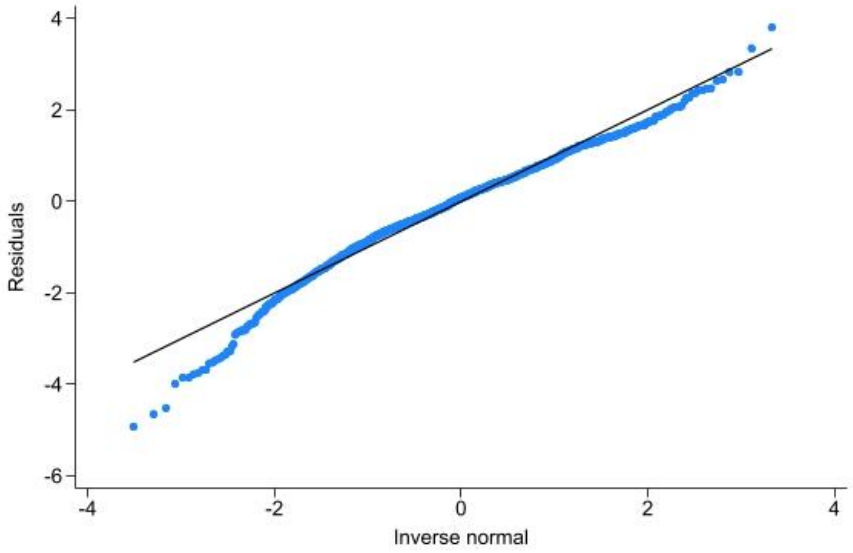
Appendix 6. *VIF Table*

Variable	VIF	1/VIF
ODA use		
Monthly	3.44	.291
Weekly	4.64	.215
Daily	8.94	.112
Age	1.12	.893
Gender	1.04	.960
Belonging to Family	1.59	.737
Belonging to Friends	1.34	.745
Romantic Belonging	1.32	.768
Interaction ODA*Belonging to Family	13.5	.074
Mean VIF	1.22	

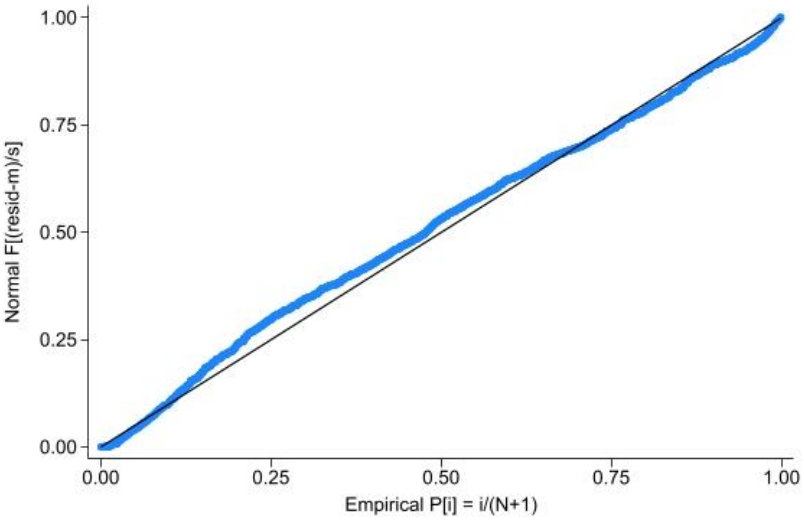
Appendix 7. *Scatter Diagram of Cases*



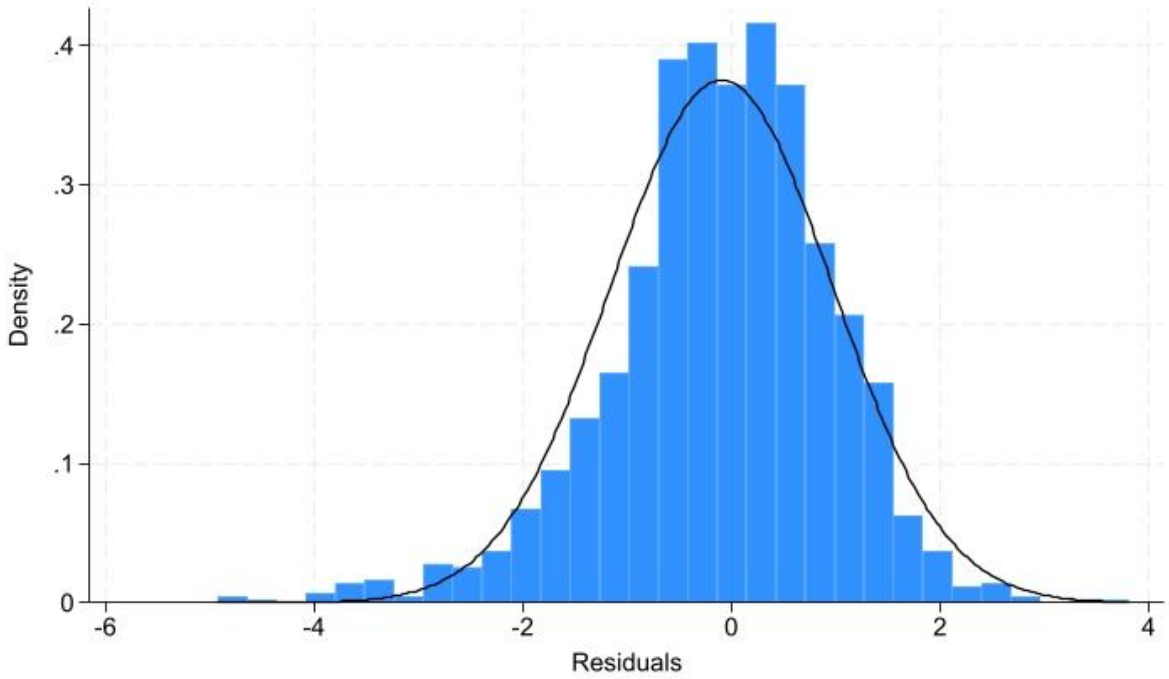
Appendix 8. *Scatter Diagram of Residuals*



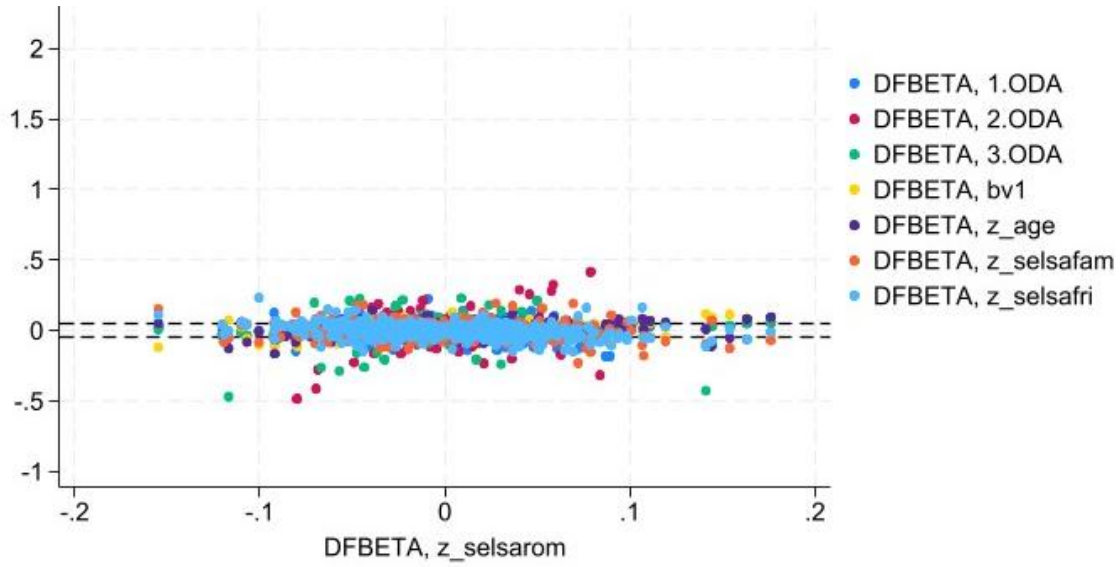
Appendix 9. *Scatter Diagram of Residuals*



Appendix 10. *Histogram on the Distribution of Residuals*



Appendix 11. *Dfbeta Scatter Diagram of Outliers*



Appendix 12. *Comparisons Between OLS and Robust Regression Coefficients and Standard Errors*

	OLS B	Robust B	OLS SE	Robust SE
Dating app use				
Monthly	−.129	−.138	.081	.094
Weekly	−.028	−.098	.122	.197
Daily	−.170	−.029	.132	.175
Gender	−.043	−.029	.046	.045
Age	.146	.152	.023	.023
Social Belonging				
Family	.181	.195	.026	.037
Friends	.171	.197	.026	.032
Romantic	.229	.221	.026	.029
Intercept	.083	.137	.074	.074

Note. *N = 1528. All values are rounded to three significant figures. Continuous variables are standardized*

Appendix 13. *Robust Regression Including Relationship Status*

Happiness	Coefficient	SE	95% CI	
			LL	UL
ODA use				
Monthly	−.193**	.102	−.386	−.005
Weekly	−.157	.204	−.548	.251
Daily	−.088	.186	−.429	.253
Gender	−.036	.045	−.125	.052
Single	.226***	.073	.088	.365
Age	.159***	.024	.112	.206
Social Belonging				
Family	.206***	.037	.132	.279
Friends	.170***	.034	.103	.237
Romantic	.292***	.040	.213	.370
Constant	.069	.078	−.084	.221

chi2(9) = 13.7 Wald Chi2 64.35 p < 0.01 Pseudo R2 = .193

Note. *N = 1505. The number of observations is lower because individuals identified as "widowed" or "other" were excluded from the analysis. All values are rounded to three significant figures*. *Continuous variables are standardized*

Appendix 14. *Robust Regression with Interaction with Age*

Happiness	Coefficient	SE	95 % CI	
			LL	UL
ODA use				
Monthly	−.195**	.098	−.387	−.003
Weekly	−.289	.198	−.677	.099
Daily	−.391	.286	−.952	.169
Gender	−.028	.045	−.117	.061
Age	.168***	.024	.121	.215
Social Belonging				
Family	.192***	.037	.120	.264
Friends	.196***	.033	.132	.260
Romantic	.223***	.030	.164	.282
Interaction ODA*age	−.128**	.065	−.254	−.001
Constant	.132*	.075	−.014	.279

*Chi2 (9) = 12.7 Wald Chi2 = 345*** Pseudo R2 = .192*

Note. *N = 1528. All values are rounded to three significant figures. Continuous variables are standardized*