A New Scale to Measure Preferences for Social Exploration and Exploitation

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A Dissertation presented to the Graduate Faculty
of the University of Virginia in Candidacy for the Degree of
Doctor of Philosophy

Department of Psychology

University of Virginia
May 2025

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Abstract

Just as animals forage for food, humans forage for social connections. People often face a decision between exploring new relationships and deepening existing ones. This tradeoff, known in optimal foraging theory as the *exploration-exploitation tradeoff*, is featured prominently in other disciplines such as animal foraging. Many of the framework's principles can be applied to humans' choices about their social resources, which we call *social exploration/exploitation*. Previously, I applied optimal foraging theory to theorize about how people search for connections (Tsang et al., 2024). In this dissertation, I present a scale that can be used to assess desires for exploration and exploitation. Across 4 studies (n = 1,439), I develop and validate a scale, examine how it relates to existing personality constructs and social network structures, and determine how it predicts well-being measures. I found that social exploration was positively associated with extraversion and larger network size, while social exploitation was negatively associated with extraversion. I also found that higher scores on both predict better social life satisfaction and less loneliness. I discuss several avenues of further research, such as investigating contextual factors that affect social exploration and exploitation and origins of these individual tendencies.

Dedicated to Adrienne Wood

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1. Introduction

Two people move to a new city where they do not know anyone. The first person, Person A, has a cousin who introduces him over email to a friend who lives there. Person A and the friend become close, going for bike rides every weekend. He is occasionally invited to a friend's house for small dinner parties, but he does not try hard to befriend other people there. After a few months, Person A also becomes friends with two colleagues in adjacent cubicles. He is satisfied with his small social network of increasingly close friends.

When the second person, Person B, arrives in the city, she joins a running group to meet new people. She starts a new tradition for the running group: happy hour cocktails on Fridays after their afternoon run. She is open to conversations with strangers everywhere she goes because she never knows what exciting connections she will make. A conversation with a person sitting next to her at a park reveals that they are from the same hometown; this person soon becomes a friend. By the time she has her first birthday in the new city, Person B has 30 friends to invite to her house for a party.

Why did Person A and B behave so differently in their new city? While their environments may have different affordances for them to meet people (Person A lives alone, while Person B has social roommates that come over), the two people may have different dispositions and individual traits. Person A may not feel confident starting conversations with new people, or Person B may not feel like any of her friends check all her boxes.

What are the consequences of Person A's and Person B's different social behaviors? Will one be happier, more psychologically enriched? What will the structures of their larger social networks look like? The answers depend in part on their personal attributes and preferences.

The example of the two people above demonstrates different tendencies to seek out new connections or deepen existing ones. This decision that people make repeatedly, whether to choose something familiar and known or learn by exploring something new and less known, is known as the *explore-exploit tradeoff*, a paradigm of optimal foraging theory (Stephens & Krebs, 1986). Optimal foraging theory explains how the ideal strategy for searching for resources depends on features of the searching organism, its environment, the desired resource, and the interactions between them. It has been described in depth in the animal foraging literature to understand how animals manage decisions over time about where to find food.

Just as animals forage for food, humans forage for friends and social connections. We can think of other people as resources (Gonzalez et al., 2021) and the problem of deciding how to allocate one's social time as an instance of the explore-exploit tradeoff. Building and sustaining a social network requires time, effort, unknown risks, and uncertain rewards. People must decide how to allocate their limited time and effort to maximize social rewards (e.g., friendship, social ties) and minimize social risks (e.g., rejection, scams, awkwardness, boredom). Reframing social decision-making in optimal foraging terms helps integrate many findings about why and how people network and what they get out of it.

Optimal foraging theory is only beginning to be applied in social psychology to the question of how people search for friendships and other general social connections (Tsang et al., 2024). In this dissertation, I recap the principles of optimal foraging theory and argue why it can and should be applied to social searches. I then detail the properties of the social search and explain underlying theoretical points. I next review neighboring literature to show how related ideas have been expressed but not synthesized and hypothesize how socially exploring/exploiting

affects outcomes such as well-being. Lastly, I present a series of studies developing and validating a scale to examine individual differences in social exploration tendencies.

2. Theoretical background

2.1 What is social exploration/exploitation

Many decisions that individuals make involve choosing between the best-known option (exploitation) and gaining information by seeking unknown options (exploration). Exploiting an existing and familiar option allows an individual to remain where they are and to be confident in the outcome. It uses fewer resources (e.g., time and energy) and mitigates risk, but may cause the individual to miss out on better, unknown options. It might also be unsustainable in the long run if the exploited resource is finite or has diminishing returns. On the other hand, exploring is high-risk but potentially high-reward: an individual can receive important information and discover a better option, but there is a switching cost and rewards may not be guaranteed.

Optimal foraging theory applies in many domains, from bacterial growth (Stocker et al., 2008) to human memory search (Baror & Bar, 2016). Exploration and exploitation usually describe behavior, not latent states such as motivations, traits, or attitudes. Generally, exploration involves alternating between novel options, whereas exploitation involves remaining at one option. One hindrance to creating a unifying body of literature is that different domains use different terminologies to refer to this search process: *optimal foraging* in animal behavior, *information search* in cognitive domains, and *bridging/bonding* in social networks.

We define social exploration-exploitation as instances of foraging where the reward sought is social connection. Humans are a social species: our survival depends greatly on social bonds, and social bonds are therefore inherently rewarding (Atzil et al., 2018). Humans have a desire to feel connected to others (Baumeister & Leary, 1995), are wired to be socially oriented

(Lieberman, 2013) and suffer greatly when they feel isolated (Cacioppo & Patrick, 2008). Therefore, we argue, social connectedness is intrinsically rewarding. Of course, part of this intrinsic reward derives from the material and psychological advantages of being around others (Atzil et al., 2018; Beckes & Coan, 2011). While we know that most humans desire connection, less is known about which type of connections people seek (new or familiar others) at a given moment, given various factors present.

Why is it important to study social exploration? Although it is generally known that satisfying relationships are essential for health and well-being (Aron et al., 2013; Cohen & Syme, 1985; Cundiff & Matthews, 2018; Diener & Seligman, 2002; House et al., 1988), we cannot make strong predictions about how different people in different contexts should allocate their time and energy across relationships. Evidence suggests that rates of loneliness vary across cultures and communities (Luhmann et al., 2022), but less is known about the best solutions to loneliness as a function of place and person. In Western countries, having many friends makes people happier (Kim & Lee, 2011), but so does having close relationships (Pietromonaco & Collins, 2017). Being a social broker who connects different groups is helpful in some settings (Burt, 1992) and not others (Stovel et al., 2011).

We can synthesize disparate literatures and identify optimal social decision-making strategies by framing choices in social relationships using optimal foraging theory. Perhaps one of the reasons that people feel lonely and disconnected is an incorrect fit between their preferences and their existing networks. If someone who prefers close relationships is told that they need more friends to be happier, they might end up feeling more exhausted and disconnected than if they invested in a few friends. Conversely, someone who prefers doing many different social activities might be unsatisfied if they only have a few friends who don’t

also like all those activities. Therefore, one of the first steps of this research is to identify individual differences in desires to explore and exploit, as we can then determine how fits between the characteristics of the person, including their dispositions, their current states, their affordances, and the environment, can lead people to have more satisfying social lives.

2.2 Theorized properties of social exploration/exploitation

Many foraging principles derived in non-social contexts should apply to foraging for social connections (Mehlhorn et al., 2015). Rhesus macaques forage for social information similarly to how they forage for food (Turrin et al., 2017). Friends are tangible rewards, meaning that agents must physically (or, in the internet age, digitally) search for them, as opposed to searching for ideas or memories. Friendship also requires time investment, like any other resource (Hall, 2019), and social interactions can have diminishing returns, just as animals exploiting a food patch can experience declines in the reward rate. As in non-social domains, agents must balance reward output and efficiency (Cook et al., 2013). It might be most *efficient* to have only one best friend—fewer cognitive resources are required to know their attitudes, predict their behavior, etc.—but that efficiency comes at the expense of novelty, diverse perspectives, and increased social capital. And environmental factors and timescales affect the optimal strategy regarding the tradeoff in both social and nonsocial resources (Monk et al., 2018), which will be discussed later.

Like other forms of exploration, social exploration can be random or directed. Random (or undirected) exploration is not goal oriented and is akin to a random walk. It can lead to the incidental discovery of new opportunities and rewards. Directed exploration is, as the name implies, goal directed. Directed exploration is driven by prior knowledge about resource distribution. Instead of incidental learning via random sampling, directed exploration involves

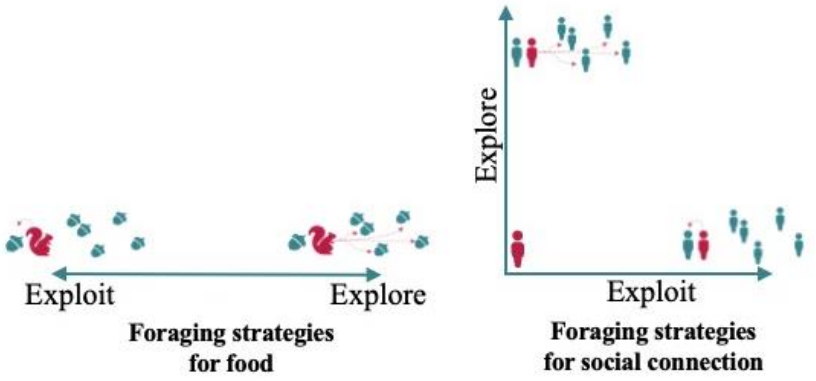
the investigation of a particular state space that maximizes the reward rate. People are often goal-directed in the types of friends they are looking for (Apostolou & Vetsa, 2022; Fitzsimons & Shah, 2008), and whether they are looking for friends at all. Even children have a preconception of the traits that they want in friends (Austin & Thompson, 1948). People search for similar others (McPherson et al., 2001) and befriend those with whom they share social needs (Secord & Backman, 1964), values (Launay & Dunbar, 2015; Lönnqvist & Itkonen, 2016), and personalities (Selfhout et al., 2009). Yet there are also many opportunities for random exploration. People talk to strangers in parks (Whyte, 1980) or make friends even when it is not their main goal, such as when picking up children from child-care (Small, 2009). Simply living nearby is often a sufficient condition for friendship (Festinger et al., 1950; Martin & Yeung, 2006). Thus, connections can be intentionally sought (directed exploration) or serendipitously found (random exploration).

In previous literatures on other decision-making domains, exploration and exploitation have been considered a tradeoff because one cannot do both simultaneously, at least not at the same timescale in the same behavioral domain. In a single decision at a single level of analysis, exploration and exploitation are considered mutually exclusive: an agent can continue exploiting their current resource, or they can search for a new resource. Over time, these decision points accumulate, and we can quantify an agent's ratio of exploration to exploitation as a continuous metric (J. D. Cohen et al., 2007; Mehlhorn et al., 2015). We think of social exploration/exploitation decisions as continuous (a decision can range from fully exploratory to fully exploitative) rather than dichotomous. Many interactions, meeting with a close friend and their new partner, reconnecting with an old work friend, might fall somewhere in the middle. When you add up a person's decisions to explore, exploit, or be somewhere in the middle, you

can place them anywhere in a two-dimensional space in which they are high or low in their tendency to socially explore *and* their tendency to socially exploit (see Figure 1). This is because there is always the option to not socialize at all, which is neither socially exploitative nor socially exploratory.

Figure 1

Foraging Strategies for Social Connections as Two-Dimensional



Therefore, we theorize that social exploration/exploitation is both continuous and two-dimensional. While animals need to meet food demands, humans can survive without social interaction or choose solitude (Burger, 1995). Someone low in *sociotropism* (seeking socialization) and high in *solitropism* (seeking solitude) is less motivated to engage in both social exploration *and* exploitation. But people also vary in how motivated they are to pursue deep friendships versus social novelty. Thus, when we describe a person's social tendency, we are placing them in a two-dimensional space—they can engage in high (or low) levels of social exploration *and* exploitation. I used this logic when creating the scale to predict that there will be a 2-factor structure and developed scale items about exploration and exploitation independently.

2.3 An individual differences approach to social exploration/exploitation

While we theorize that social exploration and exploitation are influenced by situation, we also believe that individuals have person-level baseline tendencies to prefer one or another. For example, people have different risk tolerances for exploring social situations (Green & Campbell, 2000a), and feel rewarded differently from social interactions (Depue & Fu, 2013). Additionally, other psychological constructs such as motivation and regulatory focus have also been characterized by trait-level and state-level attributes (Hoyle, 2010; Wasserman & Wasserman, 2020). Social exploration and exploitation can also be thought of as specific types of motivations: the motivation to create new ties and the motivation to deepen existing ties, respectively.

While there are many existing individual difference measures relevant to social exploration/exploitation, none to my knowledge exactly capture *which* socializing strategies people prefer. Some traits, such as extraversion or sociability, describe people's general tendencies to prefer being with others to being alone. Other traits, such as agreeableness, capture how socially desirable people are (Wortman & Wood, 2011). Still other individual differences, such as openness to experience, risk-seeking behavior, or curiosity, might impact how tolerant people are of meeting new others, but do not in themselves capture people's social orientations. A recently developed scale that is close to measuring social exploration/exploitation is the Friendship Habits Questionnaire (Howlett et al., 2023), a scale measuring whether a person is more likely to socialize in groups or in dyads. This scale is evidence that we can measure specific preferences in friendships but also does not capture exploration/exploitation. People who prefer exploring could like meeting new people one-on-one or in groups, and so could those who prefer exploiting. Therefore, I believe that there needs to be a new scale that captures people's preferences for new or familiar others, either at baseline or given a specific situation. Below, I

cover existing traits and how they might relate to social exploration/exploitation tendencies, and why existing traits do not completely capture this individual difference.

2.3.1 Extraversion

Although extraversion is highly well-known and studied, researchers hold different nuanced ideas of the fundamental features of the trait. In popular speech, extraversion is synonymous with sociability. Early personality researchers also held this belief: McCrae & Costa (1987) found that the adjectives that loaded most strongly onto the extraversion factor included sociability, fun-loving, affectionate, friendly, and talkative. However, Lucas et al. (2000) point out that it is unclear if sociability refers to a broad tendency to enjoy social situations, or a tendency to enjoy close interpersonal bonds with friends and family. The former would mean that extraverts would engage in more exploration *and* exploitation, while the latter would mean that extraverts would only engage in more exploitation. Watson and Clark (1997) argue that extraversion is mostly about pleasant affect. Extraverts experience pleasant affect across a variety of rewarding situations, both social and nonsocial (Cunningham, 1988). Lucas et al. (2000) specify this further by suggesting that reward sensitivity is the core dimension of extraversion, and that extraverts appear to be more social not because they are more sensitive to social rewards, but because social situations are especially rewarding. Ashton et al. (2002) hold a slightly different view, suggesting that the true core is the tendency to behave in ways that attract social attention.

While the existing theories are nuanced, we can make general predictions of how extraversion would relate to social exploration/exploitation. Extraversion is associated with motivations to seek new ties (McCrae & Costa, 1997; Selden & Goodie, 2018). Extraverts enjoy and engage in activities that elicit more social attention than do introverts (Ashton et al., 2002).

This may be because extraverts are more sensitive to both social and non-social rewards than introverts (Watson & Clark, 1997, Lucas et al., 2000), reflected in different dopaminergic activity in the brain (Depue & Fu, 2013). We predict that because extraverts derive greater reward from their social interactions, they would tend towards social exploration due to seeking a variety of new interesting experiences (which give surges in dopamine). Some studies have found that extraverts have more weak ties (evidence of more exploration) than introverts (Ishiguro, 2016). In one study of a complete network, researchers found that extraverts formed more ties than introverts, occupied more central network positions, nominated more people as friends and were nominated as friends more often (Feiler & Kleinbaum, 2015). Another study suggested that extraverts are more likely to form new friendship ties quickly and successfully, and focus on initiating ties to others (Selden & Goodie, 2018).

While I believe that extraversion is related to social exploration, it is not synonymous. Extraversion encompasses multiple facets, including social dominance, energy, and enthusiasm (Watson & Clark, 1997). Additionally, if extraversion is based on reward sensitivity and finding social situations rewarding, then people who are extraverted might like both exploration and exploitation, as both involve social situations.

2.3.2 Maximizing & Satisficing

Maximizing is a trait that describes people's desire to find the best possible resource (Schwartz et al., 2002) or friendships (Newman et al., 2018). We predict that maximizers should engage in more initial social exploration because they would be more motivated to seek out the best connections and more information, given that there are not time and energy constraints. On the other hand, satisficing (Simon, 1956), or looking for a "good enough" solution, would be more associated with exploitation because people are fine with settling early.

2.3.3 Curiosity

Non-social curiosity and novelty seeking are associated with non-social forms of exploration (Lydon-Staley et al., 2021). Therefore, we would also expect that trait-level curiosity about the social environment to be associated with social exploration, which may explain why socially curious people are more sociable and popular (Renner, 2006). Social curiosity is distinguished from social exploration in that the curiosity trait captures more of how people are desire knowing about the other person, whether in general or prying manners. The items on the subset of covert social curiosity include "When on the train, I like listening to other people's conversations" and "I like to look into other people's lit windows", which captures ideas of prying or nosiness more than interest in meeting new people.

2.4 Hypothesized outcomes related to social exploration/exploitation

One of the goals of this framework is to shed light on when different social search strategies are suboptimal so that future work can help mitigate the negative consequences. An abundance of evidence suggests that people, on average, may not be obtaining all the benefits that come with social connections. Even though people have virtually unlimited opportunities for social interaction, many still feel lonely and disconnected (Arbes et al., 2014; Cacioppo & Patrick, 2008; Killeen, 1998). People frequently miss out on the psychological, physical, and material benefits of healthy social connections (Wolff et al., 2009).

Since this is a new framework, we can only use past research on theoretically related constructs to make predictions about the psychological and social consequences of exploring and exploiting. Also, it is important to consider the population that existing research draws from, as not all strategies are beneficial in all cultural settings. Exploring can be advantageous in diverse and open societies, but harmful in segregated and xenophobic regions. Since most of the

literature we draw from are based on Western contexts, we limit our discussion of potential outcomes to that context as well. The results of the proposed studies in this dissertation will test some of these generated hypotheses about how exploring and exploiting affect one's network position and well-being.

2.4.1 Network position and structure

Over time, a series of decisions between exploring and exploiting social ties determines a person's social network structure, and ultimately what benefits they gain from their network. In general, we predict that more exploring leads to more weak ties and broader networks, while more exploitation leads to fewer ties, deeper connections, and denser networks. Since we define exploring as striving to make new connections, then *ipso facto* frequent explorers will have more ties. And if they are frequently exploring, then they may not have the time to invest in strengthening each tie, which results in shallower ties. Exploration may also lead to more network brokerage if people are frequently bringing together different people. On the other hand, we expect that social exploitation may lead to a fewer number of friends, since exploiting is about choosing familiar ties over new ones.

2.4.2 Effects on well-being

Satisfying social relationships are imperative for well-being, both happiness and health (Aron et al., 2013; Cohen & Syme, 1985; Cundiff & Matthews, 2018; Diener & Seligman, 2002; House et al., 1988). A single friend can provide emotional support and happiness, and even single interactions with strangers can momentarily boost belonging and well-being (Epley & Schroeder, 2014). Therefore, on a broad level, both more exploration and exploitation should positively affect well-being, assuming the relationships are positive. Having more friends makes

people happier (Kim & Lee, 2011), as does having close relationships (Pietromonaco & Collins, 2017).

Exploitation can positively affect well-being through depth and closeness of relationships. In adolescents, friendship quality was associated with greater adjustment to school (Waldrip et al., 2008), and the quality of friendships mattered more than quantity for university adjustment among first-year students (Buote et al., 2007). The quality of adolescent peer relationships predicted physical health quality in adulthood years later (Allen et al., 2015). Close relationships are shown to provide more social support than weak ties in times of threat (Coan et al., 2006), are better buffers against external stressors (Sarason et al., 1997), and are more likely to provide emotional support in times of hardship and need (Tooby & Cosmides, 1996). Close ties are important at every stage in life, from childhood (Chen et al., 2017), adolescence (Allen et al., 2022), adulthood (Demir, 2010), and late adulthood (Krause, 2006).

On the other hand, the quantity of relationships and meeting new people can also positively impact well-being. Findings from the May 2021 American Perspective Survey conducted by the Survey Center on American Life showed that Americans with more friends report greater satisfaction with how many friends they have (Cox, 2021). One study found that college students reported greater happiness and feelings of belonging when they were asked to interact with more classmates than usual (Sandstrom & Dunn, 2014a). Even the most minimal social interactions with strangers, such as stopping to greet, thank, and wish strangers well, increase happiness (Gunaydin et al., 2021) and belonging (Sandstrom & Dunn, 2014b). Weak ties, or acquaintances, can also provide social support in difficult life events, and are even sometimes preferred over strong ties (Moreton et al., 2023).

Looking deeper, the relationship between social exploration/exploitation and well-being is not always straight-forward. We believe that people get the most benefit from their ties when they have a balance of both that is matched with their individual and environmental affordances and suffer when there is a mismatch. For example, when people have more social ties than they can handle, they may feel stretched thin and burdened because they feel guilty that they cannot meet the needs of all of their ties, leading to more depressive symptoms (Thoits, 1991). Social brokerage, which we argue can result from exploration, benefits American organizations (Burt, 1992) more than Chinese ones (Xiao & Tsui, 2007). Ultimately, we hypothesize that both exploration and exploitation can lead to benefits for well-being, but mostly when an individual is doing what is optimal for their situation.

3. Overview of Studies

Thus far, I have introduced the idea of applying the exploration-exploitation tradeoff to people's choices about their social relationships, detailed hypothesized principles, reviewed related constructs, and hypothesized how social exploration and exploitation would affect social networks and well-being. To study these hypotheses and to use this framework empirically, we need valid measures of individual differences in social exploration and exploitation. The goal of the studies in this dissertation is to develop, validate, and apply a scale that researchers can use to measure tendencies to explore and exploit.

In studies 1A and 1B, I developed and validated a scale for social exploration/exploitation tendencies, called the Social Exploration Questionnaire. I used a theory-driven and data-driven approach via Exploratory Factor Analysis (EFA) to determine the best items from a large item pool (Study 1A). I then used a second sample to formally test my scale with Confirmatory Factor Analysis (CFA) and examine the relationship between the newly

developed scale and related constructs, assessing the convergent and divergent validity of the scale (Study 1B). Next, I correlated our self-report scale with experience sampling data captured over a two-week time span to see if the scale mapped on to actual behavior (Study 2). Lastly, I examined if the results replicated in a national representative sample (Study 3).

Hypotheses:

(H1) At the trait level, social exploration and social exploitation are two dimensions rather than opposite ends of the same dimension.

(H2) Social exploration and social exploitation will be correlated with neighboring constructs such as extroversion, openness, social curiosity seeking, maximizing, satisficing, and general exploration tendencies but still maintain divergent validity.

(H3) Social exploration and social exploitation will both be positively related to well-being.

(H4) People who explore more will have networks that are broad and shallow, while people who exploit more will have networks that are dense and deep.

(H5) People who explore more will interact with more people in their daily lives.

(H6) People who exploit more will interact more with people they feel close to.

4. Study 1A: Scale development and psychometric examination

4.1 Aims and Hypotheses

Study 1A aimed to evaluate potential items for a new Social Exploration Questionnaire and determine the appropriate number of factors to include in the scale via Exploratory Factor Analysis and Confirmatory Factor Analysis. I intentionally over-generated items with the expectation that some will be dropped. I hypothesized that there will be at least two factors, given that my theory suggests that explore and exploit are separate dimensions (H1). I also aimed

to test how the items and scales relate to previous personality constructs such as extraversion and curiosity for convergent and divergent validity (H2).

4.2 Method

4.2.1 Participants

Participants consisted of 392 students (M_{age} = 19.35, SD_{age} = 1.12) at the University of Virginia. Participants received partial course credit for their participation. Of the students, 60.97% identified as female, 37.76% identified as male, and 1.28% identified as other; 189 identified as White, 30 identified as Black or African American, 99 identified as Asian, 4 identified as Middle Eastern or North African, 24 identified as Hispanic or Latino, and 46 identified as Mixed-race. Past articles on best practices for EFA have recommended a respondent-to-items ratio of 10:1, which in our case would be 320 participants (Nunnally, 1978). Other sources have suggested that 300 respondents is an adequate sample size (Clark & Watson, 2016; Tabachnick et al., 2019). Either way, our sample size is large enough to detect a factor structure.

4.2.2 Procedures and Materials

I generated items that reflected the features of my theoretical framework of social exploration and exploitation. For social exploration, I generated items related to desires and actions towards meeting new people, such as “I seek out opportunities to meet new people”. For social exploitation, I generated items related to desires and actions towards seeking out familiar others, such as “Most of my social interactions feature the same people from week to week.” I intentionally generated more items than I expected to retain, looking to the data to determine which items best captured the constructs. Following recommendations (Carpenter, 2018), I generated around three times as many items as I expected to keep in the final scale. Therefore,

some items were redundant or not a good fit. In total, 32 items were administered (see Table S1 for all original items). Participants were asked to indicate the degree to which they agreed or disagreed with each of these statements on a 7-point scale (1 = strongly disagree, 7 = strongly agree).

To assess the convergent and divergent validity of our items, I also asked participants to complete a series of self-report measures related to friendship orientation and sociability.

General exploration tendency. General exploration tendency was measured with a 18-item Exploration Scale (Green & Campbell, 2000b) on an 8-point scale (1 = does not describe me at all, 8 = very much describes me), with 12 nonsocial exploration items such as "I would like to take a class that is unrelated to my major just because it interests me" and 6 social exploration items such as "I would enjoy being introduced to new people". Reliability was acceptable ($\alpha = 0.88$).

Big 5 Personality traits. The Big-Five Personality items were assessed using the 60-item BFI-2 (Soto & John, 2017). Reliability was acceptable for all 5 traits (extraversion: $\alpha = 0.78$; agreeableness: $\alpha = 0.74$; conscientiousness: $\alpha = 0.84$; neuroticism: $\alpha = 0.89$; openness: $\alpha = 0.82$).

Social interaction anxiety. Social interaction anxiety was assessed using the 19-item questionnaire (Mattick & Clarke, 1998) with items such as "When mixing socially, I am uncomfortable" measured on a 5-point scale (1 = not at all characteristic of me, 5 = extremely characteristic or true of me). Reliability was acceptable ($\alpha = 0.91$).

Curiosity. Curiosity was measured with two scales: the 25-item Five-dimensional Curiosity Scale (Kashdan et al., 2020) on a 7-point scale (1 = Does not describe me at all, 7 = Completely describes me), with the five dimensions being joyous exploration, deprivation

sensitivity, stress tolerance, social curiosity, and thrill seeking. Reliability was acceptable for all five dimensions (0.85, 0.84, 0.86, 0.84, 0.86, respectively). I also measured social curiosity specifically with the 10-item Social Curiosity Scale (Renner, 2006) on a 4-point scale (1 = strongly disagree, 4 = strongly agree) with items such as "I find it fascinating to get to know new people". Reliability was acceptable ($\alpha = 0.79$).

Social maximizing. Social maximizing was measured with the 16-item maximization in friendship selection scale from Newman et al. (2018), which was adapted from the Relational Maximization Scale (Mikkelson & Pauley, 2013). Items such as "I don't want to settle for friendships that are "good enough" were given on a 7-point scale (1 = complete disagree; 7 = completely agree). Reliability was acceptable ($\alpha = 0.852$).

Satisficing. Satisficing was measured using the 10-item Satisficing subscale of the Maximization Inventory (Turner et al., 2012). Items were given on a 7-point subscale (1 = strongly disagree, 7 = strongly agree) with items such as "I can't possibly know everything before making a decision"). Reliability was acceptable ($\alpha = 0.763$).

4.3 Results

4.3.1 Item selection

The Kaiser-Meyer-Olkin measured verified the sampling adequacy for the analysis, KMO = 0.88, which is higher than the recommended 0.7 (McCrosky & Young, 1979; Pett et al., 2003; Tabachnick & Fidell, 2007). Bartlett's test of sphericity indicated that the correlation structure is adequate for factor analyses, χ^2 (496) = 4024.62, $p < .001$.

I expected at least a two-factor structure in my data. I fit models ranging from one to five factors. My strategy was to iteratively remove items based on results of the EFA and pre-existing theory. I used oblique rotation with the "oblimin" method in the *psych* package in R (Revelle,

2007) since I expected correlations between the factors (Abdi, 2003). I computed communality estimates using the minimum residual method (Comrey, 1962). Based on past recommendations, I removed items based on the following criteria: if they do not load uniquely on individual factors (Boateng et al., 2018), if they had low communalities (below 0.4, Costello & Osborne, 2019; Hair et al., 2009), if they had low loading or cross-loadings. This process was iterative and theory driven.

After iterating and deleting items in the EFA, a stable factor structure emerged with two factors and 11 items (see Table 1). The first factor, which I call "social exploration", contains items related to getting to know new people. The second factor, which I call "social exploitation", contains items related to preference for staying with existing friends. The two factors, social exploration and social exploitation, were slightly negatively correlated with each other, $r(390) = -0.38$, $p < .01$, indicating that while they are related, they are separate constructs (see Table 2).

4.3.2 Correlations with other variables

As I expected, social exploration was positively correlated with extraversion, $r(390) = 0.54$, $p < .01$ and openness, $r(390) = 0.27$, $p < .01$. Social exploration was also positively associated with agreeableness, $r(390) = 0.18$, $p < .01$, conscientiousness, $r(390) = 0.16$, $p < .01$, social curiosity, $r(390) = 0.32$, $p < .01$, and overall exploration, $r(390) = 0.59$, $p < .01$. It was negatively correlated with neuroticism, $r(390) = -0.23$, $p < .01$ and social interaction anxiety, $r(390) = -0.53$, $p < .01$. It was not correlated with relationship maximization.

Social exploitation, on the other hand, was slightly negatively correlated with extraversion $r(390) = -0.24$, $p < .01$, and overall exploration, $r(390) = -0.28$, $p < .01$. It was positively correlated with neuroticism, $r(390) = 0.21$, $p < .01$, and social interaction anxiety,

$r(390) = 0.31$, $p < .01$. It was not correlated with relationship maximization, agreeableness, openness, conscientiousness, or social curiosity.

4.4 Discussion

In sum, I created a 11-item Social Exploration Questionnaire with two factors, social exploration and social exploitation, that mapped onto my theoretical framework of the two social orientation preferences. This showed support for H1 that social exploration and exploitation are two separate traits, rather than one-dimensional. The correlations are indicative of convergent and discriminant validity. I also found some support for H2 that social exploration is correlated with extraversion, openness, and general exploration.

5. Study 1B: Validation of the SEQ factor structure

5.1 Aims & Hypotheses

Study 1B aimed to test if the factor structure of the SEQ is best explained by the two theoretical dimensions. I used Confirmatory Factor Analysis (CFA) to determine if the fit of the model to the data was acceptable. Another aim of the study was to establish reliability and construct validity of the SEQ by comparing it to self-reported measures of sociability. I predicted that the two-factor model of the SEQ would have an acceptable fit. I also hypothesized that higher Social Exploration scores will be associated with traits such as extraversion and curiosity.

5.2 Method

5.2.1 Participants

Participants consisted of 384 students ($M_{age} = 18.82$, $SD_{age} = 1.00$) at a large university in the U.S. Participants received partial course credit for their participation. Of the students, 70.57% identified as female, 29.17% identified as male; 197 identified as White, 27 identified as Black or African American, 1 identified as American Indian or Alaska Native, 83 identified as Asian, 4

identified as Middle Eastern or North African, 19 identified as Hispanic or Latino, 2 identified as Other, and 51 identified as Mixed-race. Previous "rule of thumb" articles suggest samples of more than 300 an adequate sample size for factor analysis (Kyriazos, 2018).

5.2.2 Procedure and Materials

The procedure of Study 1B followed closely to Study 1A. Participants were given a survey administered via Qualtrics to complete with various scales.

Social Exploration Questionnaire. Social exploration and exploitation were assessed with the newly developed SEQ. The reliability of the SEQ on the social explore and social exploit dimensions were both adequate (α = 0.826, 0.725, respectively).

Social maximizing. Social maximizing was measured with the 16-item maximization in friendship selection scale from Newman et al. (2018), which was adapted from the Relational Maximization Scale (Mikkelson & Pauley, 2013). Items such as "I don't want to settle for friendships that are "good enough" were given on a 7-point scale (1 = complete disagree; 7 = completely agree, α = 0.87).

Satisficing. Satisficing was measured using the 10-item Satisficing subscale of the Maximization Inventory (Turner et al., 2012). Items were given on a 7-point subscale (1 = strongly disagree, 7 = strongly agree) with items such as "I can't possibly know everything before making a decision", α = 0.87.

Big-Five personality traits. The Big-Five Personality items were assessed using the 60-item BFI-2 (Soto & John, 2017). Reliability was acceptable for all 5 traits (extraversion: α = 0.76; agreeableness: α = 0.75; conscientiousness: α = 0.85; neuroticism: α = 0.88; openness: α = 0.84).

Social interaction anxiety. Social interaction anxiety was assessed using the 19-item questionnaire (Mattick & Clarke, 1998) with items such as "When mixing socially, I am uncomfortable" measured on a 5-point scale (1 = not at all characteristic of me, 5 = extremely characteristic or true of me). Reliability was acceptable ($\alpha = 0.92$).

Curiosity. Curiosity was measured with two scales: the 25-item Five-dimensional Curiosity Scale (Kashdan et al., 2020) on a 7-point scale (1 = Does not describe me at all, 7 = Completely describes me), with the five dimensions being joyous exploration, deprivation sensitivity, stress tolerance, social curiosity, and thrill seeking. Reliability was acceptable for all five dimensions (0.86, 0.84, 0.86, 0.87, 0.87, respectively). I also measured social curiosity specifically with the 10-item Social Curiosity Scale (Renner, 2006) on a 4-point scale (1 = strongly disagree, 4 = strongly agree) with items such as "I find it fascinating to get to know new people". Reliability was acceptable ($\alpha = 0.79$).

General Exploration Tendency. General exploration tendency was measured with a 18-item Exploration Scale (Green & Campbell, 2000b) on an 8-point scale (1 = does not describe me at all, 8 = very much describes me), with 12 nonsocial exploration items such as "I would like to take a class that is unrelated to my major just because it interests me" and 6 social exploration items such as "I would enjoy being introduced to new people". Reliability was acceptable ($\alpha = 0.87$).

5.3 Results

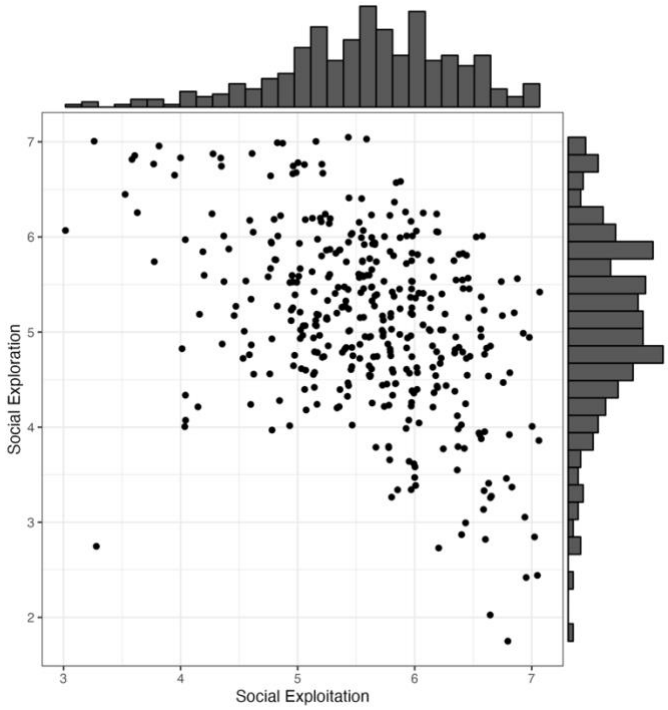
5.3.1 Confirmatory Factor Analysis

I used confirmatory factor analysis (CFA) to test the measurement and structural model of the two-factor solution suggested by the exploratory factor analysis in Study 1A to determine how well the measured variables represent the factors and the correlation structure among the

factors. I used the 'lavaan' package in R (Rosseel, 2012) to determine whether the two-factor model of the SEQ fit the new data adequately. I assessed model fit using the robust relative chi-square, the comparative fit index (CFI), the Tucker-Lewis index (TLI; for both, >0.90 is acceptable, > 0.95 is excellent; Boateng et al., 2018), the standardized root mean square residual (SRMR), and the root mean square error of approximation (RMSEA). Values of RMSEA and SRMR less than 0.08 reflect models with acceptable fit (Hu & Bentler, 1999). The model fit was $\chi^2 = 107.84$, $p < 0.001$; TLI = 0.924; CFI = 0.941, RMSEA = 0.068 (90% CI: [0.053, 0.082]); SRMR = 0.061, suggesting that the model fit the data adequately. Overall, the mean score of exploration was 5.11 out of 7 (SD = 0.936), while the mean score of exploitation was 5.585 out of 7 (SD = 0.747), suggesting that people might exploit more. Social exploration and social exploitation were correlated at r = -0.43 ($p < .001$), suggesting that while they are negatively associated, they are not identical.

Figure 2.

Scatterplot with marginal histograms of the Social Exploration Questionnaire



5.3.2 Correlation with other variables

The pattern of correlations of the social exploration and social exploitation variables in Study 1B followed closely to Study 1A. Again, I found that social exploration was positively correlated with extraversion $r(382) = 0.51$, $p < .01$, openness, $r(382) = 0.25$, $p < .01$, agreeableness, $r(382) = 0.53$, $p < .01$, and conscientiousness, $r(382) = 0.20$, $p < .01$. It was also positively correlated with social curiosity, $r(382) = 0.32$, $p < .01$ and general exploration, $r(382) = 0.42$, $p < .01$. It was negatively correlated with neuroticism, $r(382) = -0.16$, $p < .01$ and social interaction anxiety, $r(382) = -0.45$, $p < .01$.

I found that social exploitation was negatively correlated with extraversion, $r(382) = -0.34$, $p < .01$, social curiosity, $r(382) = -0.14$, $p < .01$, and overall exploration, $r(382) = -0.30$, $p < .01$, replicating results from Study 1A. In Study 1B, I found that it was also slightly negatively corelated with agreeableness, $r(382) = -0.10$, $p < .05$. It was positively correlated with neuroticism, $r(382) = 0.22$, $p < .01$, and social interaction anxiety, $r(382) = 0.40$, $p < .01$. It was not correlated with relationship maximization, openness, or conscientiousness.

5.4 Discussion

From the results of the CFA, I can conclude that the SEQ scale has decent reliability and fit with two factors (H1). Also, the correlations from Study 1B had similar patterns to those in Study 1A, showing that our constructs once again had decent convergent and divergent validity (H2). One limitation of the first two studies is that they both used college participants. College students' social lives may look different than the rest of the adult population. For example, college students typically have more structured opportunities to meet people (dorms, classes, extracurricular activities) than working adults do. Also, they might have different motivations to

meet others (e.g., job networking). Next, I plan to examine how the scale relates to behavioral outcomes in daily life.

6. Study 2: Behavioral comparison of the SEQ

6.1 Aims & Hypotheses

In Studies 1A and 1B, I aimed to develop and validate the SEQ scale and examine how it relates to existing individual difference and predicts psychological outcomes. Many of the measures previously employed were focused on the individual's attitudes and preferences. The aim of Study 2 was to measure how the SEQ relates to people's existing social network structure and behavior in terms of how much they interact with friends and acquaintances in their daily lives.

6.2 Method

The entire study was completed across two waves: the first in September 2023, and the second in November 2023. In each wave, participants completed a 2-week ecological momentary assessment and passive location tracking component, followed by a short survey. We administered the Social Exploration Questionnaire in only Wave 2 (everything else remained the same between waves). Therefore, I analyzed the results of the second wave only and will report the participants, procedure, and results from the second wave.

6.2.1 Participants

A total of 319 participants (M_{age} = 18.64, SD_{age} = 1.54) completed survey component of the second wave, which contained demographic questions. Some participants (n = 165) signed up from advertisements around campus where they could receive payment. Other participants (n = 153) signed up from the psychology department's participant pool and received partial course credit for completing the study. We recruited freshmen only. Of the participants, 94 identified as

men, 217 identified as woman, 3 identified as non-binary, and 5 identified as other, 137 identified as White or Caucasian, 108 identified as Asian, 21 identified as Black or African American, 4 identified as Middle Eastern, 12 identified as Hispanic or Latino, 35 identified as multi-racial, and 2 identified as other.

Participants were instructed to download the Metricwire app through which they would complete three brief surveys a day and have their location tracked. Three hundred and fifty-four participants completed a portion of the behavioral tracking component of the second wave (all or less than 100%). For analysis of the behavioral tracking component, I only included participants that completed more than 25% and completed the survey (n = 307).

6.2.2 Procedure

The entire study was completed across a few weeks in the fall semester of 2023. In each wave, there was a two-week behavioral tracking component followed by a 15-minute online survey component. All measures are reported here, but not all measures are used in the main analyses.

The two-week daily tracking data collection consisted of two major components: ecological momentary assessment questions and location tracking, both collected using the Metricwire app.

Ecological momentary assessment. For the ecological momentary assessment component, participants received a brief survey three times a day for 14 days for each of the two behavioral tracking waves. These surveys were sent out at random times between the hours of 9:00 am and 10:00 pm, with a minimum of 1.5 hours between surveys. In each survey, we asked participants what they were currently doing (relaxing/leisure, studying, in transit, eating, class, exercising, socializing, work/volunteer/club activity, other), how typical the activity was (1 =

extremely not typical, 7 = extremely typical), and how interesting the activity was (1 = not interesting, 5 = very interesting). We then asked if they were with anyone (I'm by myself, I'm with one friend, I'm with friends, I'm with peers/acquaintances, I'm with family, and I'm near people but not interacting with them). If they responded that they were with friends or acquaintances, we asked how close they felt to the people they were with (1 = not close at all, 5 = very close).

Location tracking. For the location tracking component, the Metricwire app passively monitored participants' real-time locations. For the scope of this dissertation, I will not be analyzing the location tracking because this project is focused on social exploration and not physical exploration.

Self-report survey. After the two weeks of daily tracking, all participants were sent a follow-up survey to complete online via Qualtrics. This consisted of self-report questionnaire and demographic questions.

Social network characterization. First, we asked about participants' social networks. We gave the instructions, "Consider the people with whom you like to spend your free time. Who are the people you have been with most often for informal social activities, such as going out to lunch, dinner, drinks, films, visiting one another's homes, exercising together, and so on?" We used this prompt adapted from Burt We then asked participants to list each of their friends and how close they were to their friend (1 = not at all close, 100 = extremely close), and the gender and race/ethnicity of their friend. Next, we asked which of their friends know their other friends, to get a sense of the social network of their friends. Participants listed 7.66 friends on average (*SD* = 4.2) and had an average closeness score of 72.29 out of 100 (*SD* = 15.69).

I calculated *network size* by counting how many people they nominated as friends. I calculated *network density* by counting how many of their friends know each other and dividing by the total number of possible ties. I calculated *average closeness* by summing all of the scores of the question of how close they are to their friends and dividing by the number of friends. I calculated *social capital* by taking the sum product of closeness scores and number of friends listed.

***Social Exploration Questionnaire*.** Participants answered the original 32 items developed for Study 1A. We calculated their social exploration and social exploitation factor scores based on the 11 items included in the final version of the scale. Reliabilities for the scales were acceptable (social exploration: $\alpha = 0.73$, social exploitation: $\alpha = 0.74$).

Other Individual Difference Measures. We then assessed how happy, meaningful, and psychologically rich they felt their life was with the 15-item Good Life Scale (Oishi & Westgate, 2022). We assessed primal world beliefs with the 18-item Primal Brief Inventory (Clifton & Yaden, 2021).

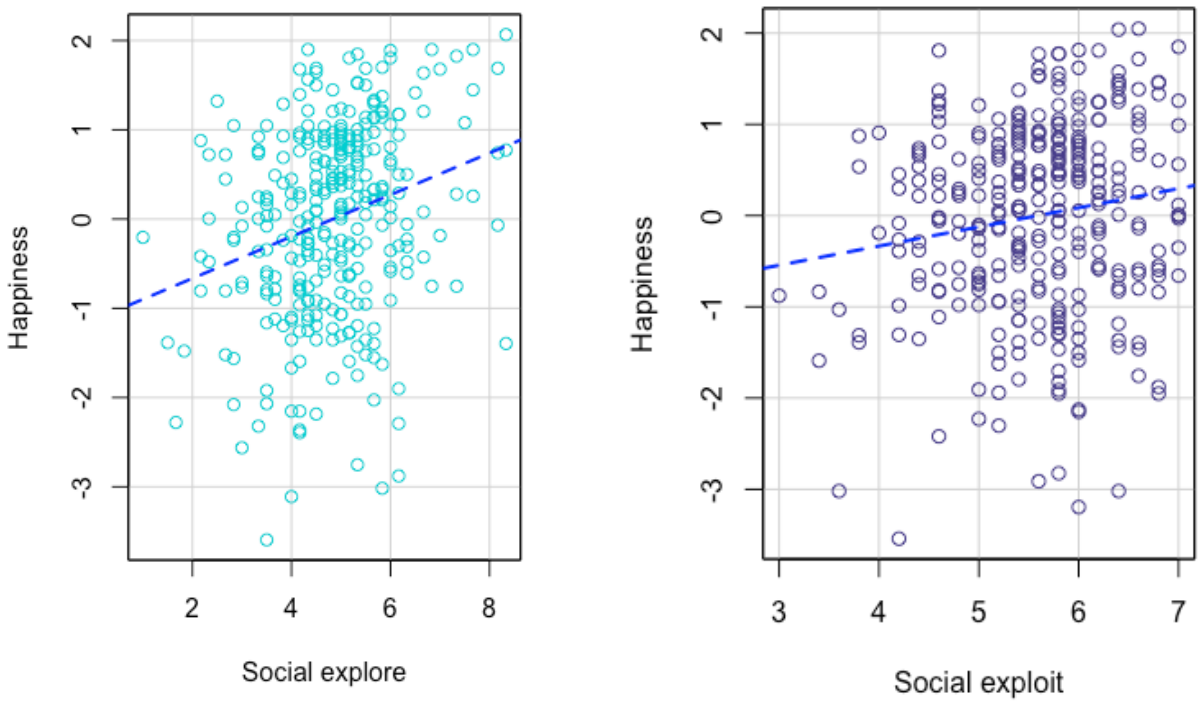
6.3 Results

6.3.1 Regressions Using Social Exploration and Social Exploitation to Predict Well-being

To analyze how social exploration and social exploitation predicted well-being, I regressed three outcome measures on the social exploration and social exploitation factors: how happy, meaningful, and psychologically rich people felt their lives were. I found that both social exploration and social exploitation predicted more happiness, more meaningfulness, and more richness, even when controlling for the other factor (see Table 5 for regression analyses, Figure 2 for graph). This is not surprising, since we know that social relationships in general are beneficial for well-being.

Figure 3

Graph of social exploration and exploitation both predicting happiness.



Note. Graph shows partial residuals of each variable on the x-axis for visual clarity.

6.3.2 Relationships between SEQ and Social Networks

I then ran regressions with the network variables as outcome measures and social exploration and social exploitation as predictor variables (see Table 6 for regression analyses). I found that for network size, more social exploration ($b = 0.68$, $SE = 0.20$, $t = 3.41$, $p < .001$), but not more social exploitation ($b = 0.21$, $SE = 0.31$, $t = 0.68$, $p > .05$), predicted a larger network. This is in line with my hypothesis that people who socially explore more will make more connections and have larger networks. For network density, I found that more social exploitation ($b = -0.05$, $SE = 0.02$, $t = -2.53$, $p = .012$) is associated with *less* network density. Social exploration had no association with density ($b = -0.02$, $SE = 0.013$, $t = -1.43$, $p > .05$). This is puzzling, since I expected that social explorers would be in more brokerage positions and social exploiters would have smaller and denser networks. Next, I found that both more social

exploration (b = 3.02, SE = 0.76, t = 4.0, p = <.001) and more social exploitation (b = 2.6, SE = 1.17, t = 2.23, p = .027) positively predicted average closeness. Although I predicted that more social exploitation would be associated with average closeness, since exploiting implies deepening connections, I did not predict that social exploration would also be associated with average closeness. Lastly, I found that more social exploration (b = 57.26, SE = 15.23, t = 3.73, p < .001), but not more social exploitation, positively predicted social capital. Again, this is in line with my hypothesis that people who explore more will know more people and have more friendship ties.

6.3.2 SEQ and Daily Behaviors

For the daily behavior component, I examined the following dependent variables: the likelihood of being with friends or acquaintances, how close people felt to their friends and acquaintances in the moments they were with them, how interesting they found their current activity to be when they reported to be socializing, and how typical what they were currently doing was when they reported to be socializing (as a potential proxy for exploration). I fit mixed-effect models to account for repeated measures. I included by-participant random effects. Models were fit using the *lme4* library in R (Bates et al., 2015) and degrees of freedom and p-values were estimated using Satterthwaite's methods with the *lmerTest* library (Kuznetsova et al., 2017). For the dependent variable of likelihood of being with friends or acquaintances, I fitted generalized linear mixed-effect models with logistic regression, since the outcome is a binary variable. I first included nested random intercepts for dates within individuals which allowed for variability at the date level within each individual, but that resulted in model convergence issues. Simplifying the model by only random intercepts for each participant and day resolved the convergence issues in the generalized linear mixed effect model. For the linear mixed effect

models, the random intercepts of day did not significantly improve model fit, so only the random intercepts for participants were retained.

I found that social exploration (OR = 1.13, SE = 0.05, t = 2.64, p = .008) was associated with a greater likelihood of self-reporting "socializing" when asked which activity they were currently doing, but social exploitation was not associated with likelihood of socializing. I found that both social exploration (OR = 1.24, SE = 0.05, t = 5.29, p < .001), and social exploitation (OR = 1.24, SE = 0.08, t = 3.41, p = .001), were associated with a greater likelihood of being with friends. Interestingly, both social exploration (OR = 0.91, SE = 0.04, t = -1.96, p = .050) and social exploitation (b = 0.80, SE = 0.06, t = -3.09, p = .002) were associated with a less likely chance of being with acquaintances, but social exploitation was more negatively strongly associated.

I next found that higher scores on social exploitation were associated with feeling closer to friends in the moment (b = 0.12, SE = 0.04, t = 3.40, p < .001), while social exploration did not predict momentary friendship closeness (b = 0.04, SE = 0.02, t = 1.61, p > .05). Also interestingly, higher scores on social exploration were *positively* associated with feeling closer to acquaintances (b = 0.08, SE = 0.04, t = 2.23, p = .026), while higher scores on social exploitation were *negatively* associated with feeling closer to acquaintances (b = -0.12, SE = 0.54, t = -2.17, p = .031).

Regarding interest in current activity, I first looked at the subset of data for when participants choose "socializing" for the question of "what are you currently doing?". I found that higher scores on social exploration (b = 0.10, SE = 0.03, t = 3.88, p < .001) and social exploitation (b = 0.12, SE = 0.04, t = 3.02, p = .003) were associated with being interested in socializing. Regarding activity typicality, I found that higher scores on social exploration were

associated with more perceived activity typicality when participants were socializing (b = 0.171, SE = 0.076, t = 2.26, p = 0.025), but social exploitation did not have a significant effect.

6.4 Discussion

In Study 2, I investigated how the SEQ relates to psychological outcomes and behavioral data such as existing network structure and daily social interactions. I found that both higher social exploration and social exploitation are positively associated with more happiness, more meaningfulness, and more richness, supporting H3. These results are not surprising, considering that a wide array of social relationships and actions are known to be beneficial for well-being. Meeting strangers can be new and interesting and increase belonging (Sandstrom & Dunn, 2014a), but so can having close relationships (Pietromonaco & Collins, 2017). Next, the results showed that people higher on exploration have larger networks (while social exploration had no relationships with network size), which is in line with my hypothesis that meeting new people will result in more connections. Interestingly, social exploiters have less network density, which was against my hypothesis that people who frequently exploit would have denser, deeper networks, so H4 was partially supported. One possible reason for our results is that exploitation might capture more of what an individual does with their existing network but may not describe how they build up the network in the first place. It is also possible that people high in social exploitation prefer deepening ties with existing friends in intimate contexts that are less conducive to bridging a dense network of ties between one's friends.

For the daily behaviors, I found that both social exploration and social exploitation were positively associated with likelihood of being with friends and negatively associated with being with acquaintances, which was puzzling (H5 not supported). I expected that social exploration would be positively associated with being with acquaintances. However, social exploitation was

more strongly negatively associated, which provides some evidence to suggest that exploiters are engaging less with weak ties. Also, social explorers reported feeling closer to the friends that they are currently with (H6 partially supported). Interestingly, social exploration was positively associated with feeling closer to acquaintances that one was currently with, while social exploitation was negatively associated. One possible reason could be that explorers feel more positively towards weaker ties than exploiters do, or that explorers sought out interacting with weaker ties, while social exploiters did not actively seek to interact with them.

7. Study 3: Extension of SEQ to a generalized sample

7.1 Aims & Hypotheses

Study 3 aimed to investigate other potential predictors of social exploration and exploitation, examine well-being outcomes, and investigate whether the SEQ results replicate in a generalized sample. While Study 1A and 1B showed that the SEQ had good reliability and differed from existing traits, the samples were both from college students at a large public school. Therefore, I used a nationally representative sample to replicate existing results and examine the SEQ's association with various social well-being measures. This study was pre-registered.

7.2 Method

7.2.1 Participants

I recruited 393 participants on CloudResearch Connect, restricting participants to be located in the United States. I excluded 49 for failing one of our two attention checks. The final sample consisted of 344 individuals (M_{age} = 40.22, SD_{age} = 11.56). Of the sample, 49.71% identified as female, 50.29% identified as male; 243 identified as White, 42 identified as Black

or African American, 20 identified as Asian, 1 identified as Middle Eastern or North African, 18 identified as Hispanic or Latino, 1 identified as Other, and 19 identified as Mixed-race.

7.2.2. Procedure and Materials

The survey was administered online via CloudResearch Connect. After consenting, participants completed a series of psychological individual trait scales and well-being outcome measures. At the end, they were asked demographic questions.

Social exploration questionnaire. Preference for social exploration and exploitation were assessed with the 11-item SEQ. Reliability was acceptable (explore α= 0.91, exploit α = 0.85).

Social life satisfaction. Social life satisfaction was assessed with the 5-item Satisfaction with Life Scale (Diener et al., 1985) by modifying the items to say "social life" instead of "life", e.g., "In most ways my social life is close to my ideal", as has been done in previous studies to measure social life satisfaction (Dang, 2020). Reliability was acceptable (α = 0.97).

Big-five personality questionnaire. Big-5 personality traits were assessed with the Ten Item Personality Inventory (Gosling et al., 2003). I used the shorter version to reduce participant fatigue. The reliability of the scale was not very high for this sample: (extraversion: Spearman-Brown (SB) = 0.61; agreeableness: SB = 0.45; conscientiousness: SB = 0.56; neuroticism: SB = 0.70 openness: SB = 0.35), but that is consistent with other research and notes from the authors.

State social connection. I assessed how connected people felt to others with the Social Connection Scale (Lok & Dunn, 2023), a 10-item measure of social connection with items such as "I feel accepted by others" measured on a 7-point scale (1 = strongly disagree, 7 = strongly agree). Reliability was acceptable (α = 0.96).

Loneliness. Loneliness was assessed with the 20-item UCLA Loneliness Scale (Russell, 1996) with items such as "How often do you feel that you lack companionship" asked on a Likert Scale from 1 = never to 4 = always. Reliability was acceptable ($\alpha = 0.96$).

Workplace status. Workplace status was assessed with the 5-item workplace status scale (Djurdjevic et al., 2017) with items such as "I have a position of prestige in my organization." Reliability was acceptable ($\alpha = 0.97$).

Social network questionnaire. I asked about participants' social networks by asking them to report all of the people they were friends with. In the instructions, I said "Take a moment and think about who you would consider a friend within your daily life. We define a friend as someone you discuss important matters with or spend your free time with." I then asked participants to write the first name and last initial of up to 15 people that they would consider a friend. After reporting all their friends, participants answered which of their friends were friends with each other, such that all dyadic relationships were assessed.

7.3 Results

7.3.1 Scale Reliability of the Social Exploration Questionnaire

A factor analysis of the 11-item scale once again revealed a two-factor solution, with the first 6-items loading onto one factor (social explore) and the later 5-items loading onto the second factor (social exploit), consistent with previous studies. Cronbach's alpha for social explore ($\alpha = 0.91$) and social exploit ($\alpha = 0.85$) were both acceptable.

7.3.2 Convergent validity & correlation with existing variables

To assess convergent validity, a measure should be related to theoretically similar constructs (Campbell & Fiske, 1959). Therefore, we believe that our social exploration construct should be related to, but distinct from, extraversion. Examining bivariate correlations, I found

that social exploration was positively correlated with extraversion, $r(342) = 0.61$, $p < .01$, agreeableness, $r(342) = 0.30$, $p < .01$, openness $r(342) = 0.37$, $p < .01$, conscientiousness, $r(342) = 0.18$, $p < .01$, and negatively correlated with neuroticism, $r(342) = -0.36$, $p < .01$. This replicated results that we found in Study 1A and 1B.

I found that social exploitation was negatively correlated with extraversion, $r(342) = -0.33$, $p < .01$ and openness, $r(342) = -0.16$, $p < .01$, and positively correlated with neuroticism, $r(342) = 0.12$, $p < .01$. It was not correlated with agreeableness or conscientiousness, replicating some of the results in the previous studies which found negative correlations with extraversion and positive correlation with neuroticism.

7.3.3 Discriminant validity

I found a high correlation between the social exploration factor and extraversion. To assess whether the factors were meaningfully distinct, I conducted discriminant validity tests in various ways. I modeled one- and two-factor measurement models with social exploration and extraversion as one factor or two factors to conduct a chi-square difference test. I found that the two-factor model (i.e., where social exploration and extraversion were modeled as two separate factors) was preferable to the one-factor model (i.e., when social exploration and extraversion were modeled as one omnibus factor).

I also assessed discriminant validity by examining the Heterotrait-Monotrait (HTMT) ratio (Hair Jr et al., 2016). To do so, I computed the HTMT values for each pair of latent constructs in the model by comparing the average correlation between the two indicators (heterotrait, i.e., social explore and extraversion) with the correlations between indicators of the same construct (monotrait). According to the criteria proposed by Henseler et al. (2015), HTMT values below 0.85, a conservative benchmark, indicate adequate discriminant validity (Voorhees

et al., 2016). I found that the HTMT values of social exploration compared to extraversion was below this threshold (HTMT value = 0.69), demonstrating that the two constructs are distinct from each other.

7.3.4 Predicting Outcome Measures

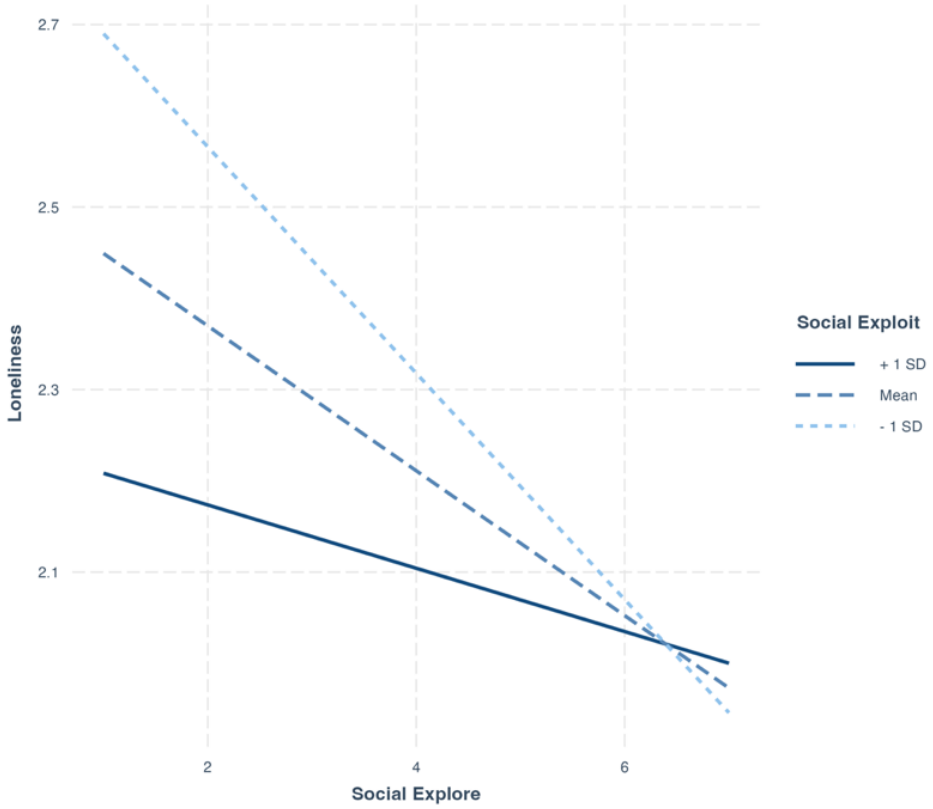
I next conducted a multiple regression analysis to examine the relationship between social exploration, social exploitation, and their interaction in predicting loneliness (Table 10). I found that social exploration negatively predicted loneliness, b = -0.33, SE = 0.10, $t(315) = -3.15$, p = .002, suggesting that individuals who report higher tendencies to explore reported lower levels of loneliness. Similarly, social exploitation also negatively predicted loneliness, b = -0.28, SE = 0.09, $t(315) = -3.08$, p = .002, indicating that individuals who report higher tendencies to exploit also experienced lower loneliness.

I found that the interaction between explore and exploit was significant, b = -0.04, SE = 0.02, $t(315) = 2.58$, p = .010, suggesting that the loneliness-reducing effects of exploration and exploitation were weaker when both were high (Figure 3). While both strategies individually contributed to lower loneliness, engaging in high levels of both simultaneously diminished their protective effects. In other words, being high on either exploring or exploiting effectively reduces loneliness, and having high amounts of both does not necessarily add an additional boost. These findings suggest that a balance between socially exploring and exploiting may be optimal for reducing loneliness, as excessively engaging in both strategies simultaneously may not provide additional benefits.

Regarding state social connectedness, I found that social exploration positively predicted feeling connected to others, b = 0.47, SE = 0.22, $t(315) = -2.20$, p = .03, and social exploitation did not have a significant effect.

Figure 4.

Plot of the interaction between social exploration and social exploitation predicting loneliness.



7.3.5 Social network analysis

In Study 3, I again examined how individual differences in exploration and exploitation tendencies related to network properties. I found that social exploration positively predicted network size (M = 5.83, SD = 4.66), b = 0.98, SE = 0.19, t = 5.21, p <.001. Social exploitation also positively predicted network size, but the effect is smaller and just under the threshold for significance, b = 0.52, SE = 0.26, t = 1.98, p = .049. I did not find that social exploration or exploitation had any association with network density.

Next, I was interested in how social network characteristics affected social life satisfaction. I regressed social life satisfaction on the number of friends that one has (network

size) and how interconnected those friends are (network density). I found that network size positively predicted social life satisfaction, b = 0.05, *SE* = 0.02, *t*(287) = 2.32, p = .021, as did network density b = 0.70, *SE* = 0.25, *t*(287) = 2.85, p = .005, controlling for Big-5 personality traits and demographics. This suggested that although self-reported tendencies to socially explore or exploit did not relate to certain network properties (density), having more friends, as well as having friends that are interconnected, seem to be good for having satisfying social lives. I found a similar pattern of results for loneliness, with network size (b = -0.01, SE = 0.01, t(273) = -2.01, p = .046) and network density (b = -0.24, SE = 0.08, t(273) = -3.18, p = .002) both negatively predicting loneliness. Lastly, I examined whether there were interactions between network properties (network size and network density) and social exploration and exploitation, to determine if there was a situation-person predicting life satisfaction, but did not find any significant interactions.

7.4 Discussion

In Study 3, I found robust evidence of the reliability of the SEQ in a generalized American sample. I found that social exploration positively correlated with extraversion and agreeableness, as well as openness and conscientiousness, and negatively correlated with neuroticism, while social exploitation negatively correlated with extraversion and openness and positively correlated with neuroticism. I found that higher scores on both social exploration and exploitation predict less loneliness and greater social life satisfaction.

8. General Discussion

Across four studies, I developed a self-report measure of the preferences individuals have to socially explore, defined a seeking out new social connections, and socially exploit, defined as

deepening existing social connections. I examined how social exploration and exploitation are related to existing personality constructs, social network structures, and well-being measures.

First, I found that the Social Exploration Questionnaire best fits as a two-factor model over a one-factor model, indicating that the two constructs represent distinct but related dimensions. The two factors were moderately negatively correlated, suggesting that while the constructs are conceptually separate, individuals who score highly on one tend to score lower on the other. This pattern may imply that it is difficult to simultaneously endorse both at high levels, and may indicate underlying constraints that make it challenging for individuals to maintain high levels of both simultaneously. This is in line with my theory that suggests that time and energy constraints make it difficult to maximally both explore and exploit. It also aligns with existing theory suggesting that in single instances, one can categorize behavior as either exploratory or exploitative (Mehlhorn et al., 2015).

Social exploration was positively correlated with extraversion, which was expected, since extraversion describes individuals that are outgoing, sociable, and energized by social interactions. Extroversion describes a constellation of behaviors, affective tendencies, and motivations, while social exploration more narrowly describes socializing preferences. I demonstrated sufficient divergent validity to conclude that they are separable traits. Social exploration was also positively correlated with extraversion, openness, agreeableness, and general exploration. Social exploitation was negatively correlated with extraversion and positively correlated with neuroticism and social anxiety. This may suggest that people may socially exploit for different reasons. One reason may be that people who prefer exploiting may intentionally prefer to deepen their existing network if they prioritize the benefits that existing ties bring, such as greater emotional support (Carstensen, 1992). Another reason may be that

people who exploit are more socially anxious and find meeting new people intimidating and daunting. People are reluctant to talk to strangers (Epley & Schroeder, 2014) due to concerns such as underestimating how positively others may respond or anticipating a broader range of negative outcomes (Epley et al., 2022). Therefore, social exploration and exploitation may map onto approach and avoidance motivation, respectively. Indeed, past research has found that approach temperament was positively related to extraversion and avoidance motivation was related to avoidance temperament (Elliot & Thrash, 2002). In the existing research on approach-avoidance motivation in the social domain, researchers have focused on goals of hoping to affiliate versus fear of rejection (Elliot et al., 2006). Perhaps individuals high in social exploration have more affiliation goals versus those high in exploitation do so out of a fear of meeting new people. Future research can examine the origins of the underlying motivations behind why people may explore or exploit.

Regarding social network structure, I found that higher scores on social exploration were related to reporting having more friends. This is consistent with our hypothesis, and social exploration is, by definition, a tendency to focus on making new friends. Another possible explanation is that social explorers have a looser definition of what a "friend" is. Although we tried to constrain the nominations by adding a definition for participants, the concept of a friend is a very ambiguous term (Fischer, 1982), and previous studies found that people label others as "friends" in a highly unsystematic way. Future work should attempt to disentangle these two explanations.

I did not find evidence to support our hypothesis that social exploitation would be associated with network density. Density was intended as a proxy for network constraint (the inverse of network brokerage), which can only be estimated from a sociocentric network in

which all members of a community report their ties. It is possible that low density did not capture a person's role as a network broker. Future work should recruit individuals from the same social network and examine the exploration and exploitation of the individuals in the closed network (Wood et al., 2023).

I also examined if person-situation fit between one's individual explore or exploit preference and their social network structure predicted well-being. Zou et al., (2015) found that participants with high prevention effectiveness reported higher life satisfaction when they were embedded in a high-density network, whereas participants with low promotion effectiveness reported lower life satisfaction when they were embedded in a low-density network, suggesting that fit between one's regulatory focus orientation and network structure predicted life satisfaction. I did not find that situation-person fit between individual preferences to explore or exploit and network structure predicted social life satisfaction, but perhaps again it is due to the subjectivity of the nomination of friends. In Zou et al.'s study, they collected data from a cohort of MBA students and allowed each participant to list up to 24 contacts whom they deemed "most important for their professional success," while my study focused on friendships for the purpose of emotional support.

- In terms of behavior, I found that both social exploration and exploitation were positively associated with an increased likelihood of being with friends and negatively associated with being with acquaintances. However, social exploitation was *more* strongly negatively associated. Social exploration was positively associated with feeling closer to acquaintances that one was currently with, while social exploitation was negatively associated. This finding suggests that exploration and exploitation preferences diverge less in predicting overall

tendencies to socialize and instead diverge in predicting the subjective experience of socializing, especially with acquaintances.

I found that the pattern of results between social exploration and social exploitation were similar that many times the two variables predicted outcome variables (e.g., loneliness) in the same direction. This is intriguing given exploration and exploitation are negatively correlated with each other. This may reflect a general positive effect of socialization in general. A host of literature has documented the positive effect of socializing and having good relationships on well-being, (Cacioppo & Patrick, 2008; Gable, 2018; Gable & Bromberg, 2018; Lyubomirsky & Layous, 2013), so perhaps any social interactions, regardless of the source, brings boosts in well-being and decreasing loneliness.

8.1 Constraints on Generalizability

There are several limitations of the current studies that constraint the generalizability of the findings. One limitation is the geographic and cultural homogeneity of the sample populations, which have all been drawn from participants residing in, and presumably embedded in, American settings. Friendship dynamics, social motivations, and their relationship to life satisfaction are deeply embedded within cultural contexts, and thus, findings from American samples may not translate to other cultural settings. U.S. friendships are distinct from those in other countries in some ways. For example, U.S. students rate their friendships as more intense and intimate than Polish peers (Rybak & and McAndrew, 2006) and display more contact and self-disclosure than students from collectivist cultures (Baumgarte et al., 2013). Also, Adams and Plaut (2003) found that North Americans tend to emphasize emotional support in friendships more than West Africans, who placed greater emphasis on instrumental support.

The association between social exploration tendencies and life satisfaction may also be shaped by cultural context. For example, a cross-national study examining the association between extraversion and life satisfaction across Canada, the United States, the United Kingdom, Germany, and Japan revealed that extraversion was a unique and robust predictor of life satisfaction in North American student and nationally representative samples. However, this association was significantly weaker—or even absent—in the non-North American samples (H. Kim et al., 2018). In societies where social relationships are more heavily influenced by predefined roles and cultural norms, extraversion may play a less central role in determining well-being. In such settings, individuals with more introverted tendencies may experience equally fulfilling social relationships. Conversely, in individualistic, high-mobility cultures with relatively loose social ties—such as those in the U.S.—social success often hinges on the ability to form new relationships (McCrae & Costa Jr., 1997; Oishi & Schimmack, 2010). In these environments, being outgoing, sociable, and equipped with strong social skills becomes more socially desirable, and individuals inclined toward social exploration may experience greater life satisfaction.

Importantly, the constraints on generalizability may not only be cultural but also temporal. Even within individualistic or American contexts, patterns of social connection and community engagement have been undergoing significant changes. Putnam (2000) documented a marked decline in civic participation, organizational membership, and family interactions in recent decades. McPherson et al. (2006) found that American's core discussion networks have shrunk, with more individuals reporting having no confidants over the past few decades. These shifts suggest that the nature of social engagement is evolving, and findings based on current or past social structures may not hold constant over time.

8.2 Other Future Directions

Beyond the open questions about generality, this study raises several questions about the origin and underlying mechanisms that contribute to desire to explore or exploit. As previously discussed, one possible origin of tendencies to socially explore or exploit are culturally based values. According to the culture-fit theory (Diener, 2012), people have greater satisfaction if their values align with the broader culture's. In individualistic societies, extraversion and seeking out relationships are valued more, and therefore people may desire exploration if they perceived that society values those that explore.

A more individual-focused origin may be infant or childhood experiences, leading to different types of attachment styles. Insecure attachment has been shown to be negatively correlated with exploration in physical, social, and intellectual domains; conversely, secure attachment promotes greater openness to exploration (Green & Campbell, 2000a). Therefore, infant attachment style may be a potential origin of social exploration tendencies. However, more research is needed to draw conclusions about if secure attachment would necessarily lead to greater social exploration, which is generally riskier. Another study on consumer behavior found that insecurely attached consumers are more risk-taking in consumption situations (Li et al., 2019).

Another area of open exploration is how contextual factors affect tendencies to socially explore or exploit. In some situations, such as when an individual is new to an environment, they must explore (because there is not enough information to exploit), regardless of their individual traits. However, when the time remaining decreases, the benefits of exploration decrease because there are fewer opportunities to take advantage of the information gained through exploration. According to the socioemotional selectivity theory (Carstensen, 1992), younger adults explore

more social relationships and have broader social networks, hoping these connections can have some payoff in the future, while older adults focus on psychological and emotional well-being goals, leading them to surround themselves more with close others. The same effect is observed for people whose time in a particular environment is nearing its end (such as college seniors). Therefore, the context surrounding the individual may impact state-level desire to socially explore or exploit. Studies using experimental methods that manipulate time horizons may help answer some of these questions.

One of the goals of this research is to help inform interventions to guide people into meaningful and intentional search strategies so that they can have more satisfying social connections. Many loneliness interventions have been conducted over the years for both youth and adults (Eccles & Qualter, 2021). A recent meta-analysis found that loneliness interventions primarily center on four primary approaches: improving social skills, enhancing social support, increasing opportunities for social contact, and addressing maladaptive social cognition (Masi et al., 2011), and concluded that interventions targeting maladaptive social cognition, or modifying negative thoughts and perceptions about oneself and others in social contexts, were particularly effective. This suggests that changing attitudes or cognition about exploring or exploiting could potentially be an effective strategy for changing behaviors. Additionally, making people more aware of what their ideal preferences are may also make people more intentional about whom they choose to socialize with. Research has found that increasing self-awareness can help individuals identify their personal preferences and behave more consistently with them in the consumption domain (Goukens et al., 2009), although other research has also found that too much introspection and analyzing reasons can reduce the quality of preferences (Wilson & Schooler, 1991).

9. Concluding Remarks

Loneliness is a pervasive issue in American society, and previous research has focused on single actions that one could take that may alleviate momentary loneliness. By framing social connection choices within the explore-exploit decision-making paradigm, this research offers a broader, more dynamic understanding of how people navigate their social worlds. Rather than viewing loneliness as a static problem solved by isolated actions, this approach highlights the ongoing, strategic decisions individuals make, and how these choices can either deepen or alleviate feelings of loneliness over time. Additionally, this research may inform interventions on the individual- and community-level, of guiding individuals to seek certain types of relationships, and also inform policy or choice architects about how to design structures and environments that easy facilitate social interactions. We hope that this research can be used as a building block to help people have more meaningful and beneficial social relationships.

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Tables & Appendices

Table 1. Original 32 items for Social Exploration Questionnaire and reasons removed

#	Item	Reason for removing
1	**I like making new friends**	
2	**I seek out opportunities to meet new people**	
3	**I am always on the lookout for new friends**	
4	I try new activities in order to make new friends	Low factor loading
5	**I think meeting new people is exciting and interesting**	
6	I view friends of friends/acquaintances as potential opportunities to expand my social network	Low communality (< 0.4)
7	I think I get "bored" of the same people	Low communality (< 0.4)
8	I can easily start a conversation with strangers	High redundancy with 12
9	I find myself connecting with people of different backgrounds and cultures	Low communality (< 0.4)
10	**I don't like constantly being with the same group of people**	
11	**I would rather like to know people from different social groups**	
12	I tend to make friends quickly	
13	The people that I'm close to changes a lot	Low communality (< 0.4)
14	The people I'm close with now aren't the people I was close with last year	Low factor loading
15	Making new friends makes me feel more excited than spending time with existing friends.	Low factor loading
16	**I prefer spending time with the friends that I have instead of finding new ones**	
17	**I prefer to have a tight-knit group of friends**	
18	Most of my friends are people I've known for years	Low communality (< 0.4)
19	**I would rather sit next to my friends in class than sit next to new people**	
20	**Most of my social interactions feature the same people from week to week**	
21	**During social events, I prefer talking to people that I know more than meeting new people**	
22	I think my current friends are superior to any other friends I could make	Low communality (< 0.4)
23	I don't like when my friend group changes	Low factor loading
24	I don't like reaching out to new people	Low factor loading
25	Who I'm close friends with doesn't change that much	Low communality (< 0.4)
26	I don't feel the need to get to know acquaintances more	High cross loading
27	It takes me a long time to get comfortable being around new people	Low factor loading
28	I don't get tired of hanging out with the same people	High redundancy with 10
29	I don't actively try to get to know acquaintances better	High redundancy with 26
30	I only go to events when I know most of the people there	Low communality (< 0.4)
31	I think having a few really close friends is enough for my social life	High cross loading
32	I tend to just stick with the friends that I have	High cross loading

Note. Bold items were retained in the final scale

Table 2. Social Exploration Questionnaire with factor loadings from Study 1A.

Item	*Factor 1*	*Factor 2*
I like making new friends	0.780	
I seek out opportunities to meet new people	0.737	
I am always on the lookout for new friends	0.529	-0.268
I think meeting new people is exciting and interesting	0.791	
I would rather like to know people from different social groups	0.670	0.141
I tend to make friends quickly	0.590	
I prefer spending time with the friends that I have instead of finding new ones	-0.230	0.459
I prefer to have a tight-knit group of friends		0.468
I would rather sit next to my friends in class than sit next to new people	0.135	0.635
Most of my social interactions feature the same people from week to week		0.623
During social events, I prefer talking to people that I know more than meeting new people	-0.273	0.480

Table 3. Means, Standard Deviations, and Correlations from Study 1A.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. S_EXPR																	
2. S_EXPT	-0.38**																
3. Max	0.04	-0.04															
4. Sat	0.25**	0.11*	-0.09														
5. E	0.54**	-0.24**	-0.11*	0.14**													
6. A	0.18**	-0.06	-0.26**	0.19**	0.07												
7. O	0.27**	-0.07	-0.1	0.22**	0.33**	0.23**											
8. C	0.16**	-0.03	-0.05	0.19**	0.26**	0.22**	0.11*										
9. N	-0.23**	0.21**	0.12*	-0.25**	-0.24**	-0.26**	0	-0.25**									
10. SIA	-0.53**	0.31**	0.28**	-0.20**	-0.65**	-0.16**	-0.22**	-0.26**	0.44**								
11. JE	0.43**	-0.17**	0.13*	0.30**	0.30**	0.12*	0.46**	0.15**	-0.24**	-0.29**							
12. DS	0.14**	-0.01	0.19**	0.16**	0.07	-0.03	0.22**	0.09	0.05	-0.01	0.41**						
13. ST	0.22**	-0.16**	-0.27**	0.15**	0.38**	0.19**	0.17**	0.24**	-0.47**	-0.52**	0.16**	-0.16**					
14. SC	0.12*	0.07	0.07	0.13*	0.10*	0	0.13**	-0.11*	0.20**	0.12*	0.14**	0.22**	-0.14**				
15. TS	0.42**	-0.22**	0.16**	0.24**	0.24**	-0.03	0.21**	-0.11*	-0.23**	-0.20**	0.46**	0.26**	0.18**	0.17**			
16. SC_2	0.32**	-0.06	0.01	0.08	0.25**	0.07	0.18**	-0.08	0.05	-0.09	0.15**	0.12*	0.03	0.57**	0.16**		
17. Ex	0.59**	-0.28**	0.09	0.27**	0.36**	0.13**	0.44**	0.02	-0.11*	-0.28**	0.54**	0.22**	0.18**	0.26**	0.54**	0.39**	
M	5.057	5.573	3.643	4.81	3.328	3.729	3.82	3.512	2.959	2.332	5.183	4.586	4.192	5.084	4.194	2.904	5.914
SD	0.91	0.703	0.859	0.511	0.611	0.544	0.614	0.653	0.801	0.703	1.02	1.25	1.324	1.173	1.394	0.48	1.073

Note. * p < .05. ** p < .01. S_EXPR = Social Exploration, S_EXPT = Social Exploitation, Max = Relational maximizing, Sat = Satisficing, E = Extraversion, A = Agreeableness, O = Openness, C = Conscientiousness, N = Neuroticism, SIA = Social Interaction Anxiety, JE = Joyous exploration, DS = Deprivation sensitivity, ST = Stress Tolerance, SC = Social Curiosity, TS = Thrill seeking, SC_2 = Social Curiosity (Renner, 2006), Ex = General exploration in adults, M = mean, SD = standard deviation

Table 4. CFA standardized factor loadings.

Subscale	*Item*	*Loading*
Social Exploration	I think meeting new people is exciting and interesting	0.802
	I like making new friends	0.763
	I seek out opportunities to meet new people	0.721
	I am always on the lookout for new friends	0.647
	I would rather like to know people from different social groups	0.630
	I tend to make friends quickly	0.526
Social Exploitation	I prefer spending time with the friends that I have instead of finding new ones	0.743
	During social events, I prefer talking to people that I know more than meeting new people	0.677
	Most of my social interactions feature the same people from week to week	0.540
	I prefer to have a tight-knit group of friends	0.526
	I would rather sit next to my friends in class than sit next to new people	0.491

Table 5. Means, Standard Deviations, and Correlations of Major Variables from Study 1B.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. S_EXPR																	
2. S_EXPT	-0.43**																
3. Max	0.08	0.01															
4. Sat	0.25**	-0.02	-0.04														
5. E	0.51**	-0.34**	-0.05	0.18**													
6. A	0.23**	-0.10*	-0.25**	0.17**	0.05												
7. O	0.25**	-0.04	-0.04	0.22**	0.23**	0.28**											
8. C	0.20**	-0.07	-0.14**	0.19**	0.16**	0.33**	0.22**										
9. N	-0.16**	0.22**	0.08	-0.27**	-0.22**	-0.19**	-0.02	-0.28**									
10. SIA	-0.45**	0.40**	0.21**	-0.15**	-0.66**	-0.16**	-0.17**	-0.26**	0.43**								
11. JE	0.28**	-0.15**	0.09	0.38**	0.27**	0.14**	0.47**	0.23**	-0.24**	-0.21**							
12. DS	0.21**	-0.04	0.15**	0.27**	0.15**	0.06	0.25**	0.14**	0.01	-0.05	0.48**						
13. ST	0.20**	-0.27**	-0.24**	0.18**	0.32**	0.13*	0.18**	0.25**	-0.53**	-0.55**	0.22**	-0.09					
14. SC	0.19**	0.04	0.13*	0.16**	0.17**	0.05	0.22**	0.06	0.12*	0.04	0.33**	0.28**	-0.15**				
15. TS	0.32**	-0.31**	0.14**	0.25**	0.29**	-0.03	0.16**	0.01	-0.23**	-0.26**	0.48**	0.27**	0.29**	0.22**			
16. SC_2	0.32**	-0.14**	0.12*	0.17**	0.26**	0.13*	0.24**	0.10	-0.04	-0.12*	0.23**	0.25**	0.04	0.60**	0.22**		
17. Ex	0.42**	-0.30**	0.06	0.33**	0.35**	0.19**	0.44**	0.06	-0.10*	-0.27**	0.49**	0.26**	0.17**	0.25**	0.49**	0.40**	
M	5.108	5.585	3.592	4.835	3.265	3.744	3.735	3.467	2.975	2.446	4.991	4.451	4.149	5.251	3.883	2.935	5.729
SD	0.936	0.747	0.894	0.517	0.596	0.549	0.633	0.557	0.765	0.758	1.107	1.307	1.355	1.223	1.419	0.456	1.061

Note. * p < .05. ** p < .01. S_EXPR = Social Exploration, S_EXPT = Social Exploitation, Max = Relational maximizing, Sat = Satisficing, E = Extraversion, A = Agreeableness, O = Openness, C = Conscientiousness, N = Neuroticism, SIA = Social Interaction Anxiety, JE = Joyous exploration, DS = Deprivation sensitivity, ST = Stress Tolerance, SC = Social Curiosity, TS = Thrill seeking, SC_2 = Social Curiosity (Renner, 2006), Ex = General exploration in adults, M = mean, SD = standard deviation

Table 6. Multiple regression analyses in Study 2 of SEQ predicting well-being measures.

DV:	**Happy**				**Meaning**				**Rich**			
Predictor	*b*	*SE*	*95% CI*	*p*	*b*	*SE*	*95% CI*	*p*	*b*	*SE*	*95% CI*	*p*
S_EXPR	0.23	0.05	0.14 - 0.33	< **0.001**	0.37	0.05	0.28 - 0.47	< **0.001**	0.36	0.04	0.27 - 0.45	< **0.001**
S_EXPT	0.21	0.08	0.06 - 0.36	**0.008**	0.18	0.07	0.04 - 0.33	**0.015**	0.24	0.07	0.11 - 0.38	**0.001**
N	319				319				319			
R2	0.07				0.17				0.17			

Note. S_EXPR: Social exploration, S_EXPT: Social exploitation.

Table 7. Multiple regression analyses in Study 2 of SEQ predicting social network measures.

	Network Size				**Network Density**				**Average Closeness**				**Social Capital**			
Predictors	*b*	*SE*	*95% CI*	*p*	*b*	*SE*	*95% CI*	*p*	*b*	*SE*	*95% CI*	*p*	*b*	*SE*	*95% CI*	*p*
S_EXPR	0.68	0.20	0.29 – 1.07	**0.001**	-0.02	0.01	-0.05 – 0.01	0.15	3.02	0.76	1.53 – 4.51	**<0.001**	57.3	15.3	27.08 – 87.43	**<0.001**
S_EXPT	0.21	0.31	-0.40 – 0.82	0.50	-0.05	0.02	-0.10 – -0.01	**0.01**	2.60	1.17	0.30 – 4.90	**0.03**	23.2	23.9	-23.81 – 70.20	0.33

Note. S_EXPR: social exploration, S_EXPT: social exploitation

Table 8. Multiple regression analyses in Study 2 of SEQ predicting daily social behaviors

	Likelihood of being with friends				**Likelihood of being with acquaintances**			
Predictors	*OR*	*SE*	*t*	*p*	*OR*	*SE*	*t*	*p*
S_EXPL	1.24	0.05	5.20	**<0.001**	0.91	0.04	-1.96	**0.050**
S_EXPT	1.24	0.08	3.41	**0.001**	0.80	0.06	-3.09	**0.002**
Random Effects								
σ^2	3.29				3.29			
τ_{00}	0.54 $_{ID}$				0.51 $_{ID}$			
	0.06 $_{date}$				0.14 $_{date}$			
ICC	0.15				0.16			
N	307 $_{ID}$				307 $_{ID}$			
	14 $_{date}$				14 $_{date}$			
Observations	11238				11238			
Marginal R^2 / Conditional R^2	0.018 / 0.168				0.008 / 0.171			

	Closeness to friends				**Closeness to acquaintances**			
Predictors	*b*	*SE*	*t*	*p*	*b*	*SE*	*t*	*p*
S_EXPL	0.04	0.02	1.61	0.107	0.08	0.04	2.23	**0.026**
S_EXPT	0.12	0.04	3.40	**0.001**	-0.12	0.05	-2.17	**0.030**
Random Effects								
σ^2	0.37				0.53			
τ_{00}	0.15 $_{ID}$				0.27 $_{ID}$			
ICC	0.29				0.34			
N	293 $_{ID}$				263 $_{ID}$			
Observations	2446				985			
Marginal R^2 / Conditional R^2	0.014 / 0.298				0.026 / 0.354			

	Interest when socializing			
Predictors	*b*	*SE*	*t*	*p*
S_EXPL	0.14	0.03	5.14	**<0.001**
S_EXPT	0.10	0.04	2.29	**0.022**
Random Effects				
σ^2	0.53			
τ_{00}	0.13 $_{ID}$			
ICC	0.19			
N	274 $_{ID}$			
Observations	1131			
Marginal R^2 / Conditional R^2	0.041 / 0.226			

	Typicality of socializing			
Predictors	*b*	*SE*	*t*	*p*
S_EXPL	0.17	0.08	2.26	**0.024**
S_EXPT	0.14	0.12	1.18	0.238
Random Effects				
σ^2	2.60			
τ_{00}	1.26 $_{ID}$			

ICC	0.33
N	274 $_{ID}$
Observations	1131
Marginal R^2 / Conditional R^2	0.011 / 0.335

Note. S_EXPL: social exploration, S_EXPT: social exploitation, OR: odds ratio. Likelihood of being with friends and acquaintances are general linear mixed effect models because the dependent variable is a binary outcome (0 if not with friends/acquaintances, 1 if with friends/acquaintances), so estimates are odds ratios. All other models are linear mixed effect models with estimates unstandardized.

Table 9. Means, Standard Deviations, and Correlations of Major Variables from Study 3.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Social Explore															
2. Social Exploit	-0.40**														
3. Social Life Satisfaction	0.37**	-0.11*													
4. Need to Belong	0.17**	0.13*	-0.11*												
5. Loneliness	-0.44**	0.12*	-0.73**	0.09											
6. Workplace Status	0.31**	-0.14*	0.36**	0.04	-0.34**										
7. State Social Connection	0.53**	-0.16**	0.72**	-0.03	-0.90**	0.42**									
8. Good Life- Happy	0.41**	-0.08	0.63**	-0.04	-0.76**	0.43**	0.73**								
9. Good Life- Richness	0.30**	-0.06	0.37**	0.04	-0.40**	0.27**	0.41**	0.25**							
10. Good Life- Meaning	0.39**	-0.1	0.62**	-0.03	-0.75**	0.38**	0.75**	0.76**	0.53**						
11. Extraversion	0.61**	-0.33**	0.45**	0.04	-0.48**	0.32**	0.52**	0.39**	0.37**	0.39**					
12. Agreeableness	0.30**	-0.1	0.25**	-0.05	-0.43**	0.21**	0.44**	0.37**	0.25**	0.48**	0.24**				
13. Conscientiousness	0.18**	-0.06	0.35**	-0.22**	-0.44**	0.19**	0.44**	0.41**	0.28**	0.53**	0.25**	0.45**			
14. Emotion Stability	0.36**	-0.12*	0.46**	-0.22**	-0.60**	0.37**	0.62**	0.58**	0.31**	0.59**	0.33**	0.54**	0.63**		
15. Openness	0.37**	-0.16**	0.14**	-0.05	-0.24**	0.16*	0.22**	0.15**	0.43**	0.31**	0.33**	0.31**	0.29**	0.30**	
M	4.46	5.65	4.09	3.29	2.18	4.16	4.62	5.01	4.72	5.09	3.46	5.51	5.6	4.94	5.09
SD	1.41	1.01	1.77	1.09	0.66	1.63	1.48	1.43	1.13	1.51	1.72	1.23	1.28	1.6	1.29

Note. * p < .05. ** p < .01. M = mean, SD = standard deviation

Table 10. Discriminant Validity Assessments from Study 3
Results of x^2 Difference Test Between Social Exploration and Extraversion

Social exploration and extraversion	*df*	AIC	BIC	$\chi 2$	$\Delta\chi 2$
one-factor model	64	14151	14255	376.67	
two-factor model	62	14083	14194	304.62	72.042

Table 11. Multiple Regression Analysis from Study 3- Predicting Loneliness from Self-Report Variables

Predictors	*Estimates*	*SE*	*95% CI*	*p*
(Intercept)	5.52	0.55	4.43 – 6.60	**<0.001**
s_explore	-0.33	0.10	-0.53 – -0.12	**0.002**
s_exploit	-0.28	0.09	-0.46 – -0.10	**0.002**
extraversion	-0.10	0.02	-0.14 – -0.06	**<0.001**
conscientiousness	-0.03	0.03	-0.09 – 0.02	0.208
emotion stability	-0.16	0.02	-0.20 – -0.11	**<0.001**
openness	0.04	0.02	-0.00 – 0.09	0.071
agreeableness	-0.05	0.03	-0.10 – 0.00	0.070
age	0.00	0.00	-0.01 – 0.00	0.798
gender [2]	0.07	0.06	-0.04 – 0.18	0.234
s_explore × s_exploit	0.04	0.02	0.01 – 0.08	**0.010**
Observations	326			
R^2 / R^2 adjusted	0.495 / 0.479			

Table 12. Means of social exploration and exploitation by race and gender

	Study 1A			Study 1B			Study 2			Study 3		
	Explore	Exploit	n	Explore	Exploit	n	Explore	Exploit	n	Explore	Exploit	n
M	5.06	5.57	392	5.11	5.59	384	4.84	5.59	319	4.46	5.65	344
Median	5.17	5.60		5.20	5.60		5.00	5.60		4.50	5.80	
SD	0.91	0.70		0.94	0.75		1.21	0.78		1.41	1.01	
Race												
White	5.15	5.57	189	5.18	5.56	197	5.06	5.66	138	4.32	5.77	243
Black	5.14	5.61	30	4.78	5.72	27	4.77	5.84	21	5.11	4.86	42
American Indian	---	---	0	3.40	6.60	1	---	---	0	---	---	0
Asian	4.76	5.53	99	5.16	5.55	83	4.69	5.41	108	4.45	5.91	20
Native Hawaiian	---	---	0	---	---	0	---	---	0	---	---	0
Middle Eastern or North African	5.33	5.40	4	5.40	4.75	4	4.88	5.80	4	5.50	6.20	1
Hispanic or Latino	5.16	5.47	24	4.68	5.63	19	3.99	6.10	12	4.42	5.58	18
Other	---	---	---	5.40	4.50	2	5.08	5.70	2	5.83	6.00	1
Multiracial	5.17	5.76	46	5.06	5.75	51	4.76	5.59	35	4.85	5.63	19
Gender												
Female	5.08	5.57	239	5.13	5.60	271	4.90	5.61	218	4.39	5.60	171
Male	5.04	5.56	148	5.06	5.57	112	4.70	5.53	94	4.53	5.70	173
Other	4.40	6.16	5	---	---	0	4.65	5.88	8	---	---	0

Table 13. Correlation table of variables with social exploration and social exploitation in all studies.

	Social Exploration				Social Exploitation			
	Study 1A	**Study 1B**	**Study 2**	**Study 3**	**Study 1A**	**Study 1B**	**Study 2**	**Study 3**
social exploit	**-0.38**	**-0.43**	**-0.27**	**-0.40**				
Personality Traits								
extraversion	**0.54**	**0.51**		**0.61**	**-0.24**	**-0.34**		**-0.33**
agreeableness	**0.18**	**0.23**		**0.30**	-0.06	**-0.10**		-0.10
openness	**0.27**	**0.25**		**0.37**	-0.07	-0.04		**-0.16**
conscientiousness	**0.16**	**0.20**		**0.18**	-0.03	-0.07		-0.06
neuroticism	**-0.23**	**-0.16**		**-0.36**	**0.21**	**0.22**		**0.12**
maximizing	0.04	0.08			-0.04	0.01		
satisficing	**0.25**	**0.25**			**0.11**	-0.02		
social interaction anxiety	**-0.53**	**-0.45**			**0.31**	**0.40**		
workplace status				**0.31**				**-0.14**
Curiosity-related traits								
Curiosity (joyous exploration)	**0.43**	**0.28**			**-0.17**	**-0.15**		
Curiosity (deprivation sensitivity)	**0.14**	**0.21**			-0.01	-0.04		
Curiosity (stress tolerance)	**0.22**	**0.20**			**-0.16**	**-0.27**		
Curiosity (social curiosity)	**0.12**	**0.19**			0.07	0.04		
Curiosity (thrill seeking)	**0.42**	**0.32**			**-0.22**	**-0.31**		
Social Curiosity- overall (Renner, 2006)	**0.32**	**0.32**			-0.06	**-0.14**		
social curiosity (general)	**0.54**	**0.47**			**-0.19**	**-0.22**		
social curiosity (covert)	0.07	**0.13**			0.04	-0.06		
explore	**0.59**	**0.42**			**-0.28**	**-0.30**		
Measures of (social) well-being								
social life satisfaction				**0.41**				**-0.11**
loneliness		**-0.20**		**-0.44**		**0.20**		**0.12**

good life- happy			**0.22**	**0.41**				0.09	-0.08
good life- meaning			**0.39**	**0.39**				0.02	-0.10
good life- rich			**0.37**	**0.30**				0.08	-0.06
state social connectedness				**0.53**					**-0.16**
need to belong				**0.17**					**0.13**
Network traits									
network size			**0.19**	**0.25**				-0.02	-0.01
network density			0.06	-0.09				0.13	0.09

Note. Colored cells $p < .05$. If a cell is empty, the measure was not included in that study.