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Social Identification with Friends and Perceived Social Support: A Survey Experiment

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Abstract

The current thesis investigates the impact of structural connectedness on subjective forms of social connectedness using a fictive scenario in the context of the life-course transition of young adults. A sample of 118 participants filled out an experimental questionnaire at the University of Lausanne campus containing a scenario and a friendship density network. Social identification and perception of social support were assessed before and after the scenario and the friendship network to examine the impact of density. MANOVA and T-test techniques were used to assess the moment-to-moment changes in social identification and perceived social support according to the density of the friendship network presented. The results showed that a denser friendship network leads to higher social identification and perceived social support. This study enhances our comprehension of how structural and subjective social connectedness are interrelated, particularly regarding their directional influence. The findings yield valuable perspectives for designing interventions that aim to alleviate personal distress. This can be achieved by fostering improved communication within one's personal network, thereby strengthening social bonds.

Keywords: Social Identity, Network Density, Friendship, Perceived Social Support.

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1. Introduction

Human beings are social creatures. We knew that long before sciences that study humans (e.g., Psychology, Sociology, Anthropology…) were developed and experimentally tested that claim. Protecting, nurturing, and putting boundaries on our social relationships are some of the main themes in Religion, Literature, and Philosophy.

Out of the ten commandments given to Mosses in the Ancient Testament (*Exodus 20:1 - 20:26*, n.d.) or the Torah for those of Jewish confession, six are strictly concerned only with interpersonal relationships. In Zoroastrianism, it is taught, for example, that women and men are equal, to fight against oppression, and to do good around oneself (Golshiri, 2019). That is to cite a few of the plethora of examples found in religious texts. Plato and Aristotle provide excellent examples of early philosophical works on interpersonal relationships (e.g., Prus & Camara, 2010). Literature also provides frameworks on how to act in society, the pitfalls of neglecting interpersonal relationships, and the importance of nurturing them while avoiding certain people. As such, literature could even work as a form of learning by proxy, as one study indicates that the genre of literature one engages with can positively influence one's interpersonal sensitivity (Fong et al., 2013). This enhancement in sensitivity can lead to improved interactions within one's social network, enriching personal relationships.

Advancing a couple of centuries and with the means of our era, we can now provide proof of the insight great thinkers throughout time and places had on the importance of interpersonal relationships for humans. Research shows that being in contact with other members of our species is vital for our mental and physical health (e.g., Berkman & Glass, 2000; Berkman & Syme, 1979; Holt-Lunstad et al., 2010; Rosengren et al., 1993; Thoits, 1983; Uchino et al., 1996). However, these social contacts can benefit or harm individuals' health (e.g., Dressler, 1980; Rook, 1984, 2015).

The present thesis aims to advance the research on how social relationships influence individuals' well-being by experimentally examining the link between structural (network density in friendship relations) and subjective forms of connectedness (social identification and perceived social support with friends) in the life transition context of young adulthood. This thesis is innovative as it is one of the first to empirically explore this relationship's directionality. Towards this aim, this thesis first provides an overview of the key concepts implicated, namely social connectedness, social networks, social support, and friendship. It then reviews in detail the study (Lee et al., 2020) that inspired the conception of the thesis. The methodology section presents a detailed description of the sample and of the questionnaire built for this study. The results section provides the findings of the experimentation. The analysis of the major findings of the thesis and their main implications for future research are found in the discussion section. The conclusion section sums up and brings the final thoughts of the thesis.

1.1 Social connectedness

Social connectedness is defined as "the degree to which a person experiences belongingness, attachment, relatedness, togetherness, or entrenchment in one's social relationships. Thus, it refers to subjective feelings and attitudes towards oneself in relation to the social context" (Santini et al., 2015, p. 54). Research has consistently demonstrated social connectedness as a mental and general health protective resource. It is a concept situated at the meso-level of social relationships (Hoffman et al., 2023). The macro level is the socio-structural conditions such as the culture, the socioeconomic factors, the politics, and the social changes that shape the social networks. The meso-level then provides opportunities for the psychosocial mechanisms such as social support, social influence, or social engagement that constitute the micro level of social relationships to unfold (Berkman & Glass, 2000).

The stress-buffering model states that "social connections benefit health by providing psychological and material resources needed to cope with stress" and "is supported by an

interaction of stress and social support" (Cohen, 2004, p. 377). It is precisely through the perception of social support that social connectedness operates as a stress buffer (Cohen, 1988; Cohen & Wills, 1985; Rosengren et al., 1993).

Alternatively, the main-effect model (Cohen, 2004, p. 678) "argues that social connectedness is beneficial irrespective of whether one is under stress." Following the principles of the social identity theory (SIT; Tajfel & Turner, 1979), individuals will follow the implicit and explicit norms of the group they identify with. Their network will thus influence their health behaviors through peer pressure, social control, and, on the individual's part, a need to belong. In meeting the group's norms, the individual will gain a sense of well-being and self-satisfaction (Thoits, 1983). Building upon these insights, we now delve into the concepts of the Social Cure (Jetten et al., 2011) to explore how group dynamics and shared identities impact well-being and health outcomes.

1.1.1 The Social Cure: social identity approach to health and wellbeing

The Social Cure (Jetten et al., 2011) claims that social relationships impact physical and mental health. More precisely, it takes the social identity approach, combining the Social Identity theory (Tajfel & Turner, 1979) with the Self-Categorization theory (Turner et al., 1987) to investigate how social life influences our well-being. The social identity theory was the origin of investigating intergroup relations. Later on, Turner et al. (1987) broadened the scope of the Social Identity theory with the Self-Categorization theory. This theory specifies the social cognitive bases of social identity. It states that "when you categorize yourself, you view yourself in terms of defining attributes of the ingroup" leading individuals to adopt the behaviors and norms of the group they identify with (Hogg, 2016, p.9). Individuals are motivated to identify with social groups and maintain a positive view of them through self-categorization to fulfill their belonging and self-esteem needs and to find meaning in their lives

(Vignoles et al., 2006). An important note on self-categorization is that the processes allowing individuals to identify with groups are dynamic and context-specific (Abrams & Hogg, 1990).

Self-categorization provides the frame for social identification. It is, therefore, a different construct than social identity. Social identity refers to the consensual and shared perception of the members of the group as well as the outgroup members of the characteristics and norms defining the group. In contrast, social identification focuses on the individual and their relationship with the group they identify with (Postmes et al., 2013). A growing body of research posits that social groups are essential resources for well-being, but only to the extent that individuals identify with the groups they perceive they belong to (Jetten et al., 2014). Thus, group identification is an essential bridge connecting social connectedness to well-being (Hoffman et al., 2023). In a study about stress in new university students, Mojzisch et al. (2021) found that students who identified weakly or moderately but had a central position in their group experienced more stress than their more peripheral peers. They might have felt some pressure to be well-connected to people they did not relate to or share the same values or ambitions with to the same extent.

As discussed in this chapter, social identification is a sine qua non condition for the beneficial effects of social connectedness to unfold. Those beneficial effects that social connectedness procures can be coined under the term social capital, which will be developed in the following chapter.

1.1.2 Social capital

Social connectedness brings social capital, defined as “a resource available to individuals resulting from group belonging and other social relationships” (Hoffman et al., 2023, p.172). Historically, social capital stems from the works of Bourdieu (1986), Coleman (1988), and Putnam (1994). “Social capital comprises social networks, social support, and social trust.” It is “generally positively related to health” (Ferlander, 2007, p.115). The use of

the term *capital* in social capital brings in economic values. Therefore, it is thought that relationships are wherein the individuals bring in something, expecting a return on investment (Ferlander, 2007). Social capital comprises a structural element, social networks, in which the cognitive elements of social capital, reciprocity, and trust can unfold (Ferlander, 2003). The structural level of social capital is divided into two categories depending on the direction of the ties (connections): horizontal (bonding social capital) or vertical (bridging social capital) (Ferlander, 2007). Bonding social capital describes equal interactions within the ties as can be found within families, friends, or colleagues. On the other hand, bridging social capital connects unequal and asymmetric relationships such as workplace or hierarchical connections (Ferlander, 2007). This definition indicates that bonding social capital "refers to relationships between individuals who see themselves in terms of their "shared social identity" (Hoffman et al., 2023, p.173). However, this view of shared social identity does not differentiate the objective from the subjective social identity. Objective social identity, also referred to as shared sociodemographic characteristics, encompasses the cultural aspects of one's identity, origins, and nationalities and is therefore imposed, not chosen (e.g., family network). Subjective shared social identity, on the other hand, "refers to a subjective and contextual definition of selfhood based on a feeling of temporary belongingness within any social category that is relevant in a given situation or period of life" (Hoffman et al., 2023, p.173). Bonding social capital helps individuals navigate life's challenges ("get by") through access to social support (de Souza Briggs, 1998, p.206). Extensive research demonstrates the positive link between dense and strong bonding networks and mental or physical health (Berkman et al., 2000; Berkman & Syme, 1979). However, the other side of the coin shows that these networks can be a source of strain for individuals, thus negatively impacting health (Ferlander, 2007).

After introducing and discussing social capital, let's delve more precisely into its concepts. To that aim, the following chapter will explore its structural element, the social network, as it is the base on which the cognitive elements can be effective (Ferlander, 2003).

1.2 Social Networks

A social network comprises all the individuals a specific person has contact with (Heaney & Israel, 2008). Social networks work on the meso level of social relationships and are therefore influenced by the macro level, such as culture and politics (Berkman & Glass, 2000). They are considered a resource because they activate the social capital those relationships provide (Ferlander, 2007; Widmer et al., 2018). The "social network analysis (SNA) is a methodology for studying the connections and behavior of individuals within social groups" (Clifton & Webster, 2017, p.442). It allows a more in-depth analysis of social relationships, specifically groups, and "provides a unique approach to understanding how social relationships influence individuals' instrumental achievements and well-being" (Zhu et al., 2013, p.382).

Social networks can be divided into two main points of research interest, which are sociocentric and egocentric personal networks (Marin & Wellman, 2011; Marsden, 1990; Vacca, 2018). Sociocentric or whole network analysis takes a distal point of view over social relationships, analyzing defined communities or social groups such as the employees of an enterprise or a minority racial group in a community. A personal network, on the other hand, focuses on the relationships a focal (ego) individual has with others (alters) (Marin & Wellman, 2011; Vacca, 2018). It considers all individuals (alters) the ego is in social contact (ties) with throughout their lifetime (Marin & Hampton, 2007). These networks can be inherited, as is the case of family or chosen, such as friends (Hoffman et al., 2023). In an ego network, "all data are collected from the ego. […] the egos are the survey respondents, while the alters are not directly observed" (Vacca, 2018, p.60). Research has demonstrated that the influence exerted

by social networks on well-being goes through the provision of social support (Lee et al., 2020; Lin et al., 1999; Zhu et al., 2013). More precisely, "characteristics of social networks determine the availability and adequacy of social support, which in turn influence wellbeing" (Zhu et al., 2013, p.382).

A key feature of social networks is density. This metric gauges the extent of connection among individuals within a social network. As mentioned in the social capital chapter, density is positively linked to mental and physical health in strong bonding networks such as family or friends (Berkman et al., 2000; Berkman & Syme, 1979). Too dense or too weak social ties can, however, bring dysfunctionalities in the network, hindering the health of its members. The following chapter will delve into this social network characteristic in more depth.

1.3.1 The Case of Density

The social density hypothesis assumes that "happiness and well-being are expected to increase with the number of people in the immediate interpersonal environment (network size) and increase with the strength of relations between people in the environment (network density)" (Burt, 1987, p. 312). Density, a structural measure in SNA, indicates how well network members connect to each other (Heaney & Israel, 2008). It is "the proportion of ties that actually exist relative to the number that could potentially exist" (Hoffman et al., 2023, p.171). Its mathematical formulation is

$$\frac{l}{n(n-1)/2}$$

where l is the number of lines(ties) in a graph, and n is the number of people (Scott, 2017). The density varies from 0 to 1.

Density is related to enhanced community participation and better social support (Bell, 1991). In his survey analysis, Burt (1987, p.328) found that "there is a significant, robust

connection between an informal discussion network surrounding a person and his or her expression of well-being" and that this effect starts to show with at least five alters in the ego network.

Bonding social capital is characterized by high network density and "provides material and emotional support, and is more inward-looking and protective" (Claridge, 2018, p.2). Friendships are characteristics of bonding capital as they are formed by people who share the same interests or goals and can thus provide social support through density (Claridge, 2018).

However, while strong bonding networks provide numerous benefits, they can also exert pressure on members, particularly those who frequently offer support, as this role can become a potential source of stress. Tightly-knit bonding networks can also limit the access to information and even promote unhealthy behaviors (Ferlander, 2007). On the other hand, weak bonding networks impede the unfolding of thrust within the network (Ferlander, 2003)

Moreover, the positive impact of density on well-being is contingent upon whether the social network is affirming or disaffirming. Indeed, a dense affirming (vs. dense disaffirming) network will positively (vs. negatively) impact an individual (Walker, 2015). The affect also has an impact on how people perceive their social network. Indeed, it has been found that experiencing positive (vs. negative) affect will lead individuals to activate larger and sparsely connected networks (vs. smaller and redundant) (Shea et al., 2015).

In a study about social identification among teammates in college sports club teams, Graupensperger et al. (2020) found that density was significantly related to social identification, leading to greater well-being. Densely connected networks render social identity more salient, increasing the probability of activating this identity in a given situation (Stryker & Burke, 2000).

This preceding chapter demonstrated how social networks, particularly one of their structural elements, density, are crucial for unfolding the cognitive components of social capital. The following chapter will focus on social support, an aspect of the cognitive elements of social capital, since as Berkman and Glass (2000, p.144) state: “Social support is one of the main ways social networks influence physical and mental health status.”

1.4. Social Support: Subjective and Structural Perspectives

Social support is the help (psychological and material) one can draw from one's entourage, whether friends, family members, neighbors, or coworkers; hence, it is viewed as a coping resource (Cohen, 2004; Thoits, 1995). It is a psychosocial mechanism; as such, it works on the micro level of social relationships and requires social networks, the meso-level, to unwrap (Berkman & Glass, 2000). It is worth noting that this is a complimentary service. From a psychological perspective, there are three types of social support: emotional, informational, and instrumental (House & Kahn, 1985). Emotional social support is defined as “the expression of empathy, caring, reassurance, and thrust and provides opportunities for emotional expression and venting” (Cohen, 2004, p. 677). Informational social support refers to the information the alters provide to help the ego cope with their problems (Lin et al., 1999). This latter form of support is usually provided as advice, guidance, or suggestions (Cohen, 2004; Lee et al., 2020). Instrumental social support provides material help such as money, food, or shelter (Cohen, 2004). It has been well-documented that emotional and informational support correlate positively (Caligiuri & Lazarova, 2002; Cheng et al., 2018; Lee et al., 2020) and correlate with instrumental support (House, 1983). Therefore, those three types of social support can be put into one factor and studied either as received or perceived social support (Thoits, 1995). They are most often studied as a unidimensional construct, as stated by the literature review of Uchino, Cacioppo, and Kiecolt-Glaser (1996).

After defining the subtypes of social support in this section, we will investigate their impact on the different phases of life using the convoy model in the following section.

1.4.1. Social support across the lifespan: The Convoy Model

The Convoy Model (Kahn & Antonucci, 1980) theorizes the provision of social support across the lifespan. "The term *convoy,* borrowed from anthropologist David Plath (1980), is used to evoke a protective layer […] who surround the individual and help in the successful negotiation of life's challenges." (Antonucci & Akiyama, 1987, p. 519). According to this model, every individual goes through life and faces challenges with a social umbrella that protects them (Antonucci & Akiyama, 1987). This social umbrella or convoy is dynamic and evolves with the individual's circumstances while keeping some stability. A practical illustration of this is how family members will stay in the person's life, but their influence and role will not remain constant. In this model (Kahn & Antonucci, 1980), the social circle surrounding an individual is separated into three circles, going from the most intimate and from which one gets the most support, called the inner circle, to the middle circle and the outer circle. The inner circle stays relatively stable over time. The middle circle comprises individuals whose importance and support exceed what is expected from their role requirements. Members of the outer circle stay in their ascribed role and place but are nonetheless considered important for the focal individual. Members of the outer circle can be schoolmates or colleagues who do not stay in the focal individual frequent contact once the individual goes through a life transition (e.g. moving to another country, changing school or workplace). "The convoy model suggests that structural and functional characteristics among convoy members vary in a normative manner by life-cycle stage (age) and feeling of closeness (circle placement) in a meaningful and predictable manner." (Antonucci & Akiyama, 1987, p. 519).

In a study of a sample comprising three generations of women, Levitt et al. (1993) investigated the characteristics of the convoy of social support across generations. Levitt et al.

(1993) obtained that across generations, there was no difference in the size of the networks, the nomination of family members in the inner circle, and the amount of support those social networks brought to the focal individuals. However, the researchers (Levitt et al., 1993) constated that the role of friends differed among generations. Younger people included more friends in their inner circle than older generations. Those young women also received more support from their friends than from their family.

After examining the various types of support and the evolution of social support throughout the lifespan, it is crucial to distinguish between enacted support and the perceived support an individual expects to receive from their networks. The subsequent section will differentiate the behavioral aspects from the cognitive components of social support, emphasizing the significance of perceived social support for overall well-being.

1.4.2. The perception of social support

Perceived social support is "the belief that one can rely on others for necessary help" (Lee et al., 2020, p.3), whereas received or enacted social support is "conceptualized as actions that others perform when they render assistance to a focal person" (Barrera, 1986, p.417). Perceived social support is thought to work in two ways. On one hand, it can reflect the actual support received. On the other hand, thinking that one will receive sufficient support from one's entourage can be enough to face adversity independent of the actual support received (Zhu et al., 2013). Perceived social support has been well-studied and documented in the literature and appears to have more influence on well-being and predicting adjustment to stressful life events than actual enacted social support (Haber et al., 2007; Lakey & Orehek, 2011; Wethington & Kessler, 1986). It is interesting to note that perceived and received social support are found to be independent measures of social support (Barrera, 1986; Haber et al., 2007), meaning that perceptions of the support one will obtain do not always align with the actual support received, and vice versa. Perceived social support has been shown to be influenced by a trait-based

tendency to view others. Indeed, in their research, Lakey and Cassady (1990, p.341) found that " low perceived support is associated with a bias toward perceiving supportive attempts as unhelpful".

In a study testing the mediating role of perceived social support between friendship quality and psychological well-being in Turkish high school students, Bakalım and Taşdelen-Karçkay (2016) found that perceived social support in friendships fully mediates the relationship between friendship quality and well-being.

Throughout the preceding chapters, we glanced at the significance of friendships for individuals, especially in early adulthood (e.g. Claridge, 2018; Levitt et al., 1993). In the following section, we will focus on the impact of friendship on individuals' flourishment across the lifespan, concentrating on early adulthood.

1.5 The role of friendship in well-being

Depending on the different life phases, friendships do not have the same roles and significance. From a social identity standpoint, life course transitions such as moving away from the parental home, moving to another country, changing school, or going to university shift one's social identities. Nevertheless, as Emler (2005) claims, this shift in social identities and, therefore, in social contacts happens gradually rather than radically as one acclimates to one's new place in one's life path. Where we are influences with whom we come into contact. If we take a first-year student moving to a different city to go to university, this student will see less of their parents and hometown friends and will be in more frequent contact with other students. This will gradually shift the student's thinking and behavior as they interact more with different social sets of people, potentially shifting their social identity (Emler, 2005).

However, these friendship relationships "are developmental resources at all ages" (Hartup & Stevens, 1997, p.355). Therefore, what is sought after in friends differs according

to the different life stages. In adults especially, the emphasis is on reciprocity, support, someone you can confide in, and trustworthiness. In contrast, the similarities in interests, experiences, and activities do not bear the same importance for adults as they would for teenagers (Hartup & Stevens, 1997). What is more, young adults look for emotional well-being when creating and maintaining friendships. Emotional well-being seems to be an influential factor for creating strong-ties friendships, "young adults select strong-tied friends based on emotional well-being and are influenced by their strong-tied rather than their weak-tied friends' emotional well-being" (Veenstra & Laninga-Wijnen, 2023, p.231).

Friendship relationships appear to be a protective factor against life challenges and to fulfill needs that other relationships, such as family, neighbors, or colleagues, cannot complete (Connidis & Davies, 1990; Dykstra, 1995; Hartup & Stevens, 1997). Friendships belong to the bonding social capital and, as such, bring to the members of the friends group an ascribed trust, meaning that members trust each other because they are part of the same group (Van Staveren & Knorringa, 2007).

Friendships improve well-being and social skills in a positive-enforcing circle. However, depending on the characteristics of the friendships and the friends, they can also be a liability. Therefore, "the identity of one's friends and the quality of one's relationships with them may be related to developmental outcomes more closely than having friends" (Hartup & Stevens, 1997, p.357).

After exploring the significance of friendship throughout the lifespan and its impact on well-being, let's delve into the structural elements of this bonding social capital in the next section.

1.5.2 Friendship Networks

"Friendship is defined at the dyadic level, often as the voluntary and reciprocal relationship between two individuals" (Waldrip et al., 2008, p.835). Friendship networks are comprised of strong ties (Totterdell et al., 2008) and high density (Claridge, 2018). Nevertheless, the strength of ties still varies according to the importance of the different alters for the ego. Not all friends have the same place in the mind of an individual. Consequently, it is expected that some alters will be contacted more frequently than others, and each plays different support roles in the perception of the ego (informational, emotional, and instrumental social support). This supposition joins the *task-specific model* formulated by (Litwak, 1985), which states that "some persons are better suited than others for meeting specific tasks, rather than all tasks" or needs (Connidis & Davies, 1990, p.142).

The propensity to make friends appears to be related to personality traits. Indeed, in their research, Totterdell et al. (2008) found that the propensity to connect with others (PCO) was related to extraversion and emotional stability, as well as helping people adjust and thrive in their social context. In turn, individuals with greater PCO had larger friendship networks.

As in social capital, the structural elements provide the base for the cognitive elements to flourish; the next section will, therefore, discuss social support in the context of friendship.

1.5.1 Friends' support

"The role and effect of social support on health and psychological well-being vary depending on the source of support" (Santini et al., 2015, p.54). Throughout the lifespan, friendship is considered one of the things that matter most for human beings (Klinger, 1977). Research has shown that the support given by friends enhances positive feelings (Li et al., 2014). In a study on early adolescent adjustment, Waldrip et al. (2008) discovered that the number of friends and the quality of the friendships were positively related to adjustment. More importantly, their results indicated that friendship quality played a critical role, especially when

peer acceptance and the number of friends were low. Even if the adolescent had one friend, if this friend appears to be supportive and offers protection and intimacy, that friendship quality is a buffer against social maladjustment.

The precedents sections provided the key concepts and theories essential to this thesis. The following section will develop in detail the paper that inspired its conception.

1.6 The study of inspiration

Lee, Stahl, and Bayer (2020) claim that the literature is lacking in how individuals cognitively represent their social networks. Therefore, they conducted two studies to widen our comprehension of how cognitive network density relates to perceived support and found that, of equal size, thinking of a denser network leads to higher perceived social support.

In the first study, they differentiated informational and emotional social support. They asked participants to generate a fixed-sized egocentric social network according to the type of support they were assigned to. They then analyzed the density of the networks generated, controlling the weight of the ties. In both types of support networks, participants' friends comprised almost half of the network (emotional: 43.42%; informational: 42.79%) and were the most named type of support. The results showed that perceived network density is positively associated with perceived support, independently of the weight of the network's ties.

Their second study manipulated the density of the networks to observe changes in moment-to-moment perceived support. Participants were, therefore, asked to generate both a dense and a sparse part of their personal social network. The density of the networks was 25% for the sparse one and 100% for the dense network. Here again, participants' friends comprised the more significant part of the network (sparse: 57.08%; dense: 43.96%). In this experiment, participants were assigned either their dense or sparse network and a scenario with severe consequences (vs. less severe). They were then asked about the support they perceived they

would receive from their network. The results showed that there was not much difference in perceived support between the two degrees of severity in the scenarios. It indicated, however, that the higher the perceived density, the higher the social support was perceived. It also appears that the link between density and perceived social support was partially mediated by the psychological mechanism of social identity or "inclusion of others in the self," as the paper calls it (Lee et al., 2020, p.415).

Following the presentation of the paper that was the prime inspiration of this thesis, we will now focus our attention on what the thesis aims to achieve.

2. Aim of the study

Psychological research has long focused on the impact of perceived social support to investigate how social relationships influence well-being (Cohen, 2004; Cohen & Wills, 1985; Thoits, 1995; Zhu et al., 2013). There has been increased research about the role of social networks in this relationship since they provide opportunities for psychosocial mechanisms such as social support to unfold (Berkman & Glass, 2000; Clifton & Webster, 2017; Zhu et al., 2013). In their research, Lee et al. (2018) found that density and bonding capital explained perceived social support. Moreover, their results showed that perceived social support predicts well-being and mediates the relationship between density and well-being. However, no experiment has been done to our knowledge about the impact of social networks in shaping social identification and the latter's role in linking density to well-being. This study aims to partially reproduce the experiment by Lee and colleagues (2020) with social identification as the dependent variable to investigate how social networks shape social identity. We also evaluate changes in moment-to-moment social identification and perceived social support. What is more, this study is novel in its approach by creating a network and imposing it on the participants and using an imaginary human being, asking the participants to behave in

answering the questionnaire as if it was them, thus creating a distance between the scenario, the compulsory network and the participants.

Building on the conclusions of Lee et al.'s paper (2020), we focused on a friendship network, as friends seemed the most readily and easily available type of social support people could recall. As our study will be conducted on a university campus, our population of interest will be students. In this life phase of early adulthood, friendships are crucial (Picton et al., 2017), increasing our interest in studying their impact on individuals. Since the weighted density, differentiating the types of social support, and having scenarios of two degrees of severity did not bring significant statistical differences in Lee et al.'s experiment (2020), we concluded that it would not be beneficial to do so in this study. Therefore, the ties in this study are unweighted; perceived social support was built as one construct, and a scenario of mid-severity was considered enough in a simplification optic. However, two density levels, 50 and 75%, were added to the original 25 and 100% to refine our understanding of the effects of density on the dependent variables, perceived social support and social identification.

In this study, we sought to answer the following research question and test the following hypothesis:

Research question: How does the primed density of a friendship network impact an individual's social identification and the available support perceived by that given network?

Hypothesis: Social identification and perceived social support will be positively associated with a denser network.

H1. Thinking about receiving support from a dense (VS. sparse) network will lead to greater momentary social identification.

H2. Thinking about receiving support from a dense (VS. sparse) network will lead to greater momentary perceived social support.

3. Method

3.1 Sample

We employed a non-probabilistic approach to conduct this study, meaning that participants were recruited using convenient sampling. 120 participants were recruited in diverse cafeterias at the University of Lausanne campus, of which 118 (83 females; M_{age}=22.56, SD_{age}= 4.18; 75.4% Swiss, 12.7% Double Nationality, 10.3% European, 1.6% International (e.g., Brazil, Russia)) completed the questionnaire. The questionnaire was available only in a French version. Regarding their education, 67.8% were in their bachelor's, 29.7% were completing their master's, 1.7% were post-graduate degree students, and 0.8% did not specify their level of education. As their area of study, 47.5% were in the faculty of Social and Political Science, 19.5% were in the Faculty of Letters, 11.9% were in the faculty of Law, 7.6% were students of the Faculty of Geoscience and Environmental, 6.8% were in Business and Economics, 4.1% were in other faculties, and 2.5% did not specify their area of study. Participants were not compensated for their participation, and participation was entirely voluntary. The sample was randomly assigned to the different versions of the questionnaire. Four conditions were created with the density of the friendship network as the independent variable ($D_{25\%}$ = 30, $D_{50\%}$ = 30, $D_{75\%}$ = 28, and $D_{100\%}$ = 30) to determine how changes in the structure of the primed network impact the social identification of a given person to their network and the perception of social support the network would bring. Table 1 presents the sociodemographic characteristics of the study sample.

Table 1.

Sociodemographic Characteristics of Participants in the Study

Baseline characteristics	*n*	*%*
Gender		
Female	83	70.3
Male	34	28.8
Unspecified	1	0.8
Highest educational level		
High School	80	67.8
Bachelor	35	29.7
Master	2	1.7
Unspecified	1	0.8
Field of study		
Social and Political Science	56	47.5
Letter	23	19.5
Law	14	11.9
Geo and Environmental Science	9	7.6
Business and Economics	8	6.8
Other	5	4.1
Unspecified	3	2.5
Nationality		
Swiss	89	75.4
Other	29	24.6

Note. Participants were, on average, 22.56 years old (*SD* = 4.18).

3.2 Procedure and measures

Participants first completed a demographic questionnaire and answered questions about their well-being, life satisfaction, and relationships with friends (see Appendix A). Secondly, they read a scenario about Alex, who sought help from his/her friends after an accident (see Appendix F), and they were asked to imagine themselves in Alex's situation. The sample was then shown Alex's friendship network (see Appendix B to E), which varied in density while staying constant in size depending on which version of the questionnaire participants received. The sample then had control questions to ensure that they understood the network. Thirdly, the

participants were given the same questionnaire they had already filled out about their friendships. However, this time, the sample had to reply as if they were Alex, thinking about his/her situation and keeping his/her friendship network in mind. All measures were assessed on a 6-point scale except for the demographic questions.

3.2.1. Participant conditions of life

Questions such as ‘I believe that I have many qualities.’ (item 9 of the questionnaire) were asked to investigate participants' general well-being and satisfaction with life. Items 7 and 9 of the questionnaire were taken from the Rosenberg Self-Esteem Scale (Rosenberg, 1965). Item 8 came from the Perceived Stress Scale (Cohen et al., 1983). The Satisfaction with Life Scale (Diener et al., 1985) provided items 11 and 13 of our study. The item 10 comes from the S-F 36 (Short-Form Health Survey) (Ware et al., 1993). The self-efficacy question (item 14) came from the TREE Survey (Scharenberg et al., 2014). We did not proceed to use these items further than on the correlation table (see Table 6) in our analyses.

3.2.2. Perceived support

Perceived support was assessed by asking, ‘I can discuss important decisions concerning my life with my friends.’ (item 17 of the questionnaire). Items 15 to 20 and 26 and their homologous versions, 29 to 35, were adapted from the Social Provision Scale (SPS) (Cutrona & Russell, 1987) in its French version (Caron, 1996) (see the questionnaire in Appendix A). The Social Provision Scale measures perceived social support on six dimensions: attachment (or emotional support), social integration, reassurance of worth, reliable alliance (or instrumental support), guidance (also known as informational support), and opportunity for nurturance (Caron, 1996; Cutrona & Russell, 1987). For the needs of this present study, we took items measuring emotional (items 16 and 30), instrumental (items 15, 29, 20, 34), informational social support (items 17, 31, 18, 32, 19, 33), and social integration (items 26, 35). For our study, we slightly adapted the items to fit our questionnaire and the participant

population concerned, replacing generic terms such as *people* or *someone* by *friends* to keep our participants' focus on their relation to their friends.

Psychometric properties of the SPS were investigated prior to inferential analyses. As we were interested in the general support structure, we performed an Exploratory Factor Analysis (while constraining the number of factors to one) (EFA) in SPSS v. 29. The Exploratory Factor analysis "allows the researcher to explore the main dimensions to *generate* a theory, or model from a relatively large set of latent constructs often represented as a set of items" (Williams et al., 2010, p.3). Using Varimax rotation, one factor representing the support structure was extracted. Reliability analysis of the one factor produced a Cronbach's α of .89 for the pre-priming condition and a Cronbach's α of .88 for the post-priming condition. The pre-priming condition pertains to the questions before the scenario and the priming, and the post-priming condition accounts for those same questions asked after the participants were exposed to Alex's situation and Alex's friendship social network. A threshold of .40 was selected for acceptable factor weight. Item 26 was excluded from the analyses due to low factor weight. The single factor calculated explained 63% of the perceived social support variance for the condition pre-priming and 64% of the variance for the post-priming condition.

The factorial structure of the SPSS for the imaginary scenario was comprehensively evaluated. All questions, except for question 35, which had a factor weight lower than .40, revealed acceptable factor weights. Item 35, 'I feel like I belong to a group of friends who share my attitudes and beliefs,' is about social integration. The fact that this item does not fit well with the one-factor of social support aligns with the results obtained by Caron (1996) in his Quebec validation of the SPS. In his conclusions, he stated that there is a more considerable proximity between the emotional, instrumental, and informational social support subfactors of the scale. In contrast, the subfactor of social integration appeared to be a distinct factor. These results concord with the psychological view of the three dimensions of social support

(informational, emotional, and instrumental) (House & Kahn, 1985) as one social support factor (Thoits, 1995). Therefore, item 35 and its pre-priming version, item 26, were removed from our analysis. Our comprehensive analysis provides reassurance about the reliability of our study. Table 2 presents the results of the factorial analysis of the Social Support Scale before and after the priming.

Table 2

Results from a factor analysis of the Social Support Scale (SPS) pre- and post-intervention

SPS Item	Factor loading	
	Pre-intervention	Post-intervention
Item 15/29	.87	.87
Item 16/30	.84	.81
Item 17/31	.89	.87
Item 18/32	.88	.91
Item 19/33	.69	.82
Item 20/34	.80	.75
Item 26/35	.54	.56

3.2.3. Social Identification

Items from different questionnaires were used to measure our participants' social identification with their friends' network and the perceived social identification participants of the study imagined Alex (see Appendix F) would feel for Alex's network of friends. Social Identification was evaluated with items such as 'My friends are important to define who I am.' (item 22 of the questionnaire). The Single-Item Social Identification (Postmes et al., 2013) measure inspired item 22 (and 39) as it was found to measure social identification well (Reysen et al., 2013). The item 23 (and 38) stems from The Multigroup Ethnic Identity Measure (Phinney, 1992). The item 24 was taken from the social identification questionnaire of Leach

et al. (2008). Two items, 21 (and 36) and 25 (and 40) were created to complete the questionnaire and measure the satisfaction one gets from one's friends' network and the latter's importance for the participants. Item 24 is excluded from our analyses due to the accidental removal of its similar version in the post-condition of the questionnaire.

We examined the psychometric properties of the Social Identification with Friends Scale (SIFS) before conducting inferential analyses. Our focus was on general identification with friends. We conducted Exploratory Factor Analysis (EFA) using SPSS v. 29 and applied Varimax rotation (factors constrained to one) to achieve this. From this analysis, we extracted a single factor representing the support structure. The reliability analysis of this factor produced a Cronbach's α of .74 for the pre-priming condition and of α = .79 for the post-priming condition. An acceptable factor weight threshold of .40 was chosen.

The Social Identification with Friends Scale's factorial structure for both the pre- and post-priming was meticulously evaluated. All questions in both assessments revealed acceptable factor weights, except for question 22 in the pre-priming condition. The explained variance (61% in the initial assessment) slightly increased in the imaginary situation (66%). Table 3 reveals the results of the factorial analysis for the Social Identification with Friends Scale before and after the priming.

Table 3

Results from a factor analysis of the Social Identification with Friends Scale (SIFS) pre- and post-intervention

SIFS Item	Factor loading	
	Pre-intervention	Post-intervention
Item 21/36	.75	.70
Item 22/39	.62	.79
Item 23/38	.91	.87
Item 25/40	.83	.88

3.2.4. Control measures of density

To ensure participants understood correctly the image representing Alex's friendship network (see Appendices B to E), three items, 27, 28, and 37, were created for this questionnaire. The control of the density's perception was assessed by asking, 'All of my friends have regular contact with them' (item 28 of the questionnaire). The cross-tabulation results between the conditions and scores in the three questions showed that the participants' perception of density corresponds well with the proposed density in the experiment groups of 25%, 50%, 75%, and 100%. Table 4 provides the cross-tabulation results obtained between the densities and the control measures of density.

Table 4

Cross-tabulation results between the densities and the control measures of density

Control measures	Density							
	25%		50%		75%		100%	
	M	SD	M	SD	M	SD	M	SD
Item 27	2.40	1.35	2.57	1.07	3.0	1.33	4.17	1.68
Item 28	2.27	1.11	2.40	1.003	2.69	1.44	4.0	1.51
Item 37	2.87	1.33	3.70	1.17	3.71	1.51	4.53	1.01

3.3. Ethical Considerations

The thesis adheres to the ethical guidelines of the University of Lausanne. We took rigorous measures to protect participants' anonymity and confidentiality. Identifying information was removed, and data access was restricted to research team members. Participation was voluntary and contingent upon informed consent, with no associated risks.

Special attention was given to the scenario (see Appendix F). It was built to not distress the participants with an accident of mild emotional valence presented. Additionally, the scenario was created in the third person to help the participants distance themselves from the event presented and the network that followed it (see Appendix B to E) and avoid uneasy feelings. It was indeed feared that the participants could feel unwell if presented with a fixed number of friends, telling them to imagine it was their group of friends, especially since some people are unsatisfied with their friendship network (Lakey & Cassady, 1990). A neutral name was chosen to help participants of any gender relate to the protagonist, Alex, in the fictional scenario.

3.4. Analytical Strategies

Our objective was to examine the effects of a priming intervention on social network density, focusing on two outcome variables: social identification and perceived social support.

To achieve this, we first present the descriptive statistics and correlations among the study variables. These preliminary analyses provide a comprehensive overview of the data and help identify any underlying patterns or relationships.

We then employed a Multivariate Analysis of Variance (MANOVA) and independent samples t-tests, using SPSS Version 29 for our statistical analyses to test our hypotheses. MANOVA was chosen because it allows for the simultaneous comparison of multiple dependent variables across different groups, thus providing a more holistic understanding of the effects of our intervention.

As such, we initially conducted a MANOVA to compare our dependent variables—social identification and perceived social support—across the four experimental groups (densities of 25%, 50%, 75%, and 100%). This analysis enabled us to detect any significant differences in these variables between the groups. The MANOVA results provided a Wilks' Lambda value, indicating whether there were overall differences in social identification and perceived social support among the four groups.

Upon observing the MANOVA results, we identified a dichotomous grouping pattern, which suggested a natural division between high and low-density groups. This observation led us to further refine our analysis by dichotomizing the grouping variable into high-density (75% and 100%) and low-density categories (25% and 50%). Subsequently, we conducted independent samples t-tests to compare the differences in social identification and perceived social support between these two dichotomized groups.

By employing MANOVA and independent samples t-tests, we could comprehensively assess the impact of social network density on social identification and perceived social support, providing robust evidence to support our hypotheses. This two-step analytical

approach allowed us to identify general differences across multiple groups and then explore more specific contrasts between high and low-density conditions.

4. Results

4.1. Descriptive Statistics

To investigate how our priming intervention impacts social network density, we initially analyzed descriptive statistics and correlations among the study variables, specifically social identification and perceived social support, to provide an overall understanding of the data collected.

Table 5 presents the descriptive statistics of the variables of interest in our study. The Social Provision Scale and the Social Identification with Friends Scale were measured before and after the intervention, creating a pre and a post-score for these scales. For the Social Provision Scale, measuring the perception of social support provided by friends, the condition pre-priming had a mean score of 34.05 with a standard deviation of 5.46. This indicates that the average SPS score before the intervention was 34.05, with scores typically varying by 5.46 points from the mean. The post-intervention SPS had a mean score of 33.72 with a standard deviation of 4.91.

For the SIFS, the pre-intervention mean was 24.30, and the standard deviation was 3.62. The mean score and standard deviation were slightly higher in the post-priming, with respective scores of μ=22.30 and SD=3.91.

Overall, these descriptive statistics provide a comprehensive overview of the central tendencies and variabilities of the critical variables in the study, offering insights into the participants' well-being and life satisfaction, as well as their perceived social support and social identification before and after the intervention.

Table 5

Descriptive statistics of the variables of interest

Variables	N	Min.	Max.	Mean	SD
SPS_pre(a)	116	22.00	42.00	34.05	5.46
SPS_post	118	19.00	42.00	33.72	4.91
SIFS_pre(b)	118	13.00	30.00	24.30	3.62
SIFS_post	118	13.00	30.00	22.30	3.91
Well-Being	118	1.00	6.00	4.19	1.05
Life Satisfaction	118	3.00	6.00	4.42	.82
Age	118	17.00	41.00	22.58	4.18

Note. a. SPS= Social Provision Scale b. SIFS= Social Identification with Friends Scale

Table 6 shows Pearson's correlations for the study variables. The correlations indicate the strength and direction of the linear relationships between these variables. Several statistically significant relationships were noted.

Firstly, Well-Being has a strong, significant positive correlation with Life Satisfaction (*r=.47, p<.001*), indicating that higher well-being is associated with higher life satisfaction.

Table 6

Pearson's Correlations for Study Variables

Variables	1	2	3	4	5	6	7	8
1. Well-Being	--							
2. Life Sat.	**.46****	--						
3. SPS_pre	.17	**.19***	--					
4. SPS_post	.10	.16	**.41****	--				
5. SIFS_pre	.04	.07	**.75****	**.19***	--			
6. SIFS_post	.04	.12	**.24***	**.77****	**.19***	--		
7. Gender (a)	.11	-.05	-.17	-.09	-.12	-.04	--	
8. Age	.07	-.05	-.14	**-.24****	-.11	**-.20***	.11	--

Note. *p < .05. **p<.01 a. 1=woman 2=man

Higher satisfaction with life is also associated with higher perceived social support before the intervention, as demonstrated by its positive correlation with the Social Provision Scale pre-intervention ($r=.19, p<.05$).

Additionally, higher perceived social support before the intervention predicts increased perceived social support after the priming ($r = .41, p < .001$) and has a weaker, but still significant, association with higher social identification following the intervention ($r = .24, p < .01$). It is also strongly associated with stronger social identification with friends before the priming ($r=.75, p<.001$).

Higher perceived social support after the priming is related to higher social identification following the intervention ($r = .77, p < .001$) and with higher social identification before the priming ($r = .19, p < .05$). On the other hand, older participants have lower perception of social support related to friends after the intervention ($r =- .24, p < .01$).

Higher social identification with friends before the priming is associated with higher social identification after the intervention ($r = .19, p < .05$).

Lastly, younger (vs. older) participants have a stronger social identification with friends after the intervention ($r = -.20, p < .05$).

In summary, the correlation table reveals several significant relationships among the variables. Notably, the Social Provision Scale (SPS) post-intervention strongly associates with its pre-intervention counterpart (SPS_pre) and with the pre- and post-intervention Social Identification with Friends Scale (SIFS). Furthermore, well-being and life satisfaction exhibit a significant positive correlation, emphasizing their interrelated nature in this study's context. Interestingly, gender shows no significant correlation with other study variables, while age negatively correlates with both SPS_post and SIFS_post intervention scores.

4.2. Analysis of Variance

Table 7

Fixed-Effects Anova results and effect size using density as the criterion.

				95% Confidence Interval	
	F(3, 114)	Sig.	η^2	Lower	Upper
SPS_post	2.57	.06	.06	.001	.15
SIFS_post	5.13	**.002****	.12	.02	.22

Note. **p<.01

Table 7 presents the variance analysis results for the Perceived Social Support post-intervention (SPS_post) and Social Identification post-intervention (SIFS_post) across the four density groups. There was no significant effect of the density on the perceived social support post-priming at the p-value level of <.05 [F(3, 114)= 2.57, p=.06] with an eta-squared (η^2) of 0.06 indicating a small to medium effect size. The effect size has a 95% confidence interval ranging from 0.001 to 0.15. The results of the social identification post-intervention variable revealed a significant effect of the density [F(3, 114)= 5.13, p < 0.01]. The effect size, calculated as eta-squared (η^2), is 0.12 with a 95% confidence interval ranging from 0.02 to 0.22, indicating a medium effect. These results suggest that while the intervention did not significantly affect perceived social support scores between the groups, it did significantly affect social identification scores.

Table 8 provides the multiple comparisons table, using the Scheffe test to evaluate the differences between the four density conditions (25%, 50%, 75%, and 100%) for the dependent variables Social Provision Scale post-intervention (SPS_post) and Social Identification with Friends Scale post-intervention (SIFS_post). For SPS_post, no statistically significant differences were found between any pairs of conditions, with p-values above the 0.05 threshold, although the difference between 25% net and 100% net *approached* significance (p = 0.07). For SIFS_post, significant differences were found between 25% net and 100% net

conditions (mean difference = -3.70, p< 0.05), indicating that participants in the 100% net condition had significantly higher social identification scores post-intervention compared to those in the 25% net condition.

Table 8

Scheffe's Multiple comparisons and homogeneous table for social support and social identification using density as the criterion

Variables	Comparison		MD(a-b)	p	Subset for α=.05	p
	Density(a)	Density(b)				
SPS_post	25%	50%	-.10	.91	32.33	.08
		75%	-1.35	.77		
		100%	-3.30	.07		
	50%	25%	.10	.91	33.23	
		50%	-.45	.99		
		100%	-2.43	.29		
	75%	25%	1.35	.77	33.68	
		50%	.45	.99		
		100%	-1.10	.48		
	100%	25%	3.33	.07	35.67	
		50%	2.43	.29		
		75%	1.99	.48		
SIFS_post	25%	50%	-1.87	.29	20.30	.09
		75%	-2.49	.10		
		100%	**-3.70***	**.003**		
	50%	25%	1.87	.29	22.17	
		50%	-.62	.94		
		100%	-1.83	.31		
	75%	25%	2.49	.10	22.79	
		50%	.62	.94		
		100%	-1.21	.67		
	100%	25%	**3.70***	**.003**	24.00	
		50%	1.83	.31		
		75%	1.21	.67		

Note. *p < .05. **p<.01 M.D.: Mean Difference

The homogeneous subset analyses further illustrate the mean differences among the groups as shown in table 8. For SPS_post, the means ranged from 32.33 to 35.66, with a significance level of 0.07, indicating no statistically significant differences among the groups. For SIFS_post, the means ranged from 20.30 to 24.00, with the 25% density condition forming a distinct subset with a lower mean and the 100% density condition forming a distinct subset with a higher mean at a significance level of 0.09. This confirms that higher social network density is associated with increased social identification scores post-intervention.

The findings from the multiple comparisons and homogeneous subsets table highlight notable trends in the data, particularly for social identification post-intervention (SIFS_post). While the comparisons for perceived social support post-intervention (SPS_post) did not reveal statistically significant differences between the four density conditions, the social identification results indicate a significant difference between the 25% and 100% density conditions, with higher social identification scores observed in the 100% density group. This suggests that higher social network density may be linked to greater social identification with the network. Given this observed dichotomous pattern, it is compelling to further explore the potential impact of social network density by comparing high-density groups (75% and 100%) with low-density groups (25% and 50%). To investigate this further, we conducted an independent samples t-test to compare the high-density and low-density groups, aiming to provide more precise insights into how varying levels of social network density influence social identification and perceived social support, thus enabling a more focused investigation of the intervention's effectiveness.

4.3. T-test results

Table 9

Independent T-test of social support and social identification

	Low Density		High Density		t(116)	p	Cohen's d
	M	SD	M	SD			
SPS_post	32.78	4.29	34.71	5.34	2.16	**.02**	-.39
SIFS_post	21.23	3.80	23.41	3.76	3.13	**.001**	-.57

Table 9 reports the results obtained on the independent sample t-test for the Social Provision Scale post-intervention (SPS_post) and the Social Identification with Friends Scale post-intervention (SIFS_post) for the low-density conditions (25-50%) and high-density conditions (75-100%).

The independent samples t-test results show significant differences between the high-density and low-density groups for both the perceived social support post-intervention (SPS_post) and the social identification post-intervention (SIFS_post). Levene's test for equality of variances was not statistically significant for either of the variables of interest (SPS_post, SIFS_post), so equal variances were assumed. The t-test comparing the perceived social support in low (M=32.78, SD=4.29) versus high density (M=34.71, SD=5.34) revealed a significant difference between the groups ($t(116) = 2.16$, $p = 0.02$, one-tailed), indicating that the high-density group had significantly higher perceived social support scores post-intervention compared to the low-density group. For SIFS_post, the t-test showed a significant difference ($t(116) = 3.13$, $p = 0.001$, one-tailed) between the low density (M=21.23, SD=3.80) and the high-density (M=23.41, SD=3.76). This indicates that higher density (vs. low density) leads to higher social identification after the presentation of the priming. The 95% confidence intervals for the differences in means do not include zero, further supporting the significance of these findings.

To investigate how important those statistically significant t-test results are, Cohen's d was calculated. Cohen's d is -0.39 for perceived social support, indicating a small to medium effect size. This effect size suggests that the high-density group had moderately higher perceived social support scores post-intervention than the low-density group. Cohen's d is -0.57 for social identification, indicating a medium effect size. These results suggest that the high-density group had significantly higher social identification scores post-intervention than the low-density group.

5. Discussion

This study investigated the link between perceived density and its influence on social identification and perceived social support in an important life domain (friendship). Its primary inspiration was the Lee et al. (2020) paper. We focused on friendships, which are considered essential in early adulthood (Mehrpour et al., 2024). We hypothesized that social identification and perceived social support would positively associate with a denser (vs. sparser) network. We tested how the density of a friendship network would influence social identification and perceived social support using, in the first instance, a Manova and, in a second round of analysis, a T-Test. The first model tested, the Manova, with each of the densities as separate entities, yielded statistically significant results for social identification and close to significant results for social support. Scheffe's posthoc test allowed us to see the results more in-depth and showed a statistically significant difference for social identification between the 25% and 100% densities. There was no statistical difference between the densities for the social support. However, for the 25 and 100% densities, we could notice it was close to the statistical significance threshold of 0.5 p-value. Constating a trend, we decided to perform a T-Test to verify it. Our second model, with network density measured as a dichotomous entity, placing 25 and 50% together and 75 and 100% density together, resulted in statistically significant social identification and perceived social support. Results, therefore, fully supported our

hypothesis, as our model shows that denser friendship groups lead to higher levels of social identification and perceived social support.

5.1 General findings

The correlation table (table 6) yielded a couple of significant results. Firstly, the age of the participants was significantly negatively correlated with the perceived social support and the social identification post-intervention and negatively but not in a significant way with social identification and perceived social support before the priming. This tendency is slightly stronger for perceived social support than for social identification. This indicates that the older the participants are, the less they identify and draw support from their group of friends. It might be that they reach and rely upon other sources of support more heavily, such as their partner or family, especially in the context of the scenario presented. Our results align with the Convoy Model (Kahn & Antonucci, 1980), especially with Levitt et al. (1993, p.326) findings that "friend support decline[d] from young to middle and from middle to older adulthood." and that middle and older generations put more family in their inner circle than does the young adults.

The statistically positive correlation between life satisfaction and the measure of perceived social support before the priming could be accounted for by personality differences among the sample, as positive (vs. negative cognitions) influence life satisfaction as well as how much a focal individual perceives they will receive social support from their network (Han et al., 2021; Lakey & Cassady, 1990). This correlation also supports the claim that higher perceived support leads to higher life satisfaction (Dehghani, 2018; Kasprzak, 2010).

Perceived social support and social identification correlate strongly before and after the priming, highlighting their impact on each other. Our study's high levels of correlation between perceived social identification and social support replicate those obtained by Junker et al. (2019), who showed that social identification positively relates to perceived social support. Junker et al. (2019) also demonstrated that social identification was crucial in perceiving social

support as positive. This correlation is less intense when comparing the social identification pre-intervention to the perceived social support post-intervention and the perceived social support pre-intervention to the social identification post-intervention. These results suggest that the intervention did impact the answers of our sample.

The perceived social support before and after the intervention correlates moderately, whereas the social identification with friends correlates weakly but still significantly. This would indicate that the intervention had a stronger effect on social identification than on perceived social support. The findings of our main analysis, which will be discussed in the following chapter, support this.

5.2. The effect of density on social identification and perceived social support

Lee et al. (2020) found that density positively predicted the inclusion of others in the self, which can account for social identification. In our study, both the Manova and the T-Test models demonstrated an effect of density on social identification, thus confirming Lee et al.'s (2020) results. It is important to note that both Lee et al. (2020) and our study used a survey methodology which impacted our findings. However, the items used in our research differed from those in Lee et al. (2020), which adds to the generalizability of both our findings.

The first model of the study did not yield significant results on the effect of density on perceived social support; however, the second did. The problem lay mainly in the 50 and 75% densities. The difference between the 25 and the 100% densities was perceived and significantly impacted social support, as the Scheffe multiple comparisons table demonstrates (table 8). The second model accentuated the differences in densities, thus revealing the density's impact on perceived social support. These results corroborate those of Lee et al. (2020).

This difference in the impact of density on social identification and perceived social support could be accounted for by personality trait differences, which could substantially influence the perception of social support more than social identification. Thus, a more stable pattern in the perception of social support would be created than in social identification, which would rather be more influenced by momentary changes in an individual's environment as predicted by the Self-Categorization theory (Abrams & Hogg, 1990; Turner et al., 1987). In their longitudinal study of men, Vinokur et al. (1987) demonstrated that even though a strong component of the perception of support came from interpersonal transactions, a stable personality component moderately determined it, thus pushing for the consideration of both personality and social interaction when studying and considering the perception of social support. On the other hand, few studies have been conducted on the personality trait component of social identification. One study investigated the impact of personality traits on organizational identification (Aghaz & Hashemi, 2014). The results of this experiment revealed that personality traits had a significant positive relationship with organizational identification, with individuals showing traits of extraversion and agreeableness (vs. neuroticism) being more identified with their organization.

Our findings add to the existing literature positing that people are more likely to perceive support through social identification with a given group (Butler et al., 2019; Haslam et al., 2016; Haslam et al., 2005, 2009). Therefore, social identification leads to the unfolding of perceived social support. This directionality could explain why our intervention affected social identification more than perceived support, as density would impact perceived social support through social identification.

5.3. Implications

Our study confirmed and furthered the findings of Lee et al. (2020). By adding two density conditions, respectively 50 and 75%, we could test whether they impacted perceived

social support and social identification. The fact that our results were inconclusive shows that it is the stark difference in density that influences our variables of interest. Our study brings novelty to the literature by highlighting how denser (vs. sparse) networks increase social identification and its more substantial effect than on perceived social support, thus confirming that it is through this meso level that perceived social support can unfold its positive effects in the context of friendships networks. By taking a fixed-sized approach, we uncovered the sole effects of density on social identification and perceived social support. Moreover, our experiment adds to the literature by shedding light on the directionality of psycho-social processes. The perception of the density cognitively modifies the social identification and the perception of social support.

On a practical side, our results could further enhance the effectiveness of existing interventions such as *Groups 4 Health* (Haslam et al., 2016), whose aim is "to build and sustain social identities and social identification" to improve general health and life satisfaction (Haslam et al., 2019, p.788) based on The Social Identity Approach to Health (Haslam et al., 2018). By considering and assessing the structural component of density, therefore enabling participants to improve the connectivity within their existing networks, this intervention would remove the pressure of finding new members to add to the network. This approach would strengthen an individual's social identification with their network, thereby boosting perceived social support. However, it is essential to assess network satisfaction, as denser networks can also have detrimental health impacts.

5.4. Limits and Ideas for Future Research

While our research provides valuable insights, we must acknowledge several limitations inherent in our study. Firstly, its setting. The experimentation was conducted in a non-controlled environment, namely the cafeteria sites of the campus of the University of Lausanne. This meant that participants could exchange about the study and share answers. This

also signifies that most of the population participating in our study was students; therefore, they all had a relatively high level of education. Our experiment also had the form of a survey, which undoubtedly impacted the results obtained. Moreover, as the study was conducted in Switzerland, we must not forget the impact the Swiss culture might have had on replying to the different questions. Another essential point to consider is Alex's priming situation. Some participants might not have related to the story or find it difficult to put themselves in someone else's place to answer the post-priming questions. Our participants might not have understood the network images well, causing them to not answer the questions following the networks to their best abilities.

Looking ahead, there is a wealth of potential for future research. Exploring participants' personal friendship networks could provide valuable insights. By analyzing the strength of ties connecting individuals within these networks and to the participant, we can better understand the importance and influence of specific relationships. Additionally, considering participants' personality traits is crucial, as it shapes their perception of friends and the support they can offer (Lakey & Cassady, 1990; Totterdell et al., 2008; Vacca, 2018; Veenstra & Laninga-Wijnen, 2023). Finally, conducting a cross-cultural replication of this study using a non-probabilistic, diverse sample would yield valuable insights into the impact of culture. The potential for future research is vast, and the insights it could yield are genuinely inspiring.

6. Conclusion

Our experiment aimed to investigate how the primed density of a friendship network impacts an individual's social identification and the available support perceived by that given network. Our quantitative findings are consistent with our hypothesis. Indeed, in our study, we demonstrated experimentally that higher levels of density in a bonding capital network, particularly friendship, lead to momentary higher levels of social identification and perceived social support.

Our results have practical implications for future interventions such as *Groups 4 health* (Haslam et al., 2016) by aiming to guide people to improve the communication in their network and helping them realize that it is not the size of their personal network that matters but how well communication flows in it. In that aim, the use of electronic means of communication could enhance communication throughout the networks by focusing on the people we feel close to rather than looking at expanding our friendship network.

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Appendices

APPENDIX A-QUESTIONNAIRE

Questionnaire sur l'entraide interpersonnelle

Cher.e participant.e,

Ce questionnaire fait partie d'une recherche de master de l'institut de psychologie à l'Université de Lausanne. Ce questionnaire inclut une **situation imaginaire** suivie de questions concernant la manière dont vous pourriez **vous sentir et vous comporter** dans un contexte similaire. Il n'y a pas de réponses justes ou fausses. Essayez de vous imaginer dans la situation et de répondre aux questions de la façon la plus spontanée possible.

Votre participation à l'étude est volontaire et vous pouvez arrêter l'étude à tout moment. Cependant, nous apprécions toute participation et vous assurons que les données récoltées seront traitées de façon anonyme et que nous suivons la procédure définie par la commission d'éthique de la faculté des sciences sociales et politiques quant à la protection et conservation des données. Ces dernières seront utilisées uniquement à des fins de recherche pour un mémoire de master, un doctorat ainsi que d'éventuelles futures publications.

En remplissant ce questionnaire vous donnez votre consentement pour participer à l'étude ainsi qu'à l'utilisation de vos données anonymisées à des fins strictement scientifiques.

Merci de votre collaboration,

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Informations personnelles

1. Vous êtes ?

   ☐ Femme ☐ Homme ☐ Non Binaire ☐ Ne souhaite pas répondre

2. Quel âge avez-vous ? _____

3. Quelle est votre nationalité ?

   ☐ Suisse ☐ Autre, précisez :_____

4. Si vous n'êtes pas né.e.s en Suisse, depuis combien d'années résidez-vous en Suisse ?

   _____

5. Veuillez nous indiquer votre activité principale actuelle

   ☐ Je suis étudiant.e en Bachelor, année _____

   ☐ Je suis étudiant.e en Master, année _____

   ☐ Autre, veuillez préciser _____

6. Quelle est votre Faculté et votre filière ?

   _____

Vous-même

Indiquez à quel point les affirmations suivantes sont exactes pour vous.

	Non, pas du tout	Non	Plutôt non	Plutôt oui	Oui	Oui, tout à fait
7. Dans l'ensemble, je suis satisfait.e de moi-même.	☐	☐	☐	☐	☐	☐
8. J'ai confiance en ma capacité à surmonter mes problèmes.	☐	☐	☐	☐	☐	☐
9. Je pense que j'ai beaucoup de qualités.	☐	☐	☐	☐	☐	☐
10. Mon état de santé est de manière générale satisfaisant.	☐	☐	☐	☐	☐	☐
11. Mes conditions de vie sont bonnes.	☐	☐	☐	☐	☐	☐
12. Généralement, je me sens bien dans ma peau.	☐	☐	☐	☐	☐	☐
13. Je suis satisfait.e de ma vie.	☐	☐	☐	☐	☐	☐
14. A chaque problème, j'arrive à trouver une solution.	☐	☐	☐	☐	☐	☐

Votre relation avec vos ami.e.s

Indiquez à quel point les affirmations suivantes sont exactes pour vous.

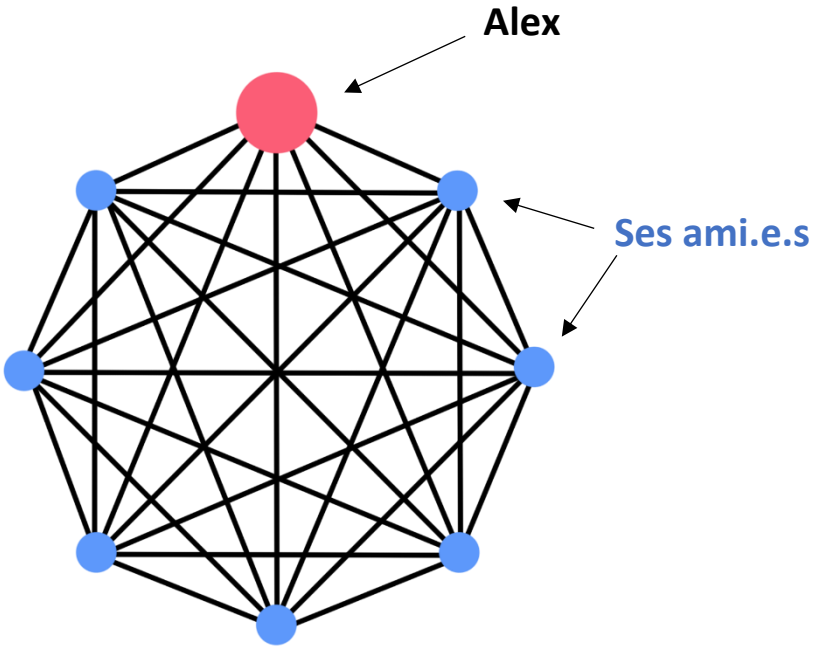
	Non, pas du tout	Non	Plutôt non	Plutôt oui	Oui	Oui, tout à fait
15. Je peux compter sur mes ami.e.s pour m'aider en cas de besoin.	☐	☐	☐	☐	☐	☐
16. Mes ami.e.s m'apportent un sentiment de sécurité affective et de bien-être.	☐	☐	☐	☐	☐	☐
17. Je peux discuter avec mes ami.e.s des décisions importantes concernant ma vie.	☐	☐	☐	☐	☐	☐
18. Je peux faire appel à mes ami.e.s pour me conseiller si j'ai des problèmes.	☐	☐	☐	☐	☐	☐
19. Je me sens à l'aise pour discuter de mes problèmes avec mes ami.e.s.	☐	☐	☐	☐	☐	☐
20. Je peux compter sur mes ami.e.s en cas d'urgence.	☐	☐	☐	☐	☐	☐
21. Je suis satisfait.e de mon groupe d'ami.e.s.	☐	☐	☐	☐	☐	☐
22. Mes ami.e.s sont important.e.s pour définir qui je suis.	☐	☐	☐	☐	☐	☐
23. Je suis très attaché.e à mes ami.e.s.	☐	☐	☐	☐	☐	☐
24. J'ai des liens forts avec mes ami.e.s	☐	☐	☐	☐	☐	☐
25. Mes ami.e.s sont important.e.s pour moi.	☐	☐	☐	☐	☐	☐
26. J'ai l'impression de faire partie d'un groupe d'ami.e.s qui partage mes attitudes et mes croyances.	☐	☐	☐	☐	☐	☐

Scénario

Vous allez maintenant lire un scénario fictif et ensuite répondre à quelques questions concernant cette histoire. Veuillez répondre comme si vous étiez le/la protagoniste du scénario. Il n'y a pas de bonnes ou de mauvaises réponses.

Imaginez qu'un après-midi Alex se promène dans son quartier. **Soudainement, un cycliste surgit de nulle part**. Il ne voit Alex qu'au dernier moment. Surpris, le cycliste **perd le contrôle de son vélo et renverse Alex**. Le cycliste s'excuse tout juste et s'enfuit. Alex **se retrouve par terre**, **choqué.e** par ce qui vient de se passer, **désorienté.e**, et avec une épaule blessée. Avec grande difficulté, Alex parvient à se relever et à marcher jusqu'à sa maison. Alex s'allonge sur son canapé et **décide d'appeler ses ami.e.s** afin de parler de ce qui vient de se passer. Alex souhaite aussi leur **demander des conseils** sur quoi faire maintenant concernant sa blessure et le cycliste qui a pris la fuite.

Alex a contacté des personnes de son réseau comme présenté sur l'image ci-dessous. Alex est représenté par le point rose. S'il y a un lien entre deux points (représentant des personnes), cela signifie que ces personnes se connaissent et ont des contacts réguliers entre elles.



Sur la base de la situation présentée et en tenant compte du réseau d'amis d'Alex, veuillez répondre aux questions suivantes.

	Non, pas du tout	Non	Plutôt non	Plutôt oui	Oui	Oui, tout à fait
27. Mes ami.e.s se connaissent tout.e.s	☐	☐	☐	☐	☐	☐
28. Tous mes ami.e.s ont des contacts réguliers entre eux	☐	☐	☐	☐	☐	☐

Veuillez répondre aux questions comme si vous étiez Alex.

Si j'étais Alex, je pense que… :

	Non, pas du tout	Non	Plutôt non	Plutôt oui	Oui	Oui, tout à fait
29. … je pourrais compter sur mes ami.e.s pour m'aider en cas de besoin.	☐	☐	☐	☐	☐	☐
30. … mes ami.e.s m'apporteraient un sentiment de sécurité affective et de bien-être.	☐	☐	☐	☐	☐	☐
31. … je pourrais discuter avec mes ami.e.s des décisions importantes concernant ma vie.	☐	☐	☐	☐	☐	☐
32. … je pourrais faire appel à mes ami.e.s pour me conseiller si j'ai des problèmes.	☐	☐	☐	☐	☐	☐
33. … je me sentirais à l'aise pour discuter de mes problèmes avec mes ami.e.s.	☐	☐	☐	☐	☐	☐
34. … je pourrais compter sur mes ami.e.s en cas d'urgence.	☐	☐	☐	☐	☐	☐
35. … je sentirais que je fais partie d'un groupe d'amis.e.s	☐	☐	☐	☐	☐	☐
36. … je serais satisfait.e de mon groupe d'ami.e.s.	☐	☐	☐	☐	☐	☐

Si j'étais Alex, je pense que … :

37. … mes ami.e.s se concerteraient entre eux/elles pour me venir en aide.	☐	☐	☐	☐	☐	☐
38. … je serais très attaché.e à mes ami.e.s.	☐	☐	☐	☐	☐	☐
39. … mes ami.e.s feraient partie de mon identité.	☐	☐	☐	☐	☐	☐
40. … mes ami.e.s seraient important.e.s pour moi.	☐	☐	☐	☐	☐	☐

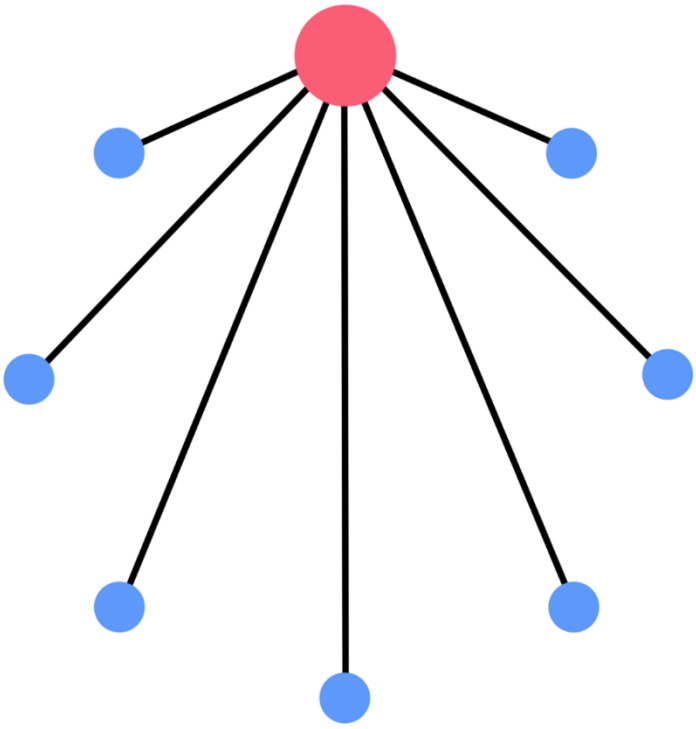
Remarques/suggestions

Le questionnaire est terminé.
Nous vous remercions d'y avoir participé !

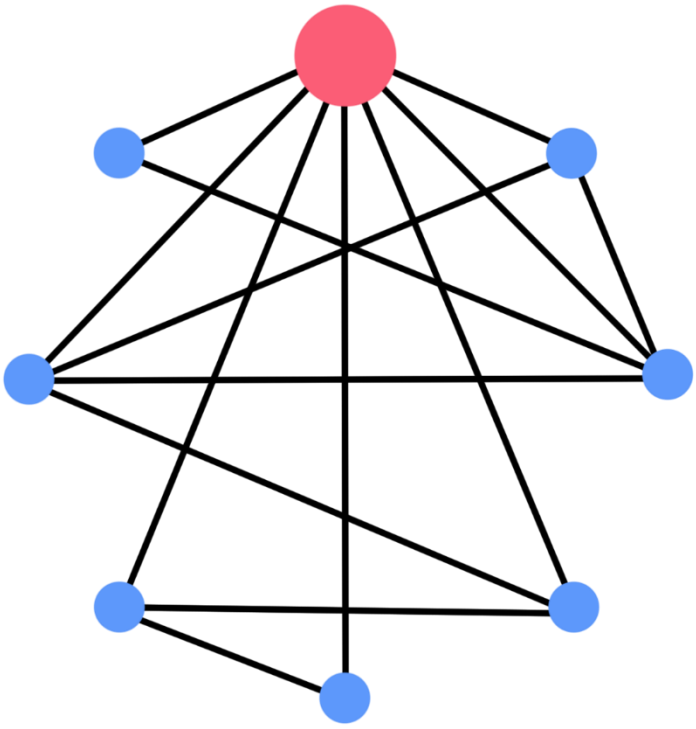
Si vous avez des questions, vous pouvez nous contacter

Esther.Vandersluis@unil.ch
Anahita.Mehrpour@unil.ch

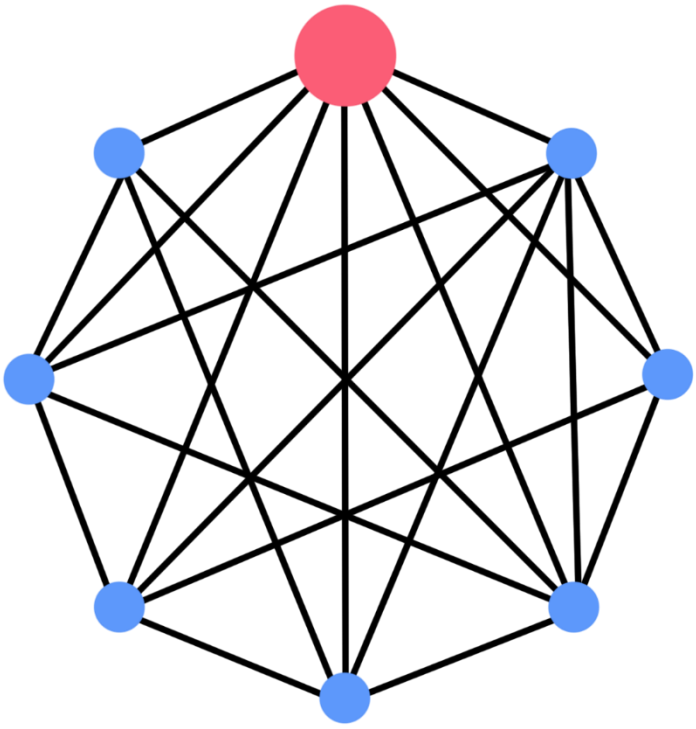
APPENDIX B-NETWORK DENSITY 25%



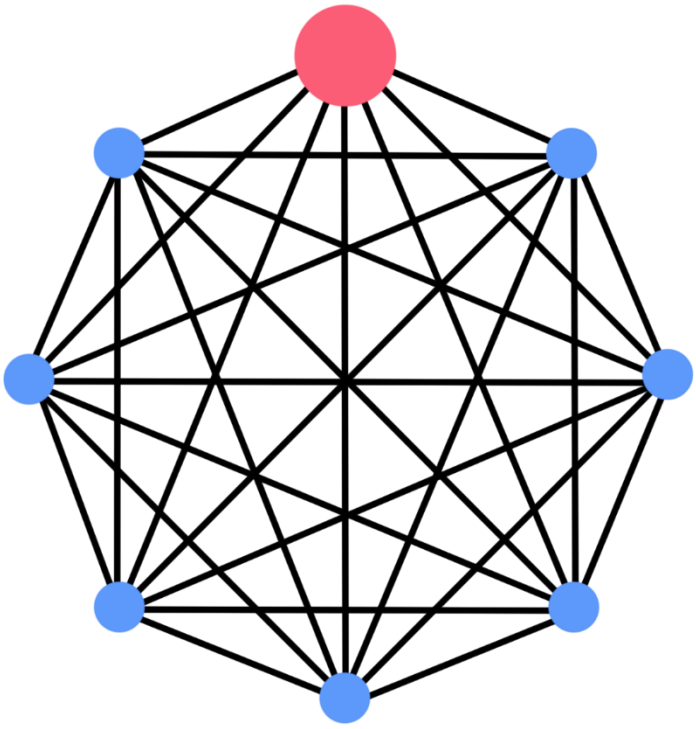
APPENDIX C-DENSITY 50%



APPENDIX D-DENSITY 75%



APPENDIX E-DENSITY 100%



APPENDIX F-SCENARIO

Imaginez qu'un après-midi Alex se promène dans son quartier. **Soudainement, un cycliste surgit de nulle part**. Il ne voit Alex qu'au dernier moment. Surpris, le cycliste **perd le contrôle de son vélo et renverse Alex**. Le cycliste s'excuse tout juste et s'enfuit. Alex **se retrouve par terre**, **choqué.e** par ce qui vient de se passer, **désorienté.e**, et avec une épaule blessée. Avec grande difficulté, Alex parvient à se relever et à marcher jusqu'à sa maison. Alex s'allonge sur son canapé et **décide d'appeler ses ami.e.s** afin de parler de ce qui vient de se passer. Alex souhaite aussi leur **demander des conseils** sur quoi faire maintenant concernant sa blessure et le cycliste qui a pris la fuite.