Coping with Depression: A Dynamic Networks Approach to the Study of Social Network Constellation, Cohesion and Conflict

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Abstract

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Humanity is now witnessing one of the highest rates of displacement since the beginning of its history, with an unprecedented 79.5 million people around the world being forced to leave their homes; among whom are 26 million refugees. Since 2011, the protracted Syrian war has threatened the stability and well-being of all persons affected by the war. In these complex emergencies, regular access to resources, pathways to building social ties, and utilization of existing service networks (such as education, healthcare, and protection) are disrupted. Nine Syrian refugees and Lebanese host currently living in Lebanon screened positive for clinical depression and receiving interpersonal psychotherapy (IPT) by Lebanese providers were recruited for the study. A novel social network assessment tool using a dynamic network framework was designed and preliminarily tested to explore social support and conflict in the sample during IPT. Changes in social support and conflict resolution were assessed pre-and post-IPT in the depressed selection. To our knowledge, this is the first-of-its-kind study to adopt a dynamic, multiplex, open-system approach to identifying, classifying, and exploring temporal changes in the social network roles in both refugees and host population(s) with specific goal orientation. This is also the first to study these in the context of individuals with a mental health problem receiving IPT for depression treatment. Outcomes indicate promise of the use of the dynamic network theory’s survey approach (aka network goal analysis) among depressed participants and provides important insights about pathways through which persons activate
social support and resolve conflict in a humanitarian emergency setting. Amidst war, economic downturn, COVID-19 pandemic, and recent bomb blasts, communities have been fragmented and their social ties, severed. Increasing rates of common mental disorders have worsened peoples’ capabilities for survival. This novel dynamic network approach to the study of social support and conflict resolution brings into focus pathways and social roles among depressed individuals crucial for social support, with implications for policymakers and mental health practitioners.

*Keywords.* Dynamic networks, Interpersonal psychotherapy, Social support, Conflict, Cohesion
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Acronyms:

- CMD: Common Mental Disorders
- IPT: Interpersonal Psychotherapy
- FGD: Focus Group Discussions
- GMH Lab: Global Mental Health Lab
- HIPAA: Health Insurance Portability and Accountability Act (this is a United States legislation that provides data privacy and security provisions for safeguarding medical information).
- IPT: Interpersonal Psychotherapy
- LMIC: Low and Middle-Income Countries
- MHPSS: Mental Health and Psychosocial Support
- MoPH: Ministry of Public Health (Lebanon)
- NMHP: National Mental Health Programme (Lebanon)
- PTSD: Post Traumatic Stress Disorder
- SDGs: Sustainable Development Goals
- TC: Teachers College
- UN: United Nations
Acknowledgments

Firstly, how this work could and should be carried out was fueled by my advisor’s belief that - "When the world crumbles around us, support makes us feel safe and hope keeps us from resigning” (Verdeli, media communication, 2015). Since knowing of such a perspective, support took on a profound and deeper meaning for me. Dr. Lena Verdeli trusted and guided me to participate and gradually coordinate the studies pertaining to refugee mental health at the Global Mental Health Lab (GMH Lab), Teachers College. Here, I learned how to think about social justice issues in the context of a scientific enterprise. Rather, I unlearned the tendency to divorce scientific thought from human rights issues or to separate the phenomenology of pathology from social determinants of health. In fact, she role-modeled – as a thinker, practitioner and teacher – a deeply humane, equitable and inclusive approach to the study of populations in deep poverty, residing on the margins of the society - in a way that is respectful and empowering for the ‘observed’. In the broad discipline of global public and mental health, such approaches are argued but rarely utilized (because tools are limited) and highly challenging to adopt (because some populations are approached whilst active conflicts, internal displacement, or genocides). Because she mentors relentlessly, teaches tirelessly, and supports unconditionally, I am indebted to her for the growth that I have experienced as a person, a student, and certainly, as a researcher in training.

Secondly, while the premise of suffering in the global mental health research is seen to be pathological – in that recovery may be seen as the remission of symptoms that only specialist doctors could treat - it was at the GMH Lab – by challenging such dogmatic paradigms; in active and critical dialogues with my colleagues that a reconstruction of recovery through the lens of
increased self-efficacy, social and economic functioning – of wellness - came to my awareness. I am grateful to my colleagues for such synergy who became my friends and thought partners over time. This work was entrusted and shaped through arduous, continuous dialogue with Ms. Sandra Pardi Maradian, project coordinator for the parent study and liaison for this dissertation. She single-handedly interviewed the patients and maintained regular monitoring of this project. On very dark days in Lebanon amidst the economic crises, the bomb blasts, and loss of life – she maintained a steadfastness to keep the project on track, instilling a pragmatic hope that would made this work possible. As such, for each of the Lebanese clinicians who discussed the nuances of implementing this study in Lebanon with their host and refugee patients, I commend their relentless spirit of service. They see patients in camps, rural lands, urban clinics, as well as in the midst of personal turmoil. Their spirit of humanitarian presence for their patients and their own zest of ensuring that this dissertation remained respectful of local norms, I am shaped by such trust and involvement, and look forward to a future in which we will join forces towards improved mental health services in far reaching, most underserved regions.

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Dedication

I am forever grateful to the kin who over many generations, suspended oppressive practices such that I could be free. This dissertation is in honor and memory of those who were lost crossing borders, so that I could grow in safety and with freedom of thought.
Chapter 1: Background & Significance

“To be stripped of citizenship is to be stripped of worldliness; it is like returning to a wilderness as cavemen or savages... A man who is nothing but a man has lost the very qualities which make it possible for other people to treat him as a fellow man... they could live and die without leaving any trace, without having contributed anything to the common world.”

- Hannah Arendt, The Origins of Totalitarianism

1.1 Refugee Crisis in the Context of Complex Emergencies and Forced Displacement

Humanity is now witnessing one of the highest rates of displacement since the beginning of its history with an unprecedented 79.5 million people around the world are forced to leave their homes (37,000 people are forced to flee their homes every day, UNHCR, 2020). Among them are nearly 26 million refugees; one person is displaced due to persecution every 2 seconds (UNHCR, 2020). Since 2011, the protracted Syrian war has had tragic consequences on all persons living in Lebanon (including the displaced refugees and the host), threatening their stability, health, and well-being. This study explores the relationship between social support and emotional well-being of both, the refugees and the host in Lebanon. Currently, around 6.6 million Syrian persons are internally displaced inside the country with over 5.6 million spread across neighboring countries of Lebanon, Turkey and Jordan; About 1.5 million reside in various urban and rural areas in Lebanon, with around 69% living in sheltered camps and below the national poverty line without formal work permits and/or citizenship and nationality rights.

When the person’s interpersonal and social contexts are thwarted or disrupted due to enduring adversities and losses, they experience cascading, and often long-term negative mental health effects. The displacement of Syrians and other sub-groups such as the Iraqis in Lebanon has
come with many personal losses and distal structures - employment, education and health - were also uprooted. These tragedies may have acutely affected their psychological well-being, challenging pre-existing sources of support, reliance and coping. In this active emergency context, building social capital may be a means of survival.

This dissertation study was based on two empirically-validated principles: 1) the relationship between interpersonal problems and psychological distress is reciprocal and bidirectional and 2) complex social networks influence the individual’s goal and life pursuits (with implications of increased social cohesion, ability to manage conflict, and motivation to recover from a depressed state – strong social networks buffer stress (Cohen & Wills, 1985). As such, the primary focus of this dissertation was linking social capital and support networks with positive mental health outcomes among all persons affected by adversity and crises in Lebanon including the Syrian refugees and the Lebanese host populations. Broadly, this study aims to explore ways to recognize and measure the interlinkages between individual- and environment-level factors in this population experiencing a complete breakdown of social and ecological systems.

Social capital contributes to health inequalities within and between populations - a view that has been adopted by social scientists, policy makers, and international institutions, including the WHO and the World Bank (World Bank, 2001). Decades of research has shown that our social networks substantially impact our physical health and psychological well-being (Gottvall, Vaez, & Saboonchi, 2019; Kotsilieris, Pavlaki, Christopoulou, & Anagnostopoulos, 2017; Wright, 2016). Another closely linked construct to social capital, is social support. Social support is defined as a “system of formal and informal relationships through which individuals receive emotional support, material or information to cope with stressful emotional situations”
(Caplan, 1974). When social support structures are closely examined, they may provide important insights into the individuals’ perception of being “protected, loved and valued” (Investigators, 2003, p. 43). A sense of belonging to a network of people in which the person can communicate and mutually connect with others is central to the experience of social support (Sarason, 2013).

Social support is vital the wellbeing and improved health outcomes (Hanley et al. 2018; Kingsbury 2017; Simich et al. 2003; Wen & Hanley 2016; Willkinson & Marmot 2003). Social networks (i.e. the links between individuals, organizations, communities and institutions) allow access to various resources at both, the individual and community levels. For this study, the social network theory approach, which advocated for the idea that social networks are “bounded sets of actors, be they organizations, institutions, or individuals that are connected by specific relationships” (Schmidt 2007), guided the framework. This approach emphasizes the linkages and relationships between different people, which can have a positive and/or a negative influence on the people involved in a person’s life.

Generally, common variables and resources connect members within and between groups in a given setting (Calhoun 2010; Leeners & Gendemann 2012; Lenders, 2012). According to Hanley et al. (2018), “social networks should be analyzed along such lines as geography (local, national, transnational), gender, religion, race and class” (p. 125). As a result, one can belong to multiple social networks at the same time. However, “because an individual may share certain characteristics with a group of individuals, does not necessarily imply that the person is networked with them or able to draw on a given connection for social support or social capital” (Ryan et al. 2008 in Hanley et al. 2018, p. 125).
Moreover, and as stated earlier, social networks are closely associated to social capital and certain scholars insist the merit of studying social networks and social capital as dependent on each other (see Lin 1999; Vertovec 2003). Social capital has been defined across disciplines, in many different ways (e.g., Bourdieu 1986; Coleman 1988; Putnam 1993; Lin 2001). The definition adopted for the purpose of this study is borrowed from the works of Robert Putnam and Nan Lin. While Putnam defines social capital as “connections among individuals—social networks and the norms of reciprocity and trustworthiness that arise from them” (Putnam, 2000, p. 18–19); Lin defines it as an “investment in social relations with expected returns in the marketplace” (2001, p. 19). In other words, it refers to the “resources embedded in social networks accessed and used by actors for actions” (Lin, 2001, p. 24–25). Though these two definitions slightly vary, their essence lies in the common factor of placing social capital in interrelations and connections aka social networks. It is an “investment in social connectedness through which resources of other actors can be accessed and borrowed” (Bhandari & Yasunobu 2009, 492).

In line with these approaches, the social networks that are explored in this study include family, friends, acquaintances and professional contacts after displacement, post-settlement. Additionally, any resource (material or immaterial) which is accessed through social relationships will be considered as social capital. These include financial support, housing, and vital advice, community and civic engagement among other variables described later in detail. Outcomes from this study will help recognize and measure the interlinkages between individual- and environment-level factors in a displaced population experiencing a complete breakdown of social and ecological systems.
In the context of displacement, social capital has been viewed from two standard pathways: ‘bonding’ capital and ‘bridging’ capital. These typologies are helpful in making sense of the diversity and importance of the various social ties Syrian refugees maintain and establish during displacement and the processes that the host populations undergo when displacements occur. Broadly, bonding capital refers to ties to people of one’s own social group (e.g. of the same family, ethnic community or friends) that constitutes a fairly homogenous set of connections and relations. On the contrary, bridging capital refers to horizontal connections to people and groups in the wider community (e.g. with individuals from different racial and ethnic groups, colleagues at a workplace, inhabitants of a different region). While the former provides safety and closeness to individuals like one’s own, the latter helps increase access to social and financial resources that may not be directly available within one’s group (Pittaway et al., 2016). Bonding and bridging capital complement one another and studies have shown that individuals who have access to or are mobilizing both, bonding and bridging sources of social capital, gain relatively more access to resources and by proxy and inadvertently, to broader networks and social connections.

1.2 Civil War and Crises in Lebanon

The 2011 Syrian civil war which is still ongoing, has led to en masse civilian displacement of about 6.6 million people, making Syria the country with the largest number of internally displaced persons in the world (IDMC 2019; UNHCR 2019a) and a majority emigrating to neighboring countries including Lebanon, Turkey and Iraq. At the moment, Lebanon hosts approximately 1.5 million Syrian refugees and migrants from other countries such as Armenia (UNHCR 2019b), making Lebanon the host to the largest number of refugees per capita in the world. With rising influx of Syrian refugees, this crisis has evolved into a protracted
situation, further straining the already bleak economic, educational, health and employment resources and infrastructure in Lebanon (Government of Lebanon and United Nations 2014; UN-Habitat and UNHCR 2014; 2018; Yassin et al., 2015).

1.3 Linking Social Networks of Refugees, Migrants and Host Population

Reports published on the informal settlements that currently exist in Lebanon for refugees and migrants, have shown that various civic and community settings are beginning to “incorporate spatial features and government practices similar to ‘camps,’ such as forms of screening and policing of residents, but without the formal legitimacy granted to them either through the state or humanitarian organizations, landlords, and the state intersect with each other” (Sanyal, 2017, p. 118). Paucity of proper housing and civic infrastructure continues to keep refugees and migrants vulnerable in the country, while perpetuating differences between them and the Lebanese host, that are all struggling for sufficient means of survival.

Although migration of Syrians to Lebanon for better employment and economic resources is unprecedented, the war has been impending their resettlement back to Syria. Instead, millions of Syrian refugees have since the war, fled their homes and faced a journey entailing displacement; “protracted liminality — a prolonged situation of insecurity and uncertainty regarding legal status, length of stay, and future moves — and settlement in familiar or unknown localities” (Palmgren, 2016, p. 4). It is within this context that this study is among the recent attempts at exploring the effects this war and such displacement has had on the social networks and social capital of both, the refugees and the host population(s) currently living in Lebanon. The only other systematic review assessing the links of social cohesion and conflicts between Syrian refugees and Lebanese host (The Social Cohesion team, World Vision International and Joseph Guay, Global Studies and International Relations and Geographic Information Science,
Northeastern University, 2020) highlights important gaps in this type of research including various sources of social cohesion and tension in the region both within, and between groups. Findings provide formative insights into the structural (e.g., poverty, resource scarcity and lack of municipal capacity in Lebanon predating the Syrian war) and proximate (e.g., racism/discrimination against the refugees in hiring for jobs, inequity in provision of housing and healthcare resources, and role of international humanitarian aid as well as forces of corruption and unfairness in resource distribution).

1.4 United Nations Sustainable Development Goals and Common Mental Disorders

Common mental disorders (CMDs) – depression, anxiety and PTSD – are known to cause significant distress and disability to individuals, their families and communities. Poor psychological health adversely impacts their daily functioning, which in turn may reduce a person’s productivity (ability to seek economic opportunities, get married, attain education and meet other developmental milestones of a healthy adult life). People with CMDs are more susceptible to poverty (Patel & Kleinman, 2003) and experience decreased human capital (i.e., a combination of educational and work experience) (Ehsan & De Silva, 2015). In the latest systematic review and meta-analysis, prevalence of CMDs was reported to be 22.1% among people residing in conflict settings (i.e. more than one in five people) which is twice as high as the prevalence reported in non-conflict and non-post-conflict settings globally (Charlson, et.al, 2019).

This in turn is linked to impeding ‘sustainable development’ in a given region (Grootaert & Van Bastelaer, 2001; Herrman, Saxena, & Moodie, 2005; Thornicroft & Patel, 2014). ‘Sustainable development’ for the purposes of this dissertation study is defined as “development that meets the needs of the present without compromising the ability of future generations to
meet their own needs” (Burtland Commission Report, 1987; UNESCO 2020 as reported in Emas, 2015, p. 1-2) and is the overarching paradigm of the United Nations Development Programme (UNDP) Goals. The UNDP SDG is the global agenda adopted by the UN in 2015 “as a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030” (UNDP, 2015; International Institute for Sustainable Development, 2020, p. 2). Seventeen SDGs comprise this global agenda. The UNDP promotes thinking about the future of the world through the lens of conservation of resources in the present and emphasizes balanced use of environmental, societal and economic resources to achieve an optimal level of quality of life. The inter-disciplinary core qualifier and valued asset to attaining any SDG is activating social capital, comprised of social goods defined as ‘trust, solidarity, friendliness and hospitality’ (Social Capital Assessment Monitor, World Social Capital Monitor, UN, April 23rd, 2016).

1.5 Ministry of Public Health, Lebanon and the Global Mental Health Lab, Teachers College - Collaboration for Capacity Building in Supervision, Training and Access to IPT in Lebanon

The Ministry of Public Health (MoPH) in Lebanon launched the National Mental Health Programme (NMHP) – the 10-year Strategic Plan to meet the rising needs for mental health care to all persons affected by the civil war in 2015. The MoPH has been at the forefront of the mental health and psychosocial support response and strategic planning for various refugee populations, majority Syrians and host Lebanese. The 2 main aims of the NMHP are: 1) to protect and promote refugees’ and host’s psychological well-being and 2) prevent or treat mental disorders. The strategic plan aims to build capacity in scalable psychological interventions that are adapted for the cultural context of refugees as well as respect and honor the contextual and cultural dimensions of the host population. In recognizing that training for mental health
professionals, clinical staff, and partner organizations in evidence-based mental health practices is insufficient to meet the growing needs of the affected populations, in 2015, as a response to the need for national mental health capacity building in Lebanon, the MoPH started its collaboration with the TC Global Mental Health Lab to pilot a feasibility study (PI: Prof. Verdeli) to evaluate the cultural-fit and feasibility of dual-format (individual and group) interpersonal psychotherapy (IPT; ie, parent study) in the region which has since been nationally scaled, developing the first cadre of over 70 competent IPT clinicians working across a variety of primary, tertiary, private and public settings. This dissertation is a sub-study of the ongoing open trial of IPT being delivered in a range of these settings in the context of the ongoing COVID-19 pandemic, the aftermath of bomb blast in August 2021, and the economic downturn that the region is undergoing.

1.6 Interpersonal Psychotherapy for Treatment of Depression in Humanitarian Emergency Settings

IPT, an evidence-based psychotherapy intervention, in its original format was developed by Gerald L. Klerman and Myrna M. Weissman in the 1970s for the treatment of depression by mental health specialists. The core principles of this intervention are: 1) a focus on interpersonal crises and difficulties (ie., IPT “problem areas”) involving life changes (role transitions), interpersonal disputes, grief related to the loss of a significant person related to the person, and loneliness/social isolation; 2) it is time limited; 3) it is symptom focused; and 4) it has a phasic structure (i.e. beginning, middle, and end). Since its founding, this intervention has been adapted for different disorders, age groups, and for use across diverse communities (including internally displaced people, refugees etc. (Verdeli et al., 2003; Verdeli et al., 2008, 2008a) and medical
settings around the world. IPT in its group format has been recommended as the first line of treatment for depression by the World Health Organization (WHO, 2016).

Increasing social support is a central focus of this treatment and a hypothesized mechanism of change in IPT (Lipsitz & Markowitz, 2013; Markowitz, Skodol, & Bleiberg, 2006). The central tenet of IPT is that in situations and contexts when inadequate social support occurs with acute interpersonal crisis (linked to the four main problem areas enlisted before), the stress-diathesis interaction occurs (i.e., the “interpersonal triad” (Stuart, 2006; Weissman, Markowitz, & Klerman, 2017). In other words, psychological distress results from an interaction of social, biological and interpersonal factors in the person’s life and may change their ability to cope with distress. This in turn worsens mental disorder symptoms and hampers social and interpersonal functioning.

Theoretically, IPT derives jointly from the founding works of John Bowlby (i.e., attachment theory (Bowlby, 1969) and Harry Stack Sullivan (i.e., interpersonal theory (Sullivan, 1953) which inform the treatment’s approach to recovery. As much as expectations, reactions, appraisals and reinforcements from close and intimate people as well as from more distant social structures (such as peer groups, neighborhood circles, etc.) effect the person’s mental health (relation view; Sullivan, 1953), so do secure attachments that provide nurturance and security to the person throughout life (attachment theory view; Bowlby, 1969). As such, when the person’s interpersonal and social contexts are thwarted or disrupted due to enduring adversities and losses, s/he experiences negative mental health effects (Paykel et al., 1969).

In IPT, the therapist provides a case formulation at the outset of treatment which serves two important functions – 1) it helps label and identify the suffering as depression and 2) it facilitates linking the patient’s depression symptoms to a focal interpersonal problem area (grief;
disputes; role changes; or social isolation as mentioned before). Throughout the course of the treatment, the therapist helps link the person’s interpersonal context with their depression (onset and course of illness), facilitates the person to build interpersonal skills to manage conflicts (and in turn, improve the quality of their relationships) and supports the person in strengthening their social ties – factors known to be integral to the patient’s recovery from depression (Markowitz, Bleiberg, Christos, & Levitan, 2006).

As such, the rationale for this dissertation study was based on two empirically-validated principles: 1) the relationship between interpersonal problems and psychological distress is reciprocal and bidirectional (target of IPT intervention for depressed patients) and 2) complex social networks influence the individual’s goal and life pursuits (with implications of increased social cohesion, ability to manage conflict, and motivation to recover from a depressed state – strong social networks buffer stress (Cohen & Wills, 1985). From a technical standpoint, social scientists and systems-theorists do not always agree on a common definition of complexity (Mesjasz, 2010) and Lloyd and other researchers (Lloyd, 1989) have identified approximately 45 different definitions of “complex social systems” that have been used across studies (Gell-Mann, 1995). There are just as many studies that have scrutinized the definitions of complex social systems (Bar-Yam, 2000; Biggiero, 2001). Social capital builds over time and can catalyze interpersonal cohesion and collective efficacy. In disenfranchised populations such as the Syrians in Lebanon, and the host population burdened by resource constraints, the role of social capital, social support and strong support networks may be key to maintaining positive personal and community well-being.
1.7 Social Capital and Mental Health Outcomes

Social capital contributes to health inequalities within and between populations - a view that has been adopted by social scientists, policy makers, and international institutions, including the WHO and the World Bank (World Bank, 2001). According to the definition provided by Putnam (2000), social capital is a way of describing social relationships within societies constituted by five principal characteristics: (1) community and personal networks; (2) civic engagement; (3) local civic identity/sense of belonging; (4) reciprocity and norms of cooperation; (5) trust in the community (Putnam, 2000). In a systematic review of 21 studies linking social capital and mental health outcomes (derived from 20 databases) conducted by (De Silva, McKenzie, Harpham, & Huttly, 2005), social capital adopted Putnam’s definition stating it to be the “more accessible” one (p. 619). In studies on social capital, it has been viewed broadly way of characterizing the individual’s environment and measuring their social connections (De Silva, McKenzie, Harpham, & Huttly, 2005).

Social capital has been shown to be a key determinant of adaptive and healthy social adjustment during resettlement following displacement (Boateng, 2010; Lecerof, Stafström, Westerling, & Östergren, 2015; Morrice, 2007). The central aspect of social capital “is trust, which establishes a social network of reciprocity and social exchange that can be drawn upon by community members” (Galea et al., 2002, p. 1374) which aligns with the definition and paradigm of the World Social Capital Monitor (UN, 2016). Broadly, social capital has been characterized in two important ways as (Bain & Hicks, 1998) – 1) structuralSocialCapital (participatory): quantity of social interactions, networks, memberships, and institutions the individual is involved with and which links her to others and 2) cognitiveSocialCapital (perceived): quality of social interactions and relationships [which includes norms, values, civic engagement, altruism, reciprocity toward the community] (Forsman, Nyqvist, Schierenbeck, Gustafson,
Within the health policy literature, it is measured in two ways: as *individual* social capital (surveying the individual about her perceptions of engagement, community participation, connections and associations in the community) and *ecological* social capital (by asking community representatives or a sample representative of the community about average level of engagement from others, trust in the community etc) (McKenzie, Whitley, & Weich, 2002). Over time, health researchers and policy-makers have measured social capital as either in the individual or in the ecological realm – whether one should take precedence over the other type in a given context has continued to be a point of unresolved contention (Henderson & Whiteford, 2003).

Therefore, social capital is at once a property or attribute of the individual as well as of the collective to which they belong (Porta, Greenland, & Hernan, 2015). For the purposes of this study, *structural* social capital and *cognitive* social capital will be measured at the individual level. There is strong evidence that links social capital directly with depression symptomatology (Wind, Fordham & Komproe, 2011) including in low income countries (De Silva, Huttly, Harpham, & Kenward, 2007). This linkage is strengthened when the individual’s social network (different people in a person’s social circle, quality of these relationships, interlinkages between different people in the network etc.) is taken into consideration (Bassett & Moore, 2013; Forsman et al., 2012). In other words, what people ‘do’ and what they ‘feel’ about their social relations is what differentiates structural from cognitive social capital (Harpham, Grant, & Thomas, 2002).

From a measurement standpoint, social capital may be examined as either ‘bonding’ or ‘bridging’ (Szreter & Woolcock, 2004). **Bonding** social capital is defined as “social cohesion within the group structure” and **bridging** social capital is described as the type that “links or cuts across different communities/groups” (Narayan, 1999). Sometimes, bonding social capital is
studied as a horizontal construct (between communities in the same social context) and bridging social capital as a vertical one (relationships between different levels of society – such as, community and local government) and in more contemporary literature, vertical social ties are distinctly studied and referred to as “linking” social capital (Aldrich & Meyer, 2015). This interchangeable description of the two types of social capital measurements will be used throughout this dissertation study. This bonding/bridging/linking paradigm is pertinent to the dissertation study because it allows for an examination of the relationships between the individual and their government which may be particularly relevant in the study of refugees within the current political and economic context in Lebanon. This paradigm helps to further highlights the important link between both, vertical and horizontal structures and individual wellbeing. To do so, the World Bank Integrated Measure of Social Capital was adjunctively used (World Bank, 2001; see methods for details). This measure was chosen due to its standard and recommended use in developing countries and other low-resource regions.

Recent studies have also shown the importance of closely studying the links between interpersonal trust and reciprocity (bonding social capital) and their link to depression symptomatology (Kim, Chung, Perry, Kawachi, & Subramanian, 2012) and an important link between chronic PTSD and low social capital in vulnerable groups such as in sexual violence survivors in Democratic Republic of Congo (Hall et al., 2014); in earthquake survivors in Peru (Flores, Carnero, & Bayer, 2014); Bhutanese refugee communities (Im & Rosenberg, 2016) among others. It is also important to note that there may be important and inevitable differences in how refugees and host access bonding (more inward-looking) social capital versus bridging social capital (seeking resources outside the homogeneous community to tackle difficult situations) systems (difference in the association between bonding versus bridging social capital
and self-rated depression have been shown elsewhere, for example, in a recent prospective cohort study by Murayama et al., 2013). Decades of research has shown that our social networks substantially impact our physical health and psychological well-being (Gottvall, Vaez, & Saboonchi, 2019; Kotsilieris, Pavlaki, Christopoulou, & Anagnostopoulos, 2017; Wright, 2016).

### 1.8 Social Support, Social Networks and Mental Health Outcomes

Another intricately linked construct to social capital, is social support. Social support is defined as a “system of formal and informal relationships through which individuals receive emotional support, material or information to cope with stressful emotional situations” (Caplan, 1974, p. 6-7). When social support structures are closely examined, they may provide important insights into the individuals’ perception of being “protected, loved and valued” (Investigators, 2003, p. 43). A sense of belonging to a network of people in which the person can communicate and mutually connect with others is central to the experience of social support (Sarason, 2013).

Like social capital, social support is also of 2 types: 1) structural and 2) functional. Structural social support refers to the size and source of social network and presence of people to help each other whilst functional social support refers to certain functions such as emotional, material and informational functions that supportive people can provide to the individual (Sarason, 2013). Numerous studies have also shown the link between low social support and higher risks of mortality (Gottvall et al, 2019). Positive types of social network support can reinforce health behavior change, while negative types of social network influence can undermine a person’s ability to change behavior for the better or to attain improved mental health and well-being (Garoosi & Shabestari, 2011; Latkin & Knowlton, 2015). In a sample of over 1,000 Syrian refugees, social support was shown to attenuate the link between torture exposure and post-traumatic stress and was a protective factor for their mental health outcomes.
Strong social networks have been shown to correlate with improved economic outcomes and emotional wellbeing in refugee populations (Hanley et al., 2018). Contrarily, people may give a person who is struggling with a health issue false, misguided, or incomplete support (Hobfoll, 2009).

In the Lebanese context, preliminary research highlights high scores of Syrian (and other sub-populations, including the Palestinian, Armenian and Palestinian) refugees with pre-existing mental health conditions similar to those observed in other populations with emergency-induced problems (see Galea et al., 2002). Their long history of war is compounded by their current lack of integration in governance and accumulation of human and resource loss. Their historical exclusionary status continues to impact their current level of trust and engagement with services as this excerpt exemplifies: “even when mental health services are available, Refugees may be unable or unwilling to utilize them. One important reason may be a limited understanding among MH providers of the culture and customs of Refugees” (UNHCR, 2018, p. 44).

1.9 Methodologies of Social Capital, Social Networks and Social Support

Methodologically, traditional approaches to the study of social networks assume that the underlying network is: 1) closed (i.e., information only spreads among observed network members and along observed edges); 2) monoplex (i.e., consisting of only one mode of social interaction between network members), and; 3) static (i.e., the network remains unchanged over time) (Guille, Hacid, & Favre, 2013; Szreter & Woolcock, 2004; Young, Mayaud, Suen, Tambe, & Rice, 2020; Zhong, Srivastava, & Leonard, 2017). In traditional paradigms, social networks are often conceptualized rather loosely without accounting for ever-changing social structures or paying close attention to how social networks develop or destruct in the context of low resources. The assumption in closed, monoplex and static social networks is that ties to social communities
remain rather close-knit over time and remain impermeable to disruptions of larger ecological and environmental contexts. This assumption may be challenged in a humanitarian crisis occurring in the context of a complex emergency.

A complex emergency, such as the one in which the refugees and the Lebanese of this study are situated, is described as “a situation where people’s livelihoods are disrupted, and lives are threatened due to ongoing political conflict, wars, or civil disturbance” (Inter-Agency Standing Committee Working Group XVith Meeting, 30 November 1994, p. 2). In these complex emergencies, regular access to resources, pathways to building social ties, and utilization of existing service networks (such as of education, healthcare, protection, etc.) is disrupted and many times, destroyed. While host communities may continue to access existing resource pathways, these are not available to the refugees due to many constraints detailed before. In other studies carried out in similar settings of forcibly displaced/migrant/refugee persons, traditional approaches to the study of social networks have been tested and criticized for their lack of attention to the unique adversities that these groups face while establishing social ties, availing resources, and engaging in the civic society (Ryan, Sales, Tilki, & Siara, 2008).

Deriving from the work of Putnam (2000), as well as Coleman (1990) and Bourdieu (1986), the main theoretical paradigm linking resource loss to stress and depression in people is encapsulated in Conservation of Resources (COR) Theory. COR states that individuals “strive to obtain, retain, and protect” those resources they most value, both material and psychosocial (Hobfoll, 2002, p. 312; Hobfoll, 2014, p. 2). The COR helps evaluate the position that when individuals experience stress when they lose or face the threat of loss of a range of resources - emotional, ecological, or structural – and fail to gain any investments or recover by resource gain after such losses (Putnam, 2000). This view – a paradigm shift from the traditional
conceptualization of trauma and depression being clinical outcomes of losses (and expressed as symptoms) – sheds light on two important facets of trauma and post-trauma response of individuals in environments abundant with losses: (1) trauma (and depression) occurs when a person experiences “rupture of five principal resource groups: safety, calmness, attachment, hope, and efficacy” (Hobfoll, 2014, p. 2) and (2) conservation of resources is a primary concern in such environments which in turn helps build and maintain ‘resource caravans’ (Hobfoll, 2014, p. 2). Resource caravans are processes essential in people’s ability to maintain and create resources for self and others, as well as personal and social structures. As such, the COR Theory also posits that interventions focused on helping fragile societies heal and build back better, focus on harnessing and fostering resource caravan passageways that are culturally and environmentally appropriate and adapted.

In constricted and hidden social networks of communities residing in conflict and post-conflict settings, that are under strain due to resource scarcity, information can transmit between members in any of their social circles, therefore approaches that integrate relational inputs from multiple social contexts should be incorporated in the study of complex social networks. As such, intervention studies rarely attempt to intervene on more than one type of inter-relationship, leaving alternative social pathways of diffusion unobserved. In the real world, individuals often have network members with overlapping roles and interact with the same network members in multiple social contexts (e.g., as neighbors and as members of the same prayer community). The same person in a social network can also play perceivably contrasting or contradicting roles (such as supportive versus conflictual). Within an individual social network, existing members may play different roles over time; exit suddenly; new members may appear; structural and ecological factors and losses may cause permanent changes to the network constellation; and the
person’s own behavior change may occur. As said before, these interlinkages can be reciprocal, bidirectional, and multi-faceted. In network science, this dynamic, ever-changing landscape of an individual social network situated within a larger structural context is termed *network multiplexity*.

The method of this dissertation study used dynamic network analysis (DNA), also more recently referred to as network goal analysis (NGA). This methodologically is conceptually grounded in dynamic network theory constructs (Westaby, 2012; 2017; Westaby & Parr, 2020). NGA contrasts with traditional social network analysis (SNA) by including an actor’s goals into the social networks. SNA does not include the goals of actors, which according to dynamic network theory, is critical to better understand motivations and constraints impacting outcomes in complex human systems. DNA methods help understand an individual’s network connections multi-dimensionally as well - multiple types of links (both positive and negative) may emerge and are analyzed simultaneously to capture this multiplexity (e.g., one’s spouse may be supportive at some times, but also create obstacles at other times). A dynamic network theory approach also helps test newer concepts of “network motivation” and the “network rippling of emotions” that can provide evidence on emerging emotional contagion and cohesion. *Network motivation* broadly refers to “a social network's general pursuit of goals” (Westaby, 2012, p. 33) which is activated through actors striving independently toward a particular goal (i.e., a goal striving role) and others actors in the network supporting them in process (i.e., a system supporting role) (Westaby, 2012). Westaby (2012) proposed that ‘goal achievement’ (e.g., desire to attain better health, attain a specific goal, cope with distress), ‘performance’ (e.g., ultimate outcome of the goal pursuit) and ‘target behaviors’ (e.g. attending weekly therapy sessions) (Westaby, 2012, pp. 2-3; Westaby, Pfaff, & Redding, 2014) is related to six critical types of
social network roles that various actors in a person’s social network (e.g., spouse, family, a circle of friends, community members, neighbors among others). Six key motivational roles in the theory and assessment battery form the central tenet to social network assessment for this dissertation.

The six key social network roles are categorized within: 1) network motivation (comprised by “Goal striving” (G) and “System supporting” (S)) – a cohesive trait of the network to help achieve a goal and keep the social structure intact to enhance needed social capital; 2) network resistance (which includes “Goal preventing” (P) and “Supportive resisting” (V)) – a dismantling trait of the social network that thwarts or hinders the individual’s/network’s goal achievement (linked to conflicts, rivalries etc.); and 3) network reactance (that is, “System negation” (N) – where individuals are upset (frustrated) with others in relation to the goal pursuit and “System reacting” (R) – people/entities in the network that may have a moderate/variable effects on system outcomes.

Goal striving (G) refers to self or entities working on their own for one’s goal (aka self-coping); System supporting (S) refers to self or entities helping or supporting others (towards the intended goal); Goal preventing (P) is the self or entities in the system doing things on their own that obstructs one’s goal; Supportive resisting (V) is the self or entities engaging with others that ends-up hurting the ability to achieve one’s goal; System negating (N) is the self or entities upset (angry) with others in relation to one’s goal; and Goal preventing (P) occurs at the level of self or entities doing things on their own that (inadvertently) obstructs one’s goal.

In terms of recent advances (Wang, Stark, Westaby, Parr, and Newman, in press; Westaby & Parr, 2020), an important conceptual and methodological modification was made to system reactance (‘R’) such as to include the effects of those individuals in a network that
‘constructively react to others having a conflict with the goal’ (p.4). Further, the system negation construct (‘N’) was also more broadly construed as measuring actors that are upset with others in the given goal pursuit. Lastly, feedback (FB) linkages from the goals to the actors themselves was also included – a way to show how knowledge about the goal spreads through the network in unobtrusive ways (such as through observation or learning through reports or online information), which accounts for the peripheral observation role in dynamic network theory.

Because goal attainment is central to DNT and this is a newer way of approaching the study of social networks, a basic assumption is that G, P and / or FB linkages explain important individual and network processes associated with key goals in the context of network relationships. In the context of this dissertation, a presumed key goal for patients was to overcome their depression (i.e. get better from depression). Hypotheses in this dissertation relied on aspects of this assumption.

This dissertation study applied and rigorously tested this novel approach to the study of social networks (network goal analysis survey [NGA]; Westaby 2012; 2017; 2020) and is the first study to adopt such a method in a complex emergency context. A further advancement in measurement was to explore changes in these variables over two time points (see “methods” for details). Moreover, the new network goal analysis (with visualizations), syntax, and measurement approach showed exactly how social networks were quantitatively linked to specific goal pursuits among both, the refugee and the host population patients. This linkage of

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1 To note, another role interacting (I) assesses the role of those actors that may not directly support, prevent, negate or get involved with the person’s goal network, but may remain in the person’s vicinity and effect the network motivation – this role will not be tested in the dissertation study.
goal pursuits and various network dimensions was central to the methodology of the dissertation study, especially as it relates to the goal of coping with depression.

Studying mechanisms of self-regulation in relation to goal pursuit has been a fundamental topic of study in research elsewhere, with widespread implications for human thought and behavior (DeMarree et al., 2012; Vohs & Baumeister, 2011). Cognitive goals (which a person imagines, conceives, perceives, and develops schemas and thoughts about in memory) can become accessible through contextual cues and guide behavior towards these desired goals (Fishbach & Ferguson, 2007). Although historically thought to be relatively deliberative in nature (e.g., Carver & Scheier, 1998; Locke & Latham, 1990), contemporary research indicates that goals can be both activated and pursued outside of conscious awareness or implicitly.

For example, Chartrand and Bargh (1996) demonstrated that priming manipulations (and cues) produce motivated behavior for goals and have been shown in a variety of settings and experimental contexts such as, to increase achievement in work settings (Bargh, Gollwitzer, Lee-Chai, Barndollar, & Trötschel, 2001), forming impressions of others (Chartrand & Bargh, 1996), and knowledge seeking (Riketta & Dauenheimer, 2003). Once activated, primed goals act similarly to the process of conscious goal pursuit including increases in goal strength over time, persistence in the face of obstacles, and bouncing back or resuming goal pursuit (Bargh et al., 2001; see also, Förster, Liberman, & Friedman, 2007). Importantly, research has shown that objective successes and failures of nonconscious goals produce emotional responses akin to those experienced with similar outcomes as conscious goals (Chartrand, Cheng, Dalton, & Tesser, 2010; Loersch, Aarts, Payne, & Jefferis, 2008; Riketta & Dauenheimer, 2003).

To our knowledge, this is the first-of-its-kind study to adopt a dynamic, multiplex, open-system approach to identifying, classifying, and exploring temporal changes in the social
network roles in both, refugees and host population(s) with a specific goal orientation. This is also the first to study these in the context of individuals with a mental health problem receiving an evidence-based psychotherapy intervention.

In this dissertation, the main focus is on demonstrating the process of applying the dynamic network method (Westaby et al., 2012) to explore the within network dynamics in social circles of Syrian refugees and Lebanese host currently living in Lebanon. Application of this novel method will be illustrated in each case included in the study, and key hypotheses (described later) will be tested. Main research questions that guided the aims and hypotheses of this dissertation were:

- What are the social network constellations, network characteristics and sources of support (and conflict) in the Lebanese and refugees’ life as they receive a depression-targeted treatment (IPT)?
- What are the social capital resources depressed individuals utilize and/or generate are they cope with and recover from depression while receiving IPT?
- What resources are most important for individuals in their recovery from depression?
- If and how do the social networks among depressed individuals change before and after IPT?
- What are the key dimensions of social capital among people affected by adversity in Lebanon?
Chapter 2: Aims & Hypotheses

Important constructs were measured pre- (T1) and post- IPT intervention (T2). In the parent study, T2 coincided with the patient receiving individual IPT (8-12 sessions on average) and meeting either remission or response criteria. Remission referred to the patient reaching a score of \( \leq 4 \) and maintaining this for 2 consecutive sessions; Response referred to the patient reaching 50% of their baseline depression score at T2. Sensitivity to change of the measures was assessed by comparison of constructs between T1 and T2. Various hypotheses are detailed below which were organized by two main associations being studied in this dissertation: 1) Network functions (including social support and interpersonal conflict(s)) and depression; and 2) Social capital and depression.

2.1 Support Functions and Depression

Aim 1:

To explore social network constellations, network characteristics and sources of support in the patient’s life as they receive a depression-targeted treatment (IPT).

1.1 To explore “system support” (S) constellations at T1;

1.2 To measure the change in S at T1 and T2.

Hypothesis 1

Hypothesis a: At either (or both) T1 or T2, there will be a negative correlation between System Support (S) and depression scores (PHQ-9 > 10).

Hypothesis 2

Hypothesis b: There will be an increase in average level of System Support (S) from T1 to T2.
2.2 Self-Coping and Self-Efficacy

Aim 2:
To measure the temporal change in self-directed behavioral coping (i.e., independent goal striving to cope / function better (G) with depression between T1 and T2).

Hypothesis 3
Hypothesis b: There will be an increase in Goal Striving (G) from T1 to T2.

Hypothesis 4
Hypothesis c: System Support (S) linkages will be positively related to G (Goal Striving). This hypothesis will be explored via the application of the Quadratic Assignment Procedure (QAP) detailed later.

2.3 Overall System

Aim 3:
Explore the relationship between the participant’s depression status and their recovery goals (i.e., cope better with the depression/function better) via their overall social network system. The goal is to assess changes in the patient’s motivation and ability to mobilize resources and mitigate or self-regulate reactions to interpersonal conflicts at T2.

Hypothesis 7
Hypothesis a: Depression level will be inversely associated with overall stronger social network characteristics (higher egocentric network density on Positive System Focus (PSF) and Network Affirmation Ratio [NAR] (quality and quantity)) (Westaby, 2012; Westaby et al., 2014).

Hypothesis b: Positive System Focus will inversely relate to depression scores:

Positive System Focus: \( (G + S) \)

\( (G+S+P+V+N+R) \)
Hypothesis c: Network Affirmation Ratio will inversely relate to depression scores.

*Network Affirmation Ratio: \( (G+S+R) \)

\( (G+S+P+V+N+R) \)

**CONCEPTUAL MODEL - Overall System**

Figure 1. Conceptual model depicting NGA role changes before and after IPT.
Chapter 3: Method, Setting, Sample, and Procedures

3.1 Parent study setting and screening of individuals (Syrian refugees and Lebanese host) for study inclusion

The data were collected from Syrian refugees and Lebanese host participants (“patients”) who were selected by the clinicians in mental health and psychosocial support (MHPSS) teams receiving training in IPT as part of the parent study (PI: Lena Verdeli, PhD). In partnership with MoPH in Lebanon, the aim of the parent study was to evaluate acceptability, feasibility and preliminary effectiveness of IPT for distressed adults in Lebanon. MoPH’s strategic plan for Mental Health and Psychosocial Support (MHPSS) aims to protect and promote psychological well-being and prevent or treat mental disorder of all persons affected by the civil war in the region. However, training of mental health professionals, clinical staff, and partner organizations of the MoPH in evidence-based mental health practices is insufficient. The NMHP embedded within the MoPH aims to build capacity in scalable psychological interventions that are adapted for the cultural context of Syrian and other refugees as well as the Lebanese host.

3.2 Sample

This parent study was conducted in MoPH-identified community health center, private practice and university settings, as well as in public healthcare settings. In the parent study, up to 30 clinicians (psychologists and psychiatric nurses) will be trained in IPT and each clinician will recruit up to 3 patients (n = 90) per inclusion criteria (defined below) to receive IPT. The sample size for the parent study was determined based on the IPT-training competency and fidelity requirements of the parent study developed by the PI (Verdeli, 2019). Recruitment efforts were limited to persons over 18 years. Adults with psychological and physical symptoms, except those with active substance use, current psychosis, suicidality (moderate and high risk as indicated by
Columbia-Suicide Severity Rating Scale C-SSRS) and severe physical disorders (assessed via self-report) will be included in the parent study.

Inclusion and exclusion of patients for IPT was carried out via 2 possible recruitment pathways: 1) Previously trained IPT clinicians not currently receiving IPT training and who were in direct contact with potential patients screened and referred them for IPT to the clinicians-in-training in the parent study; or 2) Clinicians who were receiving IPT training in the parent study, who directly came in contact with potential patients in their routine care, screened potential patients for inclusion and invited them to participate in the parent study. Both, the previously trained IPT clinicians and the clinicians-in-training screened for risk and current presentation of psychotic disorders/psychosis risk spectrum in the prospective patients at the time of screening for their fit to receive IPT.

The inclusion of persons to receive IPT was based on their total score on the depression screener – the Patient Health Questionnaire – 9 item scale (PHQ-9) being used in the parent study to determine depression level. The PHQ-9 is a depression screening measure that has been widely used in refugee settings and with displaced and resettling populations, (Nesterko, Jäckle, Friedrich, Holzapfel, & Glaesmer, 2020) as well as in other settings of complex emergencies (Poole et al., 2020). In recent studies, when the PHQ-9 (translated and validated for use in Lebanon) was used by other research groups in the population, it showed adequate internal consistency (Cronbach's alpha = 0.71) and test-retest reliability (Intraclass correlation coefficient = 0.88) with patients in an outpatient setting (Sawaya et al., 2016), and in other population-level studies, a sensitivity ranging from 62% to 88%, and specificity from 46% to 96% (de Graff et al, 2021). Standard cut-off scores on the PHQ-9 will be used to classify minimal (0–4), mild (5–9), and moderate to severe (≥ 10) symptoms of depression. The PHQ-9 has been previously
translated and validated for use in Lebanon. Persons meeting cut-off score of PHQ-9 > 10 during screening were included in the study.

The exclusion of persons at moderate/high risk to hurt or harm themselves was to ensure that when screened at moderate or high risk for suicide and psychosis they be triaged for specialized mental health management. Patients meeting the exclusion criteria based on mhGAP guidelines for psychosis, severe substance use, and other functional impairments were excluded from our study and provided debriefing or triaging services as necessary. If at the level of screening, patients scored either 1, 2 or 3 scores on item-9 of the PHQ-9 they were administered an additional suicide severity screener. If a patient, at the time of screening (or subsequently throughout the duration of receiving IPT treatment), was assessed at moderate or high risk for suicide, s/he was informed that this study might not be a good fit for him/her, and instead were provided with appropriate referrals to clinical mental health services as delivered by the health partners of MoPH (i.e., referral pathways per routine care).

3.3 Dissertation study data collection, measures and assessment

Recruitment. All clinicians-in-training in the parent study (n = 23) were approached by the dissertation PI (Sardana) with the help of the study coordinator of the parent study (Ms. Sandra Pardi Maradian). The dissertation PI explained the step-by-step procedures of assessment battery required for the dissertation study, delineate the participation in evaluation and testing procedures from those of the parent study, described the voluntary nature of this additional assessment arm, and planned steps involved with clinicians-in-training to refer their patient after consent to the study coordinator (Ms. Maradian). Assessments were either carried out by the study coordinator or self-administered by literate patients. For optimal assessment of pre- and post-treatment differences (described below) in main constructs being tested, the aim was to
recruit at least 80% clinicians-in-training (n = 18) to participate and administer the assessment package to their patient.

All patients were verbally informed about the study by the treating clinician in the preferred language of the patient, using the recruitment script provided to the clinicians in both Arabic and English, beforehand. When an individual agreed to participate in this study, the previously trained IPT clinical (recruitment pathway 1) or the clinician-in-training (recruitment pathway 2) explained the study to the individual, answered any questions they may have had, and referred them to the study coordinator as well as informed and shared the contact details of the patient with the coordinator. The coordinator then contacted the patient and obtained informed consent.

Stringent ethical procedures were established and incorporated into training to ensure that there was no perceived duress in relation to participation and that there was maximal respect for privacy and autonomy. If participants appeared hesitant or undecided at any point, they were given sufficient time to reconsider further and follow-up arrangements agreed to. Participation was voluntary, and potential participants were informed that provision of IPT (parent study) will not be affected by their decision to participate in this additional assessment component for the dissertation study. At all times, participants were assured that their decision to participate and right to withdraw at any time will not have any adverse impact on their status, their asylum application, or the services to which they are entitled as refugees or host.

All scales were translated to the Arabic language using the WHO guidelines of translation and back translation; translators were reimbursed for their time and effort. All tools were administered using the phone and/or audio Zoom different from the direct administration of clinical tools directly administered by the clinicians-in-training for the parent study. This
decision was taken in due consultation with subject matter experts (including the dissertation advisor and local supervisor of the study coordinator) to ensure independence and low bias in patient’s reporting on these additional measures, and to reduce the risk of coercion or compulsion to participate among the patients. While clinicians-in-training were not reimbursed for their support on the study, the study coordinator and translators were reimbursed for their time and effort.

*Measures.* All measures utilized in this dissertation are developed in the English language and will be translated for use in the Arabic language (dominant language of the clinicians-in-training who will administer the tools). Translation will be carried out using the standard procedure guidelines of the “process of translation and adaptation of instruments” recommended by the World Health Organization (WHO, 2020). This process was carried out in 4 sequential steps:

1. Step 1: Forward translation was carried out by the study coordinator and a local Lebanese, bilingual research assistant.

2. Step 2: Expert panel back-translation was carried out by 3 individuals including, formally trained medical translator who works closely with the MoPH and other agencies and the bilingual study coordinator as well as research assistant with bi-regional competence in translation of assessment materials.

3. Step 3: Pre-testing and cognitive interviewing was not carried out and is a future direction of the current dissertation.

4. Step 4: Final version after step 2 was administered.

- In Step 1, a health professional who is knowledgeable of English and the local languages does a literal and conceptual translation of the tools. In this dissertation study, the project
coordinator of the parent study was approached and instructions on conceptual translation were provided to her. General guidelines per the WHO (2020 update) were used to instruct her.

- In **Step 2**, the expert panel was organized and included the original translator (health professional serving as the parent study project coordinator), 2 expert local health practitioners, and one expert researcher who has previous experience in instrument development and translation.

- In **Step 3**, a local English native speaker who is also familiar with Arabic was approached to translate the local language versions back to English. Problematic words and discrepancies were resolved by discussion with the research teams and the original translator.

- In **Step 4**, for pre-testing – the tools were piloted and pre-tested at the same and the future recommendations (that are outside the scope of the dissertation study) will include carrying our cognitive interviews using the tools.

  - **Demographic information.**

    Basic demographic information, including the participant gender and age, marital status, total number of children they have, camp number/location (if comfortable reporting), nationality (Syrian, Lebanese, Other), Refugee status (if comfortable reporting), employment and education history, were collected for each participant.

  - **Social Network (to measure support and other related constructs).**
Network Goal Survey (NGS) for depression and coping - Adapted for a refugee context (Westaby, Sardana, and Verdeli, 2020, unpublished) was used to: 1) qualitatively capture the names, roles and connections between the important people in the individual’s life and 2) quantitatively capture the linkages between the various people identified in the social network, their strength/intensity of relationship with the individual, and how it relates to their depression. The NGS for the refugee context is an adaptation of the original three-part surveys developed by the Dynamic Network Lab (DNL), Teachers College, Columbia University and which utilizes network goal analysis (Westaby et al, 2017; 2019) approaches. For the purposes of this dissertation study, the NGS-refugee context was developed through an iterative process in 5 stages:

Stage 1: Original version was assessed for suitability of use in the refugee context; modifications to the structure (such as, choosing fixed entity list) and item-wording, response options (dichotomous versus continuous; wording of the Likert scale etc.) and simplifying items to enhance comprehension of items to a geographic region outside the United States was carried out in discussions between the two research teams (DNL & GMH Labs) internally.

Stage 2: Revised survey was simulated with 4-5 members in each research Lab in individual, in-vivo format to test comprehension of items by native English speakers with a masters-level education. At this stage, feedback from both Lab members was elicited and incorporated in the overall structure and item-level construction of the survey.

Stage 3: Survey was presented to the local project coordinator, 3 clinicians, and project coordinator – all affiliated with the parent study – to elicit feedback on survey items, wording, to assess by proxy comprehension of items by their patients, and
Stage 4: Survey was simulated with local project coordinator of parent study to assess for time taken, comprehension of items and item-level feedback for wording. At this stage, feasibility of translating the questionnaire to Arabic was also discussed and ascertained.

Stage 5: Survey was finalized with feedback and modifications and made ready for pilot use.

3.4 Description of the Network Goal Survey

Roles in the DNT approach (Westaby, Pfaff, & Redding, 2014): As described in the previous sections, the method of this dissertation study used dynamic network analysis (DNA) that builds on the dynamic network theory (Westaby, 2012; 2017; 2020). The 6 key motivational roles in the theory and assessment battery form the central tenet to social network assessment for this dissertation and are operationalized below using an example of a typically visualized network constellation of a 40yo Syrian female refugee presenting for treatment of severe depression in the context of grief following the death of her husband.

Box 1. KEY to Dynamic Network System Example Below

| Gray circle | Patient’s coping goal |
| Squares     | Entities involved with patient’s goal (or loosely interacting on the periphery) |
| Colored links | How the entities are connected to one another in the network in relation to patient’s goal, such as those supporting the patient and their pursuit of coping with their depression. |
Box 2. Summary Network Forces

**Network motivation** - Goal striving (G) and System supporting (S) in pursuit of the patient’s goal.

**Conflict** - Network forces showing goal prevention (P), supportive resistance (V), system reacting (R), and system negating (N).

**Dynamic feedback** - Feedback cycles that flow to those more directly involved in goal striving or preventing processes.

**Full System** - All social network roles and entities in the network involved with patient’s goal.

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**Figure 2. Prototype of Roles in the Social Network of a Syrian Refugee**

<table>
<thead>
<tr>
<th>Social Network Roles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Goal striving (G)</strong> - entities working on their own for patient’s goal (solid blue line to goal)</td>
</tr>
<tr>
<td>2. <strong>System supporting (S)</strong> - entities helping or supporting those pursuing patient’s goal (solid blue lines between entities)</td>
</tr>
</tbody>
</table>

---

**Figure 2a. Prototype of Micro Network Dynamics: Overall Network Motivation in the Social Network of a Syrian Refugee**
**Social Network Roles**

3. **Goal preventing (P)** - entities doing things on their own that obstructs the patient’s coping goal (dotted red line to goal).

4. **Supportive resisting (V)** - entities engaging with others that ends-up hurting the patient’s ability to achieve their goal (dotted red line between entities).

5. **System negating (N)** - entities upset with others in relation to your goal (solid red line between entities).

6. **System reacting (R)** - entities reacting constructively to others, if there is a conflict in relation to the patient’s goal (Solid purple line between entities).

7. **Feedback (FB)** - entities observing feedback received about the patient’s goal progress ('Observer role' in DNT).

**Figure 2b. Prototype of Micro Network Dynamics: Overall Network Conflict in the Social Network of a Syrian Refugee**

**Figure 2c. Prototype of Micro Network Dynamics: Overall Network Dynamics in the Social Network of a Lebanese Host**
3.4 Corollaries of Dynamic Network Theory roles and survey question items

The NGS-refugee context has 3 main parts: 1) The people in the person’s life (exploratory and using fixed entity list); 2) Network questions (connection of network entities in the depression context and linking with the treatment goal) and 3) Final questions (review and wrap-up). Parts #1 and #3 are brief with #2 being the longest section of the survey. When the survey was informally piloted with a healthy adult in the Lebanese context, the survey with one entity selection took up to 7 minutes to complete. When the individual selected all entities (which increases the length of the survey), it took up to 40 minutes to complete the survey.

Part 1 of the survey is focused on exploring the important people in the person’s life (the choice of wording this prompt is deliberate because it matches the clinician prompt in IPT) and links the various individuals in the person’s life, that they consider significant to their regular (everyday) interaction and contact. Part 1 begins by identifying 7 fixed entities and provides one open option to identify an entity not proscribed (merits and demerits of fixed versus open entity enlisting were rigorously considered during the survey construction phase; fixed entity enlisting was chosen to reduce participant fatigue and duration of survey). Example questions include: 1) Do you have a <entity>? 2) Do you regularly communicate with your <entity>?, 3) Do you have other family members that are important in your life, such as parents, siblings, or other relatives? etc. Response options include dichotomous choices (yes/no) and options to ascertain network size (None = 0; 1-5; 16-20 and so on) and each network size choice is scored on a scale of 0 (non) – 5 (more than 20).

Part II of the survey is focused identifying whether any of the identified interconnections influences the individual’s depression and coping from depression and specifically anchors the person to think about the times when they get sad or depressed and the different people that they
regularly communicate with in their life. This part is measured by asking questions that link with each of 6 roles (and in turn, 6 main constructs being measured) such as these (one question per question is provided as an example herein and the construct is indicated in parenthesis for reference): (1) Do you recognize when you get sad or depressed? (to assess FB); (2) When you are sad or depressed, how often can you get yourself to feel better on your own? (G); (3) When you are sad or depressed, who helps you feel better? (S); (4) How often do you do things on your own that makes you feel sad or depressed? (P); (5) Who makes you feel sad or depressed, if anyone? (V); (6) Who gets angry, upset or frustrated with you, if anyone? (N); and Who tries to find solutions, even when they get angry or upset with you? (R). The actors were placed under each question so that network linkages could be calculated and visualized.

Response options include dichotomous choices (yes/no with an option of “don’t know” response) and options to ascertain frequency of contact and interactions (Not at all; Sometimes; Often, and Don't Know) and each choice is scored on a scale of 0 (not at all) – 2 (often) and Don't Know (88). Although NGA has been measured using Likert scales, which provide more insight about the level of each role, dichotomous scaling was deemed more important in this exploratory study, in efforts to make the survey as easy to administer as possible in the given settings.

Network analysis. Any network analysis is graphical model with at least two fundamental components: nodes (e.g., actors or goals) and edges (e.g., links that connect that actor or goal nodes together). The number of edges that connected to a node is called the degree of a node, and the magnitude of the connection between two nodes is called weight.

Centrality. Three indices of centrality are typically used in network modeling: strength, closeness, and betweenness. The strength of a node refers to the sum of the weights of edges that
are connected to it. The *closeness* refers to the average distance from that node to all other nodes. The *betweenness* is defined as the number of times that node lies on the shortest path between two other nodes.

*Network connectivity and density.* The network connectivity is defined as the number of connections that were estimated to be non-zero (Boschloo et al., 2016; Costantini et al., 2015), while the network density (or global strength) is defined as the average edge strength (De Schryver, Vindevogel, Rasmussen & Cramer, 2015).

### 3.5 Social Capital

The Social Capital Integrative Questionnaire (SC-IQ) (World Bank, 2001) measured: (a) the types of groups and networks that people living on poverty and social disadvantage can call upon, and the nature and extent of their contributions to other members of those groups and networks and; (b) person’s subjective perceptions of the trustworthiness of other people and key institutions that shape their lives, as well as the norms of cooperation and reciprocity that surround attempts to work together to solve problems. In line with the social capital type distinctions outlined in this dissertation in earlier sections, items in the SC-IQ distinguish between “bonding” social capital -- ties to people who are similar in terms of their demographic characteristics, such as family members, neighbors, close friends and work colleagues and “bridging” social capital -- ties to people who do not share many of these characteristics (Gittell & Vidal 1998, Narayan 2002, Putnam 2000). What defines the boundaries between different bonding and bridging groups will clearly vary across contexts and are usually covert and political in nature. Much of this broader social and political inquiry is out of the scope of this dissertation study and will not be closely investigated.
It is also important to recognize, however, that these different forms of social capital can be used for purposes that hinder rather than help an individual's welfare (Portes 1998, Woolcock, 1998) --for example, when group membership norms confer obligations to share rather than accumulate wealth, or deny members access to services (such as preventing girls from going to school). Measurement of social capital in this dissertation study will therefore only be exploratory. The SC-IQ survey can range from 30-60 minutes to complete and each of 6 domains has variable number of questions. For each domain, a number of questions were asked about the membership and then the network density for each group membership. These domains were reviewed with the clinicians-in-training to assess the utility and applicability of existing groups available in the refugee camps.

All questions were addressed to individuals, in the context of a household (or camp settlement) context and the objective is to obtain information about the participation of household members in groups and associations, perceptions of trust and empowerment, household participation in collective action, etc. – these are measured from the individual perspective and by self-report. Information about other members of the household will be interpreted by proxy. No other members of the person’s household will be interviewed or surveyed – while that may be an important goal to triangulate social capital assessment report, it is outside the scope of this dissertation study. Lastly, some questions prompted about the person’s perception of certain community attributes, such as the community’s ability to come together to cope with calamities or to address issues of common concern. This is different of course from obtaining community-level data on social capital, such as the density of associational life or the frequency of community collective action. This dissertation study will
not collect data at the level of the community and will not collect data from other community members to corroborate this dimension of collective action.

Six dimensions that were measured using the SC-IQ are:

1) **Groups and Networks.** This is the category most commonly associated with social capital. The questions in this category consider the nature and extent of a household member's participation in various types of social organizations and informal networks, and the range of contributions that one gives and receives from them. It also considers the diversity of a given group's membership, how its leadership is selected, and how one's involvement has changed over time. These 26 ranking questions ask about groups or organizations, networks, associations to which the individual or any member of their household belong. These could be formally organized groups or just groups of people who get together regularly to do an activity or talk about things; network questions ask about “closeness”; “density”, and “similarity” of group members using 7 short questions.

2) **Trust and Solidarity.** In addition to the canonical trust question asked in a remarkable number of cross-national surveys, this category explores information on trust towards neighbors, key service providers, and strangers, and how these perceptions might have changed over time.

3) **Collective Action and Cooperation.** This category explores whether and how household members have worked with others in their community on shared goals and/or in response to a crisis. It also considers the consequences of violating community expectations regarding participation.

4) **Information and Communication.** Access to information is being increasingly recognized as central to helping communities living in poverty and adversity have a
stronger voice in matters affecting their well-being (World Bank, 2002). This category of questions explores the ways and means by which poor households receive information regarding market conditions and public services, and the extent of their access to communications infrastructure.

5) **Social Cohesion and Inclusion.** “Communities” are not single entities, but rather are characterized by various forms of division and difference that can lead to conflict. Questions in this category seek to identify the nature and extent of these differences, the mechanisms by which they are managed, and which groups are excluded from key public services. Questions pertaining to everyday forms of social interaction are also considered.

6) **Empowerment and Political Action.** Individuals are “empowered” to the extent they have a measure of control over institutions that may be directly affecting their well-being (World Bank, 2002). The questions in this section explore household members’ sense of happiness, personal efficacy, and capacity to influence both local events and broader political outcomes per the individual self-report (measured by proxy).

**Depression.** The Patient Health Questionnaire (PHQ-9) was used to measure depressive symptomatology (Kroenke, Spitzer, & Williams, 2001). The PHQ-9 is a nine-item measure of depression with each item rated on a 4-point scale (“Not all,” Several days,” “More than half the days,” and “Nearly every day”). One additional item (item 10) assesses the extent to which depression symptoms effect the person’s functioning. Only pre-treatment (T1) and last session (T2) PHQ-9 total scores would be used for the purposes of this dissertation.
**Treatment duration:** Was measured as the number of actual sessions of IPT intervention (i.e., counted after intake meeting (typically 1 session, rarely >1 session due to factors such as instrumental barriers until last actual IPT session).
Chapter 4: Data Analysis

Due to the small sample size (N = 9, pre- and post-treatment and temporal) there was insufficient statistical power to detect significant differences between the two time points (baseline and termination). Thus, we only conducted exploratory analyses on the variables, aiming to outline the linkages of the 6 motivational roles in the system networks of the sample in this dissertation. Within- and between-groups correlations in both tools was not computed due to different item structures and latent variables being assessed, and each was evaluated for statistical significance using a one-tailed test with multilevel sample sizes – T1 (baseline) and T2 (termination) since the start and termination time differed for each participant. These tests resulted in two correlation matrices (within- and between-groups). For due diligence check, an expert network statistician was consulted and various alternatives including multi-level modeling on egocentric date, tergm (temporal exponential graph model) and a stochastic actor-oriented approach using the Rsiena package were applied on the data. Results and findings generated from these analyses approaches are described in the next section.

4.1 Analysis Plan

To analyze and appropriately interpret network level data, a preliminary plan was developed to fit regression equations at the individual level and vary regression equation parameters by social network roles (NGA) to allow for testing the interactions within and between levels between the two time points (before and after IPT; T1 and T2). At the second stage of analysis, bivariate correlations were calculated between social network entities and depression scores on the PHQ-9, and then a multiple regression was conducted to evaluate the link between the change in depression scores upon various social network variables.
Clarification of units of analysis and parallels with conventional statistics. Due to the dependence of observations in the current sample, observations used to create social network variables were not independent and traditional regression techniques were not sufficient for analysis of the data in this study. Social network calculations were performed by using the UCINET VI procedure that regresses individual cells of a dependent network matrix on the corresponding cells in multiple network matrices (independent variables), referred to as the Multiple Regression Quadratic Assignment Procedure (MRQAP). This procedure is robust against autocorrelation in the rows and columns of relational data (Kilduff & Krackhardt, 1994).

The MRQAP correlates the cell representing the relationship between two persons (row 1, column 2) in the form of a T1 matrix with the corresponding A/B cell (row 1, column 2) T2 matrix. Correlating all cells between all individuals in the networks results in a Pearson correlation between the two network variables.

Example of matrix of overall system of a patient:

<table>
<thead>
<tr>
<th></th>
<th>86</th>
<th>Children</th>
<th>Counselors</th>
<th>Family</th>
<th>Friends</th>
<th>Other</th>
<th>Religious Community</th>
<th>Spouse</th>
</tr>
</thead>
<tbody>
<tr>
<td>86</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Children</td>
<td>3</td>
<td>9</td>
<td>9</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Counselors</td>
<td>3</td>
<td>9</td>
<td>9</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Family</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Friends</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Religious Community</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Spouse</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

The second step of the MRQAP generated random permutations of the independent matrix and then computes the regression and saves the resulting r2 values and all coefficients.
Step two is repeated 2,000 times to calculate standard errors for the statistics of interest. For each variable, the procedure computes the proportion of coefficients generated from the random permutations that are as extreme as the coefficient generated in Step 1. Low proportions of random permutations, such as less than .05, suggest that there is a low likelihood that the relationship between the matrices of interest occurred by chance, and thus a significant relationship is suggested (Borgatti et al., 1999; Labianca et al., 1998;). Regression involving multiple independent matrices simply controls for the correlation between the dependent and other independent matrices in the equation.

*Example of QAP Correlation matrix of a patient.*

<table>
<thead>
<tr>
<th></th>
<th>G</th>
<th>S</th>
<th>FB</th>
<th>P</th>
<th>V</th>
<th>N</th>
<th>R</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>0.2895</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FB</td>
<td>0.283</td>
<td>0.283</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>0.265</td>
<td>0.3215</td>
<td>0.828</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>0.6305</td>
<td>1</td>
<td>0.6435</td>
<td>0.112</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>0.036</td>
<td>0.1125</td>
<td>0.0835</td>
<td>0.0945</td>
<td>0.3625</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R</td>
<td>0.0245</td>
<td>0.1155</td>
<td>0.288</td>
<td>0.1915</td>
<td>0.455</td>
<td>0.03</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Score</td>
<td>0.209</td>
<td>0.0575</td>
<td>0.0485</td>
<td>0.6595</td>
<td>0.550</td>
<td>0.095</td>
<td>0.413</td>
<td>1</td>
</tr>
</tbody>
</table>

Importantly, regularly used packages such as IBM SPSS v25.0 could not be readily used to calculate sample descriptives (for demographics and normality) or to compute the number of ties/social actor relations. The limitations of using such a package include that these are setup to correlate vectors and not matrices; the significance tests in these packages make assumptions which are violated when using network data, such as independence among variables, and that these variables are drawn from a particular distribution. Instead, R-package software was used to develop a map of each individual’s social network and to calculate network density, degree,
betweenness and eigen weight vectors. Networks were visualized using visNetwork with javascripts and utilizing predeveloped htmlwidgets from Prof. Westaby’s Lab. Networks will be visualized using R Shiny. QAP correlation which is designed to correlate entire matrices (and not vectors) was used to calculate the significance allowing for comparison between the observed correlation to a reference set of thousands of correlations (only within each system at each time). A p-value is constructed after the package counts the proportion of the correlations that were as large as the observed correlation and finally, the observed correlation against the distribution of correlations is compared.

These permutation tests in the QAP procedure calculate all possible ways that the results could have been yielded if all variables were independent (as if, assuming variable independence). As such, such a procedure counts the proportion of all assignments yielding a correlation as large as the one observed – this proportion indicates the \( p \)-value (or significance), which has been reported for all individual cases in this study. The Hubert’s QAP (Krackhardt, 1988) can be extended to the multiple regression context to control for autocorrelation and then demonstrate unbiased tests of significance of both simple and multiple regression coefficients, as this approach is superior to ordinary least squares (OLS) regression models, as previously established by Monte Carlo simulations in research analyzing dyadic data in social networks (Kolaczyk, & Krivitsky, 2015). The R package \textit{qgraph} (Ebskamp, Cramer, Waldorp, Schimitmann, & Borsboom, 2011) was used to visualize data and compute node centrality measures. To test the statistical significance of a correlation or regression, a common permutation approach is to use node permutations (or node-label permutations), as used in Mantel tests and the quadratic assignment procedure (QAP) tests. By only permuting the node labels, this approach removes the statistical relationship, while preserving the same observed
network properties in all expected networks. While conducting a node permutation test, the null hypothesis assumes no relationship between the predictor variables (e.g., group membership) and response (e.g., endorsement of a social tie) in the network (this assumption is a true null hypothesis for regression-based analyses.)

Additionally, Ordinary Least Square (OLS) in the regression is difficult to apply to dyadic data because this method assumes that the observations are independent and identically distributed. For instance, the nodes in the network have links, implying a potentially dependent relationship between the directly or indirectly connected nodes. Therefore, the assumption for the OLS method would not be satisfied. Because this analysis is not based on OLS or any other conventional statistical method, hypothesis testing was not using tests of significance to reject the null.

As such, any traditional correction method(s) such as Bonferroni would not apply here, nor would be appropriate to use. Instead, Krackhardt’s suggestion on the use of Quadratic Assignment Procedure (QAP) regression was more appropriate and unlike OLS methods, it used nonparametric permutations. In the QAP, rows and columns of the network matrices are permuted, and correlations are obtained between independent matrices and the dependent matrix. After repeating such permutations several times, a test statistic is derived to test the null hypothesis of the regression. Using the QAP method, the proportion of type 1 error is lower than OLS procedure when the degree of autocorrelation is high (like in my study, the likelihood of correlation between (G) (self-coping/goal striving) and (S) (system supporting) social network roles. Steps followed in the QAP method are detailed below:

1. First, using the QAP method, Pearson’s correlation coefficient (r) between the two original matrices {e.g., (S): matrix A and (G): matrix B, so on}, treating the computed
coefficient as the observed coefficient, was computed.

2. Following the matrix comparison, the QAP procedure was used to permute each of the matrices by rearranging both its rows and columns.

3. The permuted matrix from B was then correlated with the original matrix A, producing a new Pearson’s correlation coefficient (r) between the two matrices.

4. Steps two and three were repeated at least 2,000 times.

5. The observed correlation coefficient from the first step was then compared with the distribution of the coefficients generated from step 4 to determine the proportion among the coefficients from the permuted matrices that were equivalent or higher than the observed coefficient.

Once the p-value was generated for the r, it was assessed for significance. Per standards in the field, in the current analyses, when the p-value was not below conventional threshold levels (e.g., \( p \leq .05 \), .01, or .001), the null hypothesis that any correlations between the networks occurs purely by chance failed to be rejected. Further, if the p-value was low enough, it warranted further investigation of the various network roles, and between (S) and (G) network roles and depression scores pre- and post-treatment. This ascertains the correlation within the two matrices and provides indications of direction of change (such as, if different data set was used with more observations, similar results could be yielded). In this study, between subject variance of 6 social network roles in 9 subjects was studied in tandem with various within subject variables. In my study, the ‘estimated’ sample is 720 and data were analyzed at the level of network of entities (9 subjects x 6 network roles) and system level changes are studied and interpreted. Data points were the linkage change of each social role (as measured by
the QAP method) over time and given the small N, interpretations at this stage was only exploratory.
Chapter 5: Results

5.1 Sociodemographic Characteristics

Self-reported demographics included age, gender, nationality, and contact details and a total of 9 patients were recruited through the study duration with an average age of 32.55 (SD = 8.57); 77.8% of the sample was female (n = 7) with 2 males, with heterogenous nationalities including 55.56% Lebanese (n = 5), 33.33% Syrian refugees (n = 3), and 11.11% Armenian/Lebanese migrant patient (n=1). Close to half the sample was recruited through private practitioners (n = 5), while others from community health centers (n = 2) and non-profit organizations (n = 2).

5.2 Depression Outcomes

All patients (n = 9) included in the study reported a score of ≥10 on the PHQ-9 per the inclusion criteria of the parent study with an average depression score of 17.1 (SD = 3.20) at baseline; with a range of depression level: 33.33% (n = 3) endorsed severe, 33.33% (n = 3) met criteria for moderately severe, and 33.33% (n = 3) for moderate depression. At termination, average depression score for the sample was 4.3 (SD = 1.80). Of the 9 participants, 33.33% (n = 3) responded to treatment (i.e., PHQ-9 score 50% of baseline for two consecutive sessions) and 66.67% (n = 6) met remission criteria (PHQ-9 score of ≤ 4 for two consecutive sessions).

Duration of receiving IPT widely varied in the sample and differed by assessment-type. All patients were assessed at T1 and T2 for depression symptoms (n = 9). Overall duration of treatment was calculated to include actual IPT sessions (removing intake sessions and meetings to complete the questionnaires). Duration of treatment for patients completing NGS for both T1 and T2 (n = 9) was 14.7 sessions (Range = 11-22; M = 14.7, SD = 3.29, Median = 14).
5.3 Social networks data

The main aim of the study was to assess increase in system support and decrease in overall conflict in the system. For all the 9 cases where the survey was administered at both time points, changes in system were computed and visualized (Appendix B, Figures 3-11). These results are organized by changes shown according to each of Aims 1-3 of the study per below:

Aim 1 - Support Functions and Depression: To explore social network constellations, network characteristics and sources of support in the patient’s life as they receive a depression-targeted treatment (IPT). For Aim 1, System Support (S) items were analyzed and visualized for all patients at T1. System supporting (S) includes entities in the person’s network that are helping or supporting those pursuing patient’s goal / directly supporting the patient in their goal pursuit (solid blue lines between entities). Items assessing (S) are: (1) When you are sad or depressed, who helps you feel better? Please indicate who, if anyone; (2) When you are sad or depressed, who do/does talk to you or interact with you to find ways to help you feel better? and; (3) When you are sad or depressed, whose help or support have you been thankful for?

Across the 9 cases, roles and linkages of 7 pre-fixed entities including spouse, religious community, friends, children, family and counselors were counted for size (i.e., number of cases endorsing ties with each entity) as well as average size of each entity across all cases. At T1, size of roles across all cases activating entities for (S) was: Spouse (n=2), Religious Community (n=0), Friends (n=5), Children (n=5), Family (n=5), Counselors (n=7) and Other (n=4). At T1, Counselors category was endorsed by 7 of 9 cases and this count should be interpreted with caution. In 2 cases, anecdotal evidence suggests that they activated the IPT Counselor for support role while in other cases, endorsement of IPT Counselor maybe an artefact of social desirability (since the survey was conducted after the patient’s intake session.). At T2, size of roles across
all cases activating entities for (S) was: Spouse (n=2), Religious Community (n=1), Friends (n=7), Children (n=3), Family (n=5), Counselors (n=9) and Other (n=3).

Qualitatively, At T2, Counselors category was endorsed by all 9 cases suggesting the important role that IPT Counselors have in these social networks. Further, increases in Religious Community and Friends were noted as well as decrease in size of Children (which may indicate that children in the networks retained their roles as children and not role-fulfilling entities – an aspect that may be explored in future studies) and Other categories was noted. No changes were observed in Spouse and Family category. Between T1 and T2, overall average (S) increased (T1 = 3.1; T2 = 3.3). Albeit exploratory, these findings suggest a confirmation of the Aim 1 hypothesis of increase in (S) at T2. Exploring underlying reasons for network size change were out of the scope of the current study.

Aim 2 – Self-Coping and Self-Efficacy: To measure the temporal change in self-directed behavioral coping (i.e., independent goal striving to cope / function better (G) with depression between T1 and T2). For Aim 2, System Support (S) items and Goal Striving (G) items were analyzed and visualized for all 9 patients with both T1 and T2 survey responses (Figures 1-9). As stated previously, System supporting (S) includes entities in the person’s network that are helping or supporting those pursuing patient’s goal / directly supporting the patient in their goal pursuit (solid blue lines between entities). Goal striving (G) refers to the entities working on their own for patient’s goal (solid blue line to goal). Items assessing (G) are: (1) When you are sad or depressed, how often can you get yourself to feel better on your own? And; (2) When <name of entity> is/are not around you, how often do you think they are thinking about ways to help you feel better when you are sad or depressed? Changes in S, G, P, V, N, R and Network Affirmation
Ratio as well as Positive System Focus Ratio were computed for all cases. Ratios were assessed using standard equations (Appendix B, Figures 3-11).

Positive System Focus Ratio:

\[
\frac{(G + S)}{(G+S+P+V+N+R)}
\]

Network Affirmation Ratio:

\[
\frac{(G+S+R)}{(G+S+P+V+N+R)}
\]

At T1, size of roles across all cases activating entities for (G) towards the goal was:

Spouse (n=2), Religious Community (n=0), Friends (n=3), Children (n=1), Family (n=5), Counselors (n=8) and Other (n=4). (G) was also endorsed as a self-motivation / emotion regulation proxy link in some cases, suggesting that some individuals maybe relied on (G) to strive towards their goal (of getting better from depression). Total of 5 individuals endorsed (G) as self-directed goal striving. At T2, size of roles across all cases activating entities for (G) was:

Spouse (n=2), Religious Community (n=1), Friends (n=6), Children (n=2), Family (n=6), Counselors (n=7) and Other (n=2). Total of 8 individuals endorsed (G) as self-directed goal striving.

Qualitatively, between T1 and T2, overall average (G) size increased (T1 = 2.6; T2 = 2.8). These findings suggest a confirmation of the Aim 1 hypothesis of increase in (G) at T2 and importantly, 3 additional individuals endorsed self-directed (G) at T2, suggesting an increase in emotion regulation and goal striving behavior at T2. Exploring underlying reasons for network size change were out of the scope of the current study.
Aim 3 – Overall System: In this aim, the relationship between the participant’s depression status and their recovery goals (i.e., cope better with the depression/function better) via their overall social network system was explored. Changes in overall system support, motivation and self-efficacy were studied, as well as the reduction in conflicts were explored pre- and post-IPT.

All social network roles and linkages including System supporting (S), Goal Striving (G), Goal Preventing (P), Supportive Resisting (V), System Negating (N), System Reacting (R), and Feedback (FB) items were analyzed and visualized for all patients. 9 patients comparing their outcomes between T1 and T2 survey responses. Subsequently, Network Ratios were computed for each case and graphically presented using a Histogram. The ratios included for each case are per the Dynamic Network Lab visualization tool (2018; 2021).

Positive system focus ratio: This percentage computes the links dealing only with purely positive motives (G + S / G+S+R+P+V+N). The positive system focus ratio was computed and visualized for 9 cases with both time-points T1 and T2.

Feedback ratio: This percentage is of entities receiving feedback (FB links diived by all possible feedback links to entities). The feedback ratio was computed and visualized for 9 cases with both time-points T1 and T2.

Network affirmation ratio: This percentage is of functional efforts to manage network dynamics, including constructive efforts to manage conflict (G, S, and R divided by G, S, R, P, V, and N, not including peripheral roles). This considers all the positive and constructive efforts being leveraged in the system. The network affirmation ratio was computed and visualized for 9 cases with both time-points T1 and T2.
In comparing the T1 to T2 changes in the positive system focus ratio and the network affirmation ratio, in all cases, the overall system motivation increased at T2. Changes in micro network dynamics were measured as overall network motivation as depicted by changes in (G) and (S) described above, and overall network conflict as shown in changes in P,V,N,R (Figures 1-9) for all cases where both T1 and T2 surveys were conducted. Lastly, QAP-level changes in (G) and (S) were calculated and visualized and changes in G and S vis-a-vis depression score were assessed for all cases. Overall, findings showed an increase in average scores of both, PSF ratio and NAR at T2 from PSF T1 = 4.45 to PSF T2 = 5.36 and NAR T1 = 4.67 to NAR T2 = 5.78 thereby suggesting a confirmation of hypotheses in Aim 3 that overall individuals following IPT showed higher overall network motivation (Table 3).

Individual case dynamic networks were descriptively examined and all social network roles were evaluated at three network levels: 1) degree, 2) density, and 3) centrality of each role, as established by entity’s tie betweenness and the average edge strength was computed as the network density, and computed and visualized for 9 cases with both time-points T1 and T2 (Appendix Figures 1-9). Furthermore, average QAPg and QAPs p-values for all cases with T1 and T2 (n=9) (Table 1), and an overall correlation matrix was derived to explore associations between each of the social network roles in the overall sample (Table 2).

Importantly, the results from this study indicate to overall changes in levels of cohesion and conflict pre- and post-IPT in the sample. Cohesion was measured as an overall change in degree (i.e. number of links coming in and going out of each entity) and density (total node strength) of System Support (S) as well as changes in Goal Striving (G) at T2. Changes in (S) and (G) provided exploratory evidence on the links between self-coping and self-efficacy (i.e. G) vis-à-vis changes in the system-level support dimensions (i.e. S) (person’s ability to mobilize
support, utilize existing entities to perform roles in ways that help the person achieve the goal); in a similar way, conflict was measured as a function of changes in the overall P,V,N degree and density at both time points. Analyses showed a positive correlation between network roles G and S with change in depression scores before and after IPT (Table 2). Between S at T1 and T2 there was a trend towards significance (Table 2), $r(7) = 0.924, p = <.001$. Similarly, between S and depression score, change from T1 $r(7) = -.181, p = .641$ to T2 $r(7) = -.070, p = .858$, the trend showed an increase in S between T1 and T2 (i.e. greater S after IPT). Since statistical power was insufficient to ascertain statistical significance, results should be interpreted as exploratory. Further, G and depression scores were negatively correlated: higher G at T2 was linked with lower depression score, $r(7) = -.465, p = .208$ (Table 2), albeit statistical power was insufficient.
Chapter 6: Discussion

Recent reports including the Predicting Peace: The Social Cohesion and Reconciliation Index as a Tool for Conflict Transformation (UNDP, USAID, Seed, 2015); REACH, Understanding Social Cohesion and Resilience in Jordanian Host Communities: Assessment Report (June, 2014); Mercy Corps, Analysis of Host Community-Refugee Tensions in Mafraq, Jordan (October 2012); Mercy Corps, Mapping of Host Community-Refugee Tensions in Mafraq and Ramtha, Jordan (May 2013) and the Urban Refugee Research and Social Capital: A Roundtable Report and Literature Review (International Rescue Committee (IRC) and Women’s Refugee Commission (WRC): February 2013) have highlighted significant gaps in the study of cohesion and conflict in post-conflict and active conflict settings globally. Such gaps are perpetuated by various reasons including absence of a widely held, theoretically derived, clearly articulated and reasonably operationalized definition of social cohesion, inadequate understanding of material and personal resources that help build resilience in fragile societies, and its constitutive and relational dimensions as well as a lack of appropriate, contextually valid measurement approaches.

6.1 Social cohesion, conflict, and network dynamics

For this study, social cohesion was defined per description adopted by the World Vision Social Cohesion research initiative in other similar refugee-host contexts, “as the nature and set of relationships between individuals and groups in a particular environment (horizontal social cohesion) and between those individuals and groups and the institutions that govern them in a particular environment (vertical social cohesion) (World Bank Social Cohesion Group Report, 2020, p.9). As such, grounded in dynamic network theory, social cohesion was interpreted as being constituted by strong, positive, integrated relationships as well as high goal-striving and
system supporting ties (social network roles G and S), whereas weak, negative or fragmented relationships and high conflict (social network roles P, V, N) were taken to mean low social cohesion. As a multi-faceted, scalar concept, required an understanding of social networks – complex webs of interconnected relationships internal to groups (known as bonding) and between groups (known as bridging) and has been suggested as an appropriate approach to the study of cohesion elsewhere (Lyytinen & Kullenberg, 2013).

This study focused on assessing multidimensional indicators of social cohesion involving aspects of personal, political, and developmental human security, trust in institutions, satisfaction, and participation in civic life (within groups), and measures of intergroup perceptions, perceived threats, and social distance and/or inter-group contact (between groups) as well as capturing social ties indicative of deteriorating or low social cohesion, instability, fragmentation, and conflict. Both these dimensions - of increase in social cohesion and support and decrease in conflict - were assessed by constructing items that helped capture patterns of communication of negative feelings between a centrally identified person and the person’s self-reported social network entities as well as through an assessment of the network roles that the various entities performed in the person’s life (negative stereotypes, perceptions of threat, recent or ongoing adversities and hardships due to a cascade of personal and instrumental losses).

In a humanitarian emergency context, social tensions are multi-directional (UNDP, 2013): strain and conflicts can occur between communities (e.g., host and refugee families) constituting horizontal tensions or between communities and those who govern and administer them, perpetuating vertical tensions. Per the Regional Refugee and Resilience Plan 2015-16: Regional Strategic Overview (3RP) (UNDP and UNHCR, 2018), specific and unique drivers of tension at the micro-level (such as competition for housing, employment) have been linked to horizontal
tensions, while factors at the macro-level (e.g., inequitable access to civic and welfare services) contribute to vertical tensions. Because identities are multiple, fluid and highly dependent on context, individual’s perception of threat and safety is largely subjective. What is inimitable to regions where both, refugee and host populations co-exist, is that often, political affiliation and religious identification guide such perceptions and moderate the facilitators and barriers that influence social and civic integration (Bailey & Barbelet, 2014). Within the specific Syrian refugee crisis in Lebanon, existing fragilities and political imbalance at the national level, may continue to have an effect on the alliances and rivalries between the two groups, as well as between Syrians and other refugee communities in the country. Such disparities perpetuate continuous insecurities and have been linked to numerous mental health problems in populations in humanitarian emergencies as was depicted in the parent study, from which this dissertation is derived.

When the MoPH, Lebanon launched its 10-year Strategic Plan to meet the rising needs for mental health care to all persons affected by the civil war in 2015, in addition to contextually-adapting and testing evidence-based psychotherapies for all sub-regional populations, it also emphasized its priorities around protection and promotion of refugees’ and host’s psychological well-being (increasing functioning) preventing or treating mental disorders (reducing suffering). A key element of this Strategic Plan has been to increase access to quality mental health care for all persons in Lebanon, regardless of status. In recognizing that training for mental health professionals, clinical staff, and partner organizations in evidence-based mental health practices is insufficient to meet the growing needs of the affected populations, the collaboration between the MoPH and the Global Mental Health Lab, Teachers College provided a platform to pilot a feasibility study to evaluate the cultural-fit and feasibility of dual-format (individual and group)
IPT, across a range of primary, tertiary, private and public health care and civic engagement settings (such as houses of worship, places of social congregation etc.). Due to IPT’s core principles of a focus on interpersonal crises and difficulties, \textit{increasing social support and cohesion, and decreasing interpersonal conflict are central foci of this treatment and hypothesized mechanisms of change in this treatment} (Lipsitz & Markowitz, 2013; Markowitz, Skodol, & Bleiberg, 2006).

In Lebanon’s regional and national plans, social tensions (reduced social cohesion) are conceptualized as a key driver of local violence and potentially larger conflict in the country. The government of Lebanon has expressed concerns around an existing “fragile stability,” especially in the most vulnerable and deprived parts of the country, that are further taxed due to the refugee influx. As such, the Strategic Plan outlines “stabilization as a means of strengthening national capacities to address long-term poverty and social tensions between various groups, while also meeting humanitarian needs (of all persons) (Syria Regional Response Plan, 2014; Lebanon Crisis Response Plan, 2015-16; Lebanon Roadmap of Priority Interventions for Stabilization from the Syrian Conflict, November 2013). This approach to studying factors that increase social cohesion and reduce interpersonal conflict is also consistent with the Regional Refugee and Resilience Plan 2015-16: Regional Strategic Overview – the 3RP (UNDP and UNHCR, 2014).

Within the 3RP, social cohesion is identified as an innovative approach for addressing social tensions and is defined in two ways: (1) the number of interactions between communities (among individuals of the same community as well as between individuals across groups), and (2) reduction in protection and security risks for all persons. To strengthen cohesion between refugee and host communities, the 3RP emphasizes an equal focus on increasing livelihoods, improving infrastructure and strengthening delivery of socio-economic interventions to address
the needs of vulnerable communities. Additionally, the 3RP seeks to augment social capital by strengthening bonding and bridging networks through (1) community centers, (2) engaging community outreach volunteers and (3) investing in community-based initiatives.

This study built on the integration and use of IPT as both, an intervention for treatment of clinical depression as well as a tool to leverage and enhance system-level support and cohesion, and reduce conflict (by helping the person develop emotion regulation skills, interpersonal effectiveness in negotiation of conflict etc.). Hypothesized mechanisms of change of IPT include increase in interpersonal connection and cohesion, and decrease in conflict and disputes, however, a study measuring these mediators has not yet been conducted. As such, IPT was selected as the primary intervention for the current study to examine these interpersonal linkages and connections. Future studies should explore ways of measuring differences in social networks of persons receiving IPT in the group versus individual formats, test for optimal dosage needed to yield hypothesized changes in social support and compare clinical with a non-clinical, community sample.

6.2 Complexities in Application of Dynamic Network Analyses to Social Networks in a Humanitarian Setting

In this cutting-edge approach (adopted and applied by Westaby et al., 2012, 2014, 2020) to the study of underlying mechanisms of change in IPT using network science methods, pre-network permutations (or datastream permutations) were used to test how observed social network structure would differ from what is expected if individuals made random social decisions. This approach permutes the observed data to create many expected networks that could have occurred in the absence of any social preferences. The null hypothesis here is that,
after removing the specified effects, the social structure itself is random (e.g., individuals have no other social preferences).

This approach is unique, complex, and the first of its kind dynamic interpretation in a psychotherapy intervention in a refugee sample. These within and between subject variables were studied across two points and this longitudinal, dyadic and network-level measurement was attempted using the QAP as that is the most appropriate method along with mean differences in the pilot sample. Finally, we studied both, ego and sociocentric network roles (we included person’s perception of their goal, as well as the role and interactions of others in a person’s network over time, and simultaneously). As such, repeated observations were measured at two time points for both, ego and sociocentric variables and then interpreted in relation to each other. Effects of time are typically modeled alone prior to adding other predictors to establish how the dependent variable changes longitudinally. Subsequently, a time invariant (i.e., a variable that does not change over time) independent variable could be added representing each case at each time point. Hypotheses were tested around change of network size (people leaving/being added to a person’s network) as well as change in within person (G) variable.

In other words, in addition to modeling growth trajectories using the time variable (i.e. how networks change), we also targeted the identification of characteristics that explain network change (i.e., why networks change) by asking open-ended questions as well as adding the ‘Other’ category of a network entity. To this end, we measured and visualized how new ties were formed in networks as well as older, pre-treatment ties sustained over time, based on shared foci of activity (receiving IPT, recovering from depression), thereby perhaps contributing to our understanding of larger networks in both host and refugee group. As described in earlier sections, among the social network roles, G, S, and FB are broadly seen to have an overall positive affect
on the individual’s goal pursuit, while P, N and V to have a negative impact while R could have a positive effect for networks experiencing interpersonal conflict. Overall, this approach helps characterize important behavioral and affective connections between important people in the person’s life, their existing and desired sources of support, and mechanisms through which they could mobilize and improve their resources in times of distress and crisis as mediated by IPT. Ultimately, outcomes from this study provided important insights about the host and refugees’ social structures and social capital, as well as their in-network motivation dynamics. Alongside, it shed light on their local idioms of distress and ways of coping in adversity, which provided valuable information for mental health and psychosocial support teams working with this population. Lastly, the novelty in the approach to the study of social networks also provided conceptual insights, and newer concepts, such as emotional contagion (how behaviors spread in a community) could be explored and set precedence for future studies in which meta-analysis methods could be applied to further assess within and between network dynamics.

Further, the within-person variable (such as G) could be used to determine whether deviations from one’s average had consequences for ego’s outcomes at a given time point (e.g., level or extent of self-coping towards getting better from depression). When the network contained more conflict variables (P,V,N) than usual, we could interpret that the ego be less likely to achieve their goal (G,S). For example, it is possible that a positive relationship between a number of G and S roles (or the combined effect of within- and between person network influence) and propensity to get better from depression was actually due to a third variable (e.g., improvement in socio-economic status) – which is correlated with both the independent variable of interest and our dependent variable. The most central finding of this study indicated overall changes in levels of cohesion and conflict pre- and post-IPT in the sample. Cohesion was
measured as an overall change in degree and density (S) over time as well as changes in (G) to explore links between self-coping and self-efficacy vis-à-vis changes in the system-level support dimensions (person’s ability to mobilize support, utilize existing entities to perform roles in ways that help the person achieve the goal); in a similar way, conflict was measured as a function of changes in the overall P,V,N degree and density at both time points. As described in the results section, due to a small N, while statistical significance was not confirmed, trends in G, S, and overall positive system focus ratio showed an overall increase at T2 post-IPT in the sample that was depressed at T1 and non-depressed at T2.

However, in the analyses of this study, we omitted such confounding variables to control for endogeneity. As such, decomposing the variance into within-person and between person effects of number of supportive versus non-supportive (conflict-prone) entities in the network removed the threat to causality associated with confounding variables that do not change over the course of our study (such as, a person’s refugee versus host status). This also included omitting any unobserved social conditions or processes that might have influenced what the network related to outcomes of interest could have looked like if a new actor entered the system (or contrarily, exited the system). Any confounding time-invariant characteristics, that could be correlated with the between person effect (i.e., a person’s typical number of entities in the network) rather than the within-person effect (i.e., depression score change), which purely reflects change over time. It should be noted that confounding effects of time-varying characteristics (e.g., employment status) can still create endogeneity and threaten causal inference in longitudinal models, a limitation not unique to this study. Future studies should aim to study social network changes with a larger sample size to draw conclusive interpretations about pre- and post-treatment changes using a larger sample to test between subject changes and
testing the approach in a community sample using a comparison group (clinical and non-clinical samples).
Chapter 7: Limitations

The current study was exploratory in nature, with a purposive sample, a small N, and network science informed approach to the study of social networks, that lack established norms for use with a refugee and host population in Lebanon or any other region. The findings of this study will be limited by the following:

7.1 Limitation on generalizability due to small sample size

The sample of the current study is diverse which included both, Lebanese host as well as Syrian refugee and Armenian migrant patients living in Lebanon at the time the study was conducted. The findings of the study may not be generalizable to non-refugee or non-host samples, from different backgrounds than the study participants.

7.2 Lack of comparison group

The current study examines endorsement of psychological distress (clinical depression as measured by a self-report depression screening tool) and indicators of social network linkages as a snapshot in time, and results of these measures cannot be considered a direct result of engagement or receiving IPT. All participants in the study received the same intervention and changes seen in the social networks before and after the intervention may be accounted for by other factors such as spontaneous remission of depression, and therefore decrease in social withdrawal, cohort effects etc.
7.3 Lack of a standardized social capital and social networks tool

In the current study, widely used World Bank Questionnaire Core Questions version was used at the outset to assess changes in the social capital of the participants. However, due to a number of challenges that were anecdotally reported to the study coordinator, such as difficulty comprehending questions, lack of relevance of the question to the context of a refugee in Lebanon and difficulty measuring change before and after (due to lack of sensitivity to change of the items in the tool), responses on the tool were non-interpretable.

7.4 Lack of a contextual validation pre-study of social networks survey

The social networks survey developed for the study was derived from a standard and well-tested survey tool developed by Westaby et al 2012 for the United States domestic context and was not pre-validated using cognitive interviews for use on the Lebanese context. As such, findings are exploratory and interpreted with caution.

7.5 Lack of a treatment non-responder sample

This study did not include a sample of patients that did not improve in IPT (i.e., non-responders to IPT) and as such, social networks of patients that did not meet remission or response status in treatment were not explored. By exploring support and conflict cycles in patients that did not improve in IPT, insights about their social networks and social capital resources were not captured.
Chapter 8: Future Directions

The mental health needs of refugees and host population in Lebanon and in other similar contexts of humanitarian emergencies are impacted by multiple interacting factors, namely: lack of legal status of refugees in Lebanon who are fearful of local authorities or of the government as well as threatened by their temporary status in a new country; to violence and extortion; high levels of stigma; economic instability and poor access to public healthcare facilities. Future assessment of social networks, pathways of integration among refugees and hosts, and the interactions around social capital resources between refugee and host populations that targets the unique experience of psychosocial stressors this population faces must address the effects of risk for displacement, impact of routine violence, exposure to drugs, and economic instability in a comprehensive manner.

A number of different parameters will need to be considered when selecting tools and approaches to assess social networks and social capital in a mixed refugee and host populations: the setting (e.g., general hospital, community-based general clinic, psychiatric facility); the modality of intervention (i.e., individual or group); the facilitator (e.g., mental health specialist, general health professional, peer counselor); type of intervention (i.e., IPT versus other evidence-based psychotherapy interventions); the domains addressed (e.g., strengths, difficulties, behaviors, emotions, symptoms, functioning, exposure to past stressors, current experience) and multi-sectoral collaborations (i.e. income generating activity training, integration schemes for refugees in the local context).

Further research is needed to widen our understanding of obstacles and barriers that various groups face when engaging with the social capital resources as well as establishing new social ties in a new context (some of which may be uniquely encountered by the refugees.) This
should include an assessment of structural (e.g., cost, transportation issues, lack of psychological service providers) and attitudinal barriers to service access (e.g., the influence of mental health stigma among refugees versus host populations, the inhibition among clinicians to cater to or acknowledge the health needs of the refugees, and their communities).

While the findings from this study will be used to lay the groundwork for future mental health services and research to improve access to feasible and effective psychotherapy services for all persons effected by civil war, experiencing displacement, and integrating in a new society to help support resilience in this population, the recommendations focus on clinical practice, social policy and mental health research. Consequently, effective healthcare service delivery pathways should triage the sociocultural and psychosocial lived experiences of distress in a population experiencing a cascade of structural and interpersonal losses, with the biomedical (such as the skillset and training frameworks of the health workers engaged in direct service provision) and structural strategies (such as the barriers of service delivery and challenges of service uptake and utilization by the patients in this study) to plan sustainable intervention methods to cater to the unique needs of this underserved population. While bringing resources to develop a more inclusive (and contextually-relevant as well as culturally-valid) growth process, shifting landscapes of resources, belonging to a new society, integrating and disintegrating between a former and future home base, poses a series of risks to the overall cohesiveness of and within societies, especially in fragile states.

Two billion people – and half of the world’s poor – live in countries affected by fragility, conflict and violence (FCV) and by 2030, about two-thirds of the world’s population will reside in an FCV. Since 2007, the number of major civil wars has tripled, and at the same time, conflicts have grown more complex. Widespread and far-reaching violence has economic
consequences and current trends have shown that in contrast to wars and conflicts that started in 1970 and lasted an average of 9.6 years, those that started within the last 10 years are likely to last twice as long (World Bank, Social Cohesion and Resilience Report, 2022). In sum, this upward trend has been shown to have cascading effects on increase of other forms of violence, suffering and social upheavals in societies lasting decades. There are more than 82 million forcibly displaced people globally with increased prevalence of conflict globally. Of these 82 million, more than half are internally displaced and about 70% are women and children, who endure augmented risks to safety and well-being in the current, ongoing COVID-19 pandemic.

In contemporary refugee crises (i.e., the recent unprecedented upsurge in refugees worldwide), a range of peri-migration stressors (i.e., those experienced at or very close to arrival) and post-migration living difficulties (i.e., those endured long after settlement) include adjusting to the new camp environment, destruction of conjugal and family support systems, and loss of employment among others (Silove, Ventevogel, & Rees, 2017) which worsen peoples’ health and depletes their ability to function (Hall, Bonanno, Bolton, & Bass, 2014; Hobfoll et al., 2018). In other non-refugee and non-displaced populations, the psychological impact of environmental losses and valued resources (e.g., material possessions, social capital, and financial stability) has long known to be associated with stress and increased vulnerability to negative health outcomes (e.g., suicides/homicides, violence in the community and at home, depression and anxiety) (Bonanno, Galea, Bucciarelli, & Vlahov, 2007; Hobfoll, Mancini, Hall, Canetti, & Bonanno, 2011).

The impact of loss of economic and psychosocial resources (such as family support) due to Hurricanes (Ironson et al., 1997), destruction of structures of national importance (Bonanno et al., 2007; Hobfoll, Tracy, & Galea, 2006) and terrorist attacks (Adams, Boscarino, & Galea,
2006) have been linked to adverse mental and physical health outcomes across many studies. A 10-year longitudinal study of 326 randomly sampled adults in United States, using structural equational modeling, suggested that a range of resource loss over 10 years mediated the link between adverse life events and depression symptoms (Holahan, Moos, Holahan, & Cronkite, 2000). Findings from studies conducted among other forcibly displaced groups including refugees, has shown a strong association between forced migration and adverse mental health consequences with high levels of depression, anxiety and post-traumatic stress disorder (PTSD) in comparison to host populations (Bogic, Njoku, & Priebe, 2015; Priebe, Giacco, & El-Nagib, 2016; Steel et al., 2009). In a sample of 1196 Palestinian adults facing internecine violence, enduring loss of social structures and economic resources, as well as torture, detention and harassment by the Israeli military, showed high rates of social duress, poor psychological health, poorer functioning and overall worse PTSD outcomes. Factors such as family support satisfaction and talking to friends and family were protective against PTSD (Hall et al., 2014) as indicated elsewhere.

Social networks have been identified as vital sources of social capital (Ager and Strang 2008; Alfadhli and Drury 2018; Darling 2017; Granovetter 1973; Haug 2008; Koser 2007; Poros 2011; Ryan and D’Angelo 2018), and when present and strong, have shown to reduce risks to private property, safety and security during displacement (specific links to access to reliable information, emotional support and links to lucrative and employment opportunities have been shown elsewhere). As such, other studies have shown why and how refugees and migrants frequently move to regions where forming new ties comes with minimal challenge or if to places and communities where pre-existing ties might exist. Often, these social networks may be among the prominent push factors contributing to the increasing trends in international migration (i.e.,
individual emigrate to regions in the world where they have existing or known ties – friends, extended family members, members of their country and county of origin etc.) (Sönmez 2017). In addition to existing social ties, such displacement offers opportunities to foster newer acquaintances (Hanley et al., 2018; Koser & Pinkerton, 2002), while older and existing ones may be renewed. Often, newer friendships are formed and new families are born (Beaman, 2012; Campbell, 2012; Ives et al., 2014; Lamba, 2008; Potocky-Tripodi 2004; Williams, 2006).

Therefore, while assessing and measuring social networks and observing entries and exits of various network entities in fragmented networks, “the impact of distance and physical separation on how social ties are maintained, strengthened, or weakened over time, and how their meaning and practical use can change” (Ryan et al., 2018, p. 148) should be closely considered.

Future studies should also explore concepts and operationalization of social capital and social networks in the context beyond the individual level that was assessed in the current study. Dimensions used to analyze the relationship between social capital, social cohesion indicators and subjective well-being, aggregated indicators of social cohesion in a larger community sample, which was outside the scope of the current study. Empirical analysis in this study was based on individual data for a small, heterogenous group of refugees and host patients in Lebanon, and should be extended to other regions in which co-existing groups experience similar structural and interpersonal challenges.

Overall, results of this dissertation highlighted the importance of studying social networks among individuals experiencing a breakdown of social systems and severing of social ties relating to developing clinical depression for important reasons. Individuals with clinical depression experience lack of future orientation and frequently struggle to mobilize supports even when present. Closely exploring the social networks of individuals in this sample gave key
insights on the relationship between hypothesized underlying change mechanisms of interpersonal psychotherapy namely, increase in social support (increase in support (S)) as well as in emotion regulation (increase observed in goal striving (G) and feedback (FB) at T2. The measurement of conflict linkages involved with coping goals also provided insight into understanding the exact types of stressors patients were experiencing in terms of their relationships in their own complex systems.

The network visuals provided by dynamic network analysis (aka network goal analysis) allowed us to visualize exactly where the positive and negative forces in coping with depression were emanating from in each patient’s own complex system and how dynamics changed from pre to post IPT intervention. More research with larger samples is needed to better understand which actors are playing the strongest roles in helping or hinder coping. For example, are friends consistently enacting supporter roles that in turn impact long-term positive functioning for those with depression? Do some spouses enact more complex dynamics such as being system supporters many times, but occasionally enacting system negation that thwarts the positive aspects of the multiplex relationship? How many system negation instances does it take to destabilize an otherwise healthy system with system support linkages? More generally, how does the network goal data from depressed samples differ from non-depressed samples?

The social network survey used in this dissertation provided rich insights in how Syrian refugees and the Lebanese host build social cohesion, mobilize support, manage and/or resolve conflict over time, and explored the extent to which IPT was instrumental in bringing about such change in increasing interpersonal support and decreasing conflict. The efficacy of IPT in strengthening social capital - a key protective factor in torture-exposed refugees, and its already proven effectiveness in refugee settings and suitability for training non-specialist staff worldwide
(Verdeli, 2008; Verdeli et al., 2008) - adds an important mental health skill for frontline providers. Importantly, it helps us understand how persons affected by these crises can better adjust to displacement.

Finally, the focus of this dissertation, on linking social capital and support networks with positive mental health outcomes, is in line with the UN’s Sustainable Development Goals (described in earlier sections). Broadly, it aimed to explore ways to recognize and measure the interlinkages between individual- and environment-level factors in a displaced population experiencing a complete breakdown of social and ecological systems. Refugees’ displacement has come with many personal losses and distal structures - employment, education and health - were also uprooted and their displacement to an already fragile Lebanese society, added similar stressors on the host. These tragedies not only acutely affected the psychological well-being, challenging pre-existing sources of support, reliance and coping but also, highlighted the vitality of building stronger social networks in times of such humanitarian crises.

Outcomes from this study also helped recognize and measure the interlinkages between individual- and environment-level factors in a displaced as well as a non-displaced population experiencing a complete breakdown of social and ecological systems. This is an important outcome and relates to the choice of approaching social networks in this study as being “complex” rather than “simple” networks. As described in earlier sections, the main distinction between simple and complex social networks is that whilst simple networks assume that linear contact between two entities is sufficient for transmission of effects (passing over of information, enhancing cohesion etc.), in complex social systems, reinforcement of relationships drives change. In examining types and levels of support, cohesion and conflict derived through various social ties and roles, adopting a non-traditional approach such as in this study, contributed to
understanding of social networks by arguing for a greater differentiation and specification of networks spatially (changes within the same entity role) and temporally (observed changes over time). Dense networks within close-knit local communities simplifies the experiences of forcibly displaced persons experiencing a range of post-migration living problems (described before), underestimating difficulties they may face in accessing support.
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Lebanon Roadmap of Priority Interventions for Stabilisation from the Syrian Conflict (World Bank, United Nations, Government of Lebanon, November 2013)


Mahmood, M. (2017). The Rohingya Crisis: History and Politics. *Institute of Strategic Studies*, (Vol. no. and issue no. are missing), 1-5.


Mukherjee, S. (2020). The Rohingya in crisis: evolving humanitarian norms in South and Southeast Asia?


Appendix A: Data Tables
Table 1
Average QAPg and QAPs p-values for all cases with T1 and T2

<table>
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<tr>
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<th>Descriptive Statistics</th>
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<td>N</td>
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Table 2
Correlation Matrix of Goal Striving (G), Social Support (S) and Depression Scores at T1 and T2

<table>
<thead>
<tr>
<th></th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
<th>95% Confidence Intervals (2-tailed)</th>
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<td>PHQ T1 – PHQ T2</td>
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<td>.361</td>
<td>-.413</td>
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<tr>
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*Note.* Estimation is based on Fisher’s r-to-z transformation.
Table 3
Changes between Positive System Focus (PSF) Ratio and Network Affirmation Ratio (NAR) at T1 and T2

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<th>PSF T2</th>
<th>NAR T1</th>
<th>NAR T2</th>
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Appendix B: Figures and Illustrations of Cases
Figure 3: Case Illustration – embedded figure 1 of depressed patient

**Figure 1. CASE 6: 23yo F Lebanese Host**

- **Problem Area:** Role Transition & Interpersonal Deficits (Divorced with 2 children); T1 moderate-severe depression
- **Summary at T2:** Patient trends showed an **INCREASE** in FB, PSF, and NA Rating; a **DECREASE** in N.

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Supplemental Findings for Case 6:

Social Network Roles

QAP Correlations

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Figure 2.

**CASE 4: 39yo M Lebanese Host**

**Problem Area:** Grief (father’s death) & Role Transition; T1 *moderate-severe* depression

**Summary at T2:** Patient trends show an INCREASE in G, N, R, FB and NA ratio; a DECREASE in V.

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**Micro Network Dynamics:** Overall Network Motivation: G&N

---

![Diagram of network dynamics and centrality levels pre and post IPT for Case 4.]
Supplemental Findings for Case 4:

### Social Network Roles

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### QAP Correlations

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<tr>
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CASE 11: 41yo Syrian F Refugee

Problem Areas: Grief (husband died 6 months pre-p), 4 children, T1 moderate depression

Summary at T2: Patient trends show an INCREASE in G, S, PE, PSE and NA Rates; a DECREASE in V. At T2, had a new linkage of S with Religious Community.

PIHQ Baseline: 14; Termination: 4
IPT Duration: 14 weeks

T1 (pre-IPT)  Micro Network Dynamics: Overall Network Motivation: G8S  T2 (post-IPT)
Supplemental Findings for Case 11:

Social Network Roles

QAP Correlations
Figure 6: Case Illustration – embedded figure 4 of depressed patient

**CASE 10:** 21yo Lebanese male; Moderate depression

**Problem Area:** Grief (death of his mother 9 months pre-IPT); T1 moderate-depression

**PHQ-9 Baseline:** 13; **Termination:**

**IPT Duration:** 11 weeks

**Summary at T1:** Patient trends show an **INCREASE** in N and R, a **DECREASE** in P&E and NA ratios, G, S, V and FB. At T2, patient reported starting a relationship with a girlfriend but remained ambiguous about it and described new, emerging conflicts.

**Centrality Levels**

**T1 (pre-IPT)**

**Micro Network Dynamics:** Overall Network Motivation: G&S

**T2 (post-IPT)**

Network-Level Summary

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<th>Degree</th>
<th>Betweenness</th>
<th>Eigenvector</th>
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</tr>
<tr>
<td>System Reacting</td>
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</table>

Network Ratios

![Network Ratios Graph](image-url)

T1 (pre-IPT)  T2 (post-IPT)
Supplemental Findings for Case 10:

Social Network Roles

QAP Correlations
Figure 7: Case Illustration – embedded figure 5 of depressed patient

**CASE 9: 46yo Armenian-Lebanese F Host**

**Problem Area:** Disputes & Social Isolation/Interpersonal Deficits; **T1 moderate, severe depression**

**Summary at T2:** Patient trends show an INCREASE in 9 and V; a DECREASE in C, P, FSP and NA Ratings. Patient reported that she was able to end a toxic relationship with her boyfriend by T2 (reported as Other entity at T1 and not endorsed at T2).

**PHQ-9 Score – Baseline: 19; Termination: 6**

**IPT Duration:** 12 weeks

---

**T1 (pre-IPT)**

**Centrality Levels**

- The Goal: 3
- Spouse: 0
- Religious Community: 0
- Friends: 5
- Family: 0
- Counselors: 0
- Children: 0

**Micro Network Dynamics: Overall Network Motivation: G&S**

---

**T2 (post-IPT)**

**Centrality Levels**

- The Goal: 0
- Spouse: 0
- Religious Community: 0
- Friends: 8
- Family: 8
- Counselors: 8
- Children: 8

---

111
Supplemental Findings for Case 9:

**Social Network Roles**

**QAP Correlations**

<table>
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<tr>
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<th>S</th>
<th>FB</th>
<th>P</th>
<th>V</th>
<th>N</th>
<th>R</th>
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G  | S  | FB | P  | V  | N  | R  | Score |
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Figure 8: Case Illustration – embedded figure 6 of depressed patient

**Figure 6**

**CASE 102:** 34yo Syrian woman; Severe depression  
Problem Areas: Role Transition & Disputes (motherhood challenges; disputes with mother-in-law); T1: Severe depression; IPT Duration: 15 weeks; PHQ-9 - Baseline: 26; Termination: 4

Summary at T2: Patient trends show an INCREASE in G, S, F, V, FB, PSF, and NA Ratio; a DECREASE in N.

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**Centrality Levels**

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Figure 9: Case Illustration – embedded figure 7 of depressed patient

**CASE 108:** 37yo Lebanese F; Host; Severe depression

**Problem Area:** Grief (husband’s death 6 months pre-IP); T1 moderate depression

**Summary at T2:** Patient trends show an INCREASE in R, PSF and NA Eaten; a DECREASE in P.

**PHQ-9 Baseline: 14; Termination: 4**

**IPF Duration:** 21 weeks

**T1 (pre-IPF)**

**Micro Network Dynamics:** Overall Network Motivation: G&S

**T2 (post-IPF)**

**Centrality Levels**
T1 (pre-IPT)


T2 (post-IPT)

Network Level Summary
Supplemental Findings for Case 108:

Social Network Roles

QAP Correlations
Figure 10: Case Illustration – embedded figure 8 of depressed patient

**Figure 8**  
**CASE 86:** 29yo Syrian F Refugee  
**Problem Area:** Interpersonal Deficits & Role Transitions; T1 Severe depression  
**Summary at T1:** Patient trends show an INCREASE in S, R, FB, PSF and NA ratios; a DECREASE in P, V, and N. Patient reported that while her conflicts with the family members stayed the same or increased, her motivation to get better and get support from her children increased. Her husband was still hospitalized in coma.

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**Micro Network Dynamics:** Overall Network Motivation: G&G

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**Centrality Levels**
Supplemental Findings for Case 86:

**Social Network Roles**

**QAP Correlations**

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Figure 9. **CASE 14:** Jyje Lebanna FHost  
**Problem Areas:** Disputes & Rela Transitions; T1 Sera depression  
**PHQ-9 Baseline:** 22; **Termination:** 3  
**IPT Duration:** 16 weeks  
**Summary at T2:** Patient trends show an INCREASE in P, N, R, and FB, a DECREASE in S, V, P87, and NA. Ration. At T2, patient reported that since her parents had called off her wedding days before the event, her disputes with her family continued (increased at T2 or stayed the same); she was more motivated to manage and stay non-depressed.

---

**Centrality Levels**

**T1 (pre-IPT) Micro Network Dynamics: Overall Network Motivation: G85**

**T2 (post-IPT)**
Supplemental Findings for Case 14:

### Social Network Roles

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### QAP Correlations

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