

Designing for Technology-Enabled Social-Ecological Resilience

Franziska Tachtler

TU Wien

Vienna, Austria

franziska.tachtler@tuwien.ac.at

ABSTRACT

Unaccompanied migrant youth experience marginalization. In addition, due to their experience before, during and post-migration, they are exposed to mental health risks. Thus, they would benefit from technology enabled mental health support. In this paper, I propose a shift away from viewing resilience development as a responsibility of the individual towards promoting resilience from an ecological approach. This paper presents the social-ecological model of resilience as a design framework to map out the design space of technology enabled mental health support for this and similar context.

CCS CONCEPTS

• **Human-centered computing** → **Field studies**.

KEYWORDS

Mental Health; Marginalized Populations; Social-Ecological Model; Refugee Context

ACM Reference Format:

Franziska Tachtler. 2020. Designing for Technology-Enabled Social-Ecological Resilience. In *22nd International Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI '20 Extended Abstracts)*, October 5–9, 2020, Oldenburg, Germany. ACM, New York, NY, USA, 3 pages. <https://doi.org/10.1145/3406324.3424593>

1 INTRODUCTION

Unaccompanied migrant youth “arrive in the EU unaccompanied by a responsible adult or (...) are left unaccompanied after their arrival” [10, p. 7]. Even after arriving in the country of asylum, they have to deal with many stresses such as continued disrupted/unstable educational and living situation [6] and discrimination [4]. Additionally, they face difficulties in accessing food, water, welfare and health services [6]. Being exposed to many stressors puts unaccompanied migrant youth at mental health risk [6, 7]. Thus, unaccompanied migrant youth would benefit from having and developing a strong resilience to cope with their situation. Mental health services and interventions could support them in developing this skill. However, personal and systemic barriers hinder them to access mental health services and interventions [4, 6, 14]. Recent research in Human-Computer-Interaction (HCI) suggested technology as a promising

solution to make mental health services and interventions more accessible and engaging (e.g., [1, 3, 13]). Limited research has however investigated which specific contextual considerations and specificities of this vulnerable population need to be considered in the design of mental health technologies [14]. A review of ICTs for refugees identified that there are still gaps in the research on how technologies may support the mental health of refugees and that of displaced communities, such as unaccompanied migrant youth [12].

In a three-year long project, I investigated how technology could support promoting resilience in unaccompanied migrant youth. As part of this research project, I conducted three different studies: I interviewed 5 unaccompanied migrant youths as well as 18 professional and volunteer support workers spread across social work, educational programs, mental health promotion, and mentoring programs [14]. I conducted three co-design workshops in which volunteers acting as mentors and a social worker developed together a guidebook for newcomer mentors [14]. I also conducted two series of three co-design workshops, in which unaccompanied migrant youths tested and developed concepts for mental health applications.

In [14], my co-authors and I suggest the social-ecological model of resilience [16–19] as a framework to map out the design space for how technology could promote mental health in unaccompanied migrant youth by supporting the supporters. We argue for the value of the social-ecological model of resilience as a framework to promote wellbeing also in other groups of marginalized populations. This paper presents the key qualities of the social-ecological model of resilience and how the model can provide a design framework.

2 SHIFT OF RESPONSIBILITY

The findings of our studies [14] propose a shift away from viewing resilience development as a responsibility of the individual — i.e. the unaccompanied migrant youth — towards promoting resilience from an ecological approach. First of all, viewing resilience development as a responsibility of the individual puts even more pressure on the unaccompanied migrant youth. Our studies [14] showed unaccompanied migrant youth have to deal with with many internal and external stressors in their everyday life, which are caused by their political situation. In addition, the current situation and environment hinders them to pursue their personal interest and goals and improve their individual resilience. There are varying barriers for unaccompanied migrant youths to accessing mental health support. Many of these barriers are due to the political regulations and a mismatch between offered services and their cultural values [14].

Despite of the increasing amount of mental health technologies, many of the mental health technologies focus on the individual for instance by teaching individual psycho-education and skills [11,

Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for third-party components of this work must be honored. For all other uses, contact the owner/author(s).

MobileHCI '20 Extended Abstracts, October 5–9, 2020, Oldenburg, Germany

© 2020 Copyright held by the owner/author(s).

ACM ISBN 978-1-4503-8052-2/20/10.

<https://doi.org/10.1145/3406324.3424593>

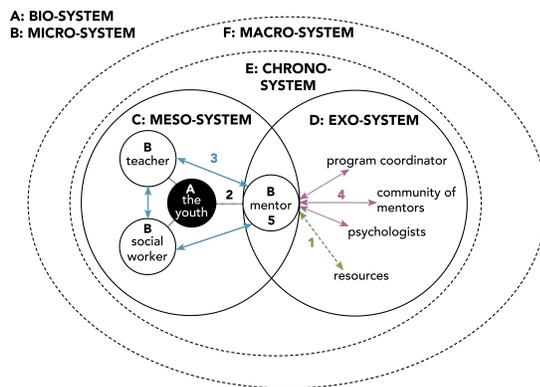


Figure 1: Social-ecological model of resilience with the focus on one specific support group - the mentors

13]. In addition, the commercially available mental health mobile applications (e.g., [5, 20, 21]) puts the responsibility for feeling good on the user and does not take into account adverse circumstances.

In [14], we argue for the value of the social ecological model of resilience as a framework to design technology enabled mental health support. A key characteristic of the social-ecological model of resilience is to shift viewing resilience development as a responsibility of the individual – in our case the unaccompanied migrant youth – to promoting resilience from an ecological approach. In the social-ecological model of resilience the environment has to facilitate resilience promotion [18].

3 THE SOCIAL-ECOLOGICAL SYSTEMS

The social-ecological model of resilience provides lenses to help structure pathways of interventions and to map out application areas for technology enabled support [14]. A key element of the social-ecological model of resilience are the systems which play an essential role in providing and sustaining the facilitative environment. These systems are based on the systems identified by Bronfenbrenner’s ecological theory of development for children [2][19].

The *bio-system* focuses on the individual – namely the unaccompanied migrant youth (Figure 1, A). The *micro-systems* (Figure 1, B) directly impact the youth [19], such as social work, teachers and mentors [14]. In our work [14], we focused on one specific support group – namely volunteers acting as mentors – and their challenges of providing support. The *meso-system* (Figure 1, C) describes the interactions between micro-systems [19], e.g., the exchange between social workers, teachers and the mentor to support unaccompanied migrant youth’s educational and personal development [14]. The *exo-system* (Figure 1, D) links to social systems that indirectly influence the quality of meso- and micro-systemic interactions [19]. In the design framework, which focuses on the mentors, the *exo-system* contains the mentor program coordinator, the community of mentors and psychologists supporting mentors [14].

The *chrono-system* describes the temporal dimension (Figure 1, E), which influences all systems [19]. In this context, the constellation between systems also changes over time. For instance, the stages of the asylum-procedure and age of the unaccompanied migrant youth influence unaccompanied migrant youth’s social ecology. While seeking for asylum and before unaccompanied migrant youth turn 18, they are ideally in regular exchange with a social worker who is responsible for them. When turning 18, this professional care relationship ends and thus this micro-system – the social-worker – would be no longer part of the social-ecological framework [14]. In addition, the asylum-procedure causes unpredictable stressful events (e.g., invitation to a hearing). These events also influence the support needs of social systems providing support such as mentors [14].

The *macro-system* includes political regulations, culture and values (Figure 1, F), which impacts all social systems – namely the bio, micro, meso, and exo – and the interplay across systems [19]. In our context [14], the macro-system has for instance a high impact on the quality and work of the micro-systems. Political regulations set the available human and financial resources in the micro-systems of professional support workers. This leads to a too low care ratio and lack of time to provide sufficient support. In addition, when turning 18, the bio-system loses the access to these micro-systems. This hinders micro-system of professional support workers to build up a trust relationship to the youth which would build an essential basis to deliver mental health interventions to promote resilience [14]. Besides, the macro-system hinders the bio-system to pursue their personal goals and determines the living circumstances and daily structures.

4 DESIGN OPPORTUNITIES

According to the definition of social ecological model of resilience, the environment is most facilitative of resilience if (i) the individual – namely the supporters and the supported youth – can easily navigate, access, and apply appropriate and culturally meaningful resources and expertise; (ii) the exchange inside and across systems functions well; and (iii) solutions as well as the supporters’ wellbeing and capacity to support is supported for long-term sustainability [18].

In our work [14], we learned that volunteers acting as mentors struggle with providing mental health support as they encounter challenges across all the aspects of the social-ecological model of resilience: They struggle finding and accessing resources and expertise (Figure 1, 1). Even when the mentors manage to find resources, the mentors struggle applying resources as the resources are insufficient to meet the mentees’ needs and help in the long term (Figure 1, 2). Thus, the characteristic (i) of the social-ecological model of resilience is not fulfilled in this context. There is a clear gap between the coordination of care (Figure 1, 3) and the sharing between mentors caring for different youths (Figure 1, 4), which decreases the quality of care. Thus, the exchange inside and across systems does not function well (ii). The mentors struggle with empathy stress, high expectations towards themselves. Their own mental health is at risk (Figure 1, 5), which threatens the mentor’s ability to provide stable support in the long term (iii).

The social-ecological model of resilience provides a conceptual structure to inspire novel design solutions by drawing analogies to existing work from different contexts that have targeted similar interventions and support models. In our work, [14], we look at five specific intervention points (Figure 1, 1-5) which could contribute to close the above identified gaps in the social-ecological model of resilience and suggest design directions for how technology could contribute to facilitative environment which promotes resilience from a social-ecological perspective, namely by

- (1) facilitating navigating resources;
- (2) facilitating applying resources;
- (3) coordinating between various care providers for the same unaccompanied migrant youth;
- (4) strengthening the exchange between peers of the mentors and experts;
- (5) sustaining the individual's capacity and wellbeing.

5 CONTRIBUTION TO THE WORKSHOP

This research provides insights into one specific context for designing technology enabled mental health support for marginalized populations and introduces a social-ecological way of thinking. As part of the workshop, I am interested in learning from challenges to provide technology enabled mental health support in other contexts and discuss if and how the social-ecological model of resilience could work as a framework to design successful mental health support for marginalized populations. In addition, I would like to discuss how mental health technology could better take into account the impact of the macro-system as this highly impacts challenges and support structures in the context of marginalized populations.

6 BIO

I am a PhD student at HCI Group, TU Wien and exploring how technology could support promoting resilience in unaccompanied migrant youth. Specifically, I am interested how the social-ecological model resilience could help to design technology enabled support for this marginalized population. In my research, I work together with unaccompanied migrant youth and mentors by using participatory engagement methods. I am a Early-Stage Researcher in the Horizon 2020 Innovation Training Network (ITN) Technology Enabled Mental Health which focuses on the design, development and evaluation of technology enabled mental health services for young people [8]. As part of the Refugees and HCI group, I co-organized a workshop [9] and special interest groups [15].

ACKNOWLEDGMENTS

This project has received funding from the European Union's Horizon 2020 research and innovation program under the Marie Skłodowska-Curie grant agreement No. 722561.

REFERENCES

- [1] Jakob E Bardram, Mads Frost, Károly Szántó, Maria Faurholt-Jepsen, Maj Vinberg, and Lars Vedel Kessing. 2013. Designing mobile health technology for bipolar disorder: a field trial of the monarca system. In *Proceedings of the SIGCHI conference on human factors in computing systems*. 2627–2636.
- [2] Urie Bronfenbrenner. 1979. *The ecology of human development*. Harvard university press.
- [3] David Coyle, Nicola McGlade, Gavin Doherty, and Gary O'Reilly. 2011. Exploratory evaluations of a computer game supporting cognitive behavioural therapy for adolescents. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. 2937–2946.
- [4] Mina Fazel and Theresa S Betancourt. 2018. Preventive mental health interventions for refugee children and adolescents in high-income settings. *The Lancet Child & Adolescent Health* 2, 2 (2018), 121–132.
- [5] Headspace. 2019. Our guide to health and happiness. Retrieved January 7, 2020 from <https://www.headspace.com/>.
- [6] Matthew Hodes and Panos Vostanis. 2019. Practitioner Review: Mental health problems of refugee children and adolescents and their management. *Journal of child psychology and psychiatry* 60, 7 (2019), 716–731.
- [7] Julia Huemer, Niranjana S Karnik, Sabine Voelkl-Kernstock, Elisabeth Granditsch, Kanita Dervic, Max H Friedrich, and Hans Steiner. 2009. Mental health issues in unaccompanied refugee minors. *Child and adolescent psychiatry and mental health* 3, 1 (2009), 13.
- [8] TEAM ITN. 2020. Technology Enabled Mental Health for Young People. Retrieved July 3, 2020 from <http://www.team-itn.eu/>.
- [9] Maximilian Krüger, Konstantin Aal, Volker Wulf, Franziska Maria Tachtler, Reem Talhouk, Ana Maria Bustamante Duarte, Karen E. Fisher, Eiad Yafi, and Koula Charitonos. 2019. Technology at/of the Border: A Workshop about Stories and Experiences. In *Proceedings of the 9th International Conference on Communities & Technologies - Transforming Communities* (Vienna, Austria) (C&T '19). Association for Computing Machinery, New York, NY, USA, 336–342. <https://doi.org/10.1145/3328320.3328408>
- [10] HOUSE OF LORDS. 2016. Children in crisis: unaccompanied migrant children in the EU. (2016).
- [11] David C Mohr, Kathryn Noth Tomasino, Emily G Lattie, Hannah L Palac, Mary J Kwasny, Kenneth Weingardt, Chris J Karr, Susan M Kaiser, Rebecca C Rossom, Leland R Bardsley, et al. 2017. IntelliCare: an eclectic, skills-based app suite for the treatment of depression and anxiety. *Journal of medical Internet research* 19, 1 (2017), e10.
- [12] Ashwed Patil. 2019. The role of ICTs in refugee lives. In *Proceedings of the Tenth International Conference on Information and Communication Technologies and Development*. 1–6.
- [13] Jessica Schroeder, Chelsey Wilkes, Kael Rowan, Arturo Toledo, Ann Paradiso, Mary Czerwinski, Gloria Mark, and Marsha M Linehan. 2018. Pocket skills: A conversational mobile web app to support dialectical behavioral therapy. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*. 1–15.
- [14] Franziska Tachtler, Toni Michel, Petr Slovák, and Geraldine Fitzpatrick. 2020. Supporting the Supporters of Unaccompanied Migrant Youth: Designing for Social-Ecological Resilience. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems* (Honolulu, HI, USA) (CHI '20). Association for Computing Machinery, New York, NY, USA, 1–14. <https://doi.org/10.1145/3313831.3376458>
- [15] Reem Talhouk, Konstantin Aal, Anne Weibert, Max Krüger, Volker Wulf, Karen Fisher, Franziska Tachtler, Suleman Shahid, Syed Ishtiaque Ahmed, and Ana Maria Bustamante Duarte. 2019. Refugees & HCI SIG: Situating HCI Within Humanitarian Research. In *Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems* (Glasgow, Scotland UK) (CHI EA '19). Association for Computing Machinery, New York, NY, USA, 1–4. <https://doi.org/10.1145/3290607.3311754>
- [16] Michael Ungar. 2011. *The social ecology of resilience: A handbook of theory and practice*. Springer Science & Business Media.
- [17] Michael Ungar. 2011. The social ecology of resilience: Addressing contextual and cultural ambiguity of a nascent construct. *American Journal of Orthopsychiatry* 81, 1 (2011), 1.
- [18] Michael Ungar. 2012. Researching and theorizing resilience across cultures and contexts. *Preventive Medicine* 55, 5 (2012), 387–389.
- [19] Michael Ungar, Mehdi Ghazinour, and Jörg Richter. 2013. Annual research review: What is resilience within the social ecology of human development? *Journal of child psychology and psychiatry* 54, 4 (2013), 348–366.
- [20] Woebot. 2019. Hi, I'm Woebot. Retrieved January 7, 2020 from <https://woebot.io/>.
- [21] Wysa. 2019. Meet Wysa. Retrieved January 7, 2020 from <https://www.wysa.io/>.