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Designing for human connectedness: A literature review and case study of interventions

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Human connectedness is increasingly gaining attention in today's society, especially since the outbreak of the COVID19 pandemic. Innovative interventions are designed for this social issue. An important question is if these interventions result in the intended outcome and if so, how that outcome is achieved. In this paper, we aim to support designers who want to design for human connectedness by 1) investigating different types of intended design outcomes of interventions for human connectedness and 2) investigating the connected working principles of those interventions. We present a developed typology of intended outcomes based on a literature review and comparative case study analysis of interventions that intend to improve human connectedness among youth. The typology consists of 2 dimensions and 6 types of intended outcomes. Three types intend to impact the individual, which are promoting social wellbeing, preventing loneliness and tackling loneliness. The other types intend to impact a group and are promoting social cohesion, preventing social erosion and tackling social fragmentation. In addition, we identify 3 themes that provide insight into how the interventions enable the intended outcomes. We show the importance of validated working principles to achieve a certain intended human connectedness outcome for a specific target group and context. We argue that developing a more nuanced understanding of human connectedness and how it can be achieved is essential for designers to develop successful interventions.

Keywords: social innovation; human connectedness; wellbeing; loneliness; typology; design rationale

1 Introduction

Human connectedness is increasingly gaining attention in today's society, especially since the outbreak of the COVID19 pandemic. Human connectedness is an essential element of our wellbeing and refers to the supportive, positive social relationships that give life purpose and meaning (Diener

& Seligman, 2004). Ryff and Singer (2008) state that having positive relationships is one of the six core dimensions of our psychological wellbeing and is therefore, a basic human need.

In general, wellbeing is a holistic concept. Diener and Seligman (2004, p.1) define it as "peoples' positive evaluations of their lives", making it a subjective experience. According to Dodge et al. (2012, p.230), "stable wellbeing is when individuals have the psychological, social and physical resources they need to meet a particular psychological, social and/or physical challenge". Thus, next to the importance of positive human connections for your social health, wellbeing encompasses mental, emotional and physical health elements as well.

With human connectedness, an individual can perceive a chronic absence of qualitative human connections. This absence translates into feelings of loneliness, which can negatively impact other aspects of people's wellbeing (Hawkley & Cacioppo, 2010).

A lack of human connections can have severe implications. On the one hand, feeling lonely affects people's physical health and mortality, increasing the chance of cardiovascular diseases and upsetting restorative body processes. On the other hand, it impacts people's mental health, possibly resulting in cognitive decline, anxiety and depression, among others. Lacking a sense of human connectedness for a longer period of time can negatively affect our overall wellbeing drastically. Although everyone's personal aim is to have a high level of wellbeing in life, there is also a public health benefit that is relevant for society as a whole. Namely, happy people are more successful in many aspects of life (Lyubomirsky et al., 2005).

In our current society, loneliness is of increasing concern (Hertz, 2020). In the Netherlands, in 2016, 43% of the population above 19 years old stated they feel lonely, 10% of which perceive it chronically (Volksgezondheid en zorg, 2021). Comparatively, in the United States, a study from 2020 showed that about 61% of adults report to sometimes or always feel lonely (Cigna, 2021). Among Dutch youth, it is estimated that 8% of youth between 12 and 25 years old feel chronically lonely (Join us, 2021a). As the number of people experiencing feelings of loneliness are high, our society's rising attention to impact people's human connectedness is understandable.

1.1 Designing for human connectedness

As outlined above, human connectedness is an essential element of wellbeing. In our society, multiple interventions that impact our wellbeing are developed and implemented. Interventions can include products, services, processes, campaigns, policies, or a combination of these. Although feeling well is a subjective experience, it depends to a certain extent on the human-made environment, in which design plays a big role. Attention for the role of design in relation to wellbeing interventions has grown over the past decades. The considerations for this are grounded in existing literature and insights from studies performed in adjacent disciplines (Petermans & Cain, 2019). Design researchers wonder how design can intentionally contribute to an individual's or community's quality of life (Desmet & Pohlmeyer, 2013). In design research, new approaches are emerging, which vary in focus and used theories. However, they "all aspire to employ design as an enabler, to focus on quality of life and to look at human needs and life aspirations in a constructive and sustainable fashion" (Desmet & Pohlmeyer, 2013, p.6). The conceptualisation of creating a design that enhances an individual's wellbeing "brings a new additional perspective to design sciences" (Petermans & Cain, 2019).

As design for wellbeing is still an upcoming field in design science, design research that specifically addresses the social aspect of wellbeing is limited. Our aim is therefore to further explore the topic of designing for human connectedness. We are specifically interested in learning more about the design reasoning implicit in designed interventions for human connectedness. A focus on design reasoning makes explicit how a certain design achieves a certain intended outcome. This paper will investigate design reasoning through the model of abductive reasoning as formulated by Dorst (2011). He explains how such a reasoning pattern in design constitutes how a 'what' and 'how' lead to aspired values or outcomes (figure 1). The 'how' in this abductive logic is the working principle that explains how a certain designed proposal or prototype leads to a certain desired outcome.

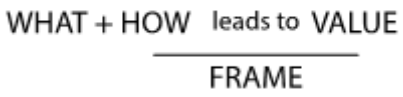

Figure 1. A framework for abductive design reasoning developed by Dorst (2011)

With or without the involvement of designers, innovative interventions are (being) implemented in our society with the aim to impact people's human connectedness. In this paper, we aim to investigate the intended outcomes (value) of interventions (what) to design for human connectedness, as well as the working principles (how) implicit or explicit in designed interventions.

These insights are relevant for two reasons. Firstly, human connectedness is a broad concept encompassing many different concepts and definitions from different sociological and psychological disciplinary domains. For example, there is a difference between the need for intimacy and close friendships on the one hand, and the need to belong to a certain group or place on the other. Secondly, if we want to design for human connectedness, we need to have a good understanding of how it can be achieved. The COVID19 pandemic has led to the development of a plethora of well-intended initiatives and designs to connect humans and tackle loneliness. Understanding if and how such initiatives have the intended effect is essential if we want better outcomes.

In this paper, we aim to contribute to support designers who want to design for human connectedness by 1) investigating different types of intended design outcomes of interventions for human connectedness and 2) investigating the connected working principles of those interventions. We present a developed typology of intended outcomes based on a literature review and comparative case study analysis of initiatives that intend to improve human connectedness among youth. In addition, the case study shows the importance of (developing) a validated mechanism, or working principle, to achieve an intended human connectedness outcome for a specific target group and context. We will argue that developing a more nuanced understanding of human connectedness and how it can be achieved is essential for designers to develop successful interventions.

2 Method

The research objective of this study was to investigate different types of intended design outcomes of interventions for human connectedness and to investigate the connected working principles of those interventions. The research questions that will be addressed in this paper are:

1. What is a typology of intended outcomes of designed interventions for human connectedness?

2. How do designed interventions enable the intended outcomes?

To answer these research questions we conducted a literature and cross-case study.

A cross-case study analysis of 20 interventions (products, services, or processes) that aim to improve human connectedness among youth was performed to study how designers can design for human connectedness. By studying the available documentation about an intervention, such as the website, the reasoning from the initiators behind the creation was partly identifiable. It was possible to identify 'what' the intervention consists of and the 'intended outcome' on human connectedness for all interventions. The 'how' describes the working principles of the intervention. In 12 cases this was made explicit by the developers in the documentation. In the other 8 cases it was partially assumed by the researchers and partially made explicit in documentation. An example of the design reasoning of an intervention is presented in table 1. An overview with the description of all interventions that were analysed can be found in table 2.

Table 1 Example of the design reasoning analysis of an intervention

What	**How (working principles)**	**Intended outcome**
Join us Once every other week, around 15 lonely adolescents meet and do fun activities. The group is guided by two youth professionals, who help each participant to define social challenges: personal challenges aimed at tackling the underlying mechanisms of loneliness. This program is organized in multiple municipalities in the Netherlands.	- Fun and safety: A pleasant atmosphere and a feeling of safety ensure that the participants have a sense of belonging. - Personal leadership: The activities are conceived, organised and carried out by the participants themselves. This gives them control and makes them responsible for their own process. This allows them to contribute to the fun, but also to discover that they may already have mastered certain skills. - Peer to peer contact: Young people have contact with and find recognition among peers.	"Join Us helps young people who are lonely. We bring them into contact with peers and help them become socially stronger." "The goal is that after participating, young people are able to build and maintain their own network." Target group: lonely young people between 12-25 years old

Table 2. An overview of the analysed interventions

Intervention	**What**
Join us (Join us, 2021b)	Once every other week, around 15 lonely adolescents meet and do fun activities. The group is guided by two youth professionals, who help each participant to define social challenges: personal challenges aimed at tackling the underlying mechanisms of loneliness. This program is organized in multiple municipalities in the Netherlands.
Social skills training (PKJP, 2021)	Training for youth who find it difficult to interact with others, to improve interpersonal relations. In some cases, parents are also involved in the process.
Cognitive behavioural therapy (Beck, 2020)	Addressing maladaptive social cognition through therapy.
Virtual reality therapy (Virtual Reality Mental Health, n.d.)	A training that is focused on improving social cognition through practicing social situations in a virtual reality environment.

Family therapy (Mayo Clinic, 2021)	A type of psychological counselling that can help family members improve communication and resolve conflicts.
Systemic psychotherapy (bacp, 2021)	A therapy that focuses not only on the individual, but takes the relationships that are present in the group into account as well.
Plant a Friend (STAD, 2021)	Young people can apply to receive a plant cutting at home and are put in a WhatsApp group with 5 other Plant Parents. They can share their experiences on how the plant grows.
Day against loneliness among youth (Eén tegen eenzaamheid, n.d.)	During the annual national campaign 'Week against loneliness', one day is dedicated to young people in order to attract attention to this age group.
Cross the line (Challenge day, 2021)	A one-day social-emotional education program for a high school class. Cross the line is the most popular activity, in which all children stand on one side of a line on the floor. A statement is shared and children have to cross the line when that phrase applies to you.
Youth contact moment (JGZ, n.d.)	An intervention from the children's healthcare centre, which aims to make high school students reflect on their health and lifestyle through a questionnaire. Besides that, it gives students that are struggling with their health the opportunity to reach out for help.
Kudoz (IWF, n.d.)	A community learning platform, which connects (young) people with and without developmental disabilities to novel experiences in their city.
Buddy (Vitalis maatjes, n.d.)	Vitalis is a foundation that connects children between the age of 5 and 18, that do not get much attention at home, with a volunteering adult. They do a fun activity every week for one year.
Sports/hobby club	The aim is to practice a sport or hobby, however almost always it involves interacting with people.
Imago (Gijsman, 2021)	Imago is a game for school classes. Cards with character attributes and beliefs about appearance are used to invite conversation on the topic of body image.
Faculty introduction weekend (Studievereniging id, n.d.)	Together with a group of about 10 new first-year students and two mentors from the second year, a new student joins a weekend full of organized activities with the aim to get to know each other and the faculty or school.
City & campus introduction week (OWee, n.d.)	A week full of activities that new students can participate in together with a group of fellow students and two mentors, in which they can get acquainted with the city, student- and sport societies.
High school mentor (AOb, 2018)	The mentor of a high school class has the task to guide the individual students in his/her class, as well take care of the overall ambiance in the class.
Psychology in education (Psychologie in het onderwijs, 2020)	An educational program which offers modules, workshops and training sessions for high schools, to increase the mental wellbeing and awareness of students and teachers.
End-of-year musical (Benny Vreden, n.d.)	Children in the last class of primary school practice and perform a musical, to end their school career together.

Speeddating (Vriendin, 2021)	A short one on one conversation to quickly get a first impression of each other.

The case study analysis of intended outcomes was complemented with a literature review of different concepts related to human connectedness. An initial theoretical framework was made from studying human connectedness literature from the field of psychology and sociology. First, the different human social needs were studied, as well as what happens when these are not fulfilled. Next, literature about social cohesion was studied to learn about the social behaviour of groups. By going through an iterative process, moving back and forward between the case study and literature study, a typology could be identified based on the intended outcomes of the interventions. Bailey (1994, p.4) explains that "a typology is another term for a classification". According to his work, we developed an operational typology, which is obtained through deductive and inductive approaches. The developed typology consists of two dimensions and six types.

In addition to the typology, we identify 3 themes through an inductive thematic approach. These (partly) answer our second research question on how the interventions enable the intended outcomes.

A limitation of the research is that the 'how' of interventions mostly is assumed by the researchers. Therefore, is it decided that they will not directly be used to gain insight from. Another limitation of this approach is that there is limited data available on the actual outcome of the interventions and thus if the intervention reached its intended outcome.

3 Results

By combining a literature review on human connectedness with a cross-case study on 20 interventions for human connectedness, we identified a typology based on their intended outcomes. The typology consists of two dimensions and six types. The first dimension describes who the intervention intends to impact - an individual, a collective, or both - and can be plotted on a sliding scale. The second dimension describes three different tactics to impact human connectedness, namely through promoting human connectedness, or preventing or tackling an absence of human connectedness.

We identified three types of intended outcome that aim to impact an individual: promoting social wellbeing, preventing loneliness and tackling loneliness. In addition, we identified three types that aim to impact a collective: promoting social cohesion, preventing social erosion and tackling social fragmentation. In this result section, we will explain each type, by referring to relevant literature from psychology and sociology and by illustrating examples from the case study.

In addition to the typology we identified 3 themes that provide insight into how the interventions enable the intended outcomes (research question 2).

- Theme 1: A holistic perspective on wellbeing is necessary, independent of the intended outcome
- Theme 2: Heuristics to design for human connectedness
- Theme 3: Developing and using evidence-based working principles to design for human connectedness

3.1 A typology of intended outcomes of interventions for human connectedness

The typology of intended outcomes of interventions for human connectedness is based on two dimensions and consists of six types, see figure 2, which are further explained in this section.

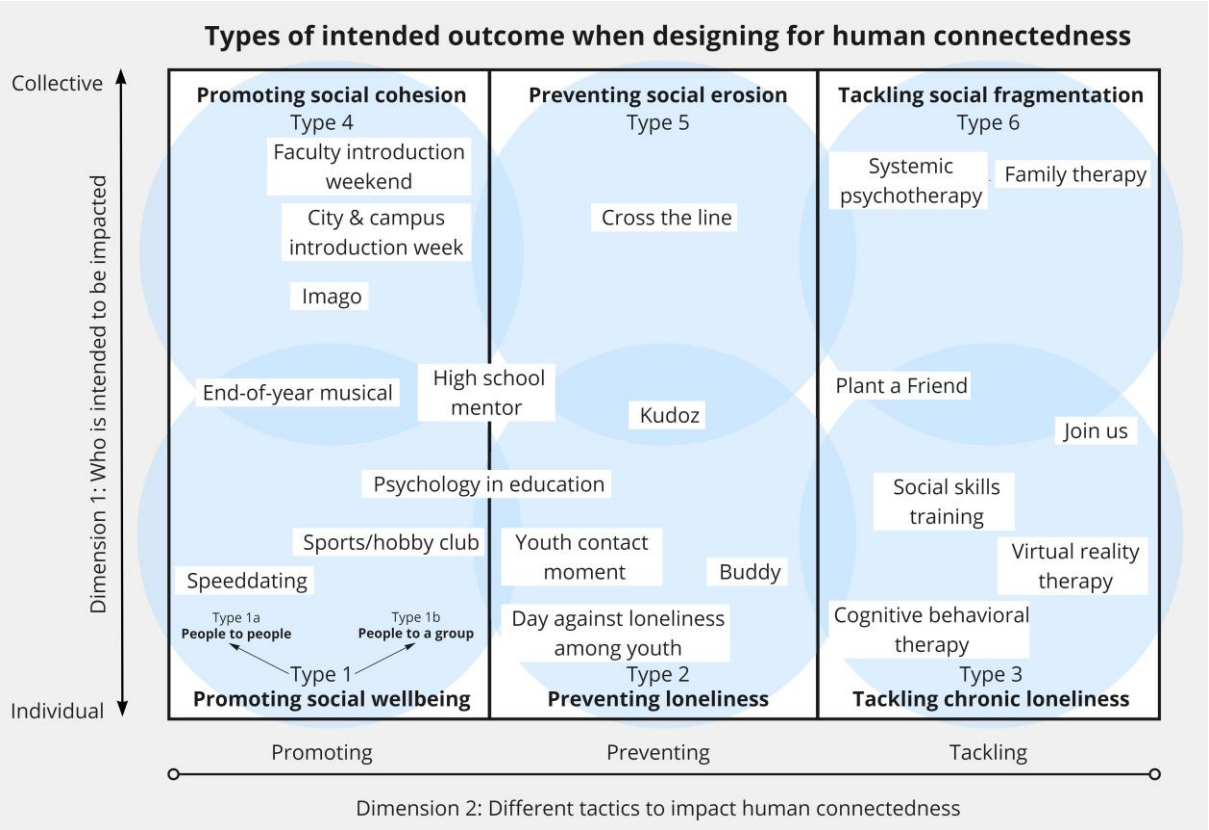

Figure 2. The typology of intended outcomes for interventions impacting human connectedness

3.1.1 Dimension 1: Who is intended to be impacted

The first, vertical dimension is based on whether the interventions that were analysed intend to impact an individual or a collective. In our study we found that in some cases, interventions could impact both an individual and the collective. An example is the intervention from Join us, in which a group of lonely young people that live in the same municipality meet every other week (Join us, 2021b). On the one hand, the adolescents receive individual guidance from a youth worker, to tackle their personal underlying mechanisms of loneliness. On the other hand, the group organizes and participates in activities together, which shapes and reinforces the social cohesion within the group. Because of this, dimension 1 is plotted on a sliding scale.

3.1.2 Dimension 2: Different tactics to impact human connectedness

The second, horizontal dimension describes 3 different tactics how interventions can impact human connectedness, either through promoting it, preventing loneliness or tackling loneliness. The reach of each component differs as well, from reaching everyone to reaching people that are at risk for developing feelings of loneliness, and finally to reaching people that suffer from feelings of loneliness. Interestingly, these different tactics correlate with two different fields of psychology. The tactic to promote human connectedness and to reach everyone can be linked to positive psychology. The tactic to prevent and tackle loneliness comes from traditional psychology, which developed an almost exclusive attention to pathology (Seligman & Csikszentmihalyi, 2000).

3.1.3 Type 1: Promoting social wellbeing

The first type of intended outcome aims to promote every individual's human connectedness or in other words social wellbeing. When looking into literature about human connectedness, two different individual needs can be distinguished. We perceive a high level of connectedness, or social wellbeing, when both needs are met. On the one hand, there is a need for intimacy, for relationships that are strong and deep with for example family members and friends. According to Prager (1995, p.3), this need is fulfilled through dyadic communication exchanges "in which people have a history and anticipate a future of intimate contact over time". Next to these close connections, there is a need to belong to social networks, having multiple superficial relationships in your own and different communities. Hagerty et al. (1992, p.236) explain this is about "the experience of personal involvement in a system or environment so that persons feel themselves to be an integral part of that system or environment".

Interventions that focus on promoting these two needs can be linked to the positive psychology movement that was popularized by Seligman and Csikszentmihalyi (2000, p.5). This field aims "to catalyse a change in the focus of psychology from preoccupation only with repairing the worst things in life to also building positive qualities". Instead of improving the lives of relatively few people who have a low social wellbeing, interventions mean to reach the majority of people that are doing fine and intend to make them flourish. For designers, it can be interesting to apply this take on psychology and intentionally design to contribute to people's quality of life. An example of how it is implemented in the design field, is the positive design framework by Desmet and Pohlmeyer (2013). This framework is, among others, based on positive psychology and supports designers in designing for human flourishing. It consists of three cornerstones: design for pleasure, design for personal significance and design for virtue. People flourish when all three ingredients intersect.

The case study shows that two subtypes can be distinguished, based on the two different social needs. Interventions of type 1a) focus on connecting people to people, addressing the need for intimacy. A speeddating event, aimed at finding a romantic relationship or a friendship is an example. Interventions of type 1b) focus on connecting people to a group, to fulfil the need to belong. An example is when children join a sports or hobby club. The child builds social connections with peers, which enlarges their social network.

3.1.4 Type 2: Preventing loneliness

The second type of intended outcome aims to impact the individuals that are at risk for developing feelings of loneliness. Namely, when someone cannot find the social interaction one is looking for, and feels disconnected on an intimate or relational level or both, feelings of loneliness can develop (Cacioppo et al., 2006). The feeling is subjective and more closely associated with the quality than the number of relationships. Therefore, someone does not have to be alone to feel alone or lonely (Cacioppo et al., 2015). When the desire for contact cannot be fulfilled for a longer time, a chronic state of loneliness can occur (Perlman & Peplau, 1981).

In literature, two types of loneliness are distinguished, which correlate with the two social needs described above. Referred to by Weiss (1973) as emotional loneliness and by Cacioppo et al. (2015) as intimate loneliness, the first type is about experiencing the absence of a significant person that you can rely on for emotional support. Dunbar (2014) calls this your inner core, which can consist of about 5 people. When someone perceives an absence of a network of social relationships, social

loneliness (Weiss, 1973) or relational loneliness (Cacioppo et al., 2015) occurs. Dunbar (2014) calls this the “sympathy group”, which can consist of 15-50 people whom we see regularly.

When looking into interventions that address the topic of loneliness, a difference between interventions that aim to prevent loneliness (type 2) and tackle loneliness (type 3) can be identified. Both types are based on traditional psychology, as they have a pathological focus, but the target group differs. Prevention interventions intend to reach people that are at risk to develop feelings of loneliness. An example is the Dutch annual national campaign “Day against loneliness among young people”, in which sharing knowledge about the topic is the main goal (Eén tegen eenzaamheid, n.d.). Another intervention is a questionnaire from a Dutch children’s healthcare centre that children go to for regular developmental check-ups (JGZ, n.d.). It aims to make high school students reflect on their health and lifestyle. Besides that, students that are struggling with their health get the opportunity to ask for professional help.

3.1.5 Type 3: Tackling chronic loneliness

The third type of intended outcome aims to impact the individual that experiences chronic feelings of loneliness. These interventions reach a selective group and intend to address the core of the problem. As explained in type 2, feeling lonely is a subjective experience, and therefore the approach to tackle it needs to be determined per individual. Interestingly, we found that these interventions do not distinguish between tackling intimate or relational loneliness. As it is such an interconnected phenomenon, the interventions need to unravel the subjective issue of the individual and then need a personalized approach to tackle the experienced loneliness. An example is cognitive behavioural therapy (Beck, 2020) or virtual reality therapy (Virtual Reality Mental Health, n.d.), which both focus on correcting maladaptive social cognition. Another example of an intervention is a social skills training, which is deployed when it is found that someone suffers from poor social skills (PKJP, 2021).

3.1.6 Type 4: Promoting social cohesion

The fourth type of intended outcome aims to promote the social cohesion in a group, as human connectedness can also be perceived on a group level. When internal binding forces are present in a social system, this is defined as social cohesion (Huygen & De Meere, 2008). Individuals in that group experience membership, strong social bonds, trust, shared values, collective behaviour, and other elements that imply a strong relationship among members (Fonseca et al., 2019). It correlates with an individual’s sense of belonging to a social network. Namely, if a group experiences a high level of social cohesion, the individual presumably perceives to be part of that collective. However, this does not necessarily mean that the individual is also able to satisfy one’s need for intimacy in that specific group.

In the context of young people, there are many interventions that promote the development of social cohesion in a group, for example their classroom, and are (unintentionally) based on positive psychology. An intervention which primarily aims for collective impact, is the faculty introduction weekend in which first year students are introduced to their faculty or school. Activities are organized in such a way that they enable the development of social cohesion among the students, so they form groups of peers in a short time. Another intervention is the end-of-year musical that a class in the last grade of primary school performs. Practicing and performing the play together with the whole class stimulates membership and trust.

3.1.7 Type 5: Preventing social erosion

The fifth type of intended outcome aims to impact the collective that is at risk for a decrease in social cohesion. This process of decline is called social erosion by Larsen (2014, p.4), in which fewer people of a group have "the belief that they share a moral community that enables them to trust each other". Social erosion can occur in any kind of social group, such as a family, team, community or organisation.

An intervention that is aimed to prevent social erosion, is Challenge day, a one-day program for a class, which focuses on building social and emotional skills (Challenge day, 2021). One activity, named "Cross the Line", is especially interesting, as children learn about each other's circumstances through statements that are shared. The intended outcome of this intervention depends on the context in which it is applied. In case this program is organized for a class in which social erosion is noticed, the intervention can offer a solution to prevent prejudice, bullying, loneliness and disrespect. When a class with a high level of social cohesion participates, the intervention can be deployed to make relationships flourish, which points towards an intervention that promotes social cohesion (type 4).

3.1.8 Type 6: Tackling social fragmentation

The sixth type of intended outcome aims to impact the collective that experiences an absence of social cohesion. Besides the individual perception of loneliness, a group can also experience disconnectedness. While not explicitly mentioned as a separate phenomenon in literature, we refer to an absence of social cohesion as "social fragmentation". This can relate to any kind of social group such as a family, team, community or organisation.

When looking at interventions that are aimed at tackling the social fragmentation of a group, examples are family therapy (Mayo Clinic, 2021) and systemic psychotherapy (bacp, 2021). These types of therapy focus not only on the individual, but take the relationships that are present in the group into account as well. The dynamics and patterns of interactions are uncovered, which might enable them to move beyond problems and build stronger relationships.

3.2 How do designed interventions enable the intended outcomes

Through the case study, we found 3 themes that give insight in what makes the interventions result in their intended outcome.

3.2.1 Theme 1: A holistic perspective on the problem situation is necessary, independent of the intended outcome

One of the key-elements of positive psychology is that it addresses people's wellbeing holistically (Seligman & Csikszentmihalyi, 2000). In the case of designing for human connectedness, this means taking into account the relationships the phenomena has with our overall wellbeing and other topics, and not looking at it as something separate.

An intervention that is a result from looking holistically into the problem situation is the game Imago, aimed at high school students, developed by one of our graduating master students (Gijsman, 2021). Through extensive research and embracing complexity, the designer learned about the relation between feelings of loneliness and body-image. To be able to design an effective intervention, the designer decided to frame his design goal differently. Through a game, he intends to reach every student in a class by sparking connections within small groups.

Another example that resulted from a holistic approach is Kudoz, a community learning platform, which connects (young) people with and without developmental disabilities to novel experiences in their city (IWF, n.d.). The design process contained many different types of research, which gave the designers a holistic perspective on the problem situation. They lived for a while in a housing complex with many residents with a cognitive disability, they studied social theories and developed and tested multiple prototypes. Because of this, the designers noticed that most existing services focus on safety, and offer predefined and predictable day activities, which can result in social isolation. They decided their new service had to broker novel experiences, linking social isolation to human flourishing theory (Van der Bijl-Brouwer, 2019).

Although it is difficult to say what it means for the actual outcome of the intervention to take a holistic perspective on the problem situation, it seems that the interventions that result from a holistic approach seem richer and give designers more possibilities.

3.2.2 Theme 2: Heuristics to design for human connectedness

Studying the intended outcomes of the interventions showed that there are working principles that are reoccurring between interventions, and as such might be used to start developing more generally applicable heuristics. A heuristic is defined by Fu, Yang and Wood (2016, p.2) as a "context-dependent directive, based on intuition, tacit knowledge, or experiential understanding, which provides design process direction to increase the chance of reaching a satisfactory but not necessarily optimal solution." A heuristic is linked to a type. An example is a heuristic from cognitive behavioural therapy, which is often applied in interventions that tackle loneliness (type 3). Namely, teaching people to identify, evaluate, and respond to their dysfunctional thoughts and beliefs addresses people's maladaptive social cognition (Beck, 2020). Designs that promote social cohesion (type 4) often involve the heuristic of 'matching' people to each other, or matching people to groups or communities. Matching is especially important during a moment of transition, such as moving, when starting at school or when a family member passes away (Schoenmakers, 2013). In that case, an intervention can enable you to discover what group matches you. Like the city & campus introduction week for new students, where sport- and student associations introduce themselves. This intervention gives students the opportunity to experience the diverse options and join the association that matches best.

3.2.3 Theme 3: Developing and using evidence-based working principles to design for human connectedness

The design reasoning as presented in the cases show the assumptions of how a certain intervention aims to achieve certain intended outcomes. To ensure that such interventions achieve actual outcomes, it is essential to use and develop evidence to validate assumed working principles. We can distinguish two means for developing such evidence-based working principles: working with proven social theories, and an iterative process of prototype development and impact measurement. For the interventions that apply CBT, Imago and Kudoz we found documentation that explicitly mentioned how they developed such an evidence-base.

In the intervention Kudoz, a combination of these two means is applied in the development. The designers implemented working principles from proven social theories on human flourishing, which were tested and adjusted in multiple rounds of prototypes. In the intervention Join us, this approach was taken as well. The guidance that young people receive from a youth worker is based on proven principles that originate from cognitive behavioural therapy. Through measuring the impact on the

adolescents, the youth workers learned which principles were most effective in that specific context and used these to create their own method.

4 Discussion and concluding remarks

With our proposed preliminary typology of intended outcomes of interventions for human connectedness, we aim to support designers in developing a more nuanced understanding of human connectedness and how it can be achieved. In this section, we argue that the value of designers, when designing for human connectedness, lies in their holistic approach. Next, we discuss the role of social isolation in relation to human connectedness, and we conclude with our thoughts on future research.

4.1 Differentiating design interventions from psychology interventions

As human connectedness and wellbeing are extensively studied in the field of psychology and sociology, interventions are mostly created from a mono-disciplinary perspective from these fields as well. This for example explains why many interventions involve principles from cognitive behavioural therapy. Therefore, we would like to argue that the role and strength of a designer lies in the potential to approach human connectedness more holistically, approaching the concept as a part of the whole, and thus embrace the complexity and relationships that human connectedness has with other topics and phenomena. Anecdotal evidence in our study suggests that the cases which had adopted a designerly approach, promoted such a holistic and integrated approach. For example for the design of the community learning platform Kudoz and the game Imago, for which the designers learned how human connectedness related to other phenomena and topics through extensive research (see theme 1). Their innovative final interventions applied heuristics from these fields that appeared related. On the other hand, the mono-disciplinary interventions, such as cognitive behavioural therapy or social skills training, are clearly better based on evidence and proven principles. This raises questions about what the role is of designers in this domain, and how psychologists, sociologists and designers could collaborate to design for human connectedness.

4.2 The role of tackling social isolation to impact human connectedness

Although initiators or designers of interventions aim for an intended outcome, the actual outcome might not always meet these interventions. We particularly question a type of interventions that we identified that aim to tackle loneliness, and try to achieve this by only tackling social isolation. These interventions mainly focus on bringing people together. Interestingly, some initiators of interventions assume that tackling social isolation solves loneliness, which is why their intended outcome was claimed to be “tackling loneliness”. An example of this is the intervention Plant a friend, which intends to tackle loneliness by bringing lonely young individuals together in a WhatsApp group, where they can share how their received plant is growing (STAD, 2021). Although this intervention does bring the adolescents together in an online environment, it does not tackle their feeling of loneliness in its core. Research from psychology shows that just bringing people together will for most people not be effective in reducing loneliness, if this is done without tackling the cognitive behavioural process that underlies their loneliness (Lodder et al., 2017). Interventions that are based on this assumption are also found targeted at elderly people. For example, a Dutch national campaign to send Christmas cards to lonely elderly (Nationaal Ouderenfonds, 2021). The receiver might feel thought of for a while, however the source of their loneliness is not addressed. Perhaps the intervention even has a counterproductive effect on some of the elderly, by making

them more aware of their loneliness. Interventions as such suggest that the initiators, who aim for tackling loneliness but purely focus on tackling social isolation, might not use evidence-based heuristics and working principles while designing for the intended outcome. Further research on the development process of these interventions should be done.

We suggest that, although interventions that intend to focus on bringing people together are a distinct type, tackling social isolation can also be viewed as a precondition when designing for human connectedness in general. Namely, every intended outcome of a human connectedness intervention should partly focus on connecting people and thus tackling their social isolation.

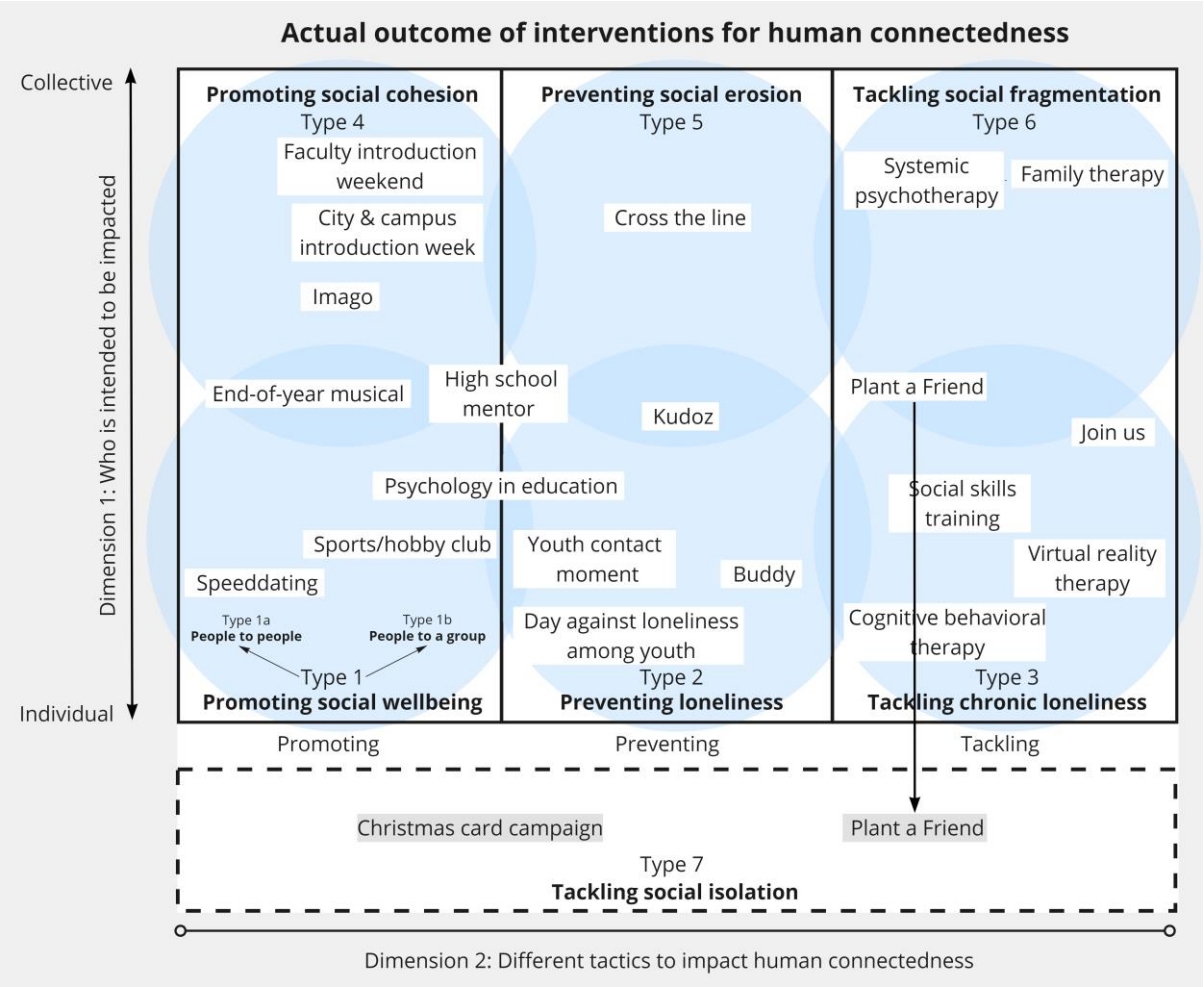

Figure 3. Tackling social isolation is both a 7th type and precondition when designing for human connectedness

4.3 Supporting designers to design for human connectedness

Based on analysing the intended outcomes and working principles, we proposed a preliminary typology of intended outcomes of interventions for human connectedness to show designers the nuance for intervening. However, what we noticed in our case study is that the types are not completely demarcated, as one intervention can sometimes address multiple types. An example that intervenes on both levels of dimension 1 is a high school mentor, which focuses on promoting the social wellbeing of individual students (type 1) as well as on the social cohesion of the whole class (type 4). An intervention can also intend to address multiple tactics, the second dimension. In the case of the mentor, he or she focuses on promoting social wellbeing among the individual students, and also intends to prevent students that seem to be at risk for loneliness. As our proposed typology

is a first attempt to provide designers more nuance, further research should find out if applying the intended outcome typology enables designers to design effective interventions. Next to that, future research can identify which working principles are connected to the specific types and which ones could be generalized towards guidelines.

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