DEVELOPMENT AND PILOT EVALUATION OF A WEB-BASED PSYCHOEDUCATION PROGRAM FOR PEOPLE WITH PATHOLOGICAL DISSOCIATION

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Development and pilot evaluation of a web-based psychoeducation program for people with pathological dissociation

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CERTIFICATE OF ORIGINALITY

I hereby declare that this thesis is my own work and that, to the best of my knowledge and belief, it reproduces no material previously published or written, nor material that has been accepted for the award of any other degree or diploma, except where due acknowledgement has been made in the text.

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ABSTRACT

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Abstract

Pathological dissociation is a common trauma-related mental health problem that is associated with considerable healthcare and social service needs. People with pathological dissociation typically require psychosocial interventions. However, challenges in providing psychosocial interventions for people with pathological dissociation exist in the field (e.g., dissociation-focused psychotherapy is expensive, is not available in many places, and may be further limited during pandemics). It has been well documented that there are advantages to using online methods to enhance healthcare and social services (e.g., high accessibility and low cost) and that web-based interventions are helpful for people with other mental health problems (e.g., depression, anxiety, and post-traumatic stress disorder). An important question that remains unexplored is whether web-based interventions are acceptable and beneficial to people with

pathological dissociation. At the time of initiating this project, no study had evaluated any kind of web-based intervention for this specific population. This project aimed to evaluate the use of web-based psychoeducation to support people with pathological dissociation. A specific trauma-informed, dissociation-focused, web-based psychoeducation program was developed. It was predicted that after this brief educational program, participants would have improvements in recovery (in terms of symptom management), self-esteem, mental health stigma, and comorbid symptoms, while their dissociative symptoms would remain stable, and that most participants (at least 60%) would be satisfied with the web-based program. A pilot evaluation study was conducted to (1) examine the acceptability, (2) explore the potential benefits, and (3) identify the perceived limitations of the program. The findings revealed that most participants were satisfied with the web-based program (e.g., most participants agreed that the program helped them understand [94.1%] and manage [66.7%] their mental health conditions and remain hopeful for recovery [78.4%]), that the dropout rate was acceptable (36.25%), and that participants had statistically significant improvements in symptom management ($p < .001$, Cohen's $d = -0.561$) and self-esteem ($p = .008$, Cohen's $d = -0.387$) after completing the program. Female participants (92.16% of the entire sample) also had statistically significant improvements in mental health stigma ($p = .029$, Cohen's $d = 0.328$) after completion of the program. Further analysis demonstrated that symptom management, self-esteem, and mental health stigma remained unchanged during the double pretest control period and the follow-up period, and that these variables improved only after the program. In the qualitative feedback, participants generally acknowledged that the program could help them better understand and manage their mental health conditions; some participants also appreciated the advantages of using online methods (e.g., overcoming time and geographical limits, no face-to-face pressure). This is one of the first projects to evaluate web-based interventions for people with pathological dissociation. The findings showed that the web-

based program can be readily used to provide educational support for this vulnerable service group because of its high acceptability, potential benefits, and low cost. However, further evaluation of the program is necessary. Some directions for further development of the program are discussed. Implications for the use of information and communication technology (ICT) to improve mental health services are also highlighted. This study demonstrates that ICT can be used to support different aspects of mental health services, such as engagement, assessment, service delivery, and evaluation, which would be especially important in the post-COVID-19 era.

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CHAPTER 1: INTRODUCTION

To some people, mental health disorders are strange and dangerous problems. Some people perceive mental disorders as significant public health problems. People who live with mental disorders can experience suffering, not only in their own lives but also in their families' lives. I was born with a congenital physical disease, which has introduced me to many people with different kinds of disabilities. When I was young, there were people around me who suffered from mental health problems. The lessons I learned from their experiences provided me with insights and an understanding of how painful events could affect one's mind. It helped me understand why sometimes mental health problems can be understood as results of, and responses to, the social environment and life experiences.

Initially, many of the people I met appeared to be ordinary people in the community, despite their depression or suffering from anxiety issues. They attended classes and/or went to work every day. They participated in various sports activities and community events. As time went on, I grew closer to one young man. While he came off as a cheerful person, he told me that he sometimes suffered from nightmares, and found his job very stressful. I knew that he suffered from various emotional problems — he had self-harming behaviors, such as cutting his hands. Yet, he refused to seek professional help.

One day, he came to me and cried about how sad and stressful his job environment was. Unexpectedly, he grew angry with me, humiliated me, and forced me to stay away. I was shocked. His anger suddenly turned back into tears, and he apologized to me for his rude words. A few seconds later, he hurled insults at me once again. Yet, this time, he appeared to be talking to himself too, "Stop blaming Andy, he is not hurting us!" And another weak voice came out from his trembling mouth, saying, "Sorry, it's my fault, please don't leave me!"

In this incident, I saw a person "changing from one alter personality to another" (technically, this phenomenon is known as identity alteration or switching) — of course, I did

not know what was happening at that time! After witnessing this, I was left very confused and had no idea how to understand such a phenomenon. I wondered if this young man had any brain or neurological problems. I even thought there could have been something like supernatural powers or ghost possession involved.

Although I was confused and nervous, several reasons drove me to further inquire and think about what I had witnessed. I did not believe that this was purely a biological problem because his condition was often triggered by stress and social events (e.g., some incidents in the workplace, conflicts with colleagues) and his symptoms could be stabilized by non-pharmacological interventions (e.g., talking to him warmly and softly, making him feel safe). Since then, I learned to use "grounding techniques" to stabilize these kinds of symptoms. In addition, I learned some important concepts from Freud's and Fromm's books, such as unconscious mind, repression, and hysteria. It is important to note that hysteria is the term that was used in the past to describe the phenomena of dissociation and conversion. This is why I thought the symptoms of this young man might have been related to his unconscious mind as well as his past experiences. Such inspiring concepts enabled me to recognize the link between the mental health problems of this young man and the psychosocial context, including his interpersonal experiences during childhood. What I had learned from the books written by Zen Master Thich Nhat Hanh also enabled me to use mindful breathing and mindful communication to take care of people's extreme emotions.

Meanwhile, I knew another young lady who presented with similar mental health problems. Both of them were sometimes very depressed and showed physical symptoms (now I know these symptoms can be understood as somatoform dissociative symptoms) that could not be explained by a physical disease, such as conversion symptoms.

Over the years, I knew quite a number of people who had similar backgrounds and mental health problems, including extensive comorbidities, painful childhood experiences, and

certain “unusual” symptoms. They frequently reported hearing voices and seeing images inside their heads. For instance, some of them often said that they saw their abusive family member repeatedly criticizing them even when the family member was not there. One person who had similar mental health conditions (i.e., trauma and dissociation) reported that she heard a baby crying inside her mind. They commonly shared with me that they had to argue with several people inside their minds – those people from the “inner world” could even take control of the body and “steal” their time, which resulted in memory loss (i.e., psychological/dissociative amnesia). Sometimes they also needed to fight or negotiate in their inner world.

All of them had encountered some kind of physical and/or emotional violence at home since childhood. Typically, these people were diagnosed with depression and/or early psychosis. Most mental health service providers told them that they had a brain disease that involved chemical imbalance. Social workers asked them to follow the psychiatrist’s advice and have better communication with their parents, who were in fact abusive.

I interacted with these people for some time, and after listening to each of their stories, I realized that there was a potentially strong link between their mental health problems and their painful psychosocial environments (e.g., stressful jobs, abusive family members, childhood abuse, family violence). Having said that, most of them did not have a chance to receive in-depth psychotherapy (or they could only see a psychologist once a month or less), family interventions, and could only receive medication treatments. When they presented with serious symptoms, such as during major depressive episodes or when the inner voices became very distressing, they would be hospitalized. Their symptoms did reduce during their inpatient treatment, which was expected because of the limited interactions with their stressors. However, their symptoms (which I now know include post-traumatic flashbacks, hearing voices, dissociative amnesia, and switching) became severe after leaving the hospital.

I heard the stories behind their mental health problems. Many of them had encountered chronic trauma, which included physical abuse, emotional abuse, and family violence. I realized that their psychological conditions got worse and their symptoms were heightened, especially when they were triggered in a social context (e.g., whenever parents or teachers said something that made them upset). I also realized that there were various underlying psychosocial problems (e.g., trauma, family violence, anger, intrapersonal conflicts) behind their presenting symptoms. I later understood that their symptoms were understandable and psychologically meaningful. Most of their symptoms could be resolved by addressing their interpersonal and intrapersonal needs — for example, when they moved away from their abusive family members, friends, or employers and acknowledged their dissociated parts of the personality, their dissociative symptoms reduced. Many of their mental health problems (e.g., psychological amnesia, hearing voices inside, flashbacks of painful memories, medically unexplained physical symptoms) may be better understood as "dissociative reactions" or unconscious self-defense mechanisms. After these experiences, I started learning about dissociation, dissociative disorders, trauma psychology, and mental health. I also started supporting people with pathological dissociation and conducting research on trauma-related mental disorders. Just like the people who taught me a lot, many trauma survivors with pathological dissociation were misunderstood and mislabeled when they were looking for health care and social services. Many of them could not receive appropriate psychosocial care services either. I wanted to help them suffer less, so I consulted foreign teachers, read relevant books and journal articles, talked to survivors with pathological dissociation on the internet, and also referred to some biographies written by survivors, their therapists, and their family members (e.g., *The Magic Castle: A Mother's Harrowing True Story of Her Adoptive Son's Multiple Personalities - And the Triumph of Healing Hardcover* written by Carole Smith). To better understand the frequency of this problem in Hong Kong, I initiated and conducted the

first trauma and dissociation research project with a local non-governmental organization, from the period of 2015 to 2018 (the research report has been published) (Fung, Ross, et al., 2019). I also conducted some other studies related to trauma, pathological dissociation, and mental health.

During my research journey and from experience of supporting people with mental health problems, I have learned the following:

1) The number of people suffering from pathological dissociation is considerable in both clinical and non-clinical settings (Şar, 2011) and people with pathological dissociation typically experience significant disability and their service utilization and health care costs are high (Brand et al., 2016). Therefore, pathological dissociation is a common condition that requires more attention, better assessment, and management.
2) People with pathological dissociation have often been exposed to adverse psychosocial experiences, childhood trauma, and chronic stress (Coons, 1994; Dalenberg et al., 2012; Ross & Ellason, 2005).
3) Pathological dissociative reactions are psychophysiological responses to trauma and stress; such reactions can be observed in other animals (Nijenhuis, Vanderlinden, et al., 1998) and usually involve some learning processes (Nijenhuis & Den Boer, 2009; Ross et al., 2017).
4) This group of people generally requires more psychosocial interventions than biological treatments (Brand, Classen, McNary, et al., 2009; Brand, Myrick, et al., 2012; International Society for the Study of Trauma and Dissociation, 2011).

Although there are diverse perspectives and even controversies regarding the understanding of pathological dissociation, as will be further discussed, I have learned that pathological dissociation is a mental health problem that requires psychosocial interventions, especially trauma-informed, dissociation-specific interventions, in health care and social

service settings (Fung & Chan, 2019; Fung, Ross, et al., 2020). Although the theoretical debates and conceptual controversies are beyond the scope of the present project, major theories and perspectives will be reviewed in Chapter 2.

Pathological dissociation, which refers to the difficulties in the process of integrating certain biopsychosocial experiences (e.g., memories, emotions, behaviors, motor controls, identities), can be observed in people with different mental health problems, specifically trauma-related mental health problems (Lyssenko et al., 2018). Pathological dissociation itself is also a problem, that is, a phenomenon which has been found to be a reliable and valid construct (Fung, Choi, et al., 2018; Van IJzendoorn & Schuengel, 1996; Waller & Ross, 1997) and is closely associated with trauma, stress, and adversities (Chiu et al., 2015; Dalenberg et al., 2012). People with pathological dissociation have universally experienced more psychosocial adversities and have more psychosocial needs (Briere, 2006; Draijer & Langeland, 1999; Fung & Chan, 2019; Fung, Ross, et al., 2020; Rossi et al., 2019; Şar et al., 2013). Its specific relationships with psychosocial adversities and psychosocial care needs have significant implications for mental health interventions because it implies that psychosocial interventions may particularly benefit people who present with pathological dissociation. Further discussion regarding the definition, prevalence, theories, and interventions of pathological dissociation will be provided in the next chapter.

In simple terms, pathological dissociation is a post-traumatic reaction (psychological trauma results in one's inability to process and integrate certain biopsychosocial experiences, and therefore leads to dissociation or division of the personality) as well as a common mental health problem that affects several people in the community. Although specific psychosocial interventions can be effective in treating pathological dissociation, there are many challenges in providing psychosocial interventions for people who suffer from pathological dissociation. Given that the technical features of information and communication technology (ICT) may

contribute to and facilitate different processes in mental health practice (e.g., recruitment, engagement, assessment, and intervention), web-based interventions may have the potential to offset some of the limitations of current psychosocial services for people with pathological dissociation. This project proposed using a web-based psychoeducation program to improve the well-being of people with pathological dissociation and to support their recovery. A brief, trauma-informed, dissociation-focused web-based psychoeducation program was co-developed with an expert in the field. This web-based educational intervention is designed to facilitate users' recovery in terms of their understanding and management of the symptoms, but not to replace specific psychotherapy or reduce their dissociative symptoms in such a short period. The project primarily focused on the acceptability and potential benefits of the proposed web-based psychoeducation program. In the following chapters, the relevant literature will be reviewed first. After that, the rationales of this project will be provided, and the methodological issues will be discussed. The results of the pilot evaluation study will be reported in Chapter 5. Further discussion of the findings and their implications will be presented in Chapter 6.

Although the detailed literature review is provided in the next chapter, it is important to clearly state the research rationales and research questions of this project:

The limited yet important literature suggests that pathological dissociation itself is a problem that is associated with psychosocial intervention needs and it is more common than it is generally expected to be in the community (Şar, 2011). Dissociation is particularly associated with considerable health and social care needs (Brand et al., 2016; Gonzalez Vazquez et al., 2017). There are different theories regarding the etiology of pathological dissociation, including the sociocognitive model and the trauma model. As will be further discussed, this project is informed by the trauma model because the trauma model receives considerable support from the empirical literature (Brand et al., 2016; Dalenberg et al., 2012) . The trauma model is also in line with my observations on the life experiences of individuals with

pathological dissociation in the field over the years. That is to say, people with pathological dissociation require more psychosocial interventions than pharmaceutical treatments. Based on my recent groundwork, this project aims to explore the acceptability and potential benefits of a particular form of psychosocial intervention, that is psychoeducation, for people with pathological dissociation. This project is also in line with the existing, well-established treatment guidelines, which are also based on the trauma model and have been evaluated in intervention studies (Brand, Classen, McNary, et al., 2009; International Society for the Study of Trauma and Dissociation, 2011). According to the trauma model and the learning theories on trauma and dissociation (Nijenhuis & Den Boer, 2009; Ross et al., 2017), people with pathological dissociation have certain psychoeducation needs, and they also need to learn healthy coping strategies to replace their trauma-related maladaptive behaviors, as has been highlighted in the clinical literature (Brand, Myrick, et al., 2012; Fisher, 1999). In addition, there are many challenges in face-to-face psychosocial services, and, therefore, the use of information and communication technology to facilitate psychoeducation is also considered. Keeping this background in mind, this project aims to develop and pilot test a web-based psychoeducation program for people with pathological dissociation. The major research questions focus on the acceptability, potential benefits, and perceived limitations of the intervention program. That is to say, this project aimed to develop a highly accessible, entry-level, educational intervention for people with pathological dissociation, and this program should be replicable and researchable. This project could contribute to the field by providing a low-cost web-based psychoeducation program for people with pathological dissociation, and this program can be used by frontline mental health service providers. This project will also contribute to the e-mental health literature because the findings could extend the scope of the existing online research to include an understudied service group. Additionally, this project

could facilitate further discussion regarding the use of information and communication technology to facilitate mental health services. The details are discussed in the next chapter.

CHAPTER 2: LITERATURE REVIEW

Pathological dissociation itself is a mental health problem which is understood as a psychophysiological response to adverse life experiences (e.g., family violence, extreme stress, emotional abuse). Itis also a common condition that can be observed in many people with different mental health problems (e.g., post-traumatic stress disorder, borderline personality disorder, dissociative disorders). According to the literature and treatment guidelines, which will be highlighted below, psychosocial interventions are primary treatments for people who suffer from pathological dissociation. However, there are some challenges in providing suitable psychosocial interventions for this group of mental health service users in the field. As demonstrated in a number of empirical studies, web-based interventions are promising ways to support people with mental health problems (e.g., depression, anxiety, post-traumatic stress disorder symptoms). An important question that remains unanswered is whether web-based interventions can be helpful for people who suffer from pathological dissociation. The questions that follow this unexplored research question include: (1) How acceptable will the web-based interventions be for people suffering from pathological dissociation? (2) What are the potential benefits of the web-based interventions for people suffering from pathological dissociation? (3) What are the perceived limitations of such interventions?

This chapter will first provide an overview of pathological dissociation and discuss the role of psychosocial interventions for people with pathological dissociation. Current challenges in providing psychosocial interventions for people with pathological dissociation will be highlighted. After that, this chapter will explain why web-based interventions may be helpful to support people who are suffering from pathological dissociation. Finally, it will talk about the major research question of the present project, that is: is it possible to use a web-based psychoeducation program to support people with pathological dissociation?

This project aimed to examine whether the web-based psychoeducation program, as a specific form of psychosocial intervention, would be acceptable and potentially beneficial for people with pathological dissociation; the perceived limitations of the program would be explored and discussed as well. The program studied in the present project and related groundwork will be introduced in the following chapter, and the rationales of evaluating this program will be discussed too.

2.1 Overview of pathological dissociation and its treatments

2.1.1 Introduction: Definition and prevalence

Dissociation, which basically means “disconnection”, refers to a failure in the process of integrating certain biopsychosocial experiences (e.g., memories, emotions, behaviours, motor controls, identities) within one’s personality system; dissociation is an officially recognized psychological phenomenon in the internationally recognized diagnostic manuals too (American Psychiatric Association, 2013; Ross, 2007b; Van der Hart et al., 2006; World Health Organization, 2018).

Dissociation is a phenomenon that has been operationalized for more than three decades (Bernstein & Putnam, 1986; Lyssenko et al., 2018; Van IJzendoorn & Schuengel, 1996). While some dissociative experiences are very common and normal in our daily lives (e.g., daydreaming, trance-like states, forgetfulness, absorption), some dissociative symptoms are considered as pathological (e.g., post-traumatic amnesia, flashbacks of painful memories, hearing voices inside one’s head, depersonalization, presence of dissociated self-states, identity alteration) (Dell, 2009; Steinberg & Schnall, 2000). Although some scholars suggested that dissociation occurs on a continuum ranging from commonly normal dissociative experiences to pathological dissociative symptoms, some other scholars believed that pathological and nonpathological (normal) dissociation are two distinct types of dissociation (Irwin, 1999; Van der Hart et al., 2004; Waller et al., 1996; Waller & Ross, 1997). It has been said that, according to the Taxon Model, pathological dissociation may be a distinct type that describes a distinct group of people who are highly traumatized and experience certain specific dissociative symptoms (Loewenstein, 2018). This project basically focuses on pathological dissociation. Pathological dissociation is a reliable and valid phenomenon that can be measured with well-established instruments, such as the Dissociative Experiences Scale-Taxon (DES-T) (Waller & Ross, 1997), the Somatoform Dissociation Questionnaire (SDQ) (Nijenhuis et al., 1996, 1997),

the Dissociative Disorders Interview Schedule (DDIS) (Ross & Browning, 2017; Ross, Heber, et al., 1989) and the Structured Clinical Interview for DSM-IV Dissociative Disorders (SCID-D) (Steinberg, 1993; Steinberg et al., 1990). The validity of pathological dissociation will be further discussed below.

People who have encountered trauma and stress may suffer from mental health problems that involve pathological dissociation. In fact, many post-traumatic reactions are dissociative in nature. For example, the two young persons that I mentioned in the first chapter presented with some symptoms of pathological dissociation – they assumed different identities with different names, ages, and behaviors (identity alteration), they could not recall some important parts of the painful childhood (dissociative amnesia), and they often suffered from the voices and visual images related to their painful memories inside their head (intrusions of the dissociated materials). Many survivors of violence or accidents also report "dissociative flashbacks" (reexperiencing the traumatic event; a common post-traumatic symptom) – the unprocessed (i.e., dissociated) trauma memories intrude into the conscious mind and cause significant distress as if the traumatic event is happening at the present moment.

It should be noted that pathological dissociation is a phenomenon that can be observed d in people with different mental health problems (Schimmenti & Caretti, 2014), such as dissociative disorders, acute stress disorder, post-traumatic stress disorder and borderline personality disorder (Dell, 2009; Lyssenko et al., 2018; Steinberg & Schnall, 2000; Van der Hart et al., 2006). A recent structured review and meta-analysis of clinical studies using the DES (including 216 studies with a total of N = 15,219 patients from different psychiatric diagnostic groups) indicated that, in addition to patients with dissociative disorders, patients with post-traumatic stress disorder, conversion disorder and borderline personality disorder also scored high on the dissociation measure (Lyssenko et al., 2018). Some scholars have been further proposing that many trauma-related disorders, such as post-traumatic stress disorder,

should be conceived and classified as a dissociative disorder because many post-traumatic reactions (e.g., flashbacks) are dissociative phenomena and because post-traumatic stress disorder and dissociative disorders involve similar clinical features and physiological and brain abnormalities and the same treatment approaches (Nijenhuis, 2017).

Although "pathological dissociation" (or "dissociative symptoms") may be a strange term for some people, it is not as rare as it is traditionally believed to be. As have been emphasized, pathological dissociation can be observed in people with different mental health problems, but pathological dissociation itself is a specific problem that is associated with trauma, adversities and stress. Epidemiological studies have examined the prevalence of pathological dissociation in different situations and contexts.

Epidemiological studies from different countries suggest that the lifetime prevalence of dissociative disorders (i.e., people with pathological dissociation who meet certain specific medical criteria according to diagnostic manuals) is about 10% in the general population and the prevalence rate can be even higher in special populations (e.g., psychiatric emergency ward patients, psychiatric inpatients, substance abusers) (for an overview, see Şar, 2011). As mentioned, pathological dissociation also occurs in some people with other disorders (e.g., patients with post-traumatic stress disorder or borderline personality disorder). In particular, Şar et al. (2006) found that, in a sample of patients with borderline personality disorder, 64% participants met the diagnostic criteria for a dissociative disorder. Similarly, Ross (2007a) also found that 59% of patients with borderline personality disorder had a dissociative disorder. In addition, a dissociative subtype of post-traumatic stress disorder has been recognized in the DSM-5 (American Psychiatric Association, 2013); data from the World Mental Health Surveys indicated that 14.4% of participants with 12-month post-traumatic stress disorder presented with dissociative symptoms (Stein et al., 2013). Therefore, pathological dissociation is not a rare problem, and it does not only affect a small number of people in the community. Recent

studies also provided evidence suggesting that pathological dissociation is not rare in the Chinese context. For instance, Chiu et al. (2017) conducted structured diagnostic interviews with a sample of acute psychiatric inpatients in Taiwan (N = 87) and reported that 19.5% of the participants met the diagnostic criteria for a dissociative disorder. In another sample of mental health service users of two Integrated Community Centres for Mental Wellness (ICCMWs) in Hong Kong (N = 202), Fung, Ross, et al. (2019) found that 14.4% of the participants screened positive for a dissociative disorder on a reliable and valid self-report measure. In addition, a non-clinical study had been done to investigate the frequency of dissociation in a college student sample in Hong Kong (N = 177) and the findings indicated that 4.52% of the student participants may have a dissociative disorder according to a self-report version of a diagnostic instrument (Fung, Ho, et al., 2018). In a recent study in which we administered the DDIS to a random sample of psychiatric inpatients diagnosed with schizophrenia or schizoaffective disorder (N = 100), over 60% of them had pathological dissociation (Wu et al., under review).

The above-mentioned epidemiological studies typically used structured interviews to examine the prevalence of pathological dissociation (Şar, 2011). In psychiatric research, the use of structured interviews has been the "gold standard" to assess mental health problems since the 1970s because structured interviews are less biased and more reliable than unstructured clinical assessment (Drill et al., 2015; Mueller & Segal, 2014). In other words, the methodology of epidemiological studies on pathological dissociation is the same as those on other mental health problems. The reliability and validity of the assessment methods for pathological dissociation are also as good as that of the assessment methods for other mental health problems (Ross et al., 2002), and are also supported by a recent meta-analysis (Mychailyszyn et al., 2021). Having said that, as there are considerable challenges in assessing pathological dissociation (e.g., avoidance, "amnesia for amnesia", internal conflicts, trusting issues, extensive comorbidities) (Brand, Lanius, et al., 2012; Chien & Fung, under review;

Ross, 1997; Steinberg & Schnall, 2000), it is reasonable to argue that such epidemiological studies would have certain limitations. Although the use of structured interviews is the "gold standard", it is not perfect too. For instance, in some cases, a correct and conclusive assessment can be made only after long-term observations and assessments. Therefore, the existing literature regarding the prevalence of pathological dissociation is inconclusive, and the reported prevalence rates should be interpreted with caution.

The current literature regarding the prevalence of pathological dissociation has certain limitations, but the available data from various countries suggested that pathological dissociation may not be uncommon. More importantly, pathological dissociation is also associated with more psychiatric comorbidities, high rates of self-harm and suicidal behaviors, poor functioning, and high healthcare costs (including frequent emergency consultations and hospitalizations) (Brand et al., 2016; Gonzalez Vazquez et al., 2017). In addition, it has been shown that over 80% of people with severe pathological dissociation would suffer from major depression (Ross et al., 1990; Şar et al., 1996). A study with a hospital-based psychiatric outpatient sample (N = 231) indicated that, compared with post-traumatic stress disorder, borderline personality disorder, alcohol abuse, childhood physical/sexual abuse, a dissociative disorder was much more strongly associated with multiple suicide attempts (Foote et al., 2008). In a regionally representative community sample (N = 658), Johnson et al. (2006) showed that a dissociative disorder was associated with poor functioning as measured with the clinician-administered Global Assessment of Functioning Scale (GAFS) and that their impairment scores were >50% higher than participants with other psychiatric conditions.

Therefore, this literature shows that people with pathological dissociation are common service users, and their needs should not be overlooked or ignored.

2.1.2 Approaches to understanding pathological dissociation

Mental health problems are often complex conditions that result from the complex interplay of biological, psychological and social factors. Researchers and practitioners have been making efforts to understand pathological dissociation using different approaches for many years too.

2.1.2.1 Biological perspectives

In terms of the biological aspect, some important studies have been done in the field. In a study that examined the genetic and environmental effects on pathological dissociation in twins, Waller and Ross (1997) suggested that environmental influences may play a more important role on pathological dissociation and that "the heritability estimate was zero" (p. 508). It has been proposed that severe pathological dissociation is associated with high hypnotizability, which is a genetically derived capacity, but current evidence is inconclusive (Şar et al., 2017). In addition, some experts believe that hypnotizability is an important factor in the development of dissociative pathology and that "only highly hypnotizable individuals can develop a dissociative disorder" (Dell, 2019, p. 48). Dell (2017) proposed that pathological dissociation may be understood as "manifestations of hypnotic pathology" (p. 58). Nevertheless, more evidence is needed before a clear conclusion can be made.

In fact, from an evolutionary psychology perspective, pathological dissociation has been suggested to be a natural animal defensive response to trauma and stress because many of such dissociative reactions (e.g., freezing, numbing, startle response, analgesia and anesthesia) can be observed in other animals (Nijenhuis, Vanderlinden, et al., 1998). Some authors also claimed that they could observe dissociative phenomena in traumatized chimpanzees (Bradshaw et al., 2008). The biological correlates of dissociation have been increasingly discussed and investigated in recent years. For instance, Chalavi et al. (2015) found that patients with post-traumatic stress disorder and dissociative identity disorder had significantly smaller global hippocampal volume than healthy controls and that smaller

hippocampal volumes were significantly correlated with more childhood traumas and dissociative symptoms in the patient groups. Moreover, Forrest (2001) proposed that insecure attachment during early childhood may be related to the development of orbitofrontal cortex, which may be manifested in the dissociation of self-identity. As noted in Fosse et al. (2019), there are certain structural neurobiological similarities in people with a history of early life stress and in patients with dissociative disorders, such as volume reductions in the hippocampus, amygdala, and prefrontal cortex. The causal relationship between neurobiological changes and dissociation, however, is still unknown. Such features may be explained by the level of dissociation and/or the impacts of trauma and stress.

Some neurobiological studies of pathological dissociation also provided very insightful findings: different dissociated self-states or identity states (also sometimes known as alternate personalities) appeared to have different regional cerebral blood flow patterns (Reinders et al., 2003) and involve different cerebral activation patterns and cardiovascular responses to trauma-related memories (Reinders et al., 2006). It was also found that there were significant differences in psychophysiological and neural activation between patients with pathological dissociation (identity alteration) and healthy participants who were instructed to simulate two different dissociated self-states – these findings suggested that the psychophysiological features of pathological dissociation cannot be simulated and that pathological dissociation is not simply caused by suggestions, social expectations or role playing effects (Reinders et al., 2012); these authors concluded that their neurobiological findings do not support the sociocognitive model of pathological dissociation (this model will be further introduced); instead, these authors believed that the existing neurobiological evidence supports the theory that dissociative identity disorder (a severe form of pathological dissociation) is a post-traumatic disorder (Reinders & Veltman, 2020). The existing biological studies revealed that

pathological dissociation may involve some biological factors, but no conclusive evidence shows that it has a strong, single biological cause.

There is, however, one important point to note: pathological dissociation is not directly caused by general biological diseases (e.g., traumatic brain injury, dementia) or substances (e.g., alcohol or drugs) too. For example, after drinking alcohol or taking certain drugs, a person may have amnesia for a short period of time or experience depersonalization, but these substance-induced experiences should not be regarded as evidence for pathological dissociation.

2.1.2.2 Sociocognitive perspectives

Some scholars have been making attempts to understand the phenomena of pathological dissociation using a sociocognitive model. Some of them proposed that some disorders associated with pathological dissociation are culture-bound conditions that are primarily reported in North America. For example, Pope et al. (2007) tried to find a case of dissociative amnesia before 1800 but they believed that they failed to do so, and therefore they argued that "dissociative amnesia is not a natural neuropsychological phenomenon, but instead a culture-bound syndrome" (p. 225). Some of them believed that dissociative disorders are not valid conditions and are only socially constructed. For instance, Spanos (1994) argued that (1) dissociative identity disorder (then known as multiple personality disorder [MPD]) is a sociohistorical product as people "learn to construe themselves as possessing multiple selves" (p. 143), that (2) "MPD is a disease/mental health problem" is a local theory that should be abandoned, and that (3) the phenomenon of MPD should be viewed from sociocognitive and historical perspectives. Some scholars, who challenged the trauma model of dissociative symptoms and disorders, also believed that pathological dissociation is related to fantasies and false memories rather than real trauma (e.g., Lilienfeld et al., 1999; Loftus & Ketcham, 1994). Nevertheless, the sociocognitive model of pathological dissociation receives little support from

empirical studies (for example, pathological dissociation was portrayed before the modern age where no media or iatrogenic suggestions could take place to socioculturally induce pathological dissociation; dissociative disorders are reliably diagnosed and reported in many different language and cultural contexts and are not culture-bound conditions that only exist in the North America), as we will further discuss (also see Brand et al., 2016; Dalenberg et al., 2012; Fung, 2018; Fung & Lao, 2017).

2.1.2.3 Trauma and developmental perspectives

Since the time of Pierre Janet and Sigmund Freud in the early 20th century, dissociation (which was regarded as a form of hysteria at that time) has been linked to trauma. From this developmental perspective, it is suggested that trauma is an important etiological factor for pathological dissociation and that pathological dissociation is a response (defense mechanism) to trauma and stress (Putnam, 1997; Ross, 1997; Van der Hart et al., 2006). Anna O and Dora are both classic cases who demonstrated somatoform symptoms of pathological dissociation after traumatic and stressful experiences – for example, Anna O presented with medically unexplained symptoms such as aphasia and paresis (Breuer & Freud, 1895) Dora presented with medically unexplained symptoms such as aphonia (loss of her voice for some time) (Freud, 1905).

Pathological dissociation has been theoretically linked to traumatization given that a traumatic event could overwhelm a person's ability to process and integrate the biopsychosocial experience (Giller, 1999), which by definition means dissociation or division of the personality. The association between trauma and dissociation is also supported by the empirical literature (e.g., Chiu et al., 2015; Nijenhuis, Spinhoven, et al., 1998).

Although the sociocognitive model proposes that the frequent report of childhood trauma in patients with pathological dissociation is due to false memories, some studies provided external evidence for the trauma histories in people with pathological dissociation

and confirmed that there is a close relationship between trauma and pathological dissociation (Coons, 1994; Şar et al., 2017). Moreover, compared with patients with other psychiatric diagnoses (e.g., schizophrenia, substance abuse), patients with highest level of pathological dissociation (i.e., dissociative identity disorder and dissociative disorder not otherwise specified) showed highest frequency of childhood abuse (physical or sexual abuse) (Ross & Ellason, 2005). The relationship between trauma and dissociation is not just a Western phenomenon, but can also be observed in other cultures (e.g., Fung, Ross, et al., 2019; Ross et al., 2008; Şar et al., 2007; Xiao et al., 2006) and even in the sixteenth century (Van der Hart et al., 1996). I also reported six cases selected from the ancient Chinese medicine literature and demonstrated that the phenomena of trauma-related pathological dissociation can be observed before the modern age (i.e., before 1900); this review of ancient medical documents provides further support for the idea that pathological dissociation is not simply a sociohistorical or socially constructed product because dissociative phenomena were witnessed and portrayed even when the concept of pathological dissociation or multiple personality disorder does not exist (Fung, 2018). Evidence from a longitudinal study also shows that disorganized attachment and maternal disrupted communication during early childhood were significantly correlated with dissociative symptoms at late adolescence (Lyons-Ruth, 2003).

Different theories have been developed or used to explain the trauma model of pathological dissociation (i.e., pathological dissociation as a response to psychological trauma), such as learning theories (as will be further discussed) (Nijenhuis & Den Boer, 2009; Ross et al., 2017), attachment theory (Schore, 2009) and the theory of structural dissociation of the personality (Steele et al., 2009; Van der Hart et al., 2006). While having different focuses and explanations, these theories acknowledge the etiological role of psychological trauma and chronic stress and understand pathological dissociation as a response to trauma.

2.1.2.4 A brief summary

The current epidemiological literature suggests that pathological dissociation exists in different cultures (Fung, 2018; Ross et al., 2008; Şar, 2011) and is a cross-culturally occurring condition, even though culture may shape the presentations of pathological dissociation (Dell, 2013; Fung & Lao, 2017). Pathological dissociation is not simply a socially constructed condition because it can be observed in animals (Nijenhuis, Vanderlinden, et al., 1998) and because it can be assessed using reliable and valid measures. The validity of pathological dissociation has been well established as well (Carlson et al., 1993; Ross et al., 2002). More importantly, the above-mentioned neurobiological studies revealed some biological characteristics of pathological dissociation and concluded that identity dissociation of the personality cannot be simply explained by sociocultural factors (Reinders et al., 2003; Reinders et al., 2006; Reinders et al., 2012). Several comprehensive review studies that examined the empirical literature also supported the trauma model rather than the sociocognitive model of pathological dissociation (Brand et al., 2016; Dalenberg et al., 2012; Gleaves, 1996).

Having said that, even though the empirical literature provides considerable support for the trauma model of pathological dissociation, the ethology and psychopathology of pathological dissociation remains to be debatable topics and no conclusive theory is widely endorsed in the field. In fact, it has been argued that neither the trauma model nor the sociocognitive model could provide conclusive evidence regarding the causal relationship between pathological dissociation and the proposed risk factors (e.g., trauma or social expectations), given that there are many other factors taking place in the development of pathological dissociation, such as sleep, self-regulation, and suggestibility (Dodier et al., 2021; Lynn et al., 2019).

In this project, the work is primarily based on the trauma model of pathological dissociation for several reasons. First, as discussed, the trauma model is not perfect, but it receives fairly strong empirical evidence in the field. Second, existing treatment guidelines that

have been evaluated in real-life naturalistic settings and in case studies and cohort studies are fundamentally based on the trauma model (Brand, Classen, Lanius, et al., 2009; Brand, Classen, McNary, et al., 2009; Brand & Loewenstein, 2014; Brand, Myrick, et al., 2012; Ellason & Ross, 1997; International Society for the Study of Trauma and Dissociation, 2011; Van der Hart & Boon, 1997). These guidelines have largely informed the development of the educational intervention program in this project. Third, as mentioned, learning theories have been used to conceptualize the development and maintenance of pathological dissociation and these well-established learning theories are consistent with the trauma model (Nijenhuis & Den Boer, 2009; Ross et al., 2017; Van der Hart et al., 2010) – for example, dissociative flashbacks can be understood using the "classical conditioning" concept, and "evaluative conditioning" may also explain the phenomenon of dissociative avoidance. Fourth, the trauma model (i.e., the idea that pathological dissociation is an understandable reaction to painful, overwhelming life experiences) is also consistent with my personal observations over the years, as have been discussed in Chapter 1.

Therefore, based on the current literature and my personal experience, in this project, I have presumed that pathological dissociation itself is a problem as well as an indicator of psychosocial intervention needs among mental health service users. It is based on the presumptions that pathological dissociation is a cross-culturally occurring response to trauma and stress and that pathological dissociation itself is a specific issue that requires psychosocial interventions. People who exhibit pathological dissociation are basically survivors of certain forms of trauma and/or extreme stress (Fung & Lao, 2017; Ross, 2007b), and dissociation is understood as a form of "mental escape" especially when physical escape in not possible (e.g., physical abuse during childhood) and when an experience is emotionally overwhelming to the point that one cannot cope any longer (Foa & Hearst-Ikeda, 1996; International Society for the Study of Trauma and Dissociation, 2020). This also partly explains why pathological

dissociation has been conceptualized as the key concept in understanding traumatization (Nijenhuis & Den Boer, 2009; Van der Hart et al., 2006). In line with this theoretical background, I have further proposed that dissociation itself is a problem as well as an indicator of psychosocial intervention needs among mental health service users (Fung & Chan, 2019; Fung, Ross, et al., 2020).

2.1.3 Psychosocial interventions as primary treatments

In the previous section, different approaches to understanding pathological dissociation have been reviewed. Two major theoretical models of dissociation (i.e., the trauma model and the sociocognitive model) are discussed. It has also been explained that this project is primarily based on the trauma model. Although there is no conclusive theory, the existing literature provides considerable support for the trauma model of pathological dissociation and indicates that adverse psychosocial factors (e.g., trauma, stress, attachment problems) are closely related to pathological dissociation. The trauma model literature (including the learning theories, the clinical literature and treatment guidelines which are also in line with the trauma model) has provided important insights regarding the importance of psychoeducation in the recovery process of people with pathological dissociation. In fact, the development of the educational intervention program is basically informed by this particular literature, as will be further discussed in the next chapter.

Nevertheless, it can be argued that even psychosocial adversities are the major etiological risk factors for pathological dissociation, the interventions may not be psychosocial interventions. For example, biological diseases such as cancer may still require psychosocial interventions such as counselling services, while psychological problems such as eating disorders may require nutrition interventions as well. Having said that, as noted in the international treatment guidelines, there are no biological interventions that can effectively treat pathological dissociation at this moment and medications should be “conceptualized as

‘shock absorbers’ rather than as curative interventions” (International Society for the Study of Trauma and Dissociation, 2011, p. 151). Based on the theoretical background of trauma model, pathological dissociation has been treated using a trauma-informed or trauma-focused approach since the time of Janet in early 1900s and a phase-oriented psychological treatment method is usually used and recommended (see Van der Hart et al., 1989; Van der Hart & Horst, 1989). The treatment literature of pathological dissociation is also based primarily on the use of trauma psychotherapy, with individual psychotherapy being the major treatment format (Brand, Classen, McNary, et al., 2009; Kluft, 1984, 1992; Putnam, 1989; Putnam & Loewenstein, 1993; Ross, 1997). Although medications may be helpful for some people with pathological dissociation as adjunctive interventions (e.g., managing comorbid symptoms such as depression, anxiety and insomnia), this literature suggests that psychosocial interventions are the primary treatments for pathological dissociation. Guidelines for treating dissociation (International Society for the Study of Trauma and Dissociation, 2011) and guidelines for treating other related disorders – including post-traumatic stress disorder (American Psychological Association, 2017; US Department of Veterans Affairs and Department of Defense, 2010), complex post-traumatic stress disorder (Cloitre et al., 2012) and borderline personality disorder (Goodman & Siever, 2012; Oldham, 2005) – also recommend psychosocial interventions, rather than medications, as primary treatments. Current empirical evidence based on a systematic review of evaluation studies also supports the use of dissociation-focused psychosocial interventions (Brand, Classen, McNary, et al., 2009), as will be further highlighted. In addition, the well-established learning theories have also been used to conceptualize the development and maintenance of dissociative symptoms, and this literature also suggests that people with pathological dissociation need to overcome the previously learned maladaptive behaviors (Nijenhuis & Den Boer, 2009; Ross et al., 2017), highlighting the importance of psychoeducation, It has been suggested that people with

pathological dissociation require psychoeducation and skills training to improve their integrative capacity in the early stages of recovery (Van der Hart et al., 2010; Van der Hart et al., 2006), so as to facilitate their readiness to process the emotions and memories in the later stages using therapeutic exposure – that is, the process of inhibitory learning (fear extinction) (Sloan & Marx, 2019). It should be noted that the educational intervention developed in this project basically serves this purpose – providing psychoeducation and skills training to improve the internal and external resources for people with pathological dissociation before they are ready to move on to the next stage of treatment. This also explains how the trauma model informs the educational intervention in this project.

Furthermore, people with pathological dissociation typically require psychosocial interventions that are trauma-informed (Substance Abuse and Mental Health Services Administration, 2014) and dissociation-focused (Brand, Classen, McNary, et al., 2009; Myrick et al., 2015). For instance, the clinical literature suggests that they need to acknowledge the impacts of trauma and stress, learn how to identify and cope with their post-traumatic and dissociative reactions, establish safety, prevent triggers and retraumatization, address cognitive errors and interpersonal problems (e.g., attachment issues and trust issues), overcome phobia of dissociated parts of the personality, develop intrapersonal (inter-personality) communication and cooperation, increase integrative capacity, reduce maladaptive strategies, and process unintegrated traumatic experiences (Herman, 1992; International Society for the Study of Trauma and Dissociation, 2011; Ross, 2007b; Ross & Halpern, 2009; Steinberg & Schnall, 2000; Van der Hart et al., 2006). Such psychosocial needs cannot be adequately addressed using medications. Therefore, self-help, psychoeducation, and social support play very important roles in their recovery (Boon et al., 2011; Fisher, 1999; Herman, 1992; Ross & Halpern, 2009; Yeung, 2014a).

The major components of psychosocial interventions for pathological dissociation have been overviewed. Typically, the treatment of severe pathological dissociation requires a phase-oriented approach. Experts in the field recommend that the treatment should consist of three phases: (1) establishing safety, stabilization and symptom reduction, (2) trauma processing and integration, and (3) identity integration and rehabilitation (International Society for the Study of Trauma and Dissociation, 2011). In particular, psychoeducation about the condition and recovery process, symptom management, safety issues, coping skills, and internal communication and cooperation are the primary concerns in the initial phases of treatment (Dell & O'Neil, 2009; International Society for the Study of Trauma and Dissociation, 2011; Ross & Halpern, 2009; Steinberg & Schnall, 2000; Yeung, 2014b).

There is also some evidence for the use of dissociation-focused treatments for pathological dissociation. In addition to some early reports (e.g., Coons, 1986; Kluft, 1984; Putnam & Loewenstein, 1993; Ross, 1987; Şar et al., 2002; Van der Hart & Boon, 1997), quite a number of scholars also tried to evaluate treatment outcomes in a more systematic way (e.g., Brand & Loewenstein, 2014; Ellason & Ross, 1997; Gantt & Tinnin, 2007; Myrick, Webermann, Loewenstein, et al., 2017; Ross & Haley, 2004). Brand, Classen, McNary, et al. (2009) conducted a systematic review of 16 dissociative disorders treatment outcome studies and 4 case studies with standardized measures and found that there is some evidence for the effectiveness of treatments for pathological dissociation. Besides, Brand, Myrick, et al. (2012) surveyed 36 internationally recognized experts in the field and summarized the interventions for severe pathological dissociation that the experts recommended at each treatment stage - such interventions typically need to be trauma-informed and dissociation-focused. For example, the interventions should include acknowledging the impacts of trauma, identifying and working with – rather than ignoring – the dissociative parts, educating about the disorders and treatment options, developing healthy interpersonal relationships, teaching self-care, managing stressors

and crisis, addressing trauma-related cognitive distortions, and ensuring safety (see Brand, Myrick, et al., 2012).

Despite these encouraging findings in the treatment literature, no randomized controlled trial has been conducted to evaluate the effectiveness of treatments for people with pathological dissociation. Therefore, there are still ongoing debates regarding the effectiveness and appropriateness of trauma-informed dissociation-focused phase-oriented psychological treatments for complex trauma and severe pathological dissociation. For example, some scholars argued that a progressive, phase-oriented approach might not be necessary as people with complex trauma disorders (including dissociative disorders) may benefit from trauma-focused cognitive behavioral therapies that do not necessarily include an extra stabilization phase, although other scholars believed that two approaches do not actually differ in nature (see Dyer & Corrigan, 2021). Therefore, the trauma-informed dissociation-focused treatments have not yet received evidence from randomized controlled trials, but they are theory-based, have been used for decades in clinical settings, and have received stronger evidence than other alternative interventions (e.g., hypnosis, mindfulness, medications). At least, trauma-informed dissociation-focused treatments have been systematically evaluated in at least 16 outcome studies and 4 case studies with standardized measures (Brand, Classen, McNary, et al., 2009), in addition to many clinical case reports, as have been discussed above. Because of the safety concerns and controversies around trauma-focused exposure therapy, this project employed a progressive approach – it developed an educational intervention that does not involve exposure elements; the intervention relies heavily on widely accepted cognitive behavioral therapy elements (e.g., identifying and managing maladaptive behaviors [post-traumatic and dissociative reactions], challenging trauma-related irrational thoughts) and coping skills (e.g., grounding techniques), as will be discussed in the next chapter.

In addition, it should be noted that some calculations showed that appropriate treatments for severe pathological dissociation could lead to reductions in healthcare costs (e.g., Lloyd, 2016; Myrick, Webermann, Langeland, et al., 2017; Ross & Dua, 1993; Yeung, 2014a). Given that people with severe pathological dissociation usually experience significant disability and require expensive social and healthcare resources (Brand et al., 2016), it is important to develop acceptable and beneficial psychosocial interventions for people suffering from pathological dissociation from a socioeconomic point of view.

2.1.4 Current challenges in providing psychosocial interventions for people with pathological dissociation

Although specific psychosocial interventions are recommended for people who suffer from pathological dissociation, there are a number of practical challenges in providing such interventions for those survivors in the field. Some of the challenges are as follows:

First, specialized individual treatment for pathological dissociation is expensive and unaffordable for many people who need help. Although long-term individual treatment (e.g., outpatient service) is recommended for people with pathological dissociation, such treatment is usually costly. For example, in Hong Kong, one session of psychological service or counselling generally costs at least several hundred to a thousand dollars. The cost of a single individual psychotherapy session is high, let alone long-term psychotherapy. Moreover, adverse childhood experiences, which people with pathological dissociation commonly experience, are associated with poor socioeconomic status such as lower earnings and financial dependence (Fung, Chung, et al., 2020; Schurer et al., 2019). Many of them, therefore, could not afford expensive treatment services in the market. Of course, people with trauma, dissociation and mental health problems may consider treatments or services provided by the government or other non-governmental organization services, but the cost will just pass on to taxpayers or funders. Besides, service users need to face other problems (e.g., a longer waiting

time) even if they decide to use public services or non-governmental organization services. Therefore, it is important to develop less expensive but still beneficial resources for people with pathological dissociation.

Second, dissociation-focused interventions are not often available in many places. In fact, a lack of professional education about trauma and dissociation has been suggested to be a serious issue in the field (International Society for the Study of Trauma and Dissociation, 2011). For example, in Brand, Myrick, et al. (2012)'s study, no experts in the treatment of dissociative disorders can be found in Asia, Africa and South America. In many places, people who are suffering from pathological dissociation cannot access dissociation-focused services. As the researcher observed, many people suffering from pathological dissociation cannot receive appropriate treatment in Hong Kong. There is also no resource or service specifically designed for people with pathological dissociation in Hong Kong. Similarly, the literature also suggests that patients with the severe form of pathological dissociation (i.e., dissociative identity disorder) typically have been in the healthcare service system for about 7 years before they can be correctly diagnosed and properly treated (Kluft, 2009; Putnam et al., 1986; Ross, Norton, et al., 1989). It should be noted that the manpower of psychiatrists and psychiatric nurses in the public mental health service system in many places is seriously insufficient, such as in Hong Kong (Fong & Wong, 2016), let alone specific services for people suffering from pathological dissociation. Therefore, it is important to improve the accessibility of helpful resources for people suffering from pathological dissociation.

Third, stigma and discrimination are significant barriers to accessing mental health services in many places and cultural contexts. These problems also occur in Chinese cultures (Chung & Wong, 2004; Georg Hsu et al., 2008) and could be a significant challenge in providing psychosocial services for people with mental health problems. Hong Kong people seem to have a lower help-seeking likelihood when encountering mental health problems than

people in some other cultures (e.g., Chinese Americans and European Americans) (Chen & Mak, 2008). Thus, in some cultures, people with mental health problems may tend not to seek help from professionals. It increases the difficulties of recognizing and treating individuals with mental health problems in the community. In addition, because of stigma and resistance in the community and objection and discrimination from the local residents, some community mental health service providers may also have difficulty in providing services. For example, many Integrated Community Centres for Mental Wellness (ICCMWs) could not find a permanent site to provide services due to the resistance from the local community (Mak, 2016; The Hong Kong Council of Social Service, 2012). It would be helpful if people with pathological dissociation can access resources in less stigmatizing environments, such as web-based self-paced environments.

Fourth, people suffering from pathological dissociation are often survivors of interpersonal trauma, and therefore it is sometimes difficult for them to quickly establish a trusting relationship (treatment alliance) with their therapists (Chu, 1988; Cronin et al., 2014); they may be more easily triggered in face-to-face interactions too. This is also a considerable challenge in providing psychosocial interventions for people who are suffering from pathological dissociation.

Fifth, face-to-face psychosocial services may be more easily affected by social factors or community issues. For example, the social unrest in Hong Kong starting from June 2019 had resulted in service suspension in some community services, transportation services and schools (e.g., the Hong Kong Polytechnic University, the Chinese University of Hong Kong and some Mass Transit Railway [MTR] stations had been affected during the social unrest). The COVID-19 pandemic also largely affected societies across many countries and led to the needs for social (physical) distancing. These unpredicted social and public health issues could

further limit face-to-face health and social care services for people with mental health problems in general, and pathological dissociation in specific.

2.2 Is it possible to use web-based psychoeducation to support people with pathological dissociation?

2.2.1 Advantages of using information and communication technology (ICT): Making support possible for those who cannot access suitable offline services

Given the challenges in providing timely and appropriate psychosocial interventions for people suffering from pathological dissociation, it is important to explore, develop and evaluate whether there are alternative ways to support this group of service users. As the literature suggests that web-based interventions are promising and can be effective in supporting people with a variety of mental health problems (Andersson & Titov, 2014; Barak & Grohol, 2011; Lal & Adair, 2014), web-based interventions may also be acceptable and beneficial to people suffering from pathological dissociation.

In fact, there are many advantages of web-based interventions that have been widely discussed in the literature. For example, web-based interventions can overcome time and geographical limits, ensure a powerful distribution capability, enable a disinhibition effect, support asynchronous interactions (Chan & Ngai, 2018), ensure a sense of safety, and prevent triggers in face-to-face interactions. Moreover, web-based interventions may be more cost-effective too, according to Andersson and Titov (2014). It should be noted that people with mental health problems now commonly use ICT and access the Internet. For instance, Ben-Zeev et al. (2013) found that 72% of people with severe mental disorders regularly used mobile devices and suggested that mobile devices can be used to facilitate skills training, self-monitoring, health management and engagement for mental health service; similarly, another survey conducted by Chen and Zhu (2015) suggested that ICT-enhanced mental health service (e.g., guided self-help) may be a cost-effective solution to the shortage of mental health professionals in China. The functionalities of ICT may potentially overcome the problems of

service unavailability, expensive service charges, and stigmatization faced by people with pathological dissociation.

Taken together, there are a variety of advantages of using ICT to support people who are suffering from pathological dissociation. Most importantly, web-based interventions make support possible for many people who cannot even access suitable support in their local community.

However, little is known about the acceptability, potential benefits, and limitations of web-based interventions in this population group. Keeping these in mind, this project aimed to examine whether it is possible to use a web-based psychoeducation program to support people with pathological dissociation. The following sections will review the current empirical evidence for web-based interventions in treating mental health problems and discuss the possibility and rationale of using web-based psychoeducation to support people with pathological dissociation.

2.2.2 The current state of the evidence for web-based interventions in people with mental health problems

The development of information and communication technology (ICT) is rapid. Given its advantages, some of which have been mentioned above, ICT has the potential to deliver social and healthcare services to meet the needs of many people. As a result, many scholars tried to evaluate the effectiveness of ICT-enhanced, or web-based, interventions in different professions and fields, such as social work (e.g., Chan, 2016a; Chan & Holosko, 2016, 2018, 2019), education (e.g., Cavanaugh et al., 2004; Torgerson & Elbourne, 2002) and health care (e.g., Neve et al., 2010; Sureshkumar et al., 2015; Wu et al., 2010).

In particular, there is a growing body of literature on the use of web-based support and interventions for people with mental health problems and these studies undoubtedly demonstrated the effectiveness and benefits of using web-based interventions for different

mental health conditions (e.g., Andersson et al., 2014; Barak & Grohol, 2011; Barak et al., 2008; Lal & Adair, 2014). For instance, a recent systematic review and meta-analysis shows that Internet- and mobile-based interventions for depression in patients with depression are effective and superior to waitlist conditions (Josephine et al., 2017); another meta-analysis of individual participant data from 3,876 adults also indicates that self-guided Internet-based cognitive behavioral therapy is effective in treating depression and therefore can be regarded as an evidence-based first-step intervention for depression (Karyotaki et al., 2017).

More specifically, there is some evidence that supports the use of web-based interventions for a variety of specific mental health problems, including anxiety (e.g., Reger & Gahm, 2009; Rooksby et al., 2015), psychosis (e.g., Gottlieb et al., 2013; Rotondi et al., 2010), insomnia (e.g., Ritterband et al., 2012; Ritterband et al., 2009), panic disorder (e.g., Carlbring et al., 2005) and substance abuse (e.g., Cunningham et al., 2009; Schwinn et al., 2010).

Given that pathological dissociation is regarded as a trauma-related mental health problem, it is important to review the evidence for web-based interventions for other trauma-related mental health problems, including post-traumatic stress disorder and borderline personality disorder.

In fact, many authors have systematically reviewed studies on the use of web-based interventions in people with trauma-related mental health problems. As early as in 2009, Amstadter et al. (2009) reviewed computerized and Internet-based interventions for trauma-related mental health problems and suggested that such interventions could yield “effect sizes that are comparable to traditional psychosocial treatment” (p. 410). In a meta-analysis conducted by Kuester et al. (2016), the authors reviewed 20 randomized controlled trials (RCTs) that evaluated web-based interventions for subclinical or clinical post-traumatic stress disorder in adults (N = 973) and came up with a conclusion that web-based interventions for post-traumatic stress disorder can result in medium to large effect sizes for post-traumatic stress

disorder symptoms. Simblett et al. (2017) conducted a broader and more updated systematic review and meta-analysis of 33 studies (N = 3822) and their findings also revealed that web-based interventions can result in significant improvements in post-traumatic stress disorder symptoms. Level 1 evidence (i.e., systematic review and meta-analysis of RCTs) for web-based interventions in other traumatized populations (e.g., people with complex post-traumatic stress disorder or borderline personality disorder) is not available in the literature. Some evidence, however, is still available for using web-based interventions to support people with other trauma-related disorders such as borderline personality disorder (e.g., Rizvi et al., 2011; Zanarini et al., 2018).

2.2.3 The possibility of using web-based psychoeducation to support people with pathological dissociation

The advantages of using web-based interventions to support people with mental health problems have been discussed. The empirical evidence of web-based interventions for mental health problems has been reviewed in some detail too. The question that remains is whether it is possible to use web-based interventions to support people who suffer from pathological dissociation. In particular, this project aims to (1) examine the acceptability, (2) explore the potential benefits and (3) identify the perceived limitations of using web-based psychoeducation to support people who are suffering from pathological dissociation.

There are a number of reasons for considering the use of web-based psychoeducation to support people with pathological dissociation. In the previous sections, the rationales of using web-based interventions have been discussed – namely, web-based interventions have the potential to offset some of the challenges in existing face-to-face psychosocial services for people with pathological dissociation. This section focuses more on why psychoeducation was particularly chosen as the intervention contents in the web-based program.

There are four major reasons:

First, psychoeducation is an essential component in the treatment for pathological dissociation. As mentioned above, both the empirical literature and treatment guidelines recommend psychoeducation as an important element in the early stage of treatment for post-traumatic and dissociative conditions (Brand, Myrick, et al., 2012; Cloitre et al., 2012; International Society for the Study of Trauma and Dissociation, 2011; Phoenix, 2007; Shabb, 2016). For example, people with pathological dissociation need to acknowledge the impacts of trauma and stress, identify stressors and triggers, know about their symptoms, causes and treatment options, learn about the coping strategies, and master the self-help skills in order to stabilize their symptoms. As Fisher (1999) said when she talks about the work of stabilization, "trauma survivors cannot teach themselves how to be safe and stable because they have no baseline, no meaningful experience of what the words 'safe' or 'stable' mean. They desperately need a teacher: someone who will provide structures for learning, a wealth of information, and feedback" (p. 2). In addition, as mentioned, this project is based on the trauma model of pathological dissociation and relevant treatment literature – from this perspective, learning theories are used to understand the development and maintenance of certain post-traumatic and dissociative reactions. People with pathological dissociation need to learn new coping strategies to replace or unlearn the maladaptive behaviors. Thus, it is reasonable to believe that web-based psychoeducation in this project could provide basic knowledge for the survivors and fulfil these educational needs. This educational intervention can also enable participants to develop more internal and external resources to prepare for future treatments, as these resources (e.g., emotional regulation skills, integrative capacity) are required before they can move on to the next stage of treatment (e.g., inhibitory learning, exposure therapy, fear extinction) in the future.

Second, the empirical literature has suggested that psychoeducation and self-help interventions in general are helpful for people who suffer from mental health problems. For

instance, a meta-analysis shows that even passive psychoeducational interventions (e.g., only providing booklets, emails or information webpages, without therapeutic guidance or group interventions or exercises) are effective in reducing psychological symptoms, although the effect sizes are not large (Donker et al., 2009). Besides, the "Coping with Depression" course is well-established in the field and has long been demonstrated to be effective for depression (Cuijpers, 1998). In addition, other systematic review and meta-analysis studies also revealed that self-help intervention is effective and superior to waitlist or no treatment conditions when treating emotional disorders (e.g., den Boer et al., 2004; Hirai & Clum, 2006; Lewis et al., 2012). It is very likely that web-based psychoeducation and self-help interventions are helpful for people with pathological dissociation too, even without personalized therapeutic guidance.

Third, the literature shows that psychoeducation can also be an effective intervention for people with other trauma-related mental health problems. Psychoeducation is always one of the core elements in the early stage of treatment for post-traumatic stress disorder, no matter the treatment option is cognitive processing therapy (Resick et al., 2008), prolonged exposure therapy (McLean & Foa, 2011) or eye movement desensitization and reprocessing (EMDR) (Shapiro & Maxfield, 2002) – these are all first line treatments for post-traumatic stress disorder according to the well-established treatment guidelines (American Psychological Association, 2017; US Department of Veterans Affairs and Department of Defense, 2017). Some studies showed that psychoeducation-based interventions can be used not only as an anti-stigma intervention (e.g., Gould et al., 2007; Pratt et al., 2005), but may also be helpful in reducing post-traumatic stress disorder symptoms (e.g., Kuhn et al., 2017; Possemato et al., 2016). Moreover, it should be noted that a recent meta-analysis of group treatments for complex post-traumatic stress disorder revealed that both trauma processing therapies (which are also known as exposure-based psychotherapy or trauma-focused psychotherapy) and psychoeducation interventions are useful and are better than usual care (Mahoney et al., 2019). As

psychoeducation is helpful for people with other trauma-related mental health problems including post-traumatic stress disorder and complex post-traumatic stress disorder (which are also conceptualized and considered as disorders that involve trauma-related structural dissociation of the personality) (Nijenhuis, 2017; Steele et al., 2009; Van der Hart et al., 2006), it is very likely that psychoeducation can be helpful for people who are suffering from pathological dissociation as well.

Fourth, psychoeducation is easy for self-administration, and therefore it has the potential to be a cost-effective resource that serves many participants or service users at the same time with minimal clinical and technical support. For example, in the treatments for other mental health problems, passive psychoeducation is regarded as being easy to implement (Donker et al., 2009). Although specialized therapy is more effective than web-based educational or self-help interventions, specialized therapy is also more costly, and therefore web-based educational interventions should be considered when the societal willingness to pay is low or when there is a lack of resources (König et al., 2018). Unlike web-based interactive interventions that require more clinical resources to provide personalized services or at least a highly automated program, the development and set-up costs of a web-based psychoeducation program are fairly low. Moreover, psychoeducation interventions do not require the involvement of a therapist. For example, if this project provides web-based individual treatments (e.g., videoconferencing-based counselling) rather than psychoeducation, the price for a counsellor or a social worker could be about HK$300 or even higher for each session – if there are 12 sessions for each participant and a total of 50 participants are included, the total costs for providing the interventions could be at least HK$300 x 12 x 50 = HK$180,000, or even higher. However, when web-based psychoeducation is chosen as the intervention, the price for having a therapist in each session is zero. The only cost would involve developing the psychoeducation materials before the intervention; nevertheless, the psychoeducation materials

are developed by the researcher, and no extra cost is required. Therefore, the web-based psychoeducation program in this project is expected to be a low-cost resource that can support many service users at the same time.

At the time of developing this project, no study had evaluated any kind of web-based intervention for people with pathological dissociation. The recent paper published by Brand et al. (2019) provided the first report of an online intervention study focusing on pathological dissociation in the field – they reported the preliminary findings of their Treatment of Patients with Dissociative Disorders (TOP DD) Study project, and suggested that their online educational program can help their participants reduce dissociative and post-traumatic symptoms in their year-long program. However, their study has a crucial limitation: Their program required the involvement of a therapist and all participants received specific therapy for their pathological dissociation at the same time; they did not have a control group or use a "double pretest" design. They cannot exclude the possibility that the clinical improvements were the results of the individual therapy rather than of the online educational program.

Both Brand et al. (2019) and I see the potential of using web-based psychoeducation to support people suffering from pathological dissociation. Both their study and my current project are new in the field. At the same time, both made important efforts to explore whether web-based interventions can be used to support people with pathological dissociation and aimed to provide some initial empirical evidence.

Therefore, the present project aimed to develop and evaluate a web-based psychoeducation program for people with pathological dissociation.

CHAPTER 3: A BRIEF WEB-BASED PSYCHOEDUCATION PROGRAM FOR PEOPLE WITH PATHOLOGICAL DISSOCIATION

Pathological dissociation itself is a mental health issue that is associated with psychosocial intervention needs. The rationales and advantages of using web-based psychoeducation to support people with pathological dissociation have been discussed. Keeping the research and service gaps in mind, this project aimed to develop and evaluate a web-based psychoeducation program for people suffering from pathological dissociation. For this purpose, a brief, trauma-informed, dissociation-focused, web-based psychoeducation program had been developed.

This chapter will first describe the development and contents of the web-based psychoeducation program. In addition, the initial results of a preliminary feasibility testing of the program will be reported.

After that, the implementations and procedures of the web-based psychoeducation program for the evaluation study in this project will be explained.

3.1 Development and contents of the web-based psychoeducation program

It has been discussed why people with pathological dissociation require psychosocial interventions in general, and psychoeducation support in particular. It has also been explained why online methods are promising. However, it should be noted that there are different forms of online psychosocial and psychoeducation interventions that might be possible.

The web-based psychoeducation program developed and tested in this project is only one specific form of different potential psychosocial interventions for people with pathological dissociation. This specific program has been reviewed and endorsed by a leading expert in the field and its feasibility has also been tested. Therefore, there was some groundwork behind to ensure the feasibility and suitability of this specific web-based psychoeducation program.

In particular, the contents of the web-based psychoeducation program were co-developed together with, and endorsed by, Dr. Colin A. Ross, M.D. Dr. Ross is an internationally renowned psychiatrist, an expert in the field of trauma and dissociation, the author of the Trauma Model (Ross, 2007b; Ross & Halpern, 2009), the author of the widely recognized textbook on dissociative identity disorder (Ross, 1997), the developer of the Dissociative Disorders Interview Schedule (DDIS) (Ross & Browning, 2017; Ross & Ellason, 2005; Ross, Heber, et al., 1989), as well as a past President of the International Society for the Study of Trauma and Dissociation (ISSTD) (1993-1994).

As mentioned in the literature review chapter, this project is based on the trauma model of pathological dissociation. The proposed educational intervention program is informed by the trauma model and relevant treatment literature. From this perspective, pathological dissociation is conceptualized as an understandable yet maladaptive response to trauma and stress. The development and maintenance of pathological dissociation can be explained using learning theories (e.g., classical conditioning and evaluative conditioning). Therefore, the proposed intervention program is designed to provide psychoeducation and skills training for

people with pathological dissociation so that they can better understand and cope with their post-traumatic and dissociative reactions.

Furthermore, when developing the program, I considered several major principles that should be held in this educational intervention. First, the program should be trauma-informed so as to empower the participants and prevent retraumatization (Substance Abuse and Mental Health Services Administration, 2014). Second, the program should take dissociation into account and should encourage and promote personality integration in the long term (e.g., acceptance towards different parts of self), which is a major issue in the treatment of pathological dissociation (International Society for the Study of Trauma and Dissociation, 2011; Steinberg & Schnall, 2000). Third, the program should emphasize the learning processes, including the learning processes behind the maladaptive behaviors in the past as well as the importance of learning healthy coping strategies to replace the maladaptive behaviors (Nijenhuis & Den Boer, 2009; Ross et al., 2017). Fourth, from the perspective of the trauma model, the target mental health problems are psychobiological reactions to the adverse social environment, and therefore the program should emphasize the importance of paying attention to the interactions between the person and the environment (e.g., addressing safety issues, dealing with interpersonal problems, staying away from toxic stress). As there is no empirically tested, fully manualized and standardized intervention for dissociation, I relied on the dissociation treatment literature as well as these four principles when selecting the intervention components.

In particular, the development of the contents for the web-based psychoeducation program was informed by the following literature:

(1) the trauma psychoeducation/self-help literature that discusses the important contents of psychoeducation for trauma survivors (e.g., Dorrepaal et al., 2012; Fisher, 1999; McFetridge et al., 2017; Phoenix, 2007; Stige, 2011; Whitworth, 2016),

(2) the pathological dissociation treatment literature (e.g., Brand, Classen, Lanius, et al., 2009; Brand, Classen, McNary, et al., 2009; Brand, Myrick, et al., 2012; International Society for the Study of Trauma and Dissociation, 2011; Ross & Halpern, 2009; Steinberg & Schnall, 2000; Van der Hart, 2012; Van der Hart & Boon, 1997; Van der Hart et al., 2006),

(3) existing self-help books for people with trauma and dissociation (e.g., ATW, 2005; Boon et al., 2011; Hu, 2014) (these books are not directly used for the current project for several reasons: being copyright-protected, being too long for a web-based program, focusing specifically on dissociative identity disorder, and/or focusing too little on dissociative reactions)

(4) online resources that include discussion of self-help tips or coping strategies for people with pathological dissociation (e.g., https://www.healthyplace.com/blogs/author/cmatulewicz, https://www.discussingdissociation.com, https://www.psychforums.com/dissociative-identity/ and https://m.wikihow.com/wikiHowTo?search=Dissociative)

(5) other related works, including a study that provides recommendations for authors of self-help materials (Redding et al., 2008), and other works that review and discuss the use of psychoeducation for people with mental disorders (e.g., Kumar et al., 2015; Motlova et al., 2017).

As noted, there is no empirically tested standardized intervention for dissociation, and this is also one of the first projects aiming to evaluate a web-based psychoeducation program for people with pathological dissociation. Thus, no direct research evidence is available regarding the amount or duration of the educational intervention. When considering the duration of the intervention, we reviewed the psychoeducation/self-help literature and also thought carefully about the contents that must be included in the program. In previous web-

based psychoeducation/self-help studies, the duration of interventions varied greatly (e.g., ranged from 4 weeks to 6 months) (e.g., Beatty & Lambert, 2013). Besides, a review study suggested that even brief psychoeducation (10 sessions or less) can still have favorable results for people with severe mental health problems (Zhao et al., 2015). Hirai and Clum (2006) conducted a meta-analysis of self-help interventions and showed that there was no significant relationship between duration of therapist contact hours or method of contact with the intervention effectiveness. In order to cover relevant topics and at the same time provide participants with enough time to read and process the psychoeducation materials, we developed a set of 12 psychoeducation materials that can be used in a web-based program for people with pathological dissociation.

The primary goals of the psychoeducation program are to enable users to (1) understand post-traumatic and dissociative reactions, (2) learn healthy coping strategies, and (3) remain hopeful for recovery. It is designed to contain the following psychoeducation elements/components:

1) Safety issues, trigger management and crisis planning (e.g, Brand, Myrick, et al., 2012; Dorrepaal et al., 2012; Fisher, 1999; International Society for the Study of Trauma and Dissociation, 2011; McFetridge et al., 2017; Stige, 2011)
2) Education about the impacts of trauma and stress (e.g, Herman, 1992; Phoenix, 2007; Whitworth, 2016)
3) Education about the condition (e.g., diagnosis), treatment options and the hope of recovery (e.g, Brand, Myrick, et al., 2012; Herman, 1992; Phoenix, 2007; Redding et al., 2008)
4) Education about the concept of dissociation (e.g, International Society for the Study of Trauma and Dissociation, 2011; Ross & Halpern, 2009; Van der Hart et al., 2006)

5) Promoting internal (intrapersonal/inter-personality) communication and cooperation and integration of the personality (e.g, Brand, Myrick, et al., 2012; International Society for the Study of Trauma and Dissociation, 2011; Van der Hart et al., 2006)
6) Identifying symptoms, self-help skills and coping strategies (e.g, Brand, Myrick, et al., 2012; Fisher, 1999; Whitworth, 2016)
7) Trauma-related cognitive distortions (e.g, Dorrepaal et al., 2012; McFetridge et al., 2017; Ross & Halpern, 2009; Stige, 2011)
8) Decreasing shame and confusion and dispelling myths and stigma (e.g, Fisher, 1999; Whitworth, 2016)
9) Understanding and resolving interpersonal problems (e.g, Brand, Myrick, et al., 2012; Ross & Halpern, 2009)
10) Self-care and living well (e.g, Stige, 2011)

Table 1 shows the contents of the web-based psychoeducation program that we developed for the present project. The package has been published elsewhere (Fung & Ross, 2019) so that the contents can be reviewed by other researchers and practitioners in the field. As this package has been published, review and replication of the intervention will be possible. The rationale, development and contents of this particular form of psychosocial intervention, i.e., the web-based psychoeducation program, for people with pathological dissociation are discussed in details in this thesis, and these contents have also been briefly described in Fung, Chan and Ross (2020b) as well, so that readers may also refer to.

Table 1. Contents of the psychoeducation package *Be A Teammate With Yourself: Understanding Trauma And Dissociation*

Session/ Chapter	Topics	Words (in English)	Relevant psychoeducation elements/components
1	Introduction – How To Use This Book	832	3, 8
2	Safety Is The Primary Consideration	1243	1, 9
3	Basic Self-Help Skills	2033	1, 6, 10
4	Trauma Affects Us In Many Ways, But Is Reversible	1244	2, 3, 4, 8
5	Common Reactions To Trauma And Stress	3143	2, 4, 5, 6, 9
6	Trauma-Related Mental Disorders: What Do These Labels Mean?	2162	3
7	Irrational Thoughts	1585	7, 8
8	Trauma Recovery And Integration Of The Personality	2344	3, 4, 5, 8
9	Common Questions About Trauma And Dissociation	1627	3, 8
10	Coping With Dissociative Reactions	3533	5, 6
11	Interpersonal Issues In Trauma And Recovery	2838	5, 9, 10
12	Living Well During And After Trauma Recovery	331	10

The psychoeducation materials are text-based and structured and can be self-administered, and therefore it is flexible and can be easily delivered using ICT (e.g., Blog, YouTube audiobook). In order to make the materials easy-to-read, we keep each session/chapter as short as possible while still covering the important psychoeducation information. In addition, post-session homework assignments, which are also available in the psychoeducation package, are designed for the participants/readers to have some reflections and/or practice what they have learned. Examples of the post-session assignments include: "*Could you create a list of harmless alternative strategies that you will consider using in the future?*" and "*Do you have any of the symptoms mentioned in this chapter? If yes, could you select one symptom, write down how it affects you and how you plan to manage this in the future?*" (see Fung & Ross, 2019). As the psychoeducation is text-based and structured and can be easily developed as an audiobook, it can be easily delivered using Email, Google Classroom, Google Form, YouTube or other web-based platforms.

The aims of the program should be further clarified as this will inform the evaluation design that will be discussed later.

This psychoeducation program is designed to be a brief, first-step, adjunctive intervention that aims to facilitate the recovery and stabilize the comorbid conditions (e.g., post-traumatic and depressive symptoms) of people with pathological dissociation, but not to fully treat the disorders or to replace in-depth psychotherapy. Informed by the above-mentioned literature and based on the experience of the program developers (including an expert psychiatrist), we believed that the information covered in this program should be made available for all trauma survivors and people with pathological dissociation in the early stages of recovery. Therefore, the primary goal of the program, which has been mentioned above, is to facilitate recovery (e.g., improving symptom management and self-esteem and reducing mental health stigma). Therefore, it was hoped that the program could improve recovery and

self-esteem and reduce mental health stigma in users who are suffering from pathological dissociation.

In addition, the literature shows that psychoeducation interventions can significantly reduce post-traumatic and depressive symptoms in trauma survivors (e.g., Kuhn et al., 2017; Mahoney et al., 2019), which are also common comorbid symptoms in people with pathological dissociation. Therefore, it was also hoped that the psychoeducation program could help users reduce comorbid post-traumatic and depressive symptoms.

In the clinical literature, it has been shown that even inpatient and outpatient treatments for dissociative disorders typically last months or even years and that in-depth, dissociation-focused psychotherapy is required to treat dissociation (Brand, Classen, McNary, et al., 2009; International Society for the Study of Trauma and Dissociation, 2011). Therefore, it was predicted that this brief, educational program could not directly reduce dissociative symptoms; in other words, users' levels of pathological dissociation are expected to remain stable (but not increase) after the program.

3.2 The program steps supported by ICT

The web-based psychoeducation program is designed to be a fully online intervention that is supported by ICT.

For recruitment and engagement, the Internet (especially social media) is a very useful platform that can be used to make contact with people who need dissociation-focused resources or services, including those who need to travel long distances to receive dissociation-focused services and those who can only receive general services that do not target dissociative symptoms in their local service locations. Given its high accessibility and low cost, the web-based program can effectively reach out to a large number of people with mental health problems so as to easily recruit and engage people who may be suffering from pathological dissociation and require dissociation-specific educational resources. Previous studies have already indicated that social media can facilitate outreach engagement in social work practice (e.g., Chan & Holosko, 2017). Therefore, the web-based psychoeducation program uses online channels to recruit potential users who want to receive dissociation-focused psychoeducation and relevant self-help resources.

For screening and assessment, ICT-supported tools such as Google Form and other online questionnaires systems can largely facilitate screening, assessment and evaluation of mental health service programs. It has been suggested that online assessments using reliable and valid measures can facilitate early identification and timely assessment of mental health problems, including trauma-related mental health problems, such as post-traumatic stress disorder (Fung, Chan, et al., 2019; Hoover & Romero, 2019), borderline personality disorder and pathological dissociation (Chan et al., 2017; Collins & Jones, 2004; Fung, Ho, et al., 2018). Therefore, in the web-based psychoeducation program, online questionnaires can be used not only to screen potential participants and assess their mental health conditions, but the online

questionnaires can also help monitor participants' psychosocial and mental health changes over time and evaluate the program outcomes.

The web-based psychoeducation program provides users with access to the psychoeducation materials (text- or audio-based materials) wherever they are. The nature of psychoeducation makes it very suitable to be adapted in a web-based learning program, which is easily accessible and self-paced, and can ensure high privacy protection. It is designed that the psychoeducation materials can be delivered using specific online platforms (e.g., Blog, YouTube) regularly with email notifications and reminders (e.g., every 5 days or every week), according to the planned schedule and sequence (12 sessions in total, from the 1st session to the 12th session). Users are recommended to complete the post-session homework assignments, but no comments or feedback are provided in the program. Users can revisit previous psychoeducation materials whenever they want during the program.

3.3 Preliminary testing

During the time of developing the web-based psychoeducation program, part of the contents had been initially tested in a sample of English-speaking participants with self-reported pathological dissociation. The research design and results of the preliminary testing have been published in Fung, Chan and Ross (2020b). In addition, some of the data collected in the preliminary testing study has been published elsewhere too (Fung, Chan, & Ross, 2020a; Fung, Chan, Ross, et al., 2020).

In this preliminary testing, only 6 chapters (Chapters 1, 2, 3, 4, 5, and 8) from the above-mentioned psychoeducation package were used. Thus, it included 6 sessions and lasted only one month; each session used one chapter. Google Classroom was used as the platform for delivering the text-based psychoeducation materials.

A total of n = 83 individuals registered online, completed the screening survey and gave informed consent, while n = 40 of them finally accepted an invitation to the platform and received the intervention, and their data (n = 40) (M_{age} = 41.1, SD = 12.0; 37 females) were analyzed. Twenty-five participants (62.5%) completed the posttest survey, and therefore the dropout rate was 37.5%. After receiving the one-month web-based psychoeducation program, this highly traumatized and dissociative sample (n = 25) had statistically significant improvements in a validated measure of clinical recovery in terms of symptom management (p = .011, Cohen's d = -0.551).

Participants who completed the web-based psychoeducation program (n = 25) were generally satisfied with this, although a number of them thought that the amount of help was not enough (52%) – this may be due to the fact that the program in the preliminary testing only provided 6 sessions (chapters). In particular, most of them agreed or strongly agreed that the web-based psychoeducation program helped them understand (84%) and manage (64%) their

conditions and remain hopeful for recovery (68%). Most participants (84%) agreed or strongly agreed that the web-based program was easy to use too.

The results of the preliminary testing provided initial evidence for the feasibility of the web-based psychoeducation program. Some participants also provided helpful feedback that informed the improvements and implementations of the web-based program in the subsequent evaluation study, which will be further discussed in the next section.

3.4 Implementation of the program in this research

The contents of the web-based psychoeducation program have been described in the previous sections and are also available for external review in Fung and Ross (2019). The results of the preliminary testing also informed the implementation of the program. In order to further evaluate the full program in the local context in the present project, the psychoeducation contents were translated to traditional Chinese by the researcher, who is also the first author of the psychoeducation package.

This section will specifically describe the implementation of the program in the pilot evaluation study in the present project. It should be noted that the evaluation methodology will be discussed in the next chapter.

As mentioned, the web-based psychoeducation program provided participants with psychoeducation materials. In the pilot evaluation study, both text-based and video-based psychoeducation materials were provided (the same contents, just in different formats), so that the users could choose a format that they preferred.

The primary goals of the web-based psychoeducation program were to enable participants to (1) better understand post-traumatic and dissociative reactions, (2) learn some healthy coping strategies, and (3) remain hopeful for recovery.

In particular, it included 12 sessions (one session used one chapter) (the average number of words in each chapter was 4181.16; SD = 2012.5) and the focuses of each session were as follows:

Session 1 used Chapter 1 (1923 words in Chinese) from the psychoeducation package (i.e., Fung & Ross, 2019). It provided participants with an introduction to the program, and it also focused on dispelling stigma and promoting hope for recovery.

Session 2 (Chapter 2; 2568 words) focused on safety issues. It discussed some common challenges in the daily life of trauma survivors with pathological dissociation and suggested some possible solutions.

Session 3 (Chapter 3; 4076 words) introduced some basic self-help skills (e.g., grounding techniques, mindful breathing) and aimed at helping participants better prepare for future challenges and manage their symptoms.

Session 4 (Chapter 4; 3177 words) discussed the impacts of trauma and stress on our body and mind and explained why these are reversible and why recovery is possible.

Session 5 (Chapter 5; 6639 words) aimed at enabling participants to identify and cope with the common reactions (e.g., avoidance, intrusive symptoms, depersonalization, amnesia, identity dissociation) to trauma and stress.

Session 6 (Chapter 6; 5484 words) introduced psychiatric diagnoses that are commonly related to trauma (i.e., acute stress disorder, post-traumatic stress disorder, complex post-traumatic stress disorder, borderline personality disorder and dissociative disorders) and explained the advantages and limitations of using these diagnostic labels. It aimed to reduce confusion and stigma related to mental disorders and promote hope for recovery.

Session 7 (Chapter 7; 3151 words) discussed irrational thoughts (e.g., over-generalization, locus of control shift) that are common among people who have encountered traumatic or stressful events. It aimed to help participants identify and tackle trauma-related irrational thoughts.

Session 8 (Chapter 8; 4935 words) focused on the theme “trauma recovery and integration of the personality”. It aimed at enabling participants to be familiar with the process and direction of recovery. It also explained why “integration” is the goal of recovery and why the overall theme of this psychoeducation is to “be a teammate with yourself”. Some important concepts related to trauma recovery were reviewed so as to decrease shame and confusion.

Session 9 (Chapter 9; 3698 words) answered some common questions about trauma and dissociation (e.g., “How could I confirm if I have PTSD, BPD, and/or DID, etc?” “Can I recover from trauma and dissociation by simply having medication treatments?” “Do I have multiple ‘personalities’?”). It aimed to reduce shame and confusion. Some common real-life challenges of trauma and dissociation survivors were also discussed (e.g., “How can I find a therapist who is experienced in treating trauma and dissociation?” “Should I tell other people about my trauma and dissociation?” “What can I do if I feel that my psychiatrist does not understand my condition?”).

Session 10 (Chapter 10; 7381) focused on the understanding and management of dissociative reactions/symptoms. It aimed to enable participants to better understand their dissociative reactions and it also discussed some principles and strategies for coping with dissociative reactions. Some examples included: “When I get triggered, I always have some painful memories that come back to me in a flood. What can I do?” “I feel like I have a child inside my mind, and she keeps crying. What can I do?” “I usually suffer from depersonalization/derealization – it’s like I am a robot, I cannot feel anything, sometimes I feel unreal, and sometimes other people/things look strange too. What can I do?” “Some parts of me are very depressed. What can I do?”

Session 11 (Chapter 11; 6332 words) focused on interpersonal issues in trauma recovery, which are common challenges to people who live with trauma and dissociation. It aimed to enable participants to better handle internal relationship issues with their internal team members as well as relationship issues with outside people during trauma recovery.

Session 12 (Chapter 12; 810) provided participants with a brief conclusion as well as a list of things that people can do as part of their recovery in order to live well (e.g., taking care of medical problems and needs, getting enough sleep and enough quality sleep, making amends with people we have hurt).

After each session, participants were invited to complete the homework assignments or record their reflections on what they had learned. The assignments were also based on the psychoeducation package. However, no feedback, grade, comments, suggestions, guidance, or other interventions were provided for the participants in the present study.

Except for sending reminders and providing technical support when requested, the researcher would not interact with the participants.

Participants could revisit and review previous psychoeducation materials whenever they wanted during the two-month web-based psychoeducation program.

In addition, participants were allowed to receive their usual treatment, if any. It was further emphasized that the web-based psychoeducation program would not and could not replace any medical treatments and the educational resources were provided for information purposes only.

The psychoeducation program in this study was fully online. In particular, all participants were recruited and screened using online surveys and interviewed using mobile phone-based technology (e.g., phone, WhatsApp, Line). All psychoeducation materials were provided through online channels (i.e., Email, Google Drive, YouTube). Standardized assessments and program evaluation were conducted using online surveys with validated self-report measures. In addition, feedback was collected using Google forms. More importantly, when participants had questions about the program (e.g., technical issues), they contacted the researcher online, and the researcher also responded and provided support through online channels (e.g., Email, WhatsApp, Line) too. As noted, it has been widely discussed in the literature that online methods can greatly facilitate both research processes and social service delivery (Chan, 2016a; Chan et al., 2017; Chan & Holosko, 2016).

The results of the preliminary testing, which have been discussed in the previous section and in Fung, Chan and Ross (2020b), had informed and improved the implementation of the

web-based psychoeducation program and ensured that necessary changes to the program could be made. In particular, the major modifications included the following:

First, Google Classroom, which was less inclusive because this platform was only accessible for Gmail account users, was used in the beginning, but a more accessible platform (i.e., Email with links to Google Drive-based reading materials and YouTube-based audiobook) was employed in the present study.

Second, in the preliminary testing, we used Google Classroom as the intervention platform, but this platform could not reliably and easily record the participation rate. Therefore, in the present study, without resources to build up an automated system, participants were asked to complete a post-session form using Google Form to indicate their attendance.

Third, participants in the preliminary testing reported that the amount of psychoeducation contents was not enough (only 6 sessions were used in the preliminary testing). Therefore, all 12 chapters were used in the present study (i.e., the web-based program had 12 sessions and lasted two months).

Fourth, some participants in the preliminary testing provided feedback and mentioned that they had difficulty in reading a lot of words, although each chapter was relatively short. Therefore, in addition to reading materials (in traditional Chinese), the web-based psychoeducation program in the present study also provided YouTube-based audio materials (in Cantonese; supported by Google Text-to-Speech technology). Participants could choose to read the text-based materials and/or watch and listen to the YouTube-based audiobook.

3.5 Intervention fidelity

In order to ensure that the intervention could be implemented as planned, the following strategies were employed in the present study.

First, the psychoeducation materials, as mentioned in previous sections, which have been published and publicly available and can be reviewed by external researchers and practitioners (Fung & Ross, 2019), were co-developed with and endorsed by a well-recognized expert in the field. The original English contents were also translated in Chinese by the first author of the psychoeducation package. Therefore, it could ensure that the session contents of the web-based program were planned based on the published package that has been endorsed by an expert in the field.

Second, given that the intervention was delivered using information and communication technology (ICT) and that the web-based program was fully standardized (the standardized contents were regularly delivered step by step according to the planned sequence), the intervention fidelity could be ensured as the intervention was not "freely interpreted and delivered by a practitioner, but is contained and provided by the program itself" (Chan, 2016b, p. 269).

Third, the participation rate was recorded in this pilot evaluation study as participants were asked to submit an online post-session form after each session. Therefore, step-by-step progress could be monitored by examining if there were incidents of not following the sequence (e.g., a participant submitted the Session 2's Post-session Form *before* he/she submitted the Session 1's Post-session Form). In addition, participants were asked to fill out a feedback form after the program so as to examine whether they would find the psychoeducation materials helpful and relevant to them.

Given that the program contents and steps are standardized and clearly described, the intervention fidelity can be ensured, and the program can be replicated in the future projects.

CHAPTER 4: METHODOLOGY

The rationales of using web-based psychoeducation to support people with pathological dissociation are discussed in Chapter 2. The development, contents, and implementation of a specific web-based psychoeducation program, which is designed to be a brief, first-step, adjunctive intervention, are explained in Chapter 3. The program was designed to facilitate recovery and reduce comorbid post-traumatic and depressive symptoms in people with pathological dissociation.

This chapter will introduce and discuss the overall methodology of the project. In particular, a pilot evaluation study of the web-based program was conducted. The rationales as well as the details of the research design (e.g., hypotheses, participants, measures) will be explained in this chapter, while the results of the pilot evaluation study will be reported in the next chapter (i.e., Chapter 5).

4.1 A pilot evaluation study

4.1.1 Rationale

This project aimed to evaluate the use of web-based psychoeducation to support people with pathological dissociation, and therefore a pilot evaluation study was conducted to test the proposed web-based program. Pilot evaluation studies are typically carried out before large-scale studies, which can help inform and improve the program development and evaluation design of the full studies and could increase the likelihood of success of the full studies (Thabane et al., 2010). As what De Vaus (2002) has strongly suggested, "do not take the risk, pilot test first" (p. 52). Van Teijlingen et al. (2001) have discussed a number of important reasons for conducting a pilot evaluation study before undertaking the full study, some of which are very relevant to the present project, such as convincing the future funding bodies and other stakeholders that the program is feasible and worth supporting, assessing whether the program is workable, assessing the proposed recruitment methods, developing and refining the research questions in the full study, and identifying potential problems of the study.

The results of a pilot evaluation study can have at least three possible outcomes: 1) turn down the main study if this is not acceptable or workable; 2) continue with the main study after modifications; or, 3) continue without modifications (see Thabane et al., 2010).

In the literature, some indicators have been commonly used to evaluate the results in pilot evaluation studies, such as acceptability (e.g., satisfaction and dropout rates) (Gibby et al., 2019; Sekhon et al., 2017) and potential benefits (or intervention outcomes) (Kurowski et al., 2016; Raab et al., 2015; Willemse et al., 2009). In addition, it is also important for a pilot study to identify potential limitations or perceived problems of the program that can help inform modifications in the future (Thabane et al., 2010; Van Teijlingen et al., 2001).

Therefore, keeping this literature in mind, the pilot evaluation study of the present project (1) focused on acceptability, while it also (2) explored the potential benefits and (3) identified the perceived limitations of the web-based program.

4.1.2 Key questions

It has been explained that this project aimed to conduct a pilot evaluation study to (1) examine the acceptability, (2) explore the potential benefits, and (3) identify the perceived limitations of the brief, trauma-informed, dissociation-focused web-based psychoeducation program for people with pathological dissociation.

First, acceptability is the major focus of this pilot evaluation study given that it would be very difficult to deliver interventions that have low acceptability, even if they are effective. Acceptability is one of the six service quality indicators (examples of other indicators include effectiveness and safety) as recommended by Maxwell (1992). It has long been recommended to evaluate the acceptability of an intervention because it may have profound implications for the dissemination and utilization of the intervention and because acceptable interventions may be more readily sought and used than those less acceptable interventions (Kazdin, 1981). In some early studies, intervention acceptability typically refers to the extent to which the stakeholders perceive the intervention to be fair and appropriate (Kazdin, 1981) or the extent to which the intervention is consistent with the expectations of the stakeholders (Kazdin, 1980). A more recent definition of acceptability of health interventions is proposed by Sekhon et al. (2017): "acceptability is a multi-faceted construct that reflects the extent to which people delivering or receiving a healthcare intervention consider it to be appropriate" (p. 1). Examples of indicators of acceptability include satisfaction, affective attitude, perceived effectiveness and intervention coherence and so on (Sekhon et al., 2017).

Second, the potential benefits of the web-based program were explored. In fact, acceptability is highly related to the benefits of an intervention – if an intervention is acceptable,

the participants would be more likely to adhere to and benefit from the intervention; on the other hand, if an intervention has low acceptability, it would not be successfully delivered and may profoundly affect the outcomes and benefits of the intervention (see Sekhon et al., 2017). Moreover, if the participants could not benefit from the program, it might not be worth conducting a full study to further evaluate the program.

Third, in order to inform the modifications and improvements of the program (in case it is acceptable and some benefits can be observed), this project also tried to identify the perceived limitations of the program. In particular, qualitative and quantitative feedback from the participants would be explored; unfavorable results (e.g., if the dropout rate is high or if some specific improvements cannot be observed) would be discussed as well.

The pilot evaluation study was therefore conducted to answer the following questions. The first question was particularly related to the potential benefits of the program. The second question was related to the acceptability of the program, and the third question was about the perceived limitations of the program.

1) Could the participants achieve improvements in recovery, self-esteem, mental health stigma and comorbid post-traumatic and depressive symptoms after the program?

This project aimed to evaluate whether participants would potentially benefit from the web-based program by examining whether there would be significant improvements in the outcome measures. In particular, the primary outcome variables included symptom management, self-esteem and mental health stigma given that the primary goals of the program were to enable participants to better understand and cope with the mental health problems and to reduce confusion. In addition, this program aimed to facilitate the management of symptoms and therefore it was expected that the comorbid symptoms (post-traumatic and depressive symptoms) would reduce after the program. However, as noted, it usually requires long-term specialized treatments to treat dissociative symptoms, and therefore it was expected that the

level of dissociative symptoms would remain stable but would not reduce after the program. Therefore, the pilot study examined whether the participants would have improvements in their mental health recovery (in terms of symptom management), self-esteem, mental health stigma, and comorbid post-traumatic and depressive symptoms, and whether their levels of pathological dissociation would remain stable after they received the web-based psychoeducation program.

2) Would the web-based psychoeducation program be acceptable to the participants?

In order to examine the acceptability of the web-based program, this project focused on the level of satisfaction reported by the participants.

Measures of participants' satisfaction, such as the Client Satisfaction Questionnaire (CSQ), have been commonly used to evaluate acceptability in the psychosocial intervention literature (e.g., Lopez-Gomez et al., 2017; Malkhasyan et al., 2019; Palumbo et al., 2019; Schoenfelder et al., 2017). This pilot study also assessed the level of satisfaction in the participants with the web-based psychoeducation program. It was predicted that most participants (e.g., at least 60%) would be satisfied with the web-based program on the Client Satisfaction Questionnaire adapted to Internet-based interventions (CSQ-I) and agreed that the program could help them understand and manage their conditions and remain hopeful for recovery. Qualitative feedback collected using a structured feedback form after the web-based program was also reviewed.

In addition, this project also considered the recruitment number and dropout rate of the participants.

As what will be discussed in the Section 4.3 (i.e., Participants and data collection), this project was designed to recruit at least 50 participants. Therefore, to examine if the web-based psychoeducation program could help participants access resources, it was predicted that at least 50 participants would enroll in this study.

As noted by Gibby et al. (2019), participant retention (or dropout rate) and satisfaction measures are commonly reported indicators of acceptability in the literature. Many studies examined dropout/participation rates and the participants' satisfaction in order to evaluate the acceptability of psychosocial interventions for people with mental health problems, as demonstrated in some review studies (e.g., Brooke-Sumner et al., 2015; Kaltenthaler et al., 2008). Therefore, this study also examined the dropout rate of the web-based program. According to a systematic review study, the dropout rates from web-based intervention programs for mental health problems could range from 2% to 83% (19 studies were included), and the weighted average dropout rate was 35% (Melville et al., 2010); another recent systematic review of the dropout rates in clinical trials of mobile phone app-based interventions (18 studies were included) for people with depression reported that the adjusted dropout rate could be as high as 47.8% (Torous et al., 2020). Therefore, this study also examined if the dropout rate would be lower than 40%.

3) What are the perceived limitations of the web-based program?

This question will be answered in the discussion chapter after analyzing the collected data. In particular, perceived limitations or problems of the program will be discussed, and recommendations for modifications or future evaluation will be provided. For example: How to increase the completion rate? What suggestions did the participants provide? Why are there some improvements in some variables but not in other variables? And, how would this finding inform the use and evaluation of the program in the future? These will be discussed after the results chapter.

4.1.3 A single-group pretest-posttest design

To answer the key questions of the project (i.e., the acceptability [e.g., dropout rate, level of satisfaction], potential benefits [e.g., improvements in recovery and self-esteem], and

perceived limitations of the proposed web-based psychoeducation program), a pilot evaluation study was conducted using a single-group design.

In the clinical literature of pathological dissociation, the challenges of using a rigorous randomized controlled design to study the effectiveness of interventions for people with dissociative symptoms or disorders have been widely discussed. For instance, in a systematic review of treatments for patients with dissociative disorders, Brand, Classen, McNary, et al. (2009) found that there was a lack of controlled outcome evaluation studies, except for one study using a single case experimental design (Kellett, 2005). Brand, Classen, McNary, et al. (2009) and Brand, Lanius, et al. (2012) explained that the lack of randomized controlled studies in the dissociation field is not surprising for a number of reasons, for example: 1) there are ethical concerns of randomizing severely symptomatic patients to control conditions; 2) there are considerable logistic challenges; 3) the treatment duration required for severe pathological dissociation is typically very long (e.g., more than 2 years), and, 4) there is a lack of standardized or fully manualized treatment for pathological dissociation. Therefore, to the best of my knowledge, no study has ever used a randomized controlled design to evaluate treatment outcomes in people with dissociative disorders.

Because of the limited resources in the present project and the difficulty in recruiting a large number of mental health service users with pathological dissociation (pathological dissociation is rarely recognized and dissociative disorders are rarely clinically diagnosed in the local service system as well as in many other countries) (Fung, 2016c; Şar, 2011), it was not possible to use a rigorous randomized controlled design with appropriate sample size in the present study. Some more important reasons for conducting a pilot evaluation study before undertaking a full study are also discussed in Session 4.1.1 and in Van Teijlingen et al. (2001).

It may be important to further summarize and emphasize why a randomized controlled design was not used in this project. In summary:

1) Given that no previous study has been conducted to evaluate web-based psychoeducation for people with pathological dissociation, it is important to first pilot test the intervention so as to demonstrate the acceptability and benefits of the intervention, before resources are mobilized to evaluate the program in a larger, more rigorous randomized controlled trial.
2) Given that pathological dissociation is rarely recognized in the field, I expected considerable challenges in recruiting enough participants for a randomized controlled trial before conducting this project.
3) Randomization is not often practical or appropriate, especially when the sample size is small because it can hardly guarantee equivalence between the intervention group and the control/comparison group (Weisburd & Gill, 2014); a small sample may also result in an underpowered test, reducing the ability to detect a true effect (Alvarez et al., 2021; Teare et al., 2014).

Because of these considerations, I believe that it is more appropriate to conduct a pilot evaluation study with a single-group design in this project, so that I could have the valuable data and groundwork to call for a follow-up randomized controlled trial in the future.

Despite the fact that there are a number of limitations of using the single-group pretest-posttest design (Knapp, 2016; Shadish et al., 2002), this is a commonly used pre-experimental design that can be used to examine the acceptability of certain interventions and initially evaluate whether there are changes after such interventions. If the program is not acceptable or if no statistically significant changes can be observed even in a pre-experimental study, the intervention program would need to be carefully reviewed and modified before resources are put in place to really evaluate the program in a full randomized controlled study, as the latter would require much more resources.

It should be noted that, because of the challenges in conducting a randomized controlled study with vulnerable populations, many studies also employed a single-group pretest-posttest design to explore the potential benefits of the proposed interventions before they could further advocate and call for a more rigorous experimental evaluation of the interventions. For example, Giacomucci and Marquit (2020) published their single-group pretest-posttest study on trauma-focused psychodrama before they could justify the importance of further evaluation of their intervention using a more rigorous design. Ross et al. (2019) evaluated their trauma model residential treatment program with significant results and implications even though they could not include a control group in clinical settings due to ethical considerations. Chan et al. (2002) and Chan (2004) also evaluated their group interventions using a single-group design due to the difficulties of involving a control group.

Similar to the study conducted by Brand et al. (2019), I believed that a preliminary and exploratory study was required to look into the acceptability of our web-based psychoeducation program for people suffering from pathological dissociation before scholars and researchers in the field are confident to invest more resources to further evaluate the web-based psychoeducation program using a randomized controlled design with a reasonably large sample size. If the program is not even acceptable in this vulnerable population, resources should not be mobilized to further evaluate its effectiveness.

Therefore, keeping in mind that there was no study that had evaluated the use of web-based interventions to support people with pathological dissociation at the time of developing this project (and there was still only one other study of this kind at the moment) (Brand et al., 2019), the present project was preliminary and exploratory in nature and a single-group design was employed.

Given that the single-group pretest-posttest design is subject to several limitations (e.g., history, maturation, testing effects), two strategies were employed to improve the validity of the pilot evaluation study.

First, this study included one additional pretest (i.e., two pretests in total) prior to the intervention. This design is known as a "double pretest" design and can improve the validity of a pre-experimental study because "if the difference between either pretest and posttest is much greater than the difference between the two pretests, additional support is provided for the effect of X (i.e., the intervention)" (Knapp, 2016, p. 470). Using a double pretest could allow each participant to serve as his/her own control. The "dry run" before the intervention could reduce the plausibility of maturation and regression toward the mean (Shadish et al., 2002).

Second, the pilot study also included a nonequivalent dependent variable in order to further reduce the internal validity threats in this pre-experimental study (Coryn & Hobson, 2011). A nonequivalent dependent variable typically refers to a variable that is unlikely to be influenced by the intervention; this could strengthen the design when a control group is not possible (Shadish et al., 2002). For instance, if some threats to internal validity (e.g., environmental factors, maturation, multiple testing) take place in the evaluation study, both the dependent variable and the nonequivalent dependent variable would be affected; if the changes are produced by the intervention rather than other factors, only the dependent variable would change while the nonequivalent dependent variable would remain the same (Coryn & Hobson, 2011). In the case of the present study, the level of curiosity, which was measured with the Embracing Dimension of the Curiosity and Exploration Inventory-II (CEI-II), was included as the nonequivalent dependent variable because this was theoretically unrelated to the web-based psychoeducation intervention. This project aimed to use the web-based psychoeducation program to help the participants improve their symptom management and self-esteem and

reduce their mental health stigma and post-traumatic and depressive symptoms, and therefore the measures of symptom management, self-esteem, mental health stigma, post-traumatic symptoms and depressive symptoms were used as the outcome measures. The web-based psychoeducation program is primarily about understanding and coping with post-traumatic and dissociative reactions and associated life challenges, and theoretically speaking it is nothing to do with increasing general curiosity. Therefore, the CEI-II was chosen as the nonequivalent dependent variable in this pilot evaluation study to improve its internal validity.

4.2 Instruments and outcome measures

In this project, the web-based psychoeducation program in this project was evaluated using standardized assessments, which were undertaken two times before the program (the 1st pretest [screening] and the 2nd pretest) and two times after the program (posttest [immediately after the intervention] and two-month follow-up).

In order to explore the potential benefits of the web-based psychoeducation program and test the above-mentioned hypotheses, the outcome measures included a measure of clinical recovery in terms of symptom management, a measure of self-esteem, a measure of mental health stigma, two measures of comorbid symptoms (i.e., post-traumatic stress disorder symptoms and depressive symptoms) and a measure of pathological dissociation. The descriptions are detailed in the following paragraphs:

The Clinical Recovery ("Mastering my illness") subscale of the Recovery Assessment Scale – Domains and Stages (RAS-DS). The RAS-DS is a self-report measure of mental health recovery with excellent internal reliability and validity (Hancock et al., 2015). It has been suggested to be a promising outcome measure due to its responsiveness (Scanlan et al., 2018) (for the details, see https://ras-ds.net.au/). The 7-item Clinical Recovery subscale (e.g., *"I can identify the early warning signs of becoming unwell"*, *"My symptoms interfere less and less with my life"*) of the RAS-DS (i.e., RAS-DS-CR) was used in this study. The RAS-DS-CR mainly assesses symptom management, which refers to the sense of control over symptoms and how well a person can master his/her symptoms. The Chinese Version of the RAS-DS-CR was translated by local scholars (Professor Samson Tse and his colleagues). Using part of the data from the present study (n = 83), the psychometric properties of the Chinese Version of the RAS-DS-CR were evaluated in a separate study. The Chinese Version of the RAS-DS-CR had a Cronbach alpha value of > 0.8 at each time point (from the 1st pretest to posttest), had moderate test-retest reliability between the first two pretests (r = .686; intraclass correlation

= .524, p < .001). It had consistent relationships with other mental health variables across time; in particular, it had consistent, negative correlations with measures of depressive symptoms and post-traumatic stress disorder symptoms and consistent, positive correlations with self-rated mental health and self-esteem across three points. It also had a consistent, non-significant correlation with dissociative symptoms across three points (Fung & Chan, in preparation). The Chinese Version of the RAS-DS-CR was administered at all four time points.

The single-item measure of self-esteem (SISE). The SISE, which asked "how satisfied are you with yourself?" (1 = very dissatisfied, 9 – very satisfied), was a valid single-item self-report measure of self-esteem (Sawicki–Luiza & Atroszko, 2017). The literature also indicated that multi-item and single-item measures of self-esteem had very similar relationships with other psychosocial and health-related measures and that they were also highly correlated with each other. This implies that even single-item measures of self-esteem can measure this construct very well (Robins et al., 2001). The Chinese Version of the SISE was translated for the present study using a collaborative approach (Douglas & Craig, 2007; Khosravani & Dastjerdi, 2013) together with a local bilingual registered social worker. Using data in the present study (n = 83), the SISE reached close to moderate test-retest reliability between the first two pretests (r = .660; intraclass correlation = .496, p < .001). The Chinese Version of the SISE was administered at all four time points.

The Self-deprecation subscale of the Perceived Psychiatric Stigma Scale (PPSS-SD) is a subscale of the Perceived Psychiatric Stigma Scale (PPSS) (Han & Chen, 2008). The PPSS is a reliable and valid Chinese self-report measure that is designed to assess mental health stigma. The PPSS-SD is a 6-item subscale that can be used to measure the level of mental health stigma – in particular, the self-deprecation aspect of mental health stigma. Using data in the present study (n = 83), the PPSS-SD had moderate test-retest reliability between the first

two pretests (r = .816; intraclass correlation = .691, p < .001). The Chinese Version of the PPSS-SD was administered at all four time points.

The Post-traumatic Stress Disorder Checklist for DSM-5 (PCL-5). The PCL-5 is a self-report measure of post-traumatic stress disorder symptoms (Blevins et al., 2015). Bovin et al. (2016) suggested that 31 to 33 were the optimal cutoff PCL-5 scores for detecting post-traumatic stress disorder. The PCL-5 has been psychometrically evaluated in the Chinese context as well. In a clinical sample of psychiatric outpatients, the Chinese Version of the PCL-5 had excellent internal consistency (Cronbach's alpha = .951) and was significantly correlated with trauma exposure (r = .415) and another measure of post-traumatic stress (r = .443); it could also detect patients with clinically diagnosed post-traumatic stress disorder with a sensitivity of 70.6% and a specificity of 72.7% when a cutoff score of 49 was employed (Fung, Chan, et al., 2019). In the present study, the PCL-5 had good test-retest reliability between the first two pretests (r = .886; intraclass correlation = .785, p < .001). The Chinese version of the PCL-5 was administered at all four time points.

The Patient Health Questionnaire-9 (PHQ-9). The PHQ-9 is a 9-item self-report measure of depression (Kroenke & Spitzer, 2002). Manea et al. (2012) indicated that 8 to 11 were acceptable PHQ-9 cutoff scores for detecting major depressive disorder. The Chinese Version of the PHQ-9 had been used in a number of previous studies (e.g., Fung, Chung, et al., 2020; Fung, Liu, et al., 2019; Fung, Ross, et al., 2020). It was also reported to have excellent internal consistency (Cronbach's alpha = 0.91) and can identify major depressive disorder with a sensitivity of 81% and a specificity of 98% when a cutoff score of 15 was used (Yeung et al., 2008). In the present study, the PHQ-9 had moderate test-retest reliability between the first two pretests (r = .804; intraclass correlation = .668, p < .001). The Chinese version of the PHQ-9 was administered at all four time points.

The Dissociative Experiences Scale-Taxon (DES-T). The DES-T is a self-report measure of pathological dissociation. It is an 8-item subscale (items 3, 5, 7, 8, 12, 13, 22 and 27) of the original 28-item DES (Bernstein & Putnam, 1986; Waller et al., 1996). The original DES is one of the most commonly used self-report measures of dissociative experiences and symptoms and has been used in hundreds of studies across different psychiatric diagnostic groups (Lyssenko et al., 2018; Van IJzendoorn & Schuengel, 1996). In a meta-analytic validation of the DES, it was found to have excellent internal consistency (the mean Cronbach's alpha was 0.93 in 16 studies) and excellent convergent validity with other measures of dissociation (including two well-established diagnostic interview schedules for dissociative disorders, r = 0.68 to 0.76) (Van IJzendoorn & Schuengel, 1996). The DES-T consists of items measuring dissociative experiences that are believed to be pathological (Waller et al., 1996; Waller & Ross, 1997). Ross et al. (2002) suggested using 20 as the DES-T cutoff score for screening for dissociative disorders as it could have good to excellent agreement with structured diagnostic interviews in detecting complex dissociative disorders (Cohen's kappa = 0.76 to 0.81). The Chinese version of the DES has also been found to be a reliable and valid self-report measure; a previous study indicated that it had excellent internal consistency (Cronbach's alpha = .953) and very good test-retest reliability (r = .797) and it was also highly correlated with the original English Version of the DES in a bilingual sample (r = .960) (Chan et al., 2017). In a subsequent validation study, the Chinese version of the DES-T was also highly internally consistent (Cronbach's alpha = .920) and was strongly associated with other measures of pathological dissociation (r = .626 to .653), which demonstrated its convergent validity; in addition, the Chinese version of the DES-T could discriminate between participants with and without clinically diagnosed dissociative disorders and a cutoff score of 25 could achieve a sensitivity of 93.8% and a specificity of 77.8% in detecting participants with a clinically diagnosed dissociative disorder (Fung, Choi, et al., 2018). In the present study, the

DES-T had moderate test-retest reliability between the first two pretests (r = .865; intraclass correlation = .748, p < .001). The Chinese version of the DES-T was administered at all four time points.

The Embracing Dimension of the Chinese Version of the Curiosity and Exploration Inventory-II (CEI-II-E). The CEI-I is a 5-item subscale of the CEI-II (Kashdan et al., 2009), which has also been validated in the Chinese context (Ye et al., 2015). As mentioned, the Chinese Version of the CEI-II-E was included as a nonequivalent dependent variable, and therefore it was administered at all four time points. In this study, the CEI-II-E had moderate test-retest reliability between the first two pretests (r = .821; intraclass correlation = .695, p < .001).

In addition to the above outcome measures, the screening survey (i.e., 1st pretest) also included the following instruments:

The Self-Report Version of the Dissociative Disorders Interview Schedule (DDIS). The DDIS is a structured diagnostic interview for dissociative disorders; a self-report version (i.e., SR-DDIS) is also available and has been found to be reliable and valid (Ross & Browning, 2017; Ross, Heber, et al., 1989). It includes sections that assess substance abuse, Schneiderian first-rank symptoms (e.g., hearing voices commenting or arguing inside one's head), borderline personality disorder symptoms and secondary features of dissociative identity disorder (DID). The Chinese Version of the DDIS/SR-DDIS has been used in a number of studies (Fung, 2016a, 2016b; Fung, Chan, Ross, et al., 2020; Fung, Ho, et al., 2018; Fung, Ling, et al., 2020). It was found to be a valid measure, because its secondary features of DID could detect participants with clinically diagnosed dissociative disorders with a sensitivity of 100% and a specificity of 85.19% when a cutoff score of 4 was used, and because there was an excellent agreement (Cohen's kappa = .900) between the SR-DDIS results and the clinical diagnoses for the presence of any dissociative disorder versus no dissociative disorder (Fung, Choi, et al., 2018).

In addition, the borderline personality disorder section of the Chinese Version of the SR-DDIS (i.e., SR-DDIS-BPD) can also detect psychiatric patients with clinically diagnosed borderline personality disorder with a sensitivity of 95.2% and a specificity of 64.9% when a cutoff score of 5 was used (according to the DSM-5 diagnostic rules) (Fung, Chan, Lee, et al., 2020). The SR-DDIS sections for substance abuse, DSM-5 dissociative disorders, borderline personality disorder and secondary features of DID were included in the screening survey (i.e., the 1st pretest).

The Brief Betrayal Trauma Survey (BBTS). The BBTS is a 24-item self-report measure of both childhood and adulthood trauma (Goldberg & Freyd, 2006). It assesses 12 different types of traumatic events before and after the age of 18. The advantages of using the BBTS include the following: (1) it assesses both betrayal trauma (e.g., "You were deliberately attacked that severely by someone with whom you were very close") and non-betrayal trauma (e.g., 'You were made to have such sexual contact by someone with whom you were not close"), and (2) it assesses both childhood (before age 18) and adulthood (age 18 or older) traumas. The Chinese Version of the BBTS was translated by a local expert Dr. Chui-De Chiu and has been used in previous studies (e.g., Chiu et al., 2010). The Chinese Version of the BBTS was included in the screening survey. Participants may answer "never", "one or two times" or "more than that" for each item. The BBTS was administered at the first pretest. In this study, a participant was considered to have experienced a certain traumatic event if he/she endorsed "one or two times" or "more than that" for that item.

At posttest, the following instrument was also included to assess levels of satisfaction.

The Client Satisfaction Questionnaire adapted to Internet-based Interventions (CSQ-I). The CSQ-I is a self-report measure that is designed specifically for assessing global satisfaction with a web-based intervention. It has 8 items and has been validated in the German context; its English version is also available, although its psychometric properties have not been evaluated

(see Boß et al., 2016). The English version was used in the preliminary testing study as well (Fung, Chan, & Ross, 2020b). The Chinese Version of the CSQ-I was used in the present study in order to quantify the participants' global satisfaction with the web-based psychoeducation program. The word "training" was changed to "program" for each item to fit the nature of the present study. The Chinese Version of the CSQ-I was also translated using a collaborative approach together with a local bilingual registered social worker for the present study. It was included in the posttest survey.

In addition, questions about demographic information and psychiatric histories were included in the screening survey, and questions for feedback were included in the posttest survey as well.

4.3 Participants and data collection

The present project aimed to evaluate the proposed web-based psychoeducation program for people suffering from pathological dissociation, and therefore a pilot evaluation study was conducted. This section will discuss the targeted participants for the study as well as the procedures for data collection.

In this study, participants were recruited mainly through online channels, such as social networking sites and online groups. In addition to online recruitment, however, I also reached out to service providers and non-governmental organizations (e.g., Integrated Community Centres for Mental Wellness, trauma counselling service units) in the Chinese context (e.g., service providers in Hong Kong, Macau and Taiwan) and asked for their help to circulate the research recruitment flyers with their service users.

When I conducted the preliminary testing, it was decided to exclude participants who self-reported to have recent suicidal ideation, suicidal attempts and/or homicidal plans in the past two months because it was assumed that people who have these risks may need active treatments first. However, after considering the fact that these risks (e.g., suicidal tendency and self-harming behaviors) are in fact very common among severely traumatized and dissociative patients (Brand et al., 2016; Gonzalez Vazquez et al., 2017) and that the proposed web-based psychoeducation would only provide participants with additional educational resources and would not discourage them to seek professional treatment in their community, the present study no longer employed this exclusion criterion. If people with these risks are excluded, the representativeness of the sample would be further limited. This is because many people with pathological dissociation suffer from these problems (e.g., suicidal tendency).

In order to ensure that meaningful within-subject statistical analyses (e.g., paired sample t test) can be conducted, this study aimed to have at least 30 completers. Therefore, assuming a completion rate of around 60% (see Section 4.1.2 for details), this study was

designed to recruit at least 50 participants in total. Having said that, I made efforts to recruit as many participants as possible during the scheduled recruitment period.

The inclusion criteria included the following:

1) being 18 years old or above;

2) agreed to give informed consent to participate;

3) attended the briefing interview (so that both online and verbal/written consent was obtained and the participants' identities could be confirmed; see below for details);

4) screened positive on the Chinese version of the Dissociative Experiences Scale-Taxon (DES-T) (i.e., they should score 25 or above on the DES-T) or the secondary features of dissociative identity disorder section of the Self-report Dissociative Disorders Interview Schedule (SR-DDIS) (i.e., they should report 4 or more secondary features of dissociative identity disorder) (Fung, Choi, et al., 2018) in the baseline screening survey;

5) being able to read and write Chinese; and,

6) being able to access the Internet.

Participants who did not attend the briefing interview before the program started were excluded. There were no other exclusion criteria.

It should be noted that the potential participants were not told about the cutoff-related inclusion criterion (i.e., the 4th criterion) and even participants who scored below the cutoff were offered the web-based psychoeducation and a lucky draw, so that they would not intentionally score high so as to win the lucky draw. This specific cutoff-related inclusion criterion was used for data analysis only in order to ensure that the included participants were really suffering from dissociative symptoms to a certain degree.

Moreover, in addition to the DES-T scores, the present study also considered participants who reported frequent secondary features of dissociative identity disorder on the SR-DDIS. This decision was informed by the local literature which indicates that this SR-DDIS

section (area under the curve = .979) preformed even better than the DES-T (area under the curve = .944) as a screening tool for pathological dissociation in the Chinese context (Fung, Choi, et al., 2018).

During the period from February to mid-April 2020, potential participants were recruited using both online (e.g., mental health-related Facebook pages and groups) and offline (e.g., the recruitment posters were sent to trauma care and mental health service providers in Hong Kong, Macau and Taiwan) channels in the Chinese context.

A list of symptoms of pathological dissociation was created by referring to the items on the existing dissociation assessment tools and the literature (Carlson & Putnam, 1993; Dell, 2009; Fung & Lao, 2017; Fung et al., 2017; Ross, Heber, et al., 1989); this list was included in the recruitment poster so that potential participants could have some basic understanding of what dissociative symptoms may look like. It was stated that participants would have a chance to access and receive a free web-based 12-session psychoeducation program and that those who completed the research process would be offered an opportunity to enter into a sweepstakes (12 randomly selected participants would win a Supermarket Coupon valued at HK$1500; the winners were selected using an online randomizer: https://www.random.org/). Thus, the recruitment poster provided information regarding the inclusion criteria, the procedures for the online assessments and web-based program, the outline of the educational contents, as well as examples of experience of pathological dissociation. The online registration form also stated clearly the information of the project (e.g., the program would not provide any services other than educational resources, participants could withdraw whenever they want, and they could receive usual care).

If they believed that they were suffering from pathological dissociation and would like to participate, they needed to give informed consent and complete an online screening survey (Time 1; 1st pretest) in order to register online first.

To ensure the validity of the data, a very brief mobile phone-based interview (e.g., phone, WhatsApp, Line) was conducted with each potential participant so as to confirm their identity after they completed the screening survey and registered online. As mentioned, it was a single-group pretest-posttest study with a double pretest design, followed by a two-month follow-up assessment. Participants who had confirmed their identities were invited to complete another online survey (Time 2; 2nd pretest) in mid-April 2020.

After the participants attended the mobile phone-based briefing interview and completed the 2nd pretest in mid-April 2020, they started receiving the web-based psychoeducation (for details of the implementation of the program, see Section 3.4).

In each session, participants received an email that provided a link to the Google Drive-based reading materials (in a PDF format) and a link to the YouTube-based audiobook (which reads out the texts in Cantonese based on a software). They could choose to read and/or watch and listen to the psychoeducation materials in each session. The psychoeducation materials were sent to the participants once every 5 days. Email reminders were also sent to them regularly. As mentioned, the participants were asked to submit a post-session form after each session and they were invited to complete the homework assignments and reflection exercises after each session, but no feedback or comments were provided in this web-based psychoeducation program. After 12 sessions (i.e., 60 days in total), participants were asked to complete the posttest.

After two months, participants were asked to complete a follow-up online survey again.

4.4 Hypotheses

To answer the key research questions that have been described in Section 4.1.2, a set of specific hypotheses was formulated. In particular, the pilot evaluation study in this project was conducted to test the following hypotheses:

1) After the intervention, participants would have improvements in recovery in terms of symptom management (i.e., the Clinical Recovery subscale of the Recovery Assessment Scale – Domains and Stages [RAS-DS-CR] scores would increase).

2) After the intervention, participants would have improvements in their degree of self-esteem (i.e., the single-item measure of self-esteem [SISE] scores would increase).

3) After the intervention, participants would have improvements in mental health stigma (i.e., reduce mental health stigma; the Self-deprecation subscale of the Perceived Psychiatric Stigma Scale [PPSS-SD] scores would decrease).

4) After the intervention, participants would have improvements in their post-traumatic symptoms (i.e., the Post-traumatic Stress Disorder Checklist for DSM-5 [PCL-5] scores would decrease).

5) After the intervention, participants would have improvements in their depressive symptoms (i.e., the Patient Health Questionnaire-9 [PHQ-9] scores would decrease).

6) After the intervention, participants' levels of dissociation would remain stable (i.e., the Dissociative Experiences Scale-Taxon [DES-T] scores would remain stable).

7) Most participants (at least 60%) would be satisfied with the web-based program, which would be quantified using the CSQ-I and the post-intervention feedback form.

More details of the instruments and outcome measures have been provided in the previous section (i.e., Section 4.2).

4.5 Data analysis

SPSS 22.0 was used to analyze the collected data in this study. Statistical analysis was conducted using a significance level of 0.05 (two-tailed).

Descriptive analysis was conducted to examine the enrollment number, completion/dropout rate, and the level of satisfaction (i.e., Hypothesis 7) of the participants with the web-based psychoeducation program.

To explore the potential benefits of the web-based program (i.e., Hypotheses 1 to 6), changes in the self-report measures before (i.e., 2nd pretest) and after the program (i.e. posttest) were examined using paired sample *t* test analysis.

For Hypotheses 1 to 6, when a specific hypothesis was supported by the data, further analysis would be conducted to examine if the scores remained stable between the "dry run" pretest period and between the two-month follow-up period. This was done to provide stronger evidence for the internal validity of the findings (i.e., to examine whether the changes occurred only during the intervention period).

Given the pilot nature of this project, the analysis focused on those participants who completed the program (i.e., the completers). Because this was not a randomized controlled trial, this project did not conduct an intention-to-treat analysis using a specific method (e.g., the last observation carried forward [LOCF]) to handle the participants who dropped out. Since this study used online surveys to collect data, no missing data entries were allowed. Nevertheless, potential differences between completers and non-completers were explored using *t* test and chi-square analysis.

Cohen's *d* was calculated to assess the effect size by dividing the mean difference by the standard deviation of the difference (small effect size = 0.2, medium effect size = 0.5, large effect size = 0.8) (Cohen, 1988; Sawilowsky, 2009). Moreover, power analysis was also

conducted using the online calculator SPH Analytics (SPH) (https://www.sphanalytics.com/statistical-power-calculator-using-average-values/).

In addition, this pilot study also explored the psychosocial and clinical correlates of changes in the psychosocial outcomes after the web-based psychoeducation program.

Qualitative feedback collected using a structured feedback form after the web-based program was explored and reported as well. The structured feedback form and its results will be further discussed in Section 5.6.

4.6 Ethical considerations

This project obtained ethics approval from the Human Subjects Ethics Sub-committee of The Hong Kong Polytechnic University (PolyU) for the pilot evaluation study (Reference Number: HSEARS20200116005).

The evaluation study emphasized that the educational contents in the web-based psychoeducation program were provided for information purposes only and could not and would not replace medical advice or treatments. The participants could receive usual care if they needed. In case of emergency, they should seek help from the service providers in their service locations.

In addition, the psychoeducation contents were co-developed with, and endorsed by, an experienced psychiatrist who is an internationally recognized expert in the field, and therefore the safety of the contents could be ensured.

Online informed consent was obtained from each participant before they started the online screening survey and registration. A brief interview was conducted with each participant to ensure that they understood and agreed to participate in the study. Participants could withdraw from the study whenever they wanted and there would be no consequences.

In this pilot evaluation study, in addition to the email address, the phone number of each participant was also collected for three reasons: 1) as noted, a more careful mobile phone-based briefing interview was conducted with each participant; 2) it could ensure the participant's identity for data validation purposes; and, 3) the contact information was required to provide incentives (a lottery draw) after the data collection process.

All data were stored in password-protected databases and only the researcher could access the data. When the data are reported and published, no identifiable personal information of the participants would be disclosed.

CHAPTER 5: RESULTS OF THE PILOT EVALUATION STUDY

This chapter will report the overall sample characteristics and the results of the pilot evaluation study. It should be noted that part of the data collected from this study has been published elsewhere and the research design has been partly described in previous studies as well (Fung, Chan, & Ross, 2020a; Fung et al., 2021). However, the overall sample characteristics and the evaluation results have not been published.

5.1 Overall sample characteristics

During the period from 6th February 2020 to 11th April 2020, a total of N = 101 participants gave online informed consent and completed the online screening survey and registration. Ten participants were excluded from the study: 8 participants were excluded because they did not participate in the mobile phone-based briefing interview and could not be further contacted; one participant reported that she was not yet 18 years old, and another participant told the researcher that she would like to withdraw before the web-based psychoeducation started because she wanted to join other activities to shift her attention.

Therefore, a total of N = 91 participants who completed the screening survey (i.e., 1st pretest) participated in the web-based psychoeducation, 83 participants completed the 2nd pretest in mid-April 2020 (during the period from 15th April 2020 to 19th June 2020), 58 participants completed the posttest in June 2020 (during the period from 18th June 2020 to 23rd June 2020), and 45 participants completed the two-month follow-up assessment in August 2020 (during the period from 18th August 2020 to 27th August 2020). Given that 101 participants registered online and given that 91 participants actually participated in the mobile phone-based briefing interview and the web-based program, the prediction that at least 50 participants would enroll in study (see Section 4.1.2) was supported by the data.

However, as mentioned in Section 4.3, this pilot study focused only on participants who were suffering from pathological dissociation (i.e., participants who screened positive for pathological dissociation [i.e., scored 25 or above on the DES-T or reported 4 or more secondary features of dissociative identity disorder on the SR-DDIS]), and therefore participants who screened negative for pathological dissociation at the 1st prettest (n = 11) were excluded from analysis in this study. In particular, of the 91 participants who completed the screening survey, 76 participants scored 25 or above on the DES-T, and 54 participants reported 4 or more secondary features of dissociative identity disorder; 51 participants met

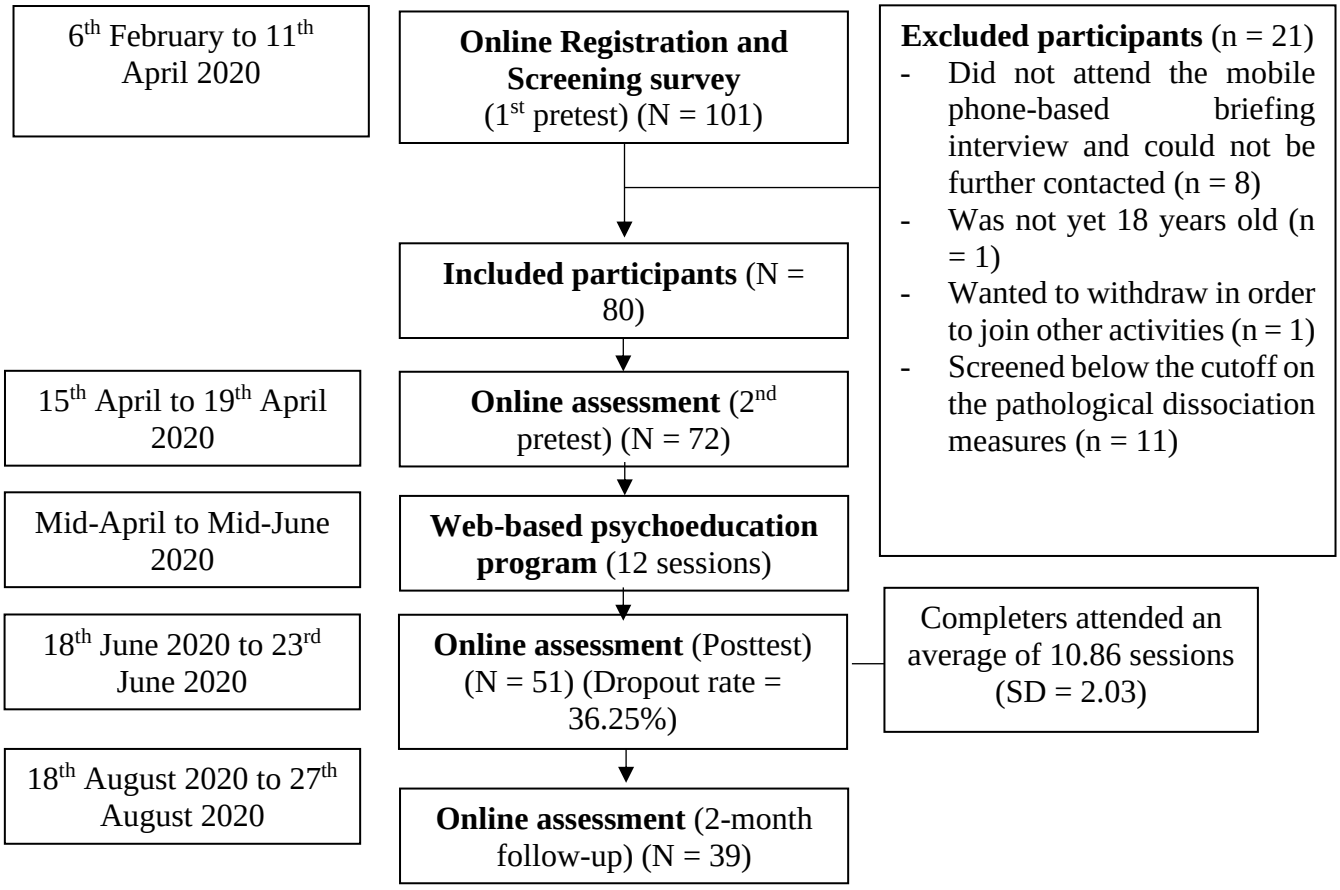
scored 25 or above on the DES-T AND reported 4 or more secondary features of dissociative identity disorder; 80 participants met screen positive for pathological dissociation on either or both measures.

A total of N = 80 participants, hence, were included for analysis.

Of this sample, 72 participants (90.0%) completed the 2nd pretest, 51 participants (63.8%) completed the posttest, and 39 participants (48.8%) completed the two-month follow-up assessment. A total of 51 participants (63.8%) attended more than 50% of the web-based psychoeducation program (i.e., more than 6 sessions), according to the post-session forms that they submitted after each session. Among the 51 participants who completed the posttest, 49 participants (96.1%) attended more than 50% of the web-based psychoeducation sessions. Among the participants who completed the 2nd pretest (n = 72), the average number of days between the two pretests was 57.03 (SD = 18.85).

Figure 1 summarizes the study's schedule and the participants' flow throughout the study.

Figure 1. Study schedule and participants' flow throughout the study



The ages of the included participants ranged from 19 to 57 (M = 28.87; SD = 7.95). Most of the participants were female (n = 71, 88.8%), n = 8 (10.0%) were male, and one participant (1.3%) reported “others”.

Most of the participants reported that they were from Hong Kong (n = 41, 51.2%) and Taiwan (n = 38, 47.5%), and one participant (1.3%) reported that she was from another place (i.e., Guangzhou).

About half of the participants were currently employed (n = 42, 52.5%), while another half of the participants were currently unemployed (n = 38, 47.5%). Most of the participants were single (n = 64, 80.0%), and some other participants were married (including common-law) (n = 15, 18.8%) and widowed (n = 1, 1.3%). When asked about at what age they first started to have emotional, psychological, or mental health problems, the average number of ages was 15.82 (SD = 6.73).

The screening results indicated that this was a highly traumatized, dissociative, and symptomatic sample.

On the BBTS, they reported an average of 4.38 (SD = 2.50) childhood traumatic events and an average of 3.78 (SD = 2.46) adulthood traumatic events. Only n = 6 participants (7.5%) did not report any childhood trauma, and only n = 2 (2.5%) did not report any adulthood trauma. All participants reported at least one traumatic event during their lifetime.

In particular, on the BBTS, they reported an average of 1.38 (SD = 1.25) childhood low betrayal traumas, an average of 2.49 (SD = 1.51) childhood high betrayal traumas, an average of 1.21 (SD = 1.29) adulthood low betrayal traumas, and an average of 1.88 (SD = 1.27) adulthood high betrayal traumas. The frequency of each type of trauma is reported in Table 2.

The mean DES-T score was 52.59 (SD = 20.50), which was far above the mean DES-T score of a local college student sample (Fung, Ho, et al., 2018) and a sample of local patients with depression (Fung, Chan, Ross, et al., 2020).

On the SR-DDIS, they reported an average of 4.93 (SD = 3.14) secondary features of dissociative identity disorder and an average of 5.38 (SD = 2.20) borderline personality disorder symptoms.

Table 2. Frequency of trauma among the included Chinese participants with pathological dissociation (*N* = 80)

Brief Betrayal Trauma Survey	**Before age 18**			**Age 18 or older**		
Items	**Never (%)**	**1 or 2 times (%)**	**more than that (%)**	**Never (%)**	**1 or 2 times (%)**	**more than that (%)**
Trauma with Less Betrayal						
1. Major earthquake, fire, flood, hurricane, tornado	90.0	5.0	5.0	92.5	2.5	5.0
2. Major auto, plane, train, or industrial accident	88.8	11.3	0	81.3	15.0	3.8
4. Witnessed someone suicide, killed, or injured [1]	73.8	18.8	7.5	72.5	17.5	10.0
7. Were yourself severely attacked [1]	51.2	30.0	18.8	62.5	18.8	18.8
9. Made to have sexual contact [1]	57.5	30.0	12.5	70.0	17.5	12.5
Trauma with More Betrayal						
3. Witnessed someone suicide, killed, or injured [2]	71.3	11.3	17.5	80.5	7.5	12.5
5. Witnessed someone severely attack a family member [2]	61.3	15.0	23.8	85.0	10.0	5.0
6. Were yourself severely attacked [2]	40.0	12.5	47.5	57.5	17.5	25.0
8. Made to have sexual contact [2]	63.7	12.5	23.8	73.8	15.0	11.3

10. Emotionally or psychologically mistreated [2]	15.0	6.3	78.8	16.3	17.5	66.3
Others						
11. Death of one's own child	96.3	2.5	1.3	88.8	10.0	1.3
12. Other seriously traumatic event	53.8	22.5	23.8	42.5	35.0	22.5

Notes: 1 = "Someone not close to you"; 2 = "Someone close to you"

In addition, based on the initial screening results based on the SR-DDIS, 51 participants (63.8%) met the DSM-5 diagnostic criteria for borderline personality disorder, 24 participants (30.0%) met the DSM-5 diagnostic criteria for dissociative amnesia, 8 participants (10.0%) met the DSM-5 diagnostic criteria for dissociative fugue, 11 participants (13.8%) met the DSM-5 diagnostic criteria for depersonalization/derealization disorder, and 17 participants (21.3%) met the DSM-5 diagnostic criteria for dissociative identity disorder.

For comparison purposes, Table 3 reports the frequency of some of the mentioned symptom clusters in this sample and in other local samples. These data further indicated that this was a highly traumatized and dissociative sample.

Table 3. Frequency of pathological dissociation and related symptoms in three Chinese samples

	A: The present sample (*N* = 80)		**B: Chinese people with depression (*N* = 68)** (Fung & Chan, 2019)		**C: Chinese college students (*N* = 190)** (Fung, Ling, et al., 2020)		**One-way ANOVA**	
Variables	**M**	**SD**	**M**	**SD**	**M**	**SD**	**F (post-hoc)**	**p**
DES-T	52.59	20.50	16.07	14.06	14.83	15.43	156.889 (A>B=C)	< .001
DID features	4.93	3.14	1.63	2.13	1.22	1.83	77.913 (A>B=C)	< .001
BPD symptoms	5.38	2.20	3.96	2.61	1.47	2.00	100.194 (A>B>C)	< .001

DES-T = the Dissociative Experiences Scale-Taxon; DID = dissociative identity disorder; BPD = borderline personality disorder

In addition, this sample also exhibited high levels of post-traumatic stress disorder symptoms and depressive symptoms. These are common comorbid symptoms among patients with complex dissociative disorders (Brand & Loewenstein, 2010; Fung & Lao, 2017; Fung et al., 2017; Ross, 2015; Şar, 2014). In particular, in this sample, the mean score of the PCL-5 was 59.83 (SD = 12.78) and the mean score of the PHQ-9 was 22.71 (SD = 8.11). In fact, in the screening survey (i.e., the 1st pretest), most of the included participants (n = 64; 80%) screened positive for a post-traumatic stress disorder on the PCL-5 (i.e., score >= 49) and most of them (n = 53; 66.25%) also presented with severe depressive symptoms on the PHQ-9 (i.e., score >= 20).

As mentioned, there were 51 participants who completed the posttest after the web-based psychoeducation program, and therefore they were regarded as "completers" (i.e., dropout rate = 36.25%). This supported the prediction that the dropout rate would be lower than 40% (see Section 4.1.2).

To examine if there were any statistically significant differences in major variables collected at baseline (i.e., the 1st pretest) between completers (n = 51) and non-completers (n= 29), a number of chi-square tests and independent sample *t* tests were conducted. Completers and non-completers did not differ in age (p = .479), gender (p = .208), locations (p = .398), number of borderline personality disorder symptoms (p = .201), childhood high and low betrayal traumas (p = .662 and p = .888, respectively), adulthood high and low betrayal traumas (p = .946 and p = .111, respectively), number of secondary features of dissociative identity disorder (p = .779), the DES-T scores (p = .113) and the PHQ-9 scores (p = .127). On the SR-DDIS, they also did not differ in the alcohol or substance abuse histories (p = .174 to .587) or the DSM-5 dissociative disorder screening results (p = .219 to .938).

However, non-completers reported slightly but statistically significantly more post-traumatic stress disorder symptoms on the PCL-5 than the completers (M = 64.14, SD = 9.38

vs M = 57.37, SD = 13.84), t(76.467) = 2.595, p = .011. In other words, those who did not complete the web-based program appeared to suffer from slightly more post-traumatic stress disorder symptoms.

5.2 Intervention fidelity

According to the post-session forms that the participants voluntarily submitted after each session, the completers attended an average of 10.86 sessions (SD = 2.03); 44 participants (86.3%) completed at least 10 sessions of the web-based psychoeducation program.

To investigate whether the participants completed the program according to the planned sequences (i.e., one attends Session 2 only after one has attended Session 1), I further analyzed the submission dates of the post-session forms that they submitted.

As reported in Table 4, it was found that most participants attended the psychoeducation sessions according to the sequence, and there were only 7 incidents (less than 1.5%) of not following the program sequence in total. This could help confirm the intervention fidelity of the web-based psychoeducation program in this study.

Table 4. Number of days between each session according to the submission date of the post-session forms (*N* = 51)

Period	Number of submitted post-session forms@	Number of days between the two sessions		Number of incidents of not following the sequence (%) #
		Mean	SD	
From Session 1 to Session 2	48	5.04	4.60	1 (2.1%)
From Session 2 to Session 3	47	5.18	4.02	0 (0%)
From Session 3 to Session 4	42	4.58	2.56	0 (0%)
From Session 4 to Session 5	44	4.78	3.26	1 (2.3%)
From Session 5 to Session 6	44	4.25	3.98	0 (0%)
From Session 6 to Session 7	47	5.55	4.53	2 (4.3%)
From Session 7 to Session 8	46	4.81	4.07	1 (2.2%)
From Session 8 to Session 9	47	4.16	2.41	0 (0%)
From Session 9 to Session 10	45	4.49	2.92	1 (2.2%)
From Session 10 to Session 11	45	4.44	2.70	1 (2.2%)
From Session 12 to Session 12	43	3.74	2.28	0 (0%)
Total	498	/	/	7 (1.41%)

Notes.

*@ This indicates the number of participants submitting the post-session forms for **both** sessions (e.g., both Session 1 and Session 2) because this table focuses on the number of days between two given sessions.*

*# For example, a participant submitted the Session 2's Post-session Form **before** he/she submitted the Session 1's Post-session Form.*

5.3 Outcomes

In order to test the first to sixth hypotheses and explore if the participants would have statistically significant changes in their psychosocial and mental health variables after they received the web-based psychoeducation program, a number of within-subject analyses were conducted. The major findings are reported in Table 5.

It was found that, compared with the scores before the program (i.e., at the 2nd pretest), participants scored statistically significantly higher on the recovery measure (i.e., the RAS-DS-CR scores) after the program, and the effect size was medium (Cohen's d = -0.56). To further verify the validity of this improvement, I examined the changes during the "dry run" double pretest control period and during the two-month follow-up period. It was found that the RAS-DS-CR scores remained stable during the "dry run" period (n = 51) (M = 17.08; SD = 4.48 vs M = 16.53; SD = 4.05), t(50) = .907, p = .369, Cohen's d = 0.13, and that the improvements at posttest were also sustained in those who completed both the posttest and the follow-up survey (n = 38) (M = 19.42; SD = 5.21 vs M = 18.84; SD = 3.98), t(37) = .826, p = .414, Cohen's d = 0.13. These results further indicated that the RAS-DS-CR scores improved only after the program, and that the 1st hypothesis was supported.

In addition, participants also scored statistically significantly higher on the SISE after they received the web-based psychoeducation program, and the effect size was in the small-to-medium range (Cohen's d = -0.387). To further verify the validity of this improvement, I also examined the changes during the "dry run" control period and during the two-month follow-up period. It was found that the SISE scores remained unchanged during the "dry run" period (n = 51) (M = 3.57; SD = 1.58 vs M = 3.69; SD = 1.57), t(50) = -.527, p = .601, Cohen's d = -0.074. In addition, the improvements in self-esteem after the program was sustained in whose who had completed both the posttest and the follow-up survey (n = 38) (M = 4.34; SD = 2.10

vs M = 4.29; SD = 1.71), t(37) = .182, p = .857, Cohen's d = 0.029. Therefore, the data supported the 2nd hypothesis.

Given that the web-based psychoeducation program included contents for dispelling the stigma related to mental health problems, it was hypothesized that participants' levels of mental health stigma would decrease after the program. While there was a decreasing trend in the PPSS-SD scores after the program, no statistically significant changes could be observed (p = .084). However, the PPSS-SD scores did statistically significantly decrease in the female participants (n = 47), (M = 13.70; SD = 4.92 vs M = 12.45; SD = 5.20), t(46) = 2.247, p = .029, Cohen's d = 0.328; in this subsample, the PPSS-SD scores also remained unchanged during the double pretest control period (n = 47) (M = 13.98; SD = 5.15 vs M = 13.70; SD = 4.92), t(46) = .609, p = .545, Cohen's d = 0.089, and the improvements was sustained in whose who completed the posttest as well as the follow-up survey (n = 36) (M = 12.58; SD = 5.18 vs M = 12.78; SD = 5.00), t(35) = -.295, p = .769, Cohen's d = -0.049. These findings partly supported the 3rd hypothesis that participants would have improvements in mental health stigma after the program.

It was hypothesized that participants' comorbid post-traumatic and depressive symptoms would decrease after the program. While there was a decreasing trend in both PCL-5 and PHQ-9 scores after the program, no statistically significant changes could be observed (p = .079 and p = 228). The levels of comorbid symptoms remained stable but did not statistically significantly decrease after the program, and therefore the 4th hypothesis and the 5th hypothesis were not supported by the data.

It was hypothesized that the participants' levels of dissociation would remain stable after the program, and the paired sample t test results revealed that no statistically significant changes in the DES-T scores could be observed before and after the program (p = .575). Therefore, the 6th hypothesis was supported by the data.

Finally, to provide further evidence for the internal validity of the findings, I examined whether the CES-II scores would remain unchanged during the program. It was designed to be the nonequivalent dependent variable, and therefore, this theoretically irrelevant variable was expected to be stable after the program. It was found that, as expected, the CES-II scores did not change after the program ($M = 18.10$; $SD = 7.74$ vs $M = 19.16$; $SD = 7.53$), $t(50) = -1.367$, $p = .178$, Cohen's $d = -0.19$. This result could help reduce the plausibility of history, maturation, testing effects as alternative explanations for the improvements in recovery, self-esteem, and mental health stigma after the program.

Table 5. Mean differences in pretest and posttest scores on the outcome measures in the pilot evaluation study (*N* = 51)

Variables	Pretest		Posttest		Predictions	*t (df = 50)*	*p*	Cohen's *d*	Power	Results
	Mean	SD	Mean	SD						
RAS-DS-CR	16.53	4.05	19.20	5.24	Increase	-4.004	.000	-0.561	.821	Increased
SISE	3.69	1.57	4.43	1.99	Increase	-2.761	.008	-0.387	.555	Increased
PPSS-SD	13.65	4.77	12.65	5.36	Decrease	1.763	.084	0.247	.169	Remained stable#
PCL-5	53.29	15.37	49.98	18.51	Decrease	1.795	.079	0.251	.166	Remained stable
PHQ-9	20.20	8.50	18.86	8.41	Decrease	1.221	.228	0.171	.126	Remained stable
DES-T	42.79	22.81	43.95	24.25	Remain stable	-.565	.575	-0.079	.057	Remained stable

Notes.

RAS-DS-CR = the Clinical Recovery Subscale of the Recovery Assessment Scale – Domains and Stages; SISE = the single-item measure of self-esteem; PPSS-SD = the Self-deprecation subscale of the Perceived Psychiatric Stigma Scale; PCL-5 = the Post-traumatic Stress Disorder (PTSD) Checklist for DSM-5; PHQ-9 = the 9-item Patient Health Questionnaire; DES-T = the Dissociative Experiences Scale-Taxon

 # The decrease was statistically significant in the female participants (n = 47), (M = 13.70; SD = 4.92 vs M = 12.45; SD = 5.20), t(46) = 2.247, p = .029, Cohen's d = 0.328.

5.4 Satisfaction

The mean CSQ-I score for the completers was 3.18 (SD = .57) (possible range = 1 to 4) in this pilot evaluation study. Table 6 reports the frequency of each CSQ-I item as well as the four questions for collecting overall feedback from the participants. It appears that, on the CSQ-I, most of the participants were satisfied with the web-based psychoeducation program. Most of them also agreed or strongly agreed that the program could help them understand (94.1%) and manage (66.7%) their mental health problems and remain hopeful for recovery (78.4%) (see Table 6). Most of the participants (92.1%) agreed that the program was easy to use (see Table 6). These findings supported the 7th hypothesis (i.e., most participants [at least 60%] would be satisfied with the web-based program) as well.

A preliminary independent sample *t* test analysis indicated that participants from Taiwan (n = 24) scored higher on the CSQ-I than participants from Hong Kong (n = 27) (M = 26.88; SD = 4.73 vs M = 24.19; SD = 4.05), t (49) = 2.188, p = .033.

In addition, efforts were made to explore the possible reasons for withdrawing from the web-based program and not completing the posttest. Email linking to a single item questioning about the possible reasons for being absent was sent to all participants who attended fewer than seven sessions of the web-based program. However, even though multiple reminders were sent, only four participants responded. One participant reported that she did not have time to participate. One participant reported that the contents of the web-based program were boring and made her forget about the web-based program. One participant reported that the contents of the web-based program had been learned before. Another participant reported that she had been hospitalized and therefore could not attend the program. The reasons for dropping out for other non-completers remained unknown.

Table 6. Satisfaction with the web-based psychoeducation program for people with pathological dissociation in the pilot evaluation study (*N* = 51)

The Client Satisfaction Questionnaire adapted to Internet-based interventions (CSQ-I)	**Does not apply to me (%)**	**Does rather not apply to me (%)**	**Does partly apply to me (%)**	**Does totally apply to me (%)**
1. The program I attended was of high quality	2.0	11.8	56.9	29.4
2. I received the kind of program I wanted	0	13.7	54.9	31.4
3. The program has met my needs	0	19.6	56.9	23.5
4. I would recommend this program to a friend, if he or she were in need of similar help	0	5.9	51.0	43.1
5. I am satisfied with the amount of help I received through the program	2.0	9.8	54.9	33.3
6. The program helped me deal with my problems more effectively	3.9	17.6	54.9	23.5
7. In an overall, general sense, I am satisfied with the program	0	11.8	52.9	35.3

8. I would come back to such a program if I were to seek help again	0	7.8	52.9	39.2

Overall feedback	**Strongly disagree (%)**	**Disagree (%)**	**Agree (%)**	**Strongly agree (%)**
1. Do you think the web-based psychoeducation for pathological dissociation (WPPD) program can help you understand your conditions?	0	5.9	54.9	39.2
2. Do you think the WPPD program can help you manage your conditions?	3.9	29.4	56.9	9.8
3. Do you think the WPPD program can help you remain hopeful for recovery?	2.0	19.6	60.8	17.6
4. Do you think the WPPD program is easy-to-use?	2.0	5.9	62.7	29.4

In order to understand the experience of the participants in this web-based psychoeducation program, further descriptive analysis was conducted with the data collected using post-session forms. Table 7 reports the descriptive data of the post-session forms of participants who completed the web-based program.

Regarding whether the contents were relevant to their experience (Question 1), the following topics had highest mean scores: “Basic self-help skills”, “Trauma affects us in many ways, but is reversible”, “Common reactions to trauma and stress”, and “Trauma recovery and integration of the personality”.

Regarding whether the contents were new to them (Question 2), some of the less commonly learned topics include the following: “Trauma recovery and integration of the personality”, “Common questions about trauma and dissociation”, and “Interpersonal issues in trauma and recovery”.

Regarding whether the contents were helpful to them (Question 3), “Trauma recovery and integration of the personality” received the highest mean score.

In summary, the data of the post-session forms indicated that all sessions were largely relevant and helpful to them. Session 8, Session 9, and Session 10 appeared to be the most helpful to them. Primarily focused on the concepts of dissociation and integration of the personality, these sessions answered some frequently asked questions, and discussed how to cope with dissociative reactions in real life situations.

Table 7. Descriptive data of the post-session forms (n = 51)

Session	Topic	Number of submitted forms (i.e., attendance)	Q1: Does the content in this chapter relate to your experience?		Q2: Have you learned this content before?		Q3: Do you think the content in this session is helpful to you?	
			Mean	SD	Mean	SD	Mean	SD
1	Introduction – How to use this book	49	7.76	1.83	5.74	2.62	6.82	1.95
2	Safety is the primary consideration	48	7.71	1.95	5.69	2.72	7.50	2.04
3	Basic self-help skills	50	8.36	1.64	6.12	2.54	8.14	2.10
4	Trauma affects us in many ways, but is reversible	43	8.44	1.91	5.98	2.64	7.79	2.27
5	Common reactions to trauma and stress	44	8.48	2.04	5.50	2.47	8.21	1.76
6	Trauma-related mental disorders: What do these labels mean?	47	8.02	2.04	5.49	2.75	8.11	2.00
7	Irrational thoughts	47	7.89	1.88	5.53	2.66	8.02	1.91

8	Trauma recovery and integration of the personality	46	8.46	1.82	4.94	2.35	8.61	1.29
9	Common questions about trauma and dissociation	46	7.65	2.12	4.91	2.60	8.30	1.90
10	Coping with dissociative reactions	46	7.96	1.92	5.28	2.62	8.39	1.54
11	Interpersonal issues in trauma and recovery	46	7.48	2.35	4.54	2.46	8.04	1.65
12	Living well during and after trauma recovery	42	8.14	1.46	6.24	2.62	7.88	1.88

Notes:

Possible range for each item: 1 = strongly disagree; 10 = strongly agree

5.5 Correlates of the changes after the web-based psychoeducation program

The change score for each of the six outcome measures was calculated. The descriptive data are reported in Table 8.

This table shows the ranges and means of the change scores. For the RAS-DS-CR and the SISE, positive change scores indicate improvements. For other outcome measures, negative change scores indicate improvements.

Table 8. Changes in the six outcome measures after the web-based psychoeducation program (*N* = 51)

Variables	Range	Mean	SD	Descriptions
RAS-DS-CR	-9.00 to 14.00	2.67	4.76	Total score = 28. Positive scores indicate improvements.
SISE	-4.00 to 6.00	0.75	1.93	Total score = 10. Positive scores indicate improvements.
PPSS-SD	-11.00 to 10.00	-1.00	4.05	Total score = 24. Negative scores indicate improvements.
PCL-5	-39.00 to 28.00	-3.31	13.19	Total score = 80. Negative scores indicate improvements.
PHQ-9	-22.00 to 20.00	-1.33	7.80	Total score = 27. Negative scores indicate improvements.
DES-T	-46.25 to 36.25	1.15	14.57	Total score = 100. Negative scores indicate improvements.

Notes.

Change score = Posttest – 2nd pretest

RAS-DS-CR = the Clinical Recovery Subscale of the Recovery Assessment Scale – Domains and Stages; SISE = the single-item measure of self-esteem; PPSS-SD = the Self-deprecation subscale of the Perceived Psychiatric Stigma Scale; PCL-5 = the Post-traumatic Stress Disorder (PTSD) Checklist for DSM-5; PHQ-9 = the 9-item Patient Health Questionnaire; DES-T = the Dissociative Experiences Scale

In order to understand what factor(s) would be associated with the psychosocial and mental health improvements after this web-based psychoeducation program and to learn about what works with who, some exploratory analysis was conducted to explore the correlates of the changes in the six outcome measures (i.e., RAS-DS-CR, SISE, PPSS-SD, PCL-5, PHQ-9 and DES-T) (from the 2nd pretest to the posttest) in this program using independent sample *t* test and chi-square analysis.

The results indicated that changes in these six outcome measures were not associated with the following variables: locations (i.e., whether they were from Hong Kong or Taiwan), age, baseline symptom levels (i.e., number of BPD symptoms, the DES-T scores, the PCL-5 scores, the PHQ-9 scores), baseline self-esteem (the SISE scores), and baseline medication treatment (see Table 9 and Table 10).

Nevertheless, it was found that the number of childhood traumas was positively correlated with the changes in the RAS-DS-CR scores ($r = .281$, $p = .046$) and negatively correlated with the changes in the PHQ-9 scores ($r = -.317$, $p = .024$) (see Table 9). In other words, participants who had encountered more traumatic events during childhood achieved better improvements in symptom management (increase in the RAS-DS-CR scores) and depressive symptoms (decrease in the PHQ-9 scores) after they received the web-based program.

In addition, it was found that participants who received psychological treatment for PTSD/dissociation at baseline before the web-based program had higher change scores on the RAS-DS-CR ($p = .015$) than those who did not receive PTSD/dissociation treatment at baseline (see Table 10). It means that those who had prior specific psychological treatment may benefit more from the web-based program in terms of symptom management. However, as will be reported later, psychological treatment for PTSD/dissociation during the web-based program was not associated with higher change scores on the RAS-DS-CR.

Table 9. Associations of baseline variables with the changes in the outcome measures after the web-based psychoeducation program (*N* = 51)

Baseline variables:	Age	DES-T	PCL-5	PHQ-9	SISE	Number of BPD symptoms	Number of childhood traumas	Number of adulthood traumas
Changes in the following variables								
1. RAS-SD-CR	-.164	-.176	-.038	.040	-.073	-.185	.281*	-.014
2. SISE	-.066	.101	.137	.021	-.015	.068	.238	.167
3. PPSS-SD	.122	.031	-.017	-.029	.082	.106	.058	.052
4. PCL-5	-.038	-.078	-.054	.072	-.151	.073	-.232	-.120
5. PHQ-9	.065	.047	-.120	-.048	-.149	.196	-.317*	-.231
6. DES-T	.054	-.033	-.129	-.002	-.037	.208	-.010	-.056

* $p < .05$ ** $p < .01$

Notes.

Change score = Posttest – 2nd pretest

RAS-DS-CR = the Clinical Recovery Subscale of the Recovery Assessment Scale – Domains and Stages; SISE = the single-item measure of self-esteem; PPSS-SD = the Self-deprecation subscale of the Perceived Psychiatric Stigma Scale; PCL-5 = the Post-traumatic Stress Disorder (PTSD) Checklist for DSM-5; PHQ-9 = the 9-item Patient Health Questionnaire; DES-T = the Dissociative Experiences Scale-Taxon. BPD = border personality disorder.

Table 10. Associations of baseline variables with the changes in the outcome measures after the web-based psychoeducation program (*N* = 51)

Baseline variables: Changes in the following variables	Location: Hong Kong (n = 27) vs Taiwan (n = 24) Mean (SD)	t (df = 49)	Employment: Employment (n = 29) vs Unemployment (n = 22) Mean (SD)	t (df = 49)	Medication treatment at the time of screening: Yes (n = 39) vs No (n = 12) Mean (SD)	t (df = 49)	Psychological treatment for PTSD/dissociation at the time of screening: Yes (n = 36) vs No (n = 15) Mean (SD)	t (df = 49)
1. RAS-SD-CR	1.89 (4.09) vs 3.54 (5.36))	-1.249	2.83 (4.12) vs 2.45 (5.58)	.275	2.54 (4.03) vs 3.08 (6.82)	-.263#	3.69 (4.74) vs 0.200 (3.91)	2.514*
2. SISE	0.44 (1.71) vs 1.08 (2.12))	-1.187	0.83 (2.17) vs 0.64 (1.59)	.348	0.53 (1.89) vs 1.42 (1.98)	-1.393	0.86 (1.76) vs 0.47 (2.33)	.662
3. PPSS-SD	-0.52 (4.32) vs -1.54 (3.74)	.899	-1.03 (4.74) vs -0.95 (3.01)	-.069	-1.02 (4.13) vs -0.92 (3.96)	-.081	-1.64 (3.63) vs 0.53 (4.69)	-1.783

4. PCL-5	-2.93 (11.0) vs -3.75 (15.5)	.221	-4.90 (14.7) vs -1.23 (10.8)	-.984	-3.74 (13.84) vs -1.92 (5.73)	-.416	-4.50 (13.5) vs -0.47 (12.4)	-.995
5. PHQ-9	0.74 (6.08) vs -2.92 (9.25)	1.379	-2.0 (9.51) vs -.45 (4.77)	-.758	3.04 (11.7) vs -2.42 (5.73)	.546	-0.75 (8.19) vs -2.73 (6.82)	.825
6. DES-T	0.97 (12.3) vs 1.35 (17.0)	-.093	-1.08 (15.5) vs 4.09 (13.0)	-1.262	3.04 (11.7) vs -5.00 (20.9)	1.704	-0.56 (14.2) vs 5.25 (15.1)	-1.306

[*] $p < .05$ [**] $p < .01$

Notes.

[#] df = 13.451

Change score = Posttest – 2nd pretest

RAS-DS-CR = the Clinical Recovery Subscale of the Recovery Assessment Scale – Domains and Stages; SISE = the single-item measure of self-esteem; PPSS-SD = the Self-deprecation subscale of the Perceived Psychiatric Stigma Scale; PCL-5 = the Post-traumatic Stress Disorder (PTSD) Checklist for DSM-5; PHQ-9 = the 9-item Patient Health Questionnaire; DES-T = the Dissociative Experiences Scale-Taxon.

Additional findings can be observed when I examined the relationship between the post-intervention satisfaction levels and the changes in the outcome measures (see Table 11).

In particular, post-intervention satisfaction levels as measured with the CSQ-I scores were negatively correlated with the changes in the PCL-5 scores ($r = -.406$, $p = .003$) as well as the changes in the PHQ-9 scores ($r = -.327$, $p = .019$).

That is to say, higher levels of satisfaction with the web-based psychoeducation program were associated with better improvements in post-traumatic and depressive symptoms.

Table 11. Pearson correlations between post-intervention satisfaction levels and the changes in the outcome measures after the web-based psychoeducation program (*N* = 51)

Changes in the following variables	The program can help you understand your conditions?	The program can help you manage your conditions?	The program can help you remain hopeful for recovery?	The program is easy-to-use?	CSQ-I Total score
1. RAS-SD-CR	.233	.202	.218	.175	.033
2. SISE	-.153	.066	.004	-.007	-.105
3. PPSS-SD	-.075	-.071	.007	-.101	-.181
4. PCL-5	-.355*	-.472**	-.442**	-.429**	-.406**
5. PHQ-9	-.224	-.187	-.239	-.319*	-.327*
6. DES-T	-.267	-.220	-.201	-.204	-.095

* $p < .05$ ** $p < .01$

Notes.

Change score = Posttest – 2nd pretest

RAS-DS-CR = the Clinical Recovery Subscale of the Recovery Assessment Scale – Domains and Stages; SISE = the single-item measure of self-esteem; PPSS-SD = the Self-deprecation subscale of the Perceived Psychiatric Stigma Scale; PCL-5 = the Post-traumatic Stress Disorder (PTSD) Checklist for DSM-5; PHQ-9 = the 9-item Patient Health Questionnaire; DES-T = the Dissociative Experiences Scale-Taxon. CSQ-I = the Satisfaction Questionnaire adapted to Internet-based interventions.

In addition, participants were asked if they were receiving treatment in the past two months at each time point. According to the self-report data at posttest, during the web-based program, 39 participants (76.5%) were receiving at least some kind of medication treatment, and 32 participants (62.7%) were receiving at least some kind of psychotherapy for PTSD and/or dissociation.

Independent sample *t* test analysis indicated no statistically significant differences in the changes in the outcome measures between participants who were receiving medication treatment (n = 39) and participants who were not receiving medication treatment (n = 12) for five out of six outcome measures.

In fact, participants who were receiving medication treatment (n = 39) had statistically significantly lower change scores in the SISE than participants who were not receiving medication treatment (n = 12) (M = 0.41; SD = 1.92 vs M = 1.83; SD = 1.59), t(49) = -2.334, p = .024.

These preliminary findings imply that those who were not receiving medication treatment had even better improvements in self-esteem after the web-based program. In addition, usage of psychotherapy service for PTSD/dissociation during the web-based psychoeducation program was not associated with the changes in the six outcome measures too.

Because of the small number of male participants (n = 4) in this program, no gender differences can be explored. However, as mentioned, while no statistically significant reduction in the level of mental health stigma can be observed in the entire sample (n = 51), the improvements were in fact statistically significant in the female sample (n = 47) (see Table 5).

Table 12. Pearson correlations among the changes in the outcome measures after the web-based program (*N* = 51)

Changes in the following variables	1	2	3	4	5	6
1. RAS-SD-CR	1					
2. SISE	.135	1				
3. PPSS-SD	-.053	-.064	1			
4. PCL-5	-.218	-.255	.279*	1		
5. PHQ-9	-.462**	-.225	.123	.412**	1	
6. DES-T	-.449**	-.020	.203	.310*	.231	1

* $p < .05$ ** $p < .01$

Notes.

Change score = Posttest – 2nd pretest

RAS-DS-CR = the Clinical Recovery Subscale of the Recovery Assessment Scale – Domains and Stages; SISE = the single-item measure of self-esteem; PPSS-SD = the Self-deprecation subscale of the Perceived Psychiatric Stigma Scale; PCL-5 = the Post-traumatic Stress Disorder (PTSD) Checklist for DSM-5; PHQ-9 = the 9-item Patient Health Questionnaire; DES-T = the Dissociative Experiences Scale-Taxon

The relationships among the changes in the six outcome measures were also explored. The findings are reported in Table 12.

It was found that, after participants received the web-based psychoeducation program, the improvements in symptom management were closely related to the decreases in depressive and dissociative symptoms, and that decreases in PTSD symptoms were also closely related to decreases in the depressive symptoms. However, no statistically significant relationships can be found among the changes in measures of symptom management, self-esteem, and mental health stigma.

5.6 Qualitative feedback collected using a structured feedback form

As mentioned, a structured open-ended feedback form was used to collect qualitive feedback from the participants after the web-based psychoeducation program. The feedback form was endorsed by the supervisor of the project, who is experienced in conducting qualitative research. The feedback form was designed to explore the subjective experience of the participants in this program and gather qualitative feedback which could hardly be collected using standardized quantitative assessment tools; the primary goal was to collect feedback that could inform further development and modifications of the web-based program in the future. Therefore, the feedback form consisted of the following six questions:

1. Can you please share: What are the most impressive things you have experienced in this program? (in Chinese: 請您簡單分享一下，您在這個計劃中，有哪些印象深刻的部分嗎？)

2. Can you please share: In what aspects could the program be useful to you? How could this help you? (in Chinese: 請您分享一下，這個計劃在哪些方面對您有用？這個計劃如何幫助到您？)

3. In your opinion, what are the good parts or strengths of this program? (in Chinese: 您認為，這個計劃有什麼好的地方，或者強項？)

4. In your opinion, what are the bad parts or limitations of this program? (in Chinese: 您認為，這個計劃有什麼不好的地方，或者不足之處？)

5. In your opinion, how can this program be further improved? Do you have any suggestions? (in Chinese: 您認為，這個計劃可以怎樣進一步改善？您有什麼建議嗎？)

6. Finally, is there anything that have not been covered in the above questions, but you would like to share with us / tell us? (in Chinese: 最後，您有什麼想分享/告訴我們，是以上問題未有涵蓋的？如有，可分享一下嗎？)

A total of n = 24 participants submitted their feedback after the program.

A thematic analysis was conducted to identify themes related to the strengths and weaknesses/limitations of the web-based psychoeducation program from the qualitative data. There were 153 utterances in total. Given the objective of this analysis (i.e., to inform the improvements of the web-based program), each utterance was tagged with one of the following themes: 1) strengths/helpfulness, 2) limitations/suggestions, or 3) not applicable (N/A). For the two themes "strengths/helpfulness" and "limitations/suggestions", there were two specific subthemes: a) contents, or b) formats.

Strengths/helpfulness in terms of the contents

Regarding the strengths/helpfulness in terms of the contents (i.e., 1a), a total of 56 utterances (36.60%) were tagged with this specific subtheme.

Consistent with the quantitative feedback, many participants mentioned that the web-based psychoeducation program could help them better understand and accept their mental health conditions. Some examples included the following:

"Made me better understand that I can recover." (in Chinese: "讓我能夠更了解自己係可以復元。") (N8)

"Helped me understand what dissociation means, made it clear for me to know when I am dissociating." (in Chinese: "幫助我，更多認識何謂解離，讓我看清楚自己正處於解離的樣貌。") (N13)

"Helped me discover that I have other personalities, and helped me realize how to communicate with other personalities." (in Chinese: "幫助到我發現自己原來有其他嘅人格，應該點同其他人格溝通") (N24)

"There are very detailed explanations about dissociation and trauma." (in Chinese: "關於解離，創傷復原方面有好詳細嘅解析。") (N25)

"One thing that's quite clear to me is that it explains the phenomena in detail, and introduces some more positive views to take on while handling DID and trauma. it's helpful for those around me who don't speak English to understand what's going on with me in better terms than I can explain in Chinese." (originally in English) (N36)

"It certainly makes everything very clear and informed some things i didn't know about" (originally in English) (N37)

"It's a great way for people to understand dissociation and its related issues" (originally in English) (N39)

"Didn't think that my experiences are related to the course, I only realized only after participating in the course." (in Chinese: "沒有想過原來自己的經歷和課程有所連結，這都是參與課程後才知道的事情。") (N60)

"Some terms made me feel understood when I was reading; it was not like reading a textbook or health information, or listening to someone who doesn't really know about the life of a sick person." (in Chinese: "有些語句讓我在讀的時候有感覺被理解，而不是在看教科書、衛教資料，或是聽一個完全不知道生病的人到底過著什麼樣的生活的人說很空泛的話。") (N61)

"Better understand my situation, accept my dissociative conditions." (in Chinese: "更了解自己的情況，接納自己的解離狀態。") (N82)

"A very good program, because I did not know too much about 'dissociation' in the past." (in Chinese: "很好的計劃，因為我本身對「解離」狀態並不太了解。") (N87)

"During the early time when I was diagnosed with PTSD, I had many dissociative symptoms (at that time, I did not know about dissociation), and even DID [symptoms]. I could not accept them, and I did not know how to express/explain these

experiences when I was receiving counselling. In this program, each session enabled me to have more understanding about trauma and dissociative states, and made me start being able to explore them in my counselling sessions." (in Chinese: "當初患上 PTSD，出現很多解離徵狀(當時並不知是解離) ，甚至是 DID，難於接受，亦不知如何在輔導中表達。在計劃中，每節內容讓我對自己的創傷、解離狀態有更多理解及明白，開始能於輔導中探討...") (N95)

"I always feel like nobody could understand me. I feel lonely and worried. Thank you so much for sharing your knowledge." (in Chinese: "經常都覺得沒有人明白，既孤單又擔憂，謝謝你分享所知所學。") (N143)

In addition, it was commonly mentioned that the program could enable them to learn some helpful coping methods. For example:

"(The web-based psychoeducation program) helped me recognize that I have other personalities, and helped me learn how to communicate with other personalities." (in Chinese: "幫助到我發現自己原來有其他嘅人格，應該點同其他人格溝通") (N24)

"I think, the grounding techniques… (the method) asking myself to assign tasks for myself to observe the environment when I feel distressed … are helpful to me." (in Chinese: "我覺得那個 grounding 的方法，在很不舒服的時候叫 assign task 給自己去觀察數出環境的客觀資訊對我有幫忙。") (N62)

"(I) learned different irrational thoughts and the grounding techniques." (in Chinese: "認識了不同的非理性想法和 grounding 技巧。") (N69)

"(I) learned some self-help skills; would not act like in the past and not going on… In particular, I started understanding why I have certain behaviors." (in Chinese:

“學會一些自助技巧，而不會再像以前一直走不不去. 尤其是我終於理解我的一些行為為什麼會出現了。”) (N89)

“Some very particular ways for me to stay calm and stay focused on myself - I read some other self-help books yet this is more specific than what I have read before.” (originally in English) (N100)

“(The method) ‘be a scientist’: using simple words to encourage us to look for evidence, to prevent irrational thoughts.” (in Chinese: “成為科學家: 其實用一些很簡單生動的言詞去鼓勵我們求証, 以對抗非理性思想。”) (N106)

“Sometimes I would make more mistakes when I feel anxious, it is much better to know that I can use the grounding techniques. ” (in Chinese: “有時候比較焦慮緊張時會犯比較多錯，想到用定位方式就會好很多。”) (N113)

“It allows me to make sense to my situation and makes very specific, good and simple self-help tools. The follow-up questions also allow me to reflect and make some change to my coping without pressure. "Be friendly" to your team member is so new to me but probably the foremost thing I have to do.” (originally in English) (N131)

“The methods of coping with dissociative reactions… (I have) learned more about how to help myself.” (in Chinese: “應對解離反應，學多了幫助自己的方法。”) (N138)

Strengths/helpfulness in terms of the formats

A total of 13 utterances (8.50%) were tagged with the 1b subtheme “strengths/helpfulness in terms of the formats”. Many of them appreciated the flexibility of the program, which would not have been possible without the use of information and communication technology. Some of the examples included the following:

"Convenient, flexible. Both audio and text versions are provided – I can choose either one of them." (in Chinese: "方便有彈性，提供語音版及文字版，可二選一") (N84)

"Not much content in each section is a great help to me, because I cannot handle too much information and it is difficult for me to read when I am not in a good condition (and I am a Taiwanese and therefore I am not able to understand Cantonese). There are not too many words, and it makes me feel that it is feasible for me to read the information every week and it motivates me to continue." (in Chinese: "每一節的內容都不多對我是很大的幫助，因為精神狀況不好的時候真的沒辦法處理太多資訊，閱讀對我會很吃力(然後我是台灣人聽不懂廣東話)。文字少可以幫助我覺得每週去讀資料是可行的，讓我有動機持續下去。") (N65)

"'It is easy for me to listen at any time." (in Chinese: "方便隨時聽") (N78)

'The arrangement that one section in five days is good. The contents are very attractive. Each time, I read them as soon as possible, and look forward to the next session once I received the email." (in Chinese: "每5 天一節內容安排很好，內容很吸引，每次收到電郵後會盡快閱讀，而且很期待下一節。") (N99)

"It's good to have both pdf and video version - I usually do in office with pdf. The use of language is clear and easy to understand." (originally in English) (N102)

"The chapters are simple, precise but sophisticated. And I don't have pressure face-to-face with the helping profession. it is also time-efficient." (originally in English) (N132)

Consistent with what we can find from the quantitative feedback, the participants also appreciated the readability of the materials and mentioned that the program was easy-to-use. For example:

"The words are simple, and it is clear to understand." (in Chinese: *"簡短的文字，作充份的表達。")* *(N14)*

"Easy to read." (in Chinese: *"簡單閱讀")* *(N31)*

"I can read by myself, and the words are simple." (in Chinese: *"自行閱讀, 當中文字都算簡單")* *(N52)*

"The words are simple for me to read, and each article is not too long." (in Chinese: *"文字都算簡單, 每篇不算太長")* *(N53)*

Limitations/suggestions in terms of the contents

A total of 22 utterances (14.38%) were about the limitations/suggestions in terms of the contents of the web-based psychoeducation program.

Many participants suggested that the program could be more interactive or include some peer-to-peer sharing activities so that the participants can share their experiences or what they have learned with other program users. For example:

"It would be better if there is a professional person who can provide email consultation, because only reading without a chance to discuss may lead to confusion about the symptoms." (in Chinese: *"如果有個專業人士可以郵件諮詢下，會比較好啲，因為單純睇文字，無人交流，就單純啲症狀對號入座")* *(N26)*

"(The program) can have more interaction and sharing." (in Chinese: *"可以多加互動交流")* *(N73)*

"Maybe a meet-up session for sharing of what we have acquired?" (originally in English) *(N104)*

Some participants further suggested that additional professional support (e.g., email consolation service, therapist-led skills training activities) could be provided so that they would have a chance to ask some specific or follow-up questions and practice what they have learned

from the program (e.g., emotion regulation exercises) after they receive the psychoeducation materials. Some examples of their comments included the following:

"(The program) can be run with the assistance of the actual support of an experienced psychiatrist or social worker." (in Chinese: "可輔以有經驗的心理醫師或社工的實際協助") (N22)

"It would be great if the program could provide simple consultation through email." (in Chinese: "如果可以加設一個郵件簡單諮詢就好啦") (N27)

"Besides, it might be much informative and therapeutic if a helping profession could do 1-2 times follow up so that I could make sure I don't interpret the concepts wrong." (originally in English) (N134)

"The benefits would be much larger if there are interactive sessions, or if the program is run by a therapist with practice." (in Chinese: "如果增設互動環節，或有治療師帶領實踐，果效會大些") (N141)

"(The program) can look for collaborations with organizations/psychiatrists/therapists/counsellors, to lead people with dissociative symptoms to further understand ourselves, to practice the skills/methods that the book has introduced, and then further evaluate and improve…"(in Chinese: "找機構/精神科醫生/治療師/輔導員合作，帶領有解離症狀的朋友更深入認識自己，實踐書中所建議的方法，再作檢討和改進。") (N142)

Some participants commented that program could be improved if the contents could be further enriched. These comments also provided suggestions that may help modify the program in the future. For example:

"The information is not enough." (in Chinese: "資訊太少") (N32)

"I think it might help if the two post-session questions (no need to have additional questions) can be some reflective exercises related to the contents, but not those questions like quizzes." (in Chinese: "我有想過如果課後的兩題(題目不要變多不然就失去本質)改成跟內容有一些關係但不是考試那種有對錯的，而是反思的題目或許有些幫助？") (N67)

"Suggestions and directions should be provided in the exercises.""建議練習題給予建議及方向" (N92)

"Add some case examples." (in Chinese: "加入案例") (N98)

"I hope that (the contents) can be more in-depth… such as the classifications and differences of different psychosomatic disorders🤔." (in Chinese: "希望能有再深入一點的，像是不同的身心病的分類、他們的差異🤔吧") (N115)

"The introduction in the first to sixth sessions is too long. The contents could be richer if it comes to the seventh session earlier." (in Chinese: "第一至六集的'入門'介紹過長，如能儘快到第七集或以後，內容自然更豐富。") (N148)

Limitations/suggestions in terms of the formats

A total of 18 utterances (11.76%) were tagged with this subtheme, which was about the limitations/suggestions in terms of the formats of the program. For example, some participants pointed out the problems of typos and the limitations of the Cantonese Text-to-Speech technology (e.g., mispronunciation) of the program:

"Sometimes there are errors in the text." (in Chinese: "有時文字有錯") (N4)

"I suggest that (the software) should not read out the text word by word, as there may be some mispronunciations because some words have multiple ways to pronounce (in Cantonese)." (in Chinese: "建議唔好見字就照讀，因為有些文字係多個讀音。") (N10)

"The bad thing is that it reads out the text word by word." (in Chinese: *"不好地方就是見字讀字")* *(N9)*

"The text has some typos/repeated words." (in Chinese: *"書本有錯別字/重複字")* *(N74)*

"The robot on YouTube reads out the words without emotions, and sometimes there are mispronunciations, it makes users refuse to use." (in Chinese: *"YOUTUBE 內容由機械人來唸十分冷冰，而且有唸錯字詞讀音的情況，令使用者產生抗拒。")* *(N147)*

"The impressive one is that it reads out the text word by word and ignores the fact that the word may have other pronunciations (in Cantonese)." (in Chinese: *"最深刻就是見字就照讀，不會理會是否有另一個讀音。")* *(N7)*

Some participants suggested that more explanations or illustrations could be provided:

"The videos can be more attractive, and graphics can be added together with the text." (in Chinese: *"影片可以生動一點，文字方面可以有圖片輔助")* *(N6)*

"Those breathing exercises can be provided together with demonstration videos." (in Chinese: *"其實一些呼吸練習，是可以有示範影片 。")* *(N16)*

"Hope that there are some simple figures and tables (for clarifying the concepts) 😂*."* (in Chinese: *"希望能有簡易圖表分類*😂*")* *(N116)*

"Some sessions in the last part has many English abbreviations, which can be hard to understand… (I) hope that there could be notes for the meanings of the abbreviations." (in Chinese: *"最後面某一節提到好多英文縮寫，都是不太懂的，希望可以註記是什麼症狀的縮寫")* *(N112)*

Even though participants were allowed to read and re-read the materials in this 60-day web-based program and that the Google Drive-based materials were removed only after the program, some participants commented that they would appreciate if they could have more time to learn about and review the psychoeducation contents in the program. For example:

> *"Maybe when there are too many contents, when (I am) busy, I could not complete one session within two days."* (in Chinese: *"或内容太多，忙的時候不能兩天內完成一節")* (N5)
>
> *"The Google Links were removed too quickly, and it is needed to complete within a short period… this is quite difficult."* (in Chinese: *"GOOGLE LINK 太快移除, 而且要短時間內完成, 有一定困難")* (N54)
>
> *"If possible, there could be more time for us to re-read and reflect. (N103)*
>
> *"I don't like the time pressure…"* (originally in English) (N133)

CHAPTER 6: DISCUSSION AND CONCLUSION

People with pathological dissociation are an underserved population. Considering the existing challenges in providing timely and suitable psychosocial support for them, this project aimed to evaluate the use of online methods to support this group of service users.

For this purpose, this project developed a brief, adjunctive, trauma-informed, dissociation-focused web-based psychoeducation program that aims to enable users to (1) understand their post-traumatic and dissociative reactions, (2) learn healthy coping strategies to manage their mental health problems, and (3) remain hopeful for recovery. As have been emphasized in previous chapters, this web-based program was designed to facilitate recovery (e.g., improving symptom management and reducing mental health-related stigma) and stabilize the comorbid conditions (e.g., post-traumatic and depressive symptoms) but not to fully treat the disorders or to replace in-depth psychotherapy. The development and contents of the web-based psychoeducation program were described in Chapter 3.

After the web-based program was developed, a pilot evaluation study was conducted. In order to help improve the web-based program and inform the evaluation design and increase the likelihood of success of the full evaluation study in the future, the pilot evaluation study mainly focused on the acceptability of the program; if the program was not even acceptable to people with pathological dissociation, it would be difficult to successfully deliver the intervention or achieve considerable benefits (Sekhon et al., 2017). This pilot evaluation study was exploratory in nature given the lack of prior relevant information available in the literature – this was the first study using online methods to support people with pathological dissociation at the time of developing and undertaking this project. Therefore, in addition to examining the acceptability of the web-based program, the study also explored its potential benefits and possible limitations. The methodology of the pilot evaluation study was discussed in Chapter 4 and the results of the pilot evaluation were reported in the previous chapter (i.e., Chapter 5).

In this chapter, the discussion will first focus on the strengths and limitations of the pilot evaluation study, the needs for further evaluation, as well as the interpretation and significance of the findings. After that, this chapter will discuss the implications of the findings for the application and future development of the web-based program. Finally, implications for the use of ICT to improve and facilitate different aspects of mental health services in general will also be discussed given that this is an increasingly important issue in the digital age, especially in the post-COVID-19 era.

6.1 Strengths and limitations of the pilot evaluation study

6.1.1 Strengths and limitations

Before the results of the pilot evaluation study can be carefully and accurately interpreted, the strengths and limitations of the study should be fully acknowledged. In particular, if the limitations of the study are ignored, the conclusions that we make may be misleading or the benefits of the web-based program may be overestimated. There are a number of limitations in the pilot evaluation study.

First, the sample size was small and was not representative. Without a larger and a more representative sample, which can be employed in future studies, and without replications, it is not possible to conclude whether the findings could be generalized from this study to other people with pathological dissociation. For example, the participants in this sample were treatment seekers who at least realized that they were having some dissociative symptoms; therefore, the findings may not be generalized to the entire clinical population because dissociation in the clinical settings usually remain unrecognized and many people with dissociative symptoms may not even know about their own dissociative symptoms (International Society for the Study of Trauma and Dissociation, 2011; Şar, 2011). Future studies may try to proactively screen for psychiatric patients who have unrecognized dissociative symptoms (rather than recruit participants who have already known about their dissociative symptoms) and evaluate whether the web-based program would be acceptable and beneficial to them as well.

Second, in terms of the representativeness of the sample, it should be noted that most of the participants were female (n = 71, 88.8%) in this study. While dissociative disorders may be more commonly recognized in females in clinical settings, epidemiological studies showed that dissociation can also be common among male participants and no gender differences can be found in certain studies (Şar, 2011; Spitzer et al., 2003). In fact, female-predominant

samples and female-only samples are fairly common in previous evaluation studies in the dissociation literature too (e.g., Coons & Bowman, 2001; Ellason & Ross, 1997; Ross & Burns, 2007). There are many possible reasons for this phenomenon – for example, women may be more active in some research settings (Smith, 2008), and women with dissociation is more commonly recognized in clinical settings (Steinberg & Schnall, 2000). Future studies need to further explore the possible reasons behind this phenomenon. In addition, future studies may also further evaluate this web-based program, as well as other dissociation interventions, in male participants with pathological dissociation.

Third, in this study, the web-based program was evaluated in a Chinese-speaking sample. This is in fact one of the unique features and significances of this project, which will be further discussed. However, the findings may not be generalizable to other language and cultural contexts. Therefore, it is important to further evaluate the acceptability and potential benefits of the web-based program in other cultural and language contexts.

Fourth, this study suffered from the limitation that it only relied on self-report data, although the measures were reliable and valid. Without structured diagnostic interviews or clinical data based on medical record (e.g., chart review), the diagnostic backgrounds of the participants could not be confirmed (e.g., what were the clinical diagnoses of the participants, how many of them fully met the diagnostic criteria for a dissociative disorder). Moreover, it is often challenging to assess pathological dissociation (Dell, 2009; International Society for the Study of Trauma and Dissociation, 2011; Şar, 2014); even structured interviews, which are the gold standard in psychiatric assessment, are not always perfect, let alone self-report measures. Therefore, the limitation that this project relied on self-report measure to assess pathological dissociation should be acknowledged. In addition, information regarding participants' usage of social and healthcare services (e.g., whether they were receiving psychotherapy or medication treatments) could only be analyzed according to participants' self-report, and therefore these

data may not be very reliable. These may, to a certain degree, limit our understanding of who the participants really were, despite the fact that this study used screening tools and collected demographic and medical backgrounds of the participants using self-report methods. In fact, multiple measures had been used to collect rich data regarding the level of dissociation and clinically relevant information (e.g., trauma histories, dissociation-related symptoms).

Sixth, the potential sociocultural influences of the participants' backgrounds were not examined and understood in this project. Participants were mainly from two locations, namely Hong Kong and Taiwan. We did not collect data regarding how they understood the psychoeducation materials, although it was found that participants from Taiwan were slightly more satisfied with the web-based program than participants from Hong Kong. Nevertheless, traditional Chinese is used in both societies. Previous studies comparing the mental health literacy of Hong Kong and Taiwan people (Wong et al., 2017) could not explain why people in Taiwan may be more satisfied with the web-based psychoeducation program. Therefore, future studies are needed in this regard.

Finally, one of the major limitations of the pilot evaluation study was that no control group was included. Without randomization and a control group, the internal validity of the evaluation study may be questioned; in other words, other alternative explanations for the improvements of the participants after the intervention could not be fully eliminated. For instance, as discussed in previous sections, it is possible that the improvements in symptom management, self-esteem and mental health stigma may be due to other factors (e.g., concurrent treatment, environmental factors, maturation, multiple testing), instead of the web-based psychoeducation program, although it is unlikely that the improvements occurred only after the program and there were no changes during the double pretest period and the follow-up period. Randomized controlled trials are widely regarded as the gold standard for demonstrating a causal relationship between the outcomes and a given intervention in

evidence-based health research (Cartwright, 2010), although such experimental designs are sometimes seen as impractical and unethical in certain context, especially in naturalistic settings (Dixon et al., 2014). Moreover, for intervention research, randomized controlled trials can provide a higher level of evidence than cohort studies, but cohort studies are still better than case studies and expert opinions (Oxford Centre for Evidence-based Medicine, 2009). Given the limitation of lacking a randomized control group, this project was exploratory in nature. The findings regarding the "potential benefits" (let alone effectiveness) of the web-based program were preliminary and inconclusive. Future studies are required to conduct randomized controlled trials to examine the effectiveness of the web-based program in order to understand whether the outcomes are really produced by the program.

Despite these limitations, there were a number of strengths in this pilot evaluation study that should be acknowledged too.

Although it was said that there was no control group, the pilot evaluation study employed two strategies to improve the internal validity of the study (see Section 4.1.3). More importantly, using a double pretest design, each participant could serve as his/her own control during the double pretest control period. A two-month follow-up assessment was also conducted. When the participants had improvements in a certain mental health aspect after the program while no improvements can be observed during the double pretest control period and during the follow-up period, stronger evidence can be provided for the association between the improvements and the participation in the program. Moreover, it appears that the observed improvements can be sustained at least after a period of time (i.e., at least two months).

In addition, the inclusion of a nonequivalent dependent variable in this study also provided stronger evidence that the observed improvements were associated with the intervention contents (i.e., the psychoeducation materials) because the theoretically irrelevant variable (i.e., the level of curiosity) remained unchanged after the program. In other words, it

is less likely that the changes were due to other effects, such as maturation or multiple testing effects.

One common concern about online research is that we could not make sure who the participants really are; there may be concerns about the "sample validity" in online research and better screening is recommended (Fronek & Briggs, 2018; Kramer et al., 2014). Therefore, in this study, in addition to collecting unique email contact information, a brief mobile phone-based interview was conducted with each participant. This could help confirm the unique identity of the participants and ensure that they understood and were willing to participate in the study. The data analysis was also conducted after excluding participants who scored below the cutoff on the screening measures. Therefore, these strategies could help improve the sample validity and reduce participant misrepresentation (Kramer et al., 2014).

Another important thing to note is that this study collected both quantitative and qualitative data from the participants. This way of triangulation could enable me to better understand to what extent the participants were satisfied with the web-based program. The CSQ-I and the feedback items quantify their levels of satisfaction, while the qualitative feedback, and the structured open-ended feedback form further explored their subjective experiences and personal opinions regarding the program. These cross-validated data could improve our understanding of the acceptability of the program.

Finally, this study developed and evaluated a fully standardized program in which the psychoeducation contents and materials have been published. This could ensure that the intervention contents were delivered as planned consistently (i.e., ensuring the intervention fidelity) and make sure that replication is possible. If future studies need to replicate the findings of the present project, the researchers could easily implement the web-based psychoeducation program. Therefore, the standardization of the psychoeducation contents makes sure that the program is researchable and replicable.

6.1.2 Some directions for further evaluation

As noted, the web-based psychoeducation program should be further evaluated in the future using a better methodology. Some of the needs for future evaluation have been highlighted above. In particular, the major directions for further evaluation of this web-based program are summarized as follows:

First, it is essential to further evaluate the web-based program using a randomized controlled design with a better methodology. As a matter of fact, randomized controlled trials are better methods to establish causal relationship between the intervention and the outcomes and to demonstrate the effectiveness of the web-based program. In addition to randomized controlled trials, single-case experimental designs (Lobo et al., 2017) may be considered to explore individual changes before, during and after the web-based program in the future too.

Second, future studies may include theoretically and clinically relevant outcome measures (e.g., emotion regulation, post-traumatic cognitions, self-acceptance, interpersonal sensitivity, inter-personality communication, hope in recovery, beliefs in and fear of negative emotions) because the initial findings from this study showed that the web-based program may be helpful to facilitate recovery but not to directly reduce the symptoms (as will be further discussed). Such evaluation could help further explore and better understand the potential benefits of the web-based program.

Third, future evaluation studies may utilize a more clearly defined sample. For example, it would be ideal if the participants are carefully diagnosed with a dissociative disorder (or a dissociative subtype of post-traumatic stress disorder, or a depressive disorder with comorbid dissociative symptoms) on a structured diagnostic interview. For example, well-established diagnostic measures, such as the Dissociative Disorders Interview Schedule or the Structured Clinical Interview for DSM-IV Dissociative Disorders, can be used. This could help better understand which specific group(s) of service users could benefit from this web-based program.

Fourth, future studies may employ a more representative sample and should not focus primarily on female participants. In addition, in the present study, the participants recognized or suspected that they may have certain dissociative experiences (otherwise they would not register and join the program). To ensure the representativeness of the sample, future studies can screen potential participants in routine clinical settings first and include more newly diagnosed (previously unrecognized) cases. This could ensure the generalizability of the evaluation findings.

Fifth, the program usage can be further measured and monitored so that future studies can examine the relationships between program usage and changes after the program. This could help ensure the intervention fidelity.

Sixth, it is important to further explore which subgroups of service users would particularly benefit from the program and what factors may be associated with better or poor improvements. For example, the pilot evaluation study showed that participants who were and were not receiving specific psychotherapy for trauma and dissociation did not differ in their improvements and that participants with more childhood traumas had better improvements in symptom management and depressive symptoms. These findings needs to be further replicated in future studies. More importantly, it is important to explore the potential differences between male and female participants and between different age groups in future studies too.

Seventh, it is important to further examine the subjective experiences of the program users so as to better understand the their needs and to inform future development of new intervention programs. In this study, efforts were made to explore the reasons of withdrawal from the web-based program, but only four non-completers responded to our questions. One additional point to note is that non-completers reported slightly but statistically significantly more PTSD symptoms than completers at baseline. The reasons behind dropout from the web-

based program remained unknown. Therefore, the subjective experiences and feedback from both completers and non-completers need to be examined in the future.

Eighth, the web-based program can be further evaluated in different cultural, language and socioeconomic contexts. While in theory pathological dissociation should be treated with the same or similar goals and principles across cultures given its cross-cultural nature, empirical evidence for this theory is necessary. In the dissociation literature, most studies that evaluated intervention effectiveness were conducted in the Western cultures (see Brand, Classen, McNary, et al., 2009). In this project, the web-based psychoeducation program was initially tested in an English-speaking sample and then evaluated in a Chinese-speaking sample. In the future, the web-based program needs to be further evaluated in different language and cultural contexts. This not only could provide stronger evidence for the use of the program but could also improve our understanding of pathological dissociation from a cross-cultural perspective. For example, people from different cultural backgrounds may have different understanding of mental health problems (Karasz, 2005), and people may cope with emotions differently in different cultures too (De Vaus et al., 2018). Therefore, a very valid question that needs to be answered is whether service users in different cultures would have different levels of acceptance towards self-help interventions. In addition, would service users in developing countries have more difficulties in understanding the psychoeducation contents that are developed based on the Western literature? These questions need to be answered with empirical data too.

6.2 Interpretation of the findings

The methodological strengths and limitations of the pilot evaluation study have been discussed above. Some directions for further evaluation of the web-based program are also highlighted. Now it is important to summarize the major findings of the study and further discuss their meanings and significance.

6.2.1 A brief summary

This project developed and initially evaluated a brief web-based psychoeducation program for people with pathological dissociation. In addition to examining the acceptability of the web-based program, the pilot evaluation study also explored its potential benefits and limitations.

A total of 101 participants were initially recruited. They registered online and completed the screening survey. This supported the prediction that at least 50 participants would enroll in this study.

The web-based psychoeducation program was evaluated in a final sample of 80 included participants who screened positive for pathological dissociation and confirmed their identity in a phone-based briefing interview; 51 participants completed the program and the posttest. The dropout rate was 36.25%, and therefore it supported the prediction that the dropout rate would be lower than 40%.

At posttest, participants who completed the program had statistically significant improvements in symptom management (the RAS-DS-CR scores) ($p < .001$, Cohen's $d = -0.561$) and self-esteem (the SISE scores) ($p = .008$, Cohen's $d = -.0387$). While the reductions in the level of mental health stigma (the PPSS-SD scores) were not statistically significant ($p = .084$) in the entire sample ($n = 51$), the female participant subsample ($n = 47$), which was actually the majority of this sample, had statistically significant improvements (reductions) in mental health stigma after they received the web-based program ($p = .029$, Cohen's $d = 0.328$).

More importantly, it should be noted that all these three variables (i.e., symptom management, self-esteem and mental health stigma) improved only after the web-based program, and these variables remained statistically unchanged during the double pretest control period ($p > .369$) and during the two-month follow-up period ($p > .414$). Therefore, these results fully supported the 1st hypothesis and the 2nd hypothesis, and partly supported the 3rd hypothesis as well.

As the web-based program aimed to help users stabilize their comorbid symptoms, it was expected that participants would have improvements in post-traumatic and depressive symptoms after the program. However, their levels of post-traumatic and depressive symptoms remained stable but did not statistically significantly decrease after the program. Therefore, the results did not support the 4th hypothesis and the 5th hypothesis.

As mentioned, it was hypothesized (i.e., the 6th hypothesis) that the levels of dissociation would remain stable after the web-based program because the literature indicates that long-term psychotherapy is required to reduce dissociative symptoms. As expected, participants did not have statistically significant change in their dissociative symptoms (i.e., the DES-T scores); in other words, their dissociative symptoms remained stable during the program.

Moreover, it was hypothesized that most participants (at least 60%) would be satisfied with the web-based program (i.e., the 7th hypothesis). The levels of satisfaction were measured with the CSQ-I as well as four additional feedback items (see Table 7). The descriptive analysis of the CSQ-I scores indicated that most participants were satisfied with the program. On the four additional feedback items, most participants agreed or strongly agreed that the program helped them understand (94.1%) and manage (66.7%) their mental health conditions and remain hopeful for recovery (78.4%). In addition, descriptive analysis of the post-session forms indicated that all sessions were largely relevant and helpful to them – in particular, session 8 (“trauma recovery and integration of the personality”), Session 9 (“common questions about

trauma and dissociation") and Session 10 ("coping with dissociative reactions") were perceived to be the most helpful contents by the participants.

Preliminary analysis of the qualitative feedback from 24 participants also highlighted some strengths and limitations of the web-based program. In particular, participants generally appreciated that the program could help them better understand and manage their mental health conditions. Some of them also mentioned the advantages of using online methods (overcoming time and geographical limits and ensuring a sense of safety as there was no face-to-face pressure). Moreover, some participants suggested that the program could be enriched by including additional mutual sharing opportunities and email consultation services and that more contents and graphic illustrations could be provided.

An exploratory analysis of the correlates of the change scores in the six outcome measures provided the following major findings: 1) more childhood traumatic experiences were associated with better improvements in symptom management and depressive symptoms after the web-based program; 2) participants who were and were not receiving concurrent psychotherapy for PTSD/dissociative symptoms did not differ in the change scores on the six outcome measures; and, 3) the improvements in symptom management were associated with the decreases in depressive and dissociative symptoms.

Taken together, the findings of the pilot evaluation study indicated that the web-based program was associated with improvements in symptom management, self-esteem, and mental health stigma (although no causal relationship can be concluded) and that the program was well accepted by the participants (as illustrated by the acceptable dropout rate, high levels of satisfaction, and qualitative feedback).

There are several important findings in this study, and each of them requires further discussion and elaboration. In particular, given that the key questions of the study focus on the

acceptability, potential benefits and perceived limitations of the program, the following discussion will first focus on these key questions.

6.2.2 The web-based program was well accepted by participants with pathological dissociation

First, this study focused on the acceptability of the web-based psychoeducation program. If the program is not even acceptable to people with pathological dissociation, it would be difficult to deliver this to potential users in the future and the program could hardly benefit them too. The pilot evaluation study examined the acceptability of the program with a number of means. It looked at the enrolment number, the dropout rate, the participants' level of satisfaction with the program, as well as the qualitative feedback from the participants. The program recruited more participants than it was expected, and the dropout rate was also lower than 40%. At posttest, the dropout rate (36.25%) was highly acceptable, considering that the average dropout rate was 35% in web-based interventions for other mental health problems (see Melville et al., 2010).

From these figures, it appears that the program had good acceptability. However, one may argue that the incentives (a lottery draw after the program) in this research project may partly reduce the dropout rate – this is a valid concern. Therefore, this study also looked at the CSQ-I and the feedback items. As noted, the data indicated that the levels of satisfaction were high. One sample t test indicated that the mean CSQ-I score ($M = 25.45$; $SD = 4.54$) in this study was similar to those reported in a recent smartphone-based pain management program ($M = 26.45$, $SD = 6.45$)($t = 1.570$, $p = .123$) (Shaygan & Jaberi, 2021); it was also comparable to, although slightly lower than, those reported in a web-based program for panic disorder and agoraphobia ($M = 28.10$, SD 5.09) ($t = 4.163$, $p < .001$) (Ebenfeld et al., 2021). In addition, most of the participants agreed that the program could help them better understand and manage their mental health conditions. Participants who completed the qualitative feedback form also

provided similar feedback, mentioning that they appreciated the helpfulness of the program and that the program could help them make sense to their experiences and provide specific self-help tools for them to manage their mental health problems. Although the participants also highlighted some limitations of the program and made some recommendations (these recommendations will be further discussed), their feedback was generally positive. In fact, if we look back to the preliminary testing study that was conducted with an English-speaking sample (Fung, Chan, & Ross, 2020b) (also see Section 3.3), we could have a more complete understanding of the web-based program, although only six sessions were used in that feasibility testing study. In that study, even though we did not provide any incentives for the participants, the dropout rate was 37.5%; most completers agreed that the web-based program helped them understand (84%) and manage (64%) their conditions and remain hopeful for recovery (68%) (Fung, Chan, & Ross, 2020b). The findings in both studies were highly consistent in terms of the level of acceptability of the program. In addition, in the present study, both qualitative and quantitative data were considered. Therefore, these findings, which were collected from multiple sources, have provided some evidence for the acceptability of the web-based psychoeducation program.

6.2.3 Participation in the program was associated with improvements in symptom management, self-esteem and mental health stigma

The second goal of the pilot evaluation study was to explore the potential benefits of the web-based program by evaluating whether there would be improvements in certain variables, such as symptom management, self-esteem and mental health stigma. The reason is that, if there is no improvement that can be observed even in this pilot study, it would be difficult to call for a more rigorous randomized controlled study to examine the effectiveness of web-based program. In other words, if no benefits can be observed, the program would be useless even if it is well accepted by people with pathological dissociation. The major findings

were that participants had statistically significant improvements in clinical recovery in terms of symptom management and self-esteem after the web-based program. In addition, female participants (92.16% of the entire sample) also had statistically significant improvements in mental health stigma after the program. More importantly, these improvements took place only after the program, and the scores remained unchanged during the double pretest control period and during the two-month follow-up period. The double pretest design allowed participants to serve as their own control and this "dry run" before the program could help reduce the possibility that the improvements after the program are due to other factors (e.g., maturation, multiple testing effects) (Shadish et al., 2002). Therefore, there is evidence showing that the participation in the web-based psychoeducation program were associated with improvements in symptom management and self-esteem (and mental health stigma in female participants), although no causal relationship can be concluded at this moment. These findings are consistent with the literature which suggests that web-based interventions are associated with improvements in mental well-being among people with trauma-related disorders (Amstadter et al., 2009).

Future studies should replicate these findings and further evaluate the causal relationship between the psychosocial and mental health improvements and the educational intervention using a randomized controlled design. In addition, potential gender differences need to be further explored using a larger sample.

6.2.4 Clinical symptoms remained stable but did not improve after the program

Third, the web-based program was designed to stabilize the mental health problems of people with pathological dissociation, and therefore the pilot evaluation study examined if the participants would have improvements in comorbid post-traumatic and depressive symptoms after the web-based program. However, participants had no statistically significant improvements in the PCL-5 and PHQ-9 scores. Thus, the initial hypotheses were not supported

by the data. It implied that participants had improvements in clinical recovery in terms of symptom management (as measured with the RAS-DS-CR) and self-esteem while their post-traumatic and depressive symptoms did not reduce after the program. It means that recovery and symptom reduction are not the same (Hancock et al., 2019). In fact, recovery from mental health issues can be defined as "a way of living a satisfying, hopeful and contributing life even with limitations caused by illness." (Anthony, 1993, p. 12). Having improvements in recovery does not always mean that the symptoms would reduce. In some clinical situations, the mental health conditions are complicated, and the symptoms could hardly reduce, but it does not mean that the individual could not "recover" from this point of view. For example, a psychotic patient may still hear voices after long-term treatment, but he/she could have a better management of the voices; even though the voices still frequently occur, they no longer seriously interfere with his/her daily life. The RAS-DS-CR that we used in this project is "about gaining an understanding of and control over symptoms and having them lesser impact on daily life – rather than the traditional focus on symptom amelioration" (N. Hancock, personal communication, June 24, 2020). It makes sense that the participants in this study had learned some helpful strategies to reduce the interference of the symptoms and therefore they had improvements in the RAS-DS-CR, even though their symptoms may still be frequent (the PCL-5 and the PHQ-9 are symptom-specific tools that measure the frequency of the symptoms). As mentioned in Section 2.2.3, previous studies reported that psychoeducation could reduce post-traumatic and depressive symptoms in trauma survivors (e.g., Kuhn et al., 2017; Mahoney et al., 2019). Therefore, in the beginning, it was also hypothesized that participants would have improvements in post-traumatic and depressive symptoms in the present study. Nevertheless, no statistically significant improvements were observed in this sample. There are at least two major possible reasons: 1) the current sample of highly dissociative participants had more severe symptomology and therefore they had poorer responses than general trauma survivors;

and, 2) the psychoeducation contents were not enough for reducing post-traumatic and depressive symptoms. It is reasonable to believe that both reasons are valid. People with severe dissociative symptoms typically require long-term in-depth psychotherapy (Brand, Myrick, et al., 2012; International Society for the Study of Trauma and Dissociation, 2011). It makes sense that their clinical symptoms did not reduce after a very brief, passive, low-cost psychoeducation program. More importantly, when looking at a recent systematic review, it may probably explain why the web-based program in this project could not directly reduce post-traumatic symptoms. In this study, Brouzos et al. (2021) systematically reviewed eight studies that evaluated psychoeducation interventions for post-traumatic stress disorder symptoms in adults, and they reported that the overall effect for reducing post-traumatic symptoms was small. They further explained that solely brief psychoeducation may be insufficient to reduce post-traumatic symptoms and that skills training should be further emphasized in trauma psychoeducation.

This literature, together with the results in this project, may imply that the web-based program has the potential to facilitate mental health recovery (e.g., improved symptom management and self-esteem) (although further evaluation is necessary), but we also need to acknowledge the limitation that the program may not be helpful for symptom reduction in people with pathological dissociation. This interpretation is consistent with the qualitative feedback of the participants – they repeatedly mentioned how the web-based program helped them understand and manage their mental health problems, but they did not say that they had fewer symptoms after the program. Yet, it is too early to make the conclusion. This exploratory study in fact highlights the needs for including theoretically and clinically relevant mental health outcome measures in future evaluation studies (e.g., emotion regulation, post-traumatic cognitions) while taking into account the perceived limitations of the program. In addition, modifications of the program may be considered to maximize its potential benefits.

6.2.5 Correlates of changes and reasons of dropping out require further investigations

Fourth, preliminary analysis of the correlates of the changes after the program indicated that the web-based program may be especially beneficial to people who have more childhood traumas and that the changes in the RAS-DS-CR scores were correlated with decreases in the PHQ-9 and DES-T scores – in other words, the better improvements in symptom management, the more decreases in depressive and dissociative symptoms (see Table 11). In addition, it was expected that the changes in the RAS-DS-CR scores would be associated with the changes in the SISE scores because it is reasonable to believe that better symptom management could improve self-esteem. However, no statistically significant findings can be found in this regard. These findings should be replicated. The possible reasons behind the negative results need to be explored in the future too.

The preliminary analysis demonstrated that participants who were and were not receiving psychotherapy for PTSD/dissociative symptoms during the program did not differ in the changes in any of the six outcome measures, implying that the overall improvements in this sample after the web-based program may not be explained by the use of trauma therapy in some participants. Despite this preliminary yet promising finding, whether or not this is really the case (i.e., the improvements are caused by the program rather than other factors such as concurrent treatment) cannot be answered by this pilot evaluation study. In addition to further exploring other potential benefits of the program, the causal relationship between those currently recognized benefits and the program should be examined in future randomized controlled studies.

As mentioned, at baseline, non-completers reported more PTSD symptoms than completers at baseline, although no other major differences can be found. Nevertheless, most non-completers did not explain why they withdrew from the web-based program. Therefore, the reasons of dropping out also require further investigations. Factors that predict non-completers can be examined in future evaluation studies too.

6.3 Application of the web-based program to support people with pathological dissociation

Despite the limitations of the pilot evaluation study, it provides some encouraging findings. The most important findings include that the fully web-based psychoeducation program was well accepted by this sample of traumatized survivors with pathological dissociation, and that participation in the program was associated with improvements in several mental health aspects (e.g., symptom management and self-esteem). Therefore, the most direct implication of the results is about the application of this program and how this could be used to support people who are suffering from pathological dissociation. The importance of this contribution should be explained first.

As noted, this is actually one of the first projects that evaluated the use of web-based interventions for people with pathological dissociation. Another report of a web-based program for people with pathological dissociation was reported during the time when the present project was being developed (Brand et al., 2019). The similarities and differences between two projects have been highlighted in Section 2.2.3. In particular, both projects recognized the potential of using online methods to support this underserved population and both projects focused on the stabilization phase and the use of psychoeducation. Nevertheless, unlike their year-long project that required the involvement of a dissociation therapist for each patient, the present project evaluated a much shorter program that only has 12 sessions; the involvement of a therapist was not required because we realized that many survivors could not access suitable dissociation-specific therapeutic services in their service locations and early self-help resources are needed. Moreover, in the present study, we made efforts to improve the internal validity of the findings by including an additional pretest so that participants could serve as their own control during the double pretest control period.

Another point to note is that this study applied the Western dissociation literature in Chinese contexts. Based on the best available information, this study was the first attempt to apply knowledge from the Western trauma and dissociation literature to deliver and systematically evaluate support services for Chinese-speaking people who suffer from pathological dissociation, even though this is just a brief, educational program. As discussed in the literature review in Chapter 2, pathological dissociation is generally regarded as a cross-culturally occurring response to psychological trauma (Brand et al., 2014; Brand et al., 2016; Dell, 2013; Fung, 2018; Fung & Lao, 2017), but some arguments suggest that this is a socially constructed product and a culture-bound syndrome (Lynn et al., 2019). If the latter theory is valid (i.e., pathological dissociation is not a response to psychological trauma), people with pathological dissociation would not respond to interventions that are based on the trauma model of dissociation, and such trauma model-based psychoeducation and explanations would not make sense to survivors in non-Western cultures. On the other hand, if pathological dissociation is a response to psychological trauma (Putnam, 1985), this would be a cross-cultural phenomenon, and, more importantly, the clinical insights and knowledge accumulated in the Western trauma and dissociation literature can be applied cross-culturally to Chinese contexts. Participants in the web-based program indicated that the trauma model-based contents made sense to them, related to them, and were helpful to them. This project provides further evidence supporting the trauma model of dissociation by demonstrating that knowledge from the Western clinical literature can be applied to the Chinese sample; for example, the trauma-specific self-help tips (e.g., grounding techniques) were perceived as very helpful by the participants.

Hence, the findings of this study contribute to the dissociation literature by demonstrating the high acceptability and potential benefits of web-based interventions for people with pathological dissociation. The results also contribute to the e-mental health

literature by extending the scope of the existing online research to include an understudied service group. That is to say, previous studies had evaluated web-based interventions for other mental health service users (Josephine et al., 2017; Kazemi et al., 2017; Lal & Adair, 2014) and trauma survivors (Rooksby et al., 2015; Sijbrandij et al., 2016; Steubl et al., 2021) but not for people with pathological dissociation. This is particularly important because web-based interventions may be acceptable to one service population but not to other service populations and because research is needed to demonstrate whether the benefits of web-based interventions in certain populations could be generalized to other populations and settings (Bewick et al., 2008). Thus, the findings imply that the web-based psychoeducation program can be acceptable to people with pathological dissociation – it is in fact feasible and may also be beneficial to use online methods to deliver self-help resources for this specific vulnerable group of service users. Both quantitative and qualitative data indicate that the participants generally agreed that the program could help them better understand and manage their mental health problems. No adverse experiences during the program were reported by the participants. Their clinical symptoms also remained stable, and did not get worse after the program.

Therefore, the most direct implication of the findings is that, given its low cost, good acceptability, potential benefits and safety, even without further modifications, the current version of the web-based psychoeducation program (as well as its educational materials) can be readily used or adapted to provide early educational support for people who are suffering from pathological dissociation.

In health and social care service settings, when a service user is found to be suffering from certain dissociative symptoms after an intake screening assessment, the web-based psychoeducation program can be offered to him/her. The web-based psychoeducation program cannot replace specialized psychotherapy, but it may help the service user make sense of his/her

post-traumatic and dissociative reactions, learn some important coping strategies and skills to manage his/her mental health problems, and prepare for the coming treatment.

The web-based psychoeducation program covers important knowledge and skills that every trauma and dissociation survivor needs to learn about in the initial stabilization phase of recovery. Without the web-based program, the social worker or therapist will have to go through all of them in the therapy session, probably in a less structured and less comprehensive manner. The program can provide the service user with an opportunity to gain the essential knowledge in a structured, self-paced learning environment – this can be completed outside the treatment session and save the session time for the face-to-face psychotherapy too. More importantly, as noted, specialized dissociation-focused psychotherapy may not be available for many people with pathological dissociation, either due to the lack of adequate services or because of other barriers (e.g., pandemics), and therefore the web-based psychoeducation program would be particularly helpful in such situations. When people with pathological dissociation are looking for or waiting for the allocation of specialized treatment services, they can at least learn some coping skills and become less confused if they could receive the web-based psychoeducation program. For instance, some participants mentioned that the grounding techniques were very helpful to them. Some contents, such as Session 8 (“Trauma recovery and integration of the personality”), Session 9 (“Common questions about trauma and dissociation”), and Session 11 (“Interpersonal issues in trauma and recovery”) were also relatively new to the participants (see Table 7), and a number of participants would not have the opportunity to learn these if they did not join the web-based program. An analysis of the baseline data in this study indicated that 40.3% of participants with pathological dissociation at baseline were not receiving PTSD/dissociation-specific psychotherapy (see Fung et al., 2021). In other words, even for people who have already recognized their own dissociative symptoms, many of them could not receive PTSD/dissociation-specific psychotherapy. It is

reasonable to believe that the rate would be much higher among those who do not even recognize their own dissociative symptoms. The same is probably true in naturalistic clinical settings too – many people with pathological dissociation could not access dissociation-specific information. A highly accessible web-based psychoeducation program may be a promising way to solve this problem.

It should be noted that such low-cost psychoeducation and skills learning would not have been possible without the use of information and communication technology to deliver the resources. Many participants expressed their appreciation regarding the delivery format of the web-based program and pointed out that the high flexibility and no face-to-face pressure were the strengths of the program. Having said that, such educational interventions cannot replace any professional support or medical treatment, and people with pathological dissociation should be regularly followed up by qualified mental health professionals. This program is just a brief, first-step, adjunctive resource, and it has a number of limitations (e.g., it cannot replace professional support, no evidence shows that it can help directly reduce the symptoms). Although such resources would be especially important when no service is available, specialized individual treatment – especially dissociation-specific psychotherapy – should be offered to those survivors in need whenever possible.

In summary, the current results imply that the web-based psychoeducation program can be readily used to provide early educational (informative) support for people who suffer from pathological dissociation given its low cost, high acceptability, potential benefits and safety, although its effectiveness still requires further evaluation and although it cannot replace professional support (which is not always available though). When a service user presents with dissociative symptoms, the social worker or healthcare service provider may offer this web-based program as a first-step support, followed by further professional support.

6.4 Implications for the future development of this web-based program

As noted, this study demonstrated that the web-based psychoeducation program may have some strengths and potential benefits in this study, which are further summarized as follows:

1. The web-based program was well accepted by the participants and the level of satisfaction was high in this sample.
2. Participants' mental health symptoms remained stable (i.e., did not get worse) during the web-based program.
3. Participation in the web-based program was associated with improvements in recovery (in terms of symptom management) and self-esteem in this sample.
4. Participation in the web-based program was associated with improvements in mental health stigma among the female participants.
5. Most participants agreed or strongly agreed that the web-based program could help them understand and manage their mental health problems.
6. Most participants agreed or strongly agreed that the web-based program could help them remain hopeful for recovery.
7. The delivery format of the program (i.e., high flexibility, no face-to-face pressure) was appreciated by a number of participants.

Nevertheless, some observations and reflections regarding the web-based program should be highlighted:

1) The web-based program cannot replace any professional services.
2) Participants did not exhibit statistically significant reductions in their mental health symptoms after the web-based program.
3) Some participants expected that they could have more time to review the psychoeducation materials in the web-based program.

4) Some participants expected that the web-based program could have more contents and elements (e.g., more sessions, peer-to-peer sharing, email consultation services).
5) Some participants expected that the web-based program could have better presentations (e.g., more graphic or video illustrations, better text-to-speech audiobook technology).

Therefore, keeping these observations in mind, the following modifications can be considered if the web-based program will be used in the future for research and/or service purposes:

1) When the web-based program is used in the future, the users can be provided with more time so that they could have less time pressure to go through the psychoeducation materials.
2) The presentations of the contents (e.g., more graphic illustrations, better text-to-speech audiobook technology) of the web-based program can be improved to further increase the level of acceptability of the program users.
3) When more professional staff resources are available, the web-based program can be further enriched by providing individualized email or phone consultation services for the users in the future. This could help address the individual needs of the users and reduce their confusions (if any) when receiving the program.
4) When more professional staff resources are available, the web-based program may include peer support elements or structured peer-to-peer sharing activities. Social and peer support is generally helpful for trauma survivors (Morley & Kohrt, 2013; Platt et al., 2014), although it is also a valid concern that people with complex trauma and severe dissociation may be easily triggered by others in group settings (International Society for the Study of Trauma and Dissociation, 2011). This will

be further explained when the potential benefits of online social support are discussed in the next section.

5) At least two additional variations of the web-based program have been highlighted above (i.e., with and without individualized consultation services; with and without peer support elements). More variations can be considered in the future (e.g., with and without concurrent face-to-face psychoeducation and skills training based on the program), and the potential differences in terms of the acceptability and outcomes between different variations of the program need to be evaluated in the future.
6) When more resources are available, the web-based program can be fully automated. In particular, the procedures from online registration, to screening, intervention (i.e., self-paced online learning) and evaluation can be fully automated and computerized so that no human resources are needed. Once the program is fully automated using ICT platforms, the program can serve many users at the same time with a low server cost and reduced human resources.
7) In the future, the web-based psychoeducation program can be further enriched by including additional skills training sessions to strengthen the use of the coping skills (e.g., relaxation exercises, grounding techniques, internal communication, journaling) because skills training is an important element in trauma psychoeducation and this may be associated with better outcomes too (Brouzos et al., 2021).
8) In the future, the web-based psychoeducation program can be further enriched by having a follow-up exposure-based treatment component. As noted in the literature review, the trauma model based treatment for people with complex trauma and dissociation involves a stabilization phase as well as a trauma processing (exposure)

phase (Brand & Loewenstein, 2014; Herman, 1992; International Society for the Study of Trauma and Dissociation, 2011; Van der Hart et al., 2006). In other words, a progressive treatment approach is usually recommended, no matter how long the stabilization phase should be (Dyer & Corrigan, 2021). For example, in prolonged exposure therapy and cognitive processing therapy, the "stabilization" or psychoeducation phase may only have one to two sessions before trauma processing. The web-based psychoeducation program developed in this project may serve as an intervention for the stabilization phase in the treatment of complex trauma and pathological dissociation. It provides essential information and introduce the coping skills for the survivors so that they could prepare for the next phase (i.e., trauma processing). In survivors with mild symptoms and stable conditions, and when there is suitable professional therapeutic support, the psychoeducation program may be followed up by an exposure-based treatment, such as a written exposure therapy (Sloan & Marx, 2019), Nevertheless, the interventions should be tailored to people with pathological dissociation and should be dissociation-informed (e.g., it may allow different dissociated self-states to share their memories and experiences and process the emotions in a strictly controlled and safe environment, supported by a therapist). Then, the entire intervention (web-based psychoeducation plus exposure therapy) will be like the STAIR Narrative Therapy (skills training plus narrative exposure) for complex trauma survivors (Cloitre et al., 2020), while it will be particularly dissociation-informed. Future studies should explore the feasibility and effectiveness of this combination of treatment (i.e., web-based psychoeducation plus dissociation-informed exposure therapy) for people with pathological dissociation. Given that there is no fully manualized, standardized treatment for people with pathological dissociation, it is important to explore this possibility.

6.5 Implications for ICT-enhanced mental health services in general

The use of ICT supported and facilitated different aspects of mental health services in this project.

This project demonstrated the feasibility and acceptability of fully online psychosocial screening and early educational interventions for service users who had a history of complex psychological trauma and severe mental health symptoms. It is important to note that such mental health support services would not have been possible without ICT. Without the use of ICT, it would not be possible to recruit and engage many participants from different regions and evaluate their progress during and after the program conveniently with minimal professional involvement. Without the use of ICT, many of the participants who did not have a chance to receive dissociation-specific mental health services could not access the essential knowledge for understanding and coping with trauma and dissociation. For example, as reported by the participants, many of the educational contents were fairly new to them, implying that they could not have a chance to access such educational resources in the existing service system. The participants were from diverse regions, including Hong Kong and Taiwan, but the web-based program helped them overcome geographical limits to receive the services. More importantly, the program was conducted during the outbreak of the COVID-19 pandemic in 2020; during that time, most face-to-face mental health services had been reduced or suspended for the purpose of infection control, but the participants could still join the psychoeducation program as this fully online program was not affected by the pandemic.

It is obvious that the use of ICT contributed to several important service components of in this program, including engagement and recruitment, assessment and evaluation, and psychoeducation interventions. This section will discuss the insights and reflections from the experience of conducting the web-based program in this study with a focus on how ICT can support and enhance mental health services in general.

6.5.1 How can ICT enhance early identification and timely support for people with mental health needs?

Early identification of mental health problems has been one of the primary goals of mental health services in the world given that "failure and delays in initial help seeking are pervasive problems worldwide" (p. 177) (e.g., only 11.3% of patients with anxiety disorder seek treatment in the first year of onset in the United States and the median duration of delay is 23 years) (Wang et al., 2007). One study reported that, in a sample of mental health service users who had a documented trauma history, only 3% had a chart diagnosis of PTSD, while the researchers found that in fact 19% to 30% of participants screened positive for PTSD (Cusack et al., 2006). For patients with dissociative identity disorder, the average diagnostic delay is about 6.7 to 6.8 years (Kluft, 2009; Ross, Norton, et al., 1989). The earlier their mental health needs are recognized, the more likely it is to provide timely support for them.

In this project that served a highly traumatized, dissociative and symptomatic sample (N = 80), our web-based program successfully recruited and engaged 31 participants (38.8%) who did not receive any psychological treatments for PTSD or dissociation at baseline. In particular, online methods were used to promote the resources that the program could offer. Potential program users were recruited and engaged through online channels. For instance, social medial platforms such as Facebook Pages and Groups related to mental health in general, and trauma and dissociation in specific, were used to distribute the recruitment posters. As noted in previous studies, social media can largely facilitate outreach engagement in social work practice (e.g., Chan & Holosko, 2017). In this project, it was a very effective channel to engage and recruit potential service users given that there have been many mental health related pages and groups on the Internet and researchers can purposefully target such specific platforms. When some potential service users would like to learn more about the service or when they wanted to ask some questions, communication through email or private/direct

messaging (PM/DM) applications would be very convincing too. Once they had decided to participate, they could easily register using the Google form.

It has been estimated that one in three adults in the United States uses the Internet to learn about health information (Jacobs et al., 2017). Online recruitment and engagement methods have a number of strengths, such as reduced costs and shorter recruitment periods, when they are used for health research purposes (Whitaker et al., 2017). It is reasonable to believe that the same is also true for health service promotion purposes. Some people want to learn about why they have certain mental health problems, and some other people in need would also like to search for how to stop or manage the symptoms (Pretorius et al., 2019). In a sample of young people with a history of self-injury, Frost and Casey (2016) reported that more than half of their participants (54%) perceived that more online support is available to them than offline support. A randomized controlled trial found that online psychoeducation is an effective way to increase mental health literacy, reduce stigma, and promote help seeking attitudes and intentions (Taylor-Rodgers & Batterham, 2014). This literature, along with the experience in the present project, highlights the potential of using online methods to extend the scope of mental health services by reaching out to and engaging those in need on the Internet.

Therefore, community mental health services can be improved by establishing more online platforms that include mental health self-assessment and screening tools, provide entry-level psychoeducation information, and introduce available resources and service providers in the community. Compared with traditional offline services, such online platforms will have the potential to engage a larger amount of people quickly. In addition to improving early identification of mental health problems and encouraging seeking help, online platforms using different means (e.g., photovoice-based videos, psychoeducation, social contact) could also reduce mental health stigma (e.g., reducing fear and anger toward individuals with mental health problems, reducing self-stigma for seeking help) (Nickerson et al., 2020; Tippin &

Maranzan, 2019) – mental health stigma is a very common help-seeking barrier and is also associated with poor well-being among people with mental health problems (Chan & Fung, 2019; Fung et al., 2021).

6.5.2 How can ICT enhance mental health screening and assessment?

Early screening and accurate assessment are important because such information would fundamentally affect service and intervention planning. As mentioned, many mental health problems are often under-assessed and underdiagnosed even in clinical settings, such as PTSD (Cusack et al., 2006) and borderline personality disorder (Morgan & Zimmerman, 2015). There are some challenges in mental health assessment in clinical settings. For example, clinical assessment is not always reliable – in the DSM-5 field trials, a number of mental disorders (including major depressive disorder and generalized anxiety disorder) had questionable reliability (kappa range: 0.20 to 0.39) (Regier et al., 2013). General (unstructured) clinical assessment, without the use of standardized (structured) tools, is the norm of mental health practice and it has the advantages of saving time, having more flexibility, and ensuring a strong rapport relationship with the service user, but it could be less comprehensive, more biased, and less reliable (Mueller & Segal, 2014). On the other hand, standardized assessment can improve the reliability and validity of the clinical information; the use of structured interviews (e.g., the Structured Clinical Interview for DSM) has been the gold standard to assess mental disorders since the 1970s (Drill et al., 2015; Mueller & Segal, 2014). Meta-analyses revealed that the agreement between general clinical assessment and structured assessment was fairly low for many mental disorders (the mean kappa was 0.27) (Rettew et al., 2009), suggesting that the use of evidence-based standardized assessment tools are important and can help collect useful clinical information (Jensen-Doss et al., 2013). However, in the real life clinical settings, mental health practitioners rarely use such tools (Bruchmüller et al., 2011). In the context of dissociation, dissociative symptoms and disorders are rarely recognized in clinical settings

without the use of standardized assessment tools prior to systematic investigations (Sun et al., 2019; Yu et al., 2010). However, why don't mental health practitioners use evidence-based standardized assessment tools in general? Some practitioners tend to believe that their own clinical judgement is more useful, while many practitioners prefer not to use standardized assessment tools because they take too long and they may disturb the rapport relationship with the service users (Bruchmüller et al., 2011). Some practitioners also think that mental health service users do not like such assessment. Yet, empirical data indicated that standardized assessments – even structured interviews – are well accepted by service users (Bruchmüller et al., 2011). This literature points out that standardized assessment tools should be more regularly used in clinical settings. I propose that the challenges of using standardized assessment tools (e.g., need to spend more session time) may be reduced by using ICT.

In this project, the web-based program fully utilized the strengths of ICT to collect data and undertake psychosocial and mental health assessment. The program set up Google forms that consisted of a number of reliable and valid self-report assessment tools. Such Google forms were used not only for screening purposes, but also for evaluation purposes. This project could regularly monitor the psychosocial and mental health changes of the participants and thus evaluate the program. When potential service users registered online, they needed to complete the Google form that included the screening tools. Service users were also asked to complete the Google forms again during and after the program. The use of ICT had saved a lot of time and resources to collect data. Service users could complete the assessments whenever and wherever they were available and did not need to wait for the service provider as well. In addition, the service provider did not need to wait for each service user to fill out the forms too. The data were automatically stored in a password-protected database so that no data entry was needed. No human error would possibly take place during the data collection process too. The data collected before the program started particularly provided rich information about the

mental health problems (depression, dissociation, PTSD, borderline personality disorder), trauma histories, psychosocial stressors and general backgrounds of each participant. All assessments were conducted using online platforms. Participants could complete the assessments whenever and wherever they want (e.g., at midnight at home). This experience demonstrates the convenience of using ICT to facilitate mental health screening and assessment. The participants did not complain of feeling uncomfortable of filling out the questionnaires for multiple times too.

Considering the fact that web-based assessment is reliable and valid for a variety of mental health problems (e.g., Fortson et al., 2006; Fung, Chan, et al., 2019; Fung, Chan, Lee, et al., 2020; Fung, Choi, et al., 2018; Miller et al., 2002) and that web-based assessment may reduce some of the challenges of conducting standardized assessment in clinical practice (e.g., spending a lot of time), community mental health service providers should consider the advantages of setting up online platforms to provide self-assessment tools for early screening purposes. The online platforms can engage potential service users or community members and invite them to complete certain reliable and valid self-report measures – if they initially screen positive for certain mental health problems or exhibit some psychosocial needs, they can be directed to relevant services and resources for follow-up assessment and management. Mental health service providers can also set up a secure ICT-based platform and database for both screening and regular assessment purposes. At the time of admission or intake, a potential service user can first complete the standardized assessments, either based on self-report measures or based on computer-assisted structured interviews, on the platform at home, on transportation, or in the waiting room before he/she meets the practitioner for a more comprehensive assessment or an intake interview. While self-report assessments cannot replace clinical judgement and structured diagnostic interviews, such prior ICT-based assessments not only can save a lot of time, but they can also help collect useful data that may

facilitate clinical assessment and increase the validity of the final clinical judgement. This regular and convenient procedure may also help prevent overlooking some less commonly recognized mental health problems, such as dissociation and post-traumatic stress. For screening purposes, lower cutoff scores can be considered in order to increase the sensitivity of the initial screening and to avoid false-negative results.

In addition, similar ICT-based assessments can be conducted regularly during the service and at termination for ongoing assessment and service evaluation purposes. This could help evaluate the service outcomes and ensure evidence-based practice. Given that everything can be done within an ICT-based platform with a secure database, it would be easy to do the scoring, before/after comparison, or even chart review. Once the platform is established, it would only require minimal manpower – no need to enter the data with possible human error, no need to wait for each service user filling out the printed questionnaire, no need to print out everything, and no need to match the data with the user ID every time manually. If the platform is secure enough, it can be used for case recording too, or the practitioner can input clinical interview data and combine them with the web-based assessment results.

6.5.3 The potential benefits of online social support

In this project, the web-based psychoeducation program did not provide social support or employ any mutual aid element. Regarding this, some participants expressed their wish to get in touch and exchange experience with other people who have similar problems. I would like to first explain why the web-based program did not initially provide such element. There are two major reasons. First, if the program includes mutual support element (e.g., establish a closed social media group for the participants), there may have unexpected interactions among the participants and this may indirectly contribute to the changes of the psychosocial well-being, and therefore the program would be less standardized and replicable. Second, group interaction among the members may increase the risk, because the trauma and dissociative

experiences of some participants may trigger others – it has been said in the treatment guidelines that many patients severe dissociation have difficulty tolerating the emotions and trauma discussion in group settings and that if a group work approach is used it should be managed in a very careful manner and the group should be highly structured and task-focused in order to prevent "symptom exacerbation and/or dysfunctional relationships among group members" (p. 149) (International Society for the Study of Trauma and Dissociation, 2011). Therefore, before more resources are available and before a careful group management plan is established, I decided not to include group element in this purely psychoeducational intervention program in the pilot testing phase.

Having said that, generally speaking, the potential benefits of online social support should be acknowledged, and future mental health services may consider facilitating more mutual support for mental health service users on the Internet too. The mental health benefits of receiving social support in our daily life have been well documented in the literature (e.g., Wang et al., 2018; Zimet et al., 1990). In the context of trauma and dissociation, the role of social support is equally, if not more, important. Trauma expert Dr. Judith Herman suggested that trauma is essentially disempowering and disconnecting the survivors from others, and therefore empowerment and social connection (or restoration of relationships) are two fundamental bases of recovery from trauma (Herman, 1992, 1998). Previous research shows that the diversity of a social network and the level of social support may be protective against mental health problems after trauma and stress (Cohen & Wills, 1985; Platt et al., 2014). Peer support is also associated with increased hope, better recovery attitudes and decreased post-traumatic symptoms in survivors of combat trauma (Jain et al., 2016; Morley & Kohrt, 2013). Support from peers who have similar experiences may provide social acknowledgement that could reduce stigma and confusion. Experience sharing among peers may also facilitate the use of healthy coping skills and promote hope for recovery too.

Although online and offline social support may not be the same, it may still be beneficial to receive social support from others on the Internet. For instance, Liu and Yu (2013) explained that the use of social media could reduce existing barriers and allow the users to "access expanded social networks and information" (p. 676) and the users can have the benefits of online emotional and informational support by using social media. For health service users, online interactions with others can share views and experiences with others, offer and receive encouragement, and exchange knowledge and information (Cheung et al., 2017). In addition, emotional support and identity expression on the Internet may help promote mental well-being and reduce stigma among certain vulnerable groups (Chong et al., 2015). It is interesting to note that a recent systematic review suggested that social acknowledgement and trauma disclosure may be two important elements that could promote better changes in Internet-based interventions for PTSD (Steubl et al., 2021).

As have been observed on the Internet, there are many existing online groups and forums related to mental health issues (including PTSD and dissociation), but most of them are not managed by professional health and social care service providers. The huge number of online support groups indicates the perceived benefits of such platforms and people's needs of receiving social support for mental health problems on the Internet. Nevertheless, conflicts and problems (e.g., argument among members, spams, hate speeches, or sensitive contents) are not uncommon among these online groups. There are risks of running online support groups from a service provider's point of view. However, as noted, there are also many potential benefits of developing and professionally managing online support groups for people with mental health problems – this is particularly true if face-to-face social support would be further limited in the future because of unexpected issues (e.g., pandemics, combats). Specific online group service guidelines should be developed so as to facilitate the development and management of online support groups. Guidelines are also needed to guide service users to reduce risks and respond

to crisis when managing online groups. Future research can also evaluate the effectiveness of online support groups for people with a variety of mental health problems, including PTSD and dissociative disorders.

6.5.4 The potential benefits of automated and self-paced services

The benefits and empirical evidence of self-help and psychoeducation interventions have been discussed in Chapter 2. In this project, the psychoeducation interventions were delivered using email and the materials were set up on Google Drive and YouTube – even if the number of participants largely increases, the workload would not dramatically change. Therefore, with the use of ICT, the psychoeducation service became very efficient, and it was possible to serve many users at the same time; the service also became possible for those who originally could not access such dissociation-specific educational services in their service locations. However, the psychoeducation materials were delivered to the participants using emails. The researcher needed to send mass email manually on time. In other words, no automation was used.

In the future, mental health service providers may provide more automated and self-paced services for potential and regular service users. There are many existing automated or self-paced programs or applications for people with mental health problems, and many of them have been empirically tested, such as the PTSD Coach (Possemato et al., 2016), the E-couch (Powell et al., 2020) and certain self-guided Internet-based cognitive behavioral therapy programs for depression (e.g., the MoodGYM) (Karyotaki et al., 2017; Twomey & O'Reilly, 2017). Such services can be further promoted and improved in order to meet the service needs of those who could not access or need to wait for traditional mental health services.

A recent systematic review conducted by Tay et al. (2018) highlighted two interesting findings: 1) ICT-based informational interventions may be particularly helpful to increase the mental health literacy of less commonly known mental health problems; 2) effective ICT-

enhanced interventions that increase mental health literacy and reduce stigma may need to include more active components (e.g., videos, quizzes). These findings may also inform the development and implementation of automated and self-paced services for people with mental health concerns in the future. For instance, ICT-based self-paced psychoeducation programs for less commonly known mental health problems (e.g., dissociation, eating disorder) may be of particular interest to the field; more active components can be considered in future ICT-based services (e.g., web-based programs, mobile phone applications) – these could include education videos or games, programmed guided self-help curriculums, or even artificial intelligence (AI)-based chatbots that accompany the service user and provide support (e.g., information, self-help tips) when being requested. The potential of such advanced automated services has been highlighted in the literature – for example, recently some scholars have discussed that companion chatbots may provide social emotional support for those in need (De Gennaro et al., 2020; Ta et al., 2020).

6.6 Concluding remarks

In the introduction, In the introduction, I mentioned that people with pathological dissociation are an underserved group in the health and social care systems, although they have considerable service needs.

I still remember the trauma survivors who taught me in the past. After years of effort and struggle, they can now feel safe, become relaxed, and sleep well every night — there are no more nightmares, flashbacks, or distressing voices as they have learned how to communicate and live harmoniously with their inner teammates. Of course, just knowledge and insights are not enough. They also made efforts to stay away from the abusive and toxic environment, regain the power in their lives, and start new relationships — these are important steps in the process of recovery for a childhood trauma survivor (Herman, 1992, 1998).. However, without the understanding of their trauma and dissociation (e.g., what are the symptoms, how to work with the angry inner part, how to manage dissociative amnesia and flashbacks, and why it is important to stay away from traumatizing and stressful environments) and the hope for recovery from a trauma-informed perspective, it is unlikely that they would have made great progress. They did not receive such information from the health and social service systems, and they were only told to take medications and keep a good relationship with their abusive family members, or forgive them even when they were not ready to. I am grateful to be the one who shared the knowledge about trauma and dissociation with them in the beginning, as well as the one who witnessed their wonderful recovery after they built their new lives and achieved a teamwork relationship with their inner teammates.

The reality is that many survivors could not access suitable resources and services in the health and social care service systems. Web-based interventions may have the potential to fill this important service need. However, there is a huge knowledge gap because very little is

known about the possibility of using online methods to support this specific vulnerable population.

To address these service and research gaps, this project developed and pilot-tested a brief, web-based psychoeducation program for people who suffer from pathological dissociation. The web-based program made the trauma-and dissociation-specific resources (i.e., information about trauma and dissociation and healthy coping strategies) available to those who previously could not access such resources in their service locations.

A pilot evaluation study was conducted to explore the acceptability, potential benefits, and perceived limitations of the web-based program. The results indicated that the program was well accepted by the participants and that participation in this program was associated with improvements in symptom management, self-esteem, and mental health stigma.

This study, as one of the first studies examining the use of online methods to support people with pathological dissociation, demonstrated that the web-based program can be readily used to provide educational support for people with pathological dissociation because of its high acceptability, low cost, and potential benefits. Yet, further evaluation of its effectiveness is necessary.

This project contributes to the dissociation literature by demonstrating the high acceptability and potential benefits of a web-based psychoeducation program for people with pathological dissociation. In particular, it provides a highly accessible, low-cost educational resource for both survivors and practitioners in the field. The potential application of the web-based program is explained. Implications for further evaluation and development of the program are discussed as well.

This project could also further the discussion of how ICT may facilitate and support different aspects of mental health services. The experience of this study, along with the existing

literature, demonstrates that ICT can be used to support different aspects of mental health practice, including recruitment, screening, assessment, providing psychoeducation, and evaluation. Therefore, implications for the use of ICT to improve and facilitate mental health services are also highlighted.

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