ICTs Intervention for Chinese Adolescents with Mental Health Disorders: Based on Satir family Therapy

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Abstract. Recently, the growing mental health concerns among Chinese adolescents have become a critical issue that requires innovative solutions. Information and Communication Technologies (ICTs) play an important role in addressing these challenges. The access and use of technology to receive information, services, and support has been increasingly drawing attention from researchers. However, limited research has been analyzed to apply ICTs to Chinese adolescents' mental health on the basis of Satir family therapy. This study was to explore the theoretical and practical models of using ICTs to intervene in adolescent mental health problems based on Satir family therapy, which provided a theoretical basis for further research, and suggested that more attention should be paid to the intervention of ICTs in Chinese adolescents with mental health disorders. The literature review and telephone interviews were conducted with nine Chinese adolescents with mental health problems. A thematic analysis was then conducted based on the data collected to extract common themes, which were used to refine the theoretical and practical models explored. Ultimately, a theoretical model was refined: (1) ICTs as accessible and immediate tools that can provide support in connecting individuals, families, and society. (2) ICTs as an influencing factor need to be assessed for potential dangers, such as internet addiction. The study also refined a practical model. At the prevention level, (1) using online platforms to assist youth in understanding mental health and regaining self-confidence; (2) using micro-videos to assist meditation and enhance the vitality of the individual iceberg; and (3) using social media to connect family and external resources to access to family and peers. At the intervention level, the latent problems brought about by ICTs, such as inaccessibility and reliance on them, and the level of professional intervention by therapists, all need to be brought to the attention of future research. In conclusion, this technology model can be made more accessible and efficient, particularly for those living in areas with limited access to mental health services. This study contributes to the existing research by exploring the potential of ICTs to enhance the delivery of family therapy and improve the mental health of Chinese adolescents. It is essential to maximize the benefits and minimize the downsides of digital divide.

1. Introduction

The World Health Organization (WHO, 2022) recently released that adolescence aged 10-19 is recognized as a strong foundation for health development.[15] Depression, anxiety, stress and even self-harm among Chinese adolescents are an increasingly pressing issue in the digital era (Zhu *et al.*,2023).[20] The prevalence of mental health problems among adolescents is a growing concern with serious implications for the well-being and functioning of those affected. While Satir family therapy has been used to address these issues (Xu, 2022; Zhou, 2022),[16][19] information and communication technologies (ICTs) such as websites, social media, and apps or online platforms provide a unique opportunity to engage with and support adolescents with mental health issues in new ways (Lal, Daniel & Rivard, 2017).[8] Recent developments in ICTs have opened up new possibilities for intervening in adolescent mental health problems, making it more accessible to detect, prevent, and intervene in the mental problems of adolescents, especially depression and anxiety.

This paper aims to examine the use of ICTs for Chinese adolescents' mental health from a Satir family therapy (SFT) perspective. In particular, it considers the theoretical and practical aspects of SFT, the role of ICTs in SFT, and the implications of ICTs interventions. The following research questions will be addressed:

1. What are the theoretical foundations of Satir family therapy, and how can it be integrated with ICTs to address adolescent mental health problems?

2. What are the potential benefits and risks of using ICTs for intervention in adolescent mental health problems with Satir family therapy?

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3. What are the practical models of using ICTs in adolescent mental health problems based on Satir family therapy?

2. Literature Review

The study is not only to draw attention to the issues embracing the roles and interventions of ICTs in Chinese adolescents' mental health based on SFT, but also the practical implications for harnessing technological advancements. Therefore, this study mainly focuses on the following two themes to inquire into and analyze the facts of literature.

2.1 The theoretical foundations of ICTs integrated with Satir family therapy

With the rapid development of VR, big data, 5G, AI and other technologies and the support of such platforms, the interactive integration of ICTs and mental health services can not only promote the development of technology but also enhance the effectiveness of family therapeutic practice for the transformation of individuals and family (Liu & Zhao, 2021).[9] Social workers, therapists and counselors create online chat rooms for family intervention and emotional counselling as well as physical and mental assistance for families isolated at home, to share experience, information, knowledge and other resources (Liu & Zhao, 2021).[9] From online crisis intervention (CBT) to online mutual aid for sexual minorities, it can also provide social support for Chinese adolescents suffering from emotional distress and reduce the level of stigmatization (Liu & Zhao, 2021; Zhou *et al.*, 2020).[9][18]

Western research investigates that intensive use of ICTs for entertainment is linked to poor relationships with peers and parents, while intensive use of ICTs for communication is associated with good peer relationships and poor parent relationships (Punamäki *et al.*, 2009).[11] ICTs usage in adolescence is seen as a new tool for playing, exploring, and communicating within the family. ICTs can be effective and provides an immediate response to mental health issues, those youth who suffering from high rates of depression, anxiety, and self-harm in New Zealand may tend to engage with digital therapies and mental health tools, such as Apps, computerized therapy, and other digital tools (Fleming *et al.*, 2018; Stasiak *et al.*, 2016).[4][12] Lal, Daniel & Rivard (2017) highlights the access and use, concerns, benefits and recommendations of technology in youth mental health care from the perspectives of family members.[8]

However, limited research has been explored based on SFT. It can be shown that family dynamics can have a significant impact on the mental health of adolescents with bipolar disorder (Goldstein *et al.,* 2009).[5] Wickrama *et al.* (2008) emphasize the importance of the impact of family environment on the development of depression and highlight the need for early intervention to prevent depression and improve the mental health of young adults.[14] Another study Xu (2022) analyses the causes of childhood emotions and their impact on the growth process using Satir iceberg theory.[16] Chen (2010) explored the effectiveness of Satir family therapy in adolescent mental health work through case studies of patients with anorexia nervous.[3] Banmen (2008) presents the Satir Models process for transformation and addresses common misconceptions about suicide and highlights the need for a deep-level understanding of the mental and emotional process of suicidal.[1] However, there is almost no literature combining ICTs and SFT for innovative research. Therefore, it is imperative to explore the integrated model of ICTs with Satir family therapy.

2.2 The practical model of ICTs integrated with Satir family therapy

Based on the detailed debates above, this paper focuses an innovative and integrated practical model of ICTs in Chinese adolescents' mental health issues based on Satir family therapy. The practical model is based on the hierarchical system of network social work in Zhao (2016).[17] Zhao (2016) created a network framework on ICTs intervention in social work which concluded three levels in it.[17] He believed that ICT is regarded as only an auxiliary tool or instrumental support to achieve the goal of clients, which is the first level. The second level is that the professional process of case reception, relationship building and actual intervention is completed online. ICT constitutes the main medium for social workers or therapists to help people, that is, its full online use in helping people. The third level is oriented to the problems generated by the network itself, such as verbal violence and collective behavior in cyberspace. The domestic theoretical research on the Satir family therapy model can be broadly divided into two sections: one that focuses on the theoretical introduction and integration of family therapy, and the other on the application and practice of the model. Scholars such as Wang (2012) have provided systematic introductions to the theory of the Satir therapy model and its main technical methods, including family remodel-ling, communication gestures, simulated families, and relationship profiling techniques.[13] They argue that Satir family education and counseling places greater emphasis on the emotional experience of the individual. Guo & Liang (2008) have provided a systematic introduction to the theoretical sources, treatment strategies, and growth model of the Satir Therapy Model, as well as an analysis of the applicability of the humanistic beliefs advocated by the model in China.[6]

In terms of practical research, it mainly studies the influence of Satir family therapy theory on case work and group work. Chen & Li (2012) successfully used Satir family therapy model to help service objects get out of depression.[2] Chen (2010) explored the effectiveness of Satir therapy model in adolescent mental health work by counseling a case of anorexia nervous.[3] Lu (2012) studied and analyzed the psychological status of children of divorced families, compared the numerical values before and after group counseling, and then discussed the influence of Satir family therapy model on counseling of children of divorced families.[10]

Foreign research has shown that more emphasis is on the practice of Satir family therapy model. Banmen (2008) used Satir therapy model in the adolescent crisis intervention, which can effectively integrate the positive beliefs of human nature and the inner resources, so as to help the therapist to connect with the deeper inner world and cultivate the desire of adolescents for life and face the problems and pressures in life with a more positive attitude.[1] In short, Satir family therapy has also been widely used in personal growth, group training, interpersonal therapy, treatment of depression and anxiety patients, and treatment of low self-worth. However, the promotion and development of Satir family therapy in China is still relatively backward, which is mainly based on the publication of books, the experience of workshops and the professional training courses. The relevant empirical research and literature are still relatively scarce. Especially for this paper, the research combining ICTs and Satir model is almost a blank field.

In summary, various studies have investigated the impact of different factors on adolescent mental health and well-being. Therefore, this paper indicatively combines ICTs and Satir model to study the mental health problems of adolescents. ICTs are used as an instrumental support and impact factor, combined with Satir family therapy, play a prevention and intervention role to carry out pre-eminent, in-event and post-event practical models for adolescent psychological health (see Figure 1).

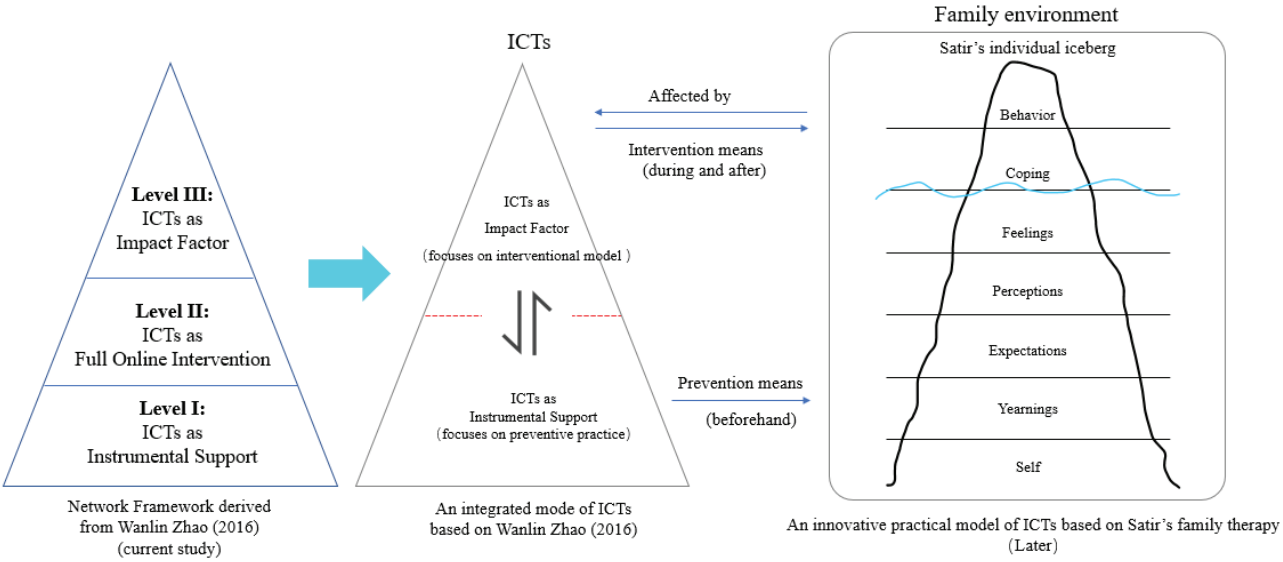

Figure 1: An innovative practical model of ICTs based on Satir family therapy

3. Methodology

At present, the research on adolescent mental health problems at home and abroad mostly adopts quantitative research methods, mainly exploring the relationship between the causes of adolescent problems and the effectiveness of Satir model or ICT intervention. It is difficult to deeply understand the potential factors and complex feelings at all levels under the iceberg of adolescent mental health problems. Therefore, this paper uses literature research and telephone interviews to explore the role of ICTs based on Satir family therapy in adolescent mental health problems. In the first stage, extensive literature research is conducted on two main topics, namely the intervention of ICTs in adolescents' mental health problems and the application of the Satir family therapy model to such problems. This provides the theoretical model that was refined through the integration of the author's observations and reflections. In the second stage, anonymous telephone interviews are conducted with nine adolescents with mental health problems, who are recruited randomly from social workers and counseling agencies across the country through authors' friends. The interviews focus on investigating the adolescents' past experiences and therapeutic interventions with ICTs, including their accessibility and use of Satir theoretical model, as well as their perceptions regarding the effectiveness, benefits, concerns, and recommendations of ICT interventions. Simultaneously, a thematic analysis method is used to extract common themes to refine the theoretical and practical models.

3.1 Literature research

Although the number of domestic research on the combination of ICTs and Satir model is limited, the advancement of mobile phones and internet technology is moving forward to research more relevant literature which could provide theoretical foundations and build innovative concepts or frameworks for further research. Therefore, based on a large number of literature, this study builds a theoretical model for the combined intervention of ICTs in adolescents' mental health problems and Satir family therapy.

3.2 Telephone interview

Due to the limited time and financial issues, this study mainly employs a telephone interview for the target group to focus on a deeper understanding of the reality of respondents and explores their experiences with the Satir family therapy and the role of ICTs in it. The telephone interviews for this study are scheduled to take place between February 1 and February 10, 2023. A total of nine Chinese adolescents will be randomly recruited as interviewees from social workers or psychological counselling agencies across the country with the help of the authors' friends. The participants selected for the study will have mental health problems, specifically those who have experienced depression, anxiety, stress, or severe mental health issues in China. These criteria will be communicated to the authors' friends in advance. The demographic characteristics of age, gender, education, and family background of the participants will be obtained from the original records of these agencies and will not be included in the telephone interview outline. The authors' friends will provide the telephone numbers of the selected participants. All information collected from the interview will be anonymous and confidential and stored in a locked laptop. All data including telephone recordings, transcriptions and translation of documents, and analysis process and other related resources will be completely deleted after completing the paper. The results of the research are used for this paper only but not for other commercial purposes.

Prior to the formal interview, each interviewee signed an informed consent form, which is outlined below:

Pre-interview description:

Interview notes: *This interview will be recorded in its entirety in order to facilitate subsequent content organization. The content of this interview will be used for academic research purposes only, and we will keep your personal information strictly confidential.*

Proper noun interpretation

ICTs: *Information and Communication Technologies include not only email, instant messaging, video chat, website, and online social media but also various electronic devices capable of information exchange and transmission.*

SFT: *Satir Family Therapy is a theoretical system created by Ms. Virginia Satir, the first family therapist in the United States. It is a new method of psychotherapy, which starts from the systemic aspects of the family and society to deal with the problems borne by the individual more comprehensively. It focuses on improving personal self-esteem, improving communication, and helping people live more "humane" lives rather than just eliminating "symptoms", and the ultimate goal of treatment is to achieve "physical and mental integration, internal and external consistency".*

Interview questions:

1） How long did it take for you to feel bad before you were diagnosed with mental health problems?

2） What do you think of the causes of your state?

3）When you feel bad, how do you usually behave outwardly?

4）When you feel bad, what are the ways you relieve it? Are you willing to seek help from your friends and family members or net friends?

5）Have you learned about Satir family therapy? Or does your therapist use the Satir model during your treatment? If have, please introduce the treatment process and your perspectives.

6）Have you accessed and used ICTs before and during your treatments? If have, please introduce the intervention process and your opinions on pros and cons of ICTs. If have not, are you willing to do online interventions and why?

7）With the development of technology, the combination of Satir model and ICTs will become increasingly rich in diagnosis and treatment methods in the future, are you willing to accept VR family role-play, online meditation, mental health educational video and other related methods for prevention and intervention to improve your life energy? What do you think of it?

4. Result and Discussion

The study recruited nine Chinese adolescents between the ages of 15 and 19 with mental health issues to participate in the telephone interview. Family background information included family structure and household income. Family structure was categorized as either single-parent or two-parent households, while household income was divided into high, medium, and low income. The income ranges for each category were defined by the social workers or psychological counseling agencies, with low-income families earning less than 80,000 yuan annually, middle-income families earning between 80,000 and 150,000 yuan annually, and high-income families earning more than 150,000 yuan annually. Education was categorized into four groups: dropout, currently in high school, completed high school, and not disclosed. Specifically, three of them were interviewed by using Satir theory and ICTs. It is noticeable that the practical applications of the two interviews in adolescents' mental health are still fewer. Demographic characteristics and presenting problems of the clients are provided in Table 1.

The iceberg metaphor of the Satir family therapy can offer an explicit depiction of their deeper inner worlds of these nine adolescents with mental health issues. It provides a thorough analysis for us to explore the root causes of the behaviors and problems. The nine participants' inner worlds using the iceberg metaphor is divided into seven layers. From the lowest layer to the highest one are respectively self, yearnings, expectations, perceptions, feelings, coping, and behavior. The first layer 'self' demonstrates 'I am not good'. The 'yearnings' shows 'being accepted, trusted, appreciated and connected'. The 'expectations' manifests 'others should understand me. I should do the best to get recognized by others'. The 'perceptions' indicates 'I am not good enough and always rejected or criticized by others. Nobody understands me'. The 'feelings' is described as 'anxiety, anger, aggression, depression, unhappiness, disappointment, or loneliness'. The 'coping' represents 'a

blaming or placating stance'. The 'behavior' performs 'self-harm or giving up on themselves'. The last two layers are located above the waters of the Satir's iceberg, and the other layers below it.

Table 1: demographic characteristics and presenting problems of the clients

Participant	Age	Gender	Family Background	Education	Presenting problems	ICTs' access/use	Satir theory
Participant 1	17	Female	Single-parent Low-income family	Dropout	Being anxious about study and disappointed in herself	Yes	No
Participant 2	16	Female	Two-parent Low-income family	In high school	Family conflicts with parents	Yes	No
Participant 3	18	Female	Two-parent Middle-income family	In high school	Being anxious about study and addicted to online games	**Yes**	**Yes**
Participant 4	19	Male	Two-parent Middle-income family	High school completed	Being unable to control emotions and angry with himself	Yes	No
Participant 5	18	Female	Single-parent Low-income family	Dropout	Being low self-esteem and aggressive	Yes	No
Participant 6	15	Female	Single-parent Low-income family	Dropout	Losing interest in life and self-harm	**Yes**	**Yes**
Participant 7	19	Male	Two-parent Middle-income family	Non-disclosure	Being anxious about future and believing the life is pointless	**Yes**	**Yes**
Participant 8	18	Female	Two-parent Low-income family	In high school	Being low self-esteem and unhappy	No	Yes
Participant 9	16	Female	Single-parent Low-income family	In high school	Being depressed losing interest in study	Yes	No

4.1 Access and use of ICTs

Almost all participants indicate that they had or currently use ICTs. For instance, students who need to check assignments, online courses and grades in WeChat groups. They also need to contact therapists when attending psychological therapy and view relevant psychological health knowledge and treatment progress on institutional online platforms. In addition, communication with parents, classmates and friends requires the use of mobile phones. When they feel depressed, they will also play online games or watch movies. In this regard, ICTs play an indispensable role in their study and adolescent life, as one participant put it:

"I was diagnosed with moderate anxiety a year ago and always couldn't concentrate on my study. It was the head teacher who discovered the problem and communicated with me on WeChat that I realized I had an anxiety disorder. I began to feel I was in a bad state, especially when I wanted to kill myself. I often searched online for some scales related to depression, and I would like to verify the results. At that time, I found myself suffering from severe depression, then I found some online counselors. So, I searched for ways by myself online to prevent and relieve depression and try to change myself.

My therapist has established an online anonymous community for our peer group. I particularly like to communicate with them on the virtual network, because they have the same symptoms as me and there are many common topics. I feel that I am real and safe here. I can also check my treatment progress on the institutional online platform."

Therefore, whether in the prevention stage or the treatment stage, these participants are basically exposed to ICTs. The purposes of using ICTs include: (1) transmitting information, (2) searching information, (3) learning courses, (4) understanding the treatment, and (5) entertainment. From these perspectives, ICTs play an active role in supporting adolescents with mental health problems. But based on the Satir family theory, only three participants describe that ICTs intervention could help therapists directly deliver the knowledge of mental health and required readings to them, which highlights the function of transmitting information.

4.2 Benefits and risks

According to the thematic analysis, this study summaries the benefits and risks of ICTs used in adolescents' mental health problems listed in Table 2. In terms of the Satir family therapy, the integration of ICTs in the interview rarely mentioned the pros and cons. But the peer or family support from online platforms and groups plays a crucial role on family reconstruction.

In addition to the benefits of using ICTs for mental health treatment, it's important to concern that the effectiveness of online therapy may vary depending on the individual and the type of mental health issue being treated. While some studies have shown that online therapy can be just as effective as in-person therapy for certain conditions, such as depression and anxiety, it may not be appropriate for all individuals or all types of mental health issues (Lal, Daniel & Rivard, 2017).[8]

Another potential benefit of using ICTs for mental health treatment is the ability to use data and technology to enhance the effectiveness of treatment. For example, data from wearable technology or mobile apps can be used to track symptoms, monitor medication adherence, and provide personalized treatment recommendations (Hunt & Eisenberg, 2010).[7] However, it's important to ensure that data is collected and used in an ethical and secure manner to protect patient privacy.

Overall, the use of ICTs for mental health treatment has the potential to increase accessibility, convenience, and personalized treatment options for individuals struggling with mental health issues. However, it's important to consider the potential drawbacks and limitations of this approach and to work with a mental

health professional to determine the most appropriate treatment plan for clients.

Table 2: benefits and risks of ICTs

Item	Number	Sub themes	Participant quote
Benefits	1	Increased accessibility	*ICTs can make mental health treatment more accessible to me who lives in remote areas and I have mobility issues*
	2	Convenience	*ICTs allow for treatment to be conducted from the comfort of one's own home or in a place of their choosing*
	3	Cost-effective	*Online therapy can be less expensive than in-person therapy.*
	4	Increased anonymity	*ICTs can offer more anonymity than in-person treatment, which is appealing to me who are uncomfortable with face-to-face interaction*
	5	Personalized treatment	*ICTs allow for personalized treatment plans that can be tailored to an individual's specific needs and preferences*
	6	Increased frequency of contact	*ICTs can allow for more frequent contact between the patient and mental health professional, which may be beneficial for me*
	7	Improved self-management	*The use of mobile apps can help me manage my symptoms and track the progress*
	8	Improved access to peer support	*Online support groups and forums can provide a sense of community and support for me*
	9	Flexibility	*Online therapy can be conducted at a time that is convenient for me, which can help to minimize disruptions to the daily routine*
	10	Reduced stigma	*The anonymity of online therapy and support groups may reduce the stigma associated with seeking mental health treatment*
Risks	1	Addiction and social isolation	*I am always obsessed with the online games and social withdrawal without friends in reality*
	2	Limited literacy skills and recognition ability	*Sometimes I cannot search the information as what I want and not recognize correctly*
	3	The quality of information	*The online information and treatment of mental health is not always right and effective. Some information is full of cyberbully and pornography*
	4	Technical issue (e.g., accessibility and reliability)	*Technical difficulties with ICTs can lead to frustration and disruptions in my treatment*
	5	Lack of human interaction	*Lack of human interaction may be a drawback of using ICTs for mental health treatment*
	6	Limited nonverbal cues	*Online therapy may not capture all of the nonverbal cues that are present in face-to-face interactions*
	7	Ethical concerns	*There may be ethical concerns related to privacy and confidentiality*
	8	Not appropriate for everyone	*Online therapy may not be appropriate for all individuals, especially those with severe mental health issues that require more intensive treatment.*

4.3 Recommendations

The practice model of Satir family therapy combined with ICTs in adolescents' mental health problems is worthy of being deeply explored. At the prevention level, the three participants approved that using an integrated method of ICTs and SFT could facilitate the instant and efficient communication between family members and therapist which will be effective to promote the treatment. Secondly, it could offer explicit, comprehensive and professional information on adolescents with mental health issues. Last but not least, it could enhance peer or family support during treatment procedure, which is beneficial to family reconstruction. At the intervention level, the potential concerns should be taken into consideration, such as web-addiction of participants and professional ability of online therapists. Participants' recommendations are listed in Table 3.

Table 3: recommendations

Item	Number	Sub-themes	Participant quote
Prevention (ICTs as instrumental support)	1	Direct communicant	*I support VR technology or micro-videos. In my treatment, my social worker discussed about ICTs with me, which could assist meditation to directly enhance the vitality and perception of self, others and context.*
	2	Educational information	*Online education platforms and authentic knowledge could assist me in understanding mental health and regaining self-confidence. I will not afraid to face any problems.*
	3	Family or peers' support	*I usually use social media or online counseling, which is helpful to connect family members and external resources. I believe it will provide a social support to family reconstruction.*
Intervention (ICTs as influencing factor)	1	Addiction	*I hope it will not be stopped because more and more technology has improved the effectiveness on mental health issues. I had severe troubles with my parents because I was addicted to online games. I won't communicate with them offline but sought virtual intimacy. But my therapist used Satir model and ICTs to help me balance the relation of virtual and reality so that I realized which is significant for me and what I want most.*

	2	Profession	*The professional ability of therapists is more important, which will decide how the ICTs and Satir model are effectively applied in mental health issues during treatment. But I think it is not an unsolvable problem for future.*

However, some participants indicated that they have limited experiences in the combination of ICTs with Satir family therapy and have not a systematic and in-depth understanding. Due to personal or objective reasons such as lack of proficiency in the use of professional equipment (e.g., mental health APP), they are inclined to use smartphones, laptops and other online devices more as entertainment platforms, which play a very important role in their daily lives.

4.4 Findings

Based on previous literature review and thematic analysis, the practical combination of ICTs and Satir family therapy is demonstrated in Figure 2. In the 'prevention' phase, before initially negative emotions or depressive state have not been worsened, ICTs could be regarded as instrumental support to information-searching, communication, education, connection, which could arouse one's life energy and satisfy one's expectations so as to mitigate the passive feelings. During and after the 'treatment' phase, individuals may be affected by the malpractice of ICTs, then professional therapists or social workers will explicitly and directly communicate with patients via text messages or emails, such as video conferencing, online questionnaires, etc., which will enhance the relationships and cultivate the good behaviors coping with mental health issues without blaming or placating stance.

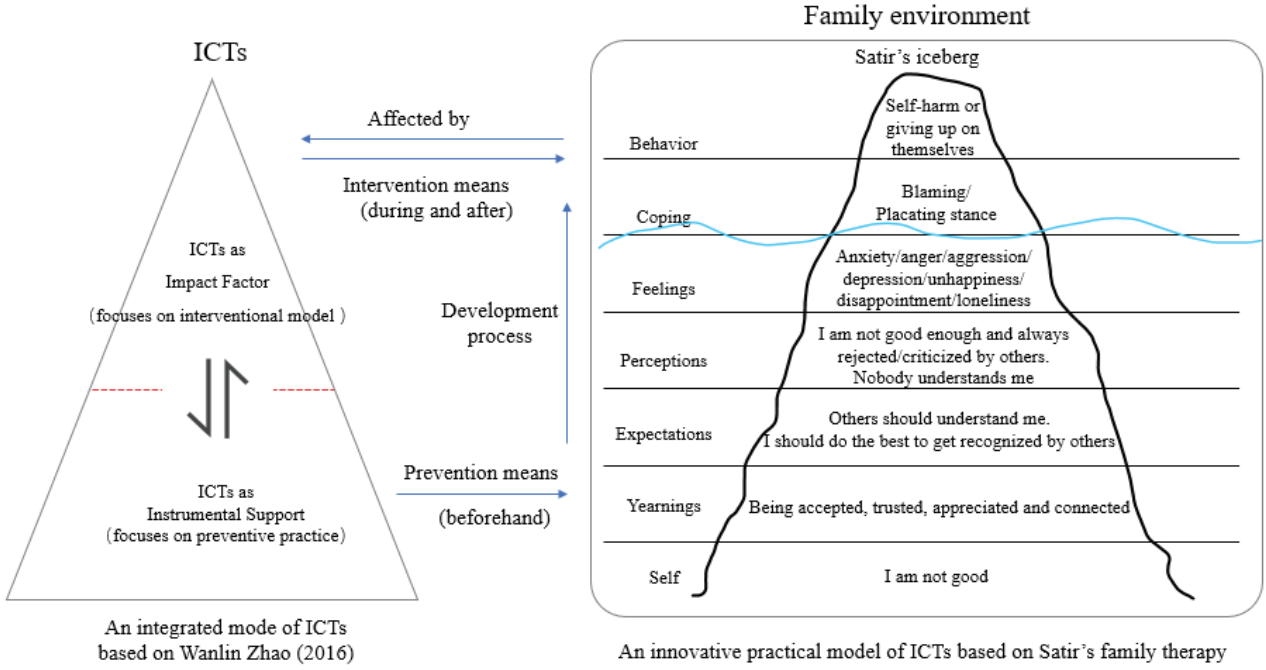

Figure 2: A practical model of ICTs based on Satir family therapy

5. Conclusion

Although the study recruited a small sample size which limits the generalization of the results, the tentative research on the application of the combination of theoretical and practical models in adolescents with mental health problems through innovative integration of ICTs and Satir family therapy proves that there is a promising research prospect. The results highlight the significance of ICTs in adolescents' mental health issues based on Satir theory, including access and use, benefits and drawbacks, and recommendations. The findings also offer a promising approach to the intervention of Chinese adolescent mental health problems. More research and practice should be paid attention to in the future, such as the clinical and interdisciplinary applications on adolescent mental health problems, which will be better to provide more alternative solutions for youth with mental health issues.

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Conflicts of Interest

None declared.

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