

Developing and Pilot Testing a Brief Intervention to Reduce Psychological Distress among  
Individuals Recently Diagnosed with HIV in China

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**Abstract**

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In China, where there are few mental health resources, the majority of HIV-related efforts have focused on medical treatment and transmission prevention rather than psychosocial support. Yet people living with HIV/AIDS (PLWHA) report high levels of psychological distress, especially upon first receiving their HIV diagnosis. We conducted mixed methods research of a qualitative study with ( $N = 31$ ) individual interviews and 3 focus groups ( $n = 6$  in each group), and a quantitative survey ( $N = 200$ ) with HIV affected participants in Shanghai and Beijing, China. Our findings informed the development of the Psychology Toolbox intervention, a brief CBT skills-based intervention comprising an Automatic Thought Record, Behavioral Activation, and Paced Breathing, designed to be integrated into primary care for recently diagnosed PLWHA.

Recently diagnosed Chinese PLWHA who are men who have sex with men (MSM) are particularly vulnerable to psychological distress as they face both HIV and sexual orientation stigma. We conduct a pilot Type 1 hybrid effectiveness-implementation trial (Curran et al., 2012) of the Psychology Toolbox intervention with recently diagnosed MSM for mental health outcome data as well as feasibility and acceptability information. Ten recently diagnosed MSM at an HIV treatment center in Shanghai China completed the intervention. Paired-samples  $t$  tests

demonstrate significant reduction in HIV-related distress, depression, problems with adjustment, as well as improvements in coping and perceived social support. Participants found the intervention highly acceptable. Community advisory board members of nurses, physicians, and community peer leaders along with attrition data suggest that the intervention is feasible. Future research may seek implement the intervention in a larger sample as well as among other recently HIV diagnosed populations.

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## DEDICATION

*To my 爸爸妈妈  
for giving me the chance to go to school  
and learn to do something that might change the world*

**Title:** The development of a brief distress reduction intervention for individuals recently diagnosed with HIV in China

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## **ABSTRACT**

In China, where there are few mental health resources, the majority of HIV-related efforts have focused on medical treatment and transmission prevention rather than psychosocial support. Yet people living with HIV/AIDS (PLWHA) report high levels of psychological distress, especially upon first receiving their HIV diagnosis. We conducted mixed methods research of a qualitative study with ( $N = 31$ ) individual interviews and 3 focus groups ( $n = 6$  in each group), and a quantitative survey ( $N = 200$ ) with HIV affected participants in Shanghai and Beijing, China. Our qualitative data revealed major themes of *forms of distress* experienced and *types of psychosocial support* that our participants wished they could have accessed upon diagnosis as well as *suggestions for intervention* structure that would be most feasible and acceptable. Our quantitative surveys provided further evidence of the high degree of psychosocial distress among recently diagnosed PLWHA. Our findings informed the development of the Psychology Toolbox intervention, a brief CBT skills-based intervention comprising an Automatic Thought Record, Behavioral Activation, and Paced Breathing, designed to be integrated into primary care for recently diagnosed PLWHA. Intervention contents are described in detail. The intervention requires evaluation for efficacy and best strategies for eventual implementation and dissemination.

**Keywords:** HIV, recently diagnosed, China, distress, intervention

## INTRODUCTION

At the end of 2014, there were 296,000 individuals living with HIV and 205,000 with AIDS in China (UNAIDS, 2015). People living with HIV/AIDS (PLWHA) in China experience significant mental health distress (Niu, Luo, Liu, Silenzio, & Xiao, 2016). While transmission prevention efforts have been the focus of governmental energy, there has been limited attention paid to the mental health of PLWHA (Shao, 2006). There is a relative lack of research conducted on the psychological experiences of Chinese PLWHA. The available work, however, has consistently demonstrated a high rate of psychological distress among Chinese PLWHA, with considerable variation among groups based on transmission routes. A convenience sample of HIV treatment seeking adults in Beijing found a 54.2% endorsement of “significant depressive symptomatology” as indicated by a score of 10 or above on the brief 10-item Center for Epidemiological Studies Depression Scale (CES-D), as well as a 42.9% positive screen for panic attacks, and a 30.8% positive screen for generalized anxiety disorder (Yang, Leu, Simoni, Chen, Shiu & Zhao, 2015). Among HIV-positive former plasma/blood donors, Meade et al. (2010) reported 47% moderate and 36% severe depression, while Wang et al. (2005; as cited in Su, Lau, Mak, Choi, Chen, Song, et al. 2013) found that 92% of their rural sample were depressed (both studies used the Chinese version of the Beck Depression Inventory (BDI; Beck, Steer, & Carbin, 1988; Zheng, Wei, Goa, Zhang, & Wong, 1988). Meade et al. (2010) also reported that 52% met criteria for mild-moderate and 8% marked-severe anxiety (using the Chinese version of the Zung Self-rating Anxiety Scale, Zhang, 2015; Zung, 1971). In urban areas of Henan and Guangdong provinces, Su et al. (2013) reported that 72% of their general PLWHA sample had depression. Jin et al. (2013) reported on psychological distress in HIV-positive intravenous drug users (IDU) seeking methadone treatment in Yunnan province, finding that 43.1% endorsed suicidality,

compared to 8.5% in controls (HIV-negative, non-IDU) using the BDI. Another study of general HIV-positive participants reported that nearly 80% met criteria for lifetime major depressive disorder, compared to 4% of their HIV-negative counterparts, and 20% expressed current suicidal ideation (assessed with the Chinese Composite International Diagnostic Interview and the BDI; Jin, Hampton Atkinson, Yu, Heaton, Shi, Marcotte, et al., 2006).

In addition to diagnosable mental health conditions, PLWHA experience specific HIV-related distress such as disclosure distress (Yang, Xie, Simoni, Shiu, Chen, Zhao, et al., 2016; Simoni, Yang, Shiu, Chen, Udell, et al., 2015), concerns related to medication adherence (Simoni, Yang, & Porricolo, 2012), and medication side effects (Chen, Shiu, Yang, Simoni, Fredriksen-Goldsen, Lee, et al., 2013; Chen, Shiu, Yang, Lee, Lee, Simoni, et al., 2013).

People who have recently received an HIV diagnosis are particularly vulnerable to psychological distress (Martinez, Israelski, Walker, & Koopman, 2002). While there is a relative absence of research on the mental health of recently diagnosed HIV patients in China, the existing global literature has emphasized the critical nature of psychological adjustment to an HIV diagnosis. In fact, the event of receiving an HIV diagnosis itself is so distressing that it qualifies as an index trauma for a posttraumatic stress disorder (PTSD) diagnosis according to the Diagnostic and Statistical Manual (DSM-IV-TR; APA, 2000). Kelly et al. (1998) found that 30% of homosexual/bisexual men in an Australian sample met criteria for posttraumatic stress disorder in response to receiving an HIV diagnosis. While there is contention in the PTSD literature about the validity and utility of classifying receiving an HIV diagnosis as a “trauma” (Bakelaar, Rosenstein, Kagee, & Seedat, 2011; Mundy & Baum, 2004), it is doubtlessly a stressful experience. Upon receiving a diagnosis, many individuals exhibit PTSD symptoms such as recurrent and intrusive thoughts and nightmares about death and illness, as well as

situational avoidance of HIV-related stimuli including other people, hospital sites, and life activities (Breslau, Davis, Andreski, & Peterson, 1991; Acierno, Resnick, & Kilpatrick, 1997).

Olley et al. (2005) assessed a sample of recently diagnosed PLWHA (mean duration since diagnosis was less than 6 months) in South Africa using expert-administered MINI International Neuropsychiatric Interviews and found that up to 29% of participants met criteria for major depression, 54% for suicidality, and 40% for social anxiety disorder.

In addition to the inherent dysfunction associated with having diagnosable mental disorders, psychological distress in PLWHA has negative repercussions for HIV disease and risk management as well (Delahanty, Bogart, & Figler, 2004). Recently diagnosed individuals include a higher proportion of those with a recent infection, which is characterized by high viral load and increased HIV-transmission potential (Quinn, Wawer, Sewankambo, Serwadda, Li, Wabwire-Mangen, et al., 2000; Koopman, Jacquez, Welch, Simon, Foxman, Pollock et al., 1997). Depression and PTSD diagnoses have been linked to reduced antiretroviral treatment adherence, which can result in reduced viral suppression again leading to greater chances of HIV transmission (Wagner, Goggin, Remien, Rosen, Simoni, Bangsberg, et al., 2011; Sherr, Nagra, Kulubya, Catalan, Clucas, & Harding, 2011). Researchers have highlighted the need for mental health treatment to reduce HIV transmission risk behavior, including both sexual risk behavior and HIV care and treatment adherence (Grossman & Gordon, 2010; Sikkema, Watt, Drabkin, Meade, Hansen, & Pence, 2010). The first year after receiving an HIV diagnosis can be a critical period for intervention, especially to target risk reduction, linkage to care, and mental health. (Weinhardt, 2005; Bhatia, Hartman, Kallen, Graham, & Giordano, 2011; Rao, Chen, Pearson, Simoni, Fredriksen-Goldsen, Nelson, et al., 2012). Intervening early in the HIV disease

experience may be useful to mitigate future suffering and may help avoid the high rates of lifetime depression and anxiety described above.

The majority of intervention research for recently diagnosed PLWHA has focused on transmission risk reduction (such as “Positive Choices” by Sikkema, Hansen, Kochman, Santos, Watt, Wilson, et al., 2011; Sikkema, Abler, Hansen, Wilson, Drabkin, Kochman, et al., 2014) and linking to medical care (e.g., “Antiretroviral Treatment Access Study Case Management Intervention” by Gardner, Metsch, Anderson-Mahoney, Loughlin, Rio, Strathdee, et al., 2005; “Outreach Initiative” by Naar-King, Bradford, Coleman, Green-Jones, Cabral, & Tobias, 2007) rather than psychological well-being. We could not locate intervention research in China for newly diagnosed PLWHA.

Given that the number of individuals diagnosed with HIV in China each year continues to increase (China Center for Disease Control and Prevention, 2013; 2015), research is needed to address their mental health needs. In this paper, we conducted a two-stage mixed methods project to better understand the concerns and psychological distress experienced by Chinese individuals soon after receiving a diagnosis of HIV in order to develop a behavioral intervention to address these needs.

## **METHODS**

A qualitative Study 1 and quantitative Study 2 are described separately below. The studies were conducted at Shanghai Public Health Clinical Center (SPHCC) and Beijing Ditan Hospital, premier HIV treatment centers in two major metropolitan areas of China. All study procedures were approved by ethics review boards at SPHCC, Ditan Hospital, and the University of Washington.

### **Study 1: Qualitative Study**

For the qualitative component, in 2010 – 2011, we conducted in-depth interviews with recently diagnosed HIV-positive patients to understand their HIV-related mental health needs and acceptance of psychosocial interventions. We also conducted three focus groups with six participants each, one with recently diagnosed PLWHA, one with their family caregivers (including parents and spouses), and one with their HIV healthcare providers (including doctors and nurses). A community advisory board (CAB) of stakeholders including patients who had successfully coped with living with HIV for a long period of time, volunteers at Red Ribbon Society (an HIV/AIDS non-governmental association), seasoned HIV care providers, and supportive family caregivers were also consulted, prior to collecting our in-depth interviews as well as after synthesizing our qualitative findings.

The qualitative study was advertised with posters in the waiting rooms and through staff. Potential participants were invited to speak with clinic staff that connected them to a research coordinator who explained the study details and obtained informed consent. Inclusion criteria were receiving an HIV diagnosis in the last year and ongoing HIV-related care at SPHCC or Ditan Hospital, 18 years or older, and Mandarin speaking. Participants who were cognitively impaired as informally assessed by medical providers were excluded. Participants received 100 RMB (~USD 15) for their participation in the study.

Researchers experienced in qualitative methods (including the first author) conducted the semi-structured individual interviews and focus groups in Mandarin with participants at Ditan Hospital and SPHCC. Individual interviews were based on an interview guide (see Appendix A) with open-ended prompts designed to collect exploratory information about participants' psychological experiences of being HIV-positive, beginning with their diagnosis story and how

HIV has affected their daily life, wellbeing, and family functioning. Focus group questions followed the same interview guide but were framed as relating to the PLWHA in their family or under their care. Participants were also queried specifically about the psychological impact of the diagnosis, how they had coped, as well as what resources and support they wished they had access to, or would have been helpful.

Each interview lasted 1-2 hours, was audio recorded and transcribed. A total of  $N = 31$  participants were recruited for the individual interviews ( $n = 12$  from Ditan Hospital and  $n = 19$  from SPHCC) in addition to 3 focus groups, yielding 34 transcripts for analysis.

### *Participants*

Individual interview participants ranged in age from 23 – 66 years ( $M = 41.6$ ,  $SD = 10.4$ ); 15 were male and 16 were female. Almost half of the male participants (46.7%) acquired HIV from having sex with other men, and just over one third of female participants (36.8%) acquired HIV through heterosexual sex, the two most common transmission routes. Other known transmission routes reported were blood plasma selling, medical procedures, and needle use. In terms of socioeconomic status, participants ranged in educational history with some completing middle school and others obtaining graduate degrees; some were fully employed while others were unemployed.

### *Data Analysis*

All audio recordings of interviews and focus groups were transcribed verbatim in Chinese by experienced transcribers. At least one member of the research team also reviewed each transcript for accuracy to the recording. Three teams of Mandarin-speaking Chinese research

assistants independently coded each transcript in ATLAS.ti qualitative software using an iterative codebook developed from a constant comparison analysis framework (Miles & Huberman, 1994). Preliminary codes were identified by extracting key phrases from answers that appeared relevant to mental health or were repeated by other transcripts, suggesting possible patterns. The interviews were systematically reviewed and coded; the first author (research supervisor) facilitated reconciliation of discrepancies in codes through group discussion and consensus (Hill, Knox, Thompson, Williams, Hess, & Ladany, 2005). Illustrative quotes were extracted then translated into English for publication.

## **Study 2: Quantitative Study**

For the quantitative phase of the project, we conducted a survey in 2012 at Ditan Hospital to assess a larger sample of recently diagnosed PLWHA for descriptive information on HIV-related mental health. Participants ( $N = 200$ ) completed an hour-long paper-and-pencil survey of demographics and psychometrically validated measures of mental health symptomology. We followed the same procedures for advertising, recruitment, inclusion criteria, and participant compensation as Study 1 described above.

### *Measures*

#### Beck Depression Inventory-II (BDI-II)

The BDI-II is a well-established measure (Beck, Steer, & Brown, 1996) for detecting depressive symptoms and has been psychometrically validated in several Chinese populations (e.g., Shek, 1990) including those living with chronic illness (Harris & D'Eon, 2008). This 21-item scale rates experiencing depressive symptoms over the past two weeks such as sadness,

pessimism, and irritability on a 4-point Likert-type scale. Compared to other assessments of depression, the BDI includes more items on somatic symptoms (Smarr & Keefer, 2011), which may be better suited for assessing depression in Chinese populations (Parker, Cheah, & Roy, 2001; Kleinman, 1985).

### Zung Self-Rating Anxiety Scale (SAS)

The SAS is a 20-item measure assessing anxiety symptoms on a 4-point Likert-type scale ranging from *A little of the time* to *Most of the time* (Zung, 1971). Because this measure details many somatic symptoms of anxiety such as shaking and trembling, increased heart rate, indigestion, and aches and pains, it was chosen for this study due to the somatization of psychological problems in Chinese populations (Kleinman, 1982). The measure has cognitive, autonomic, motor and central nervous system symptoms. Reliability and validity of the Chinese version have been established by many studies (e.g., Zhang, Liu, Li, Mao, & Yuan, 2015; Liu, Oda, Peng, & Asai, 1997).

## **RESULTS**

### **Study 1: Qualitative Findings**

Our analyses of qualitative interview and focus group data revealed themes in two primary categories: 1) types of distress experienced by recently diagnosed PLWHA, and 2) thoughts they had about what resources would be helpful (for themselves at the time and others in a similar situation), including suggestions for intervention timing, location, format, and characteristics of the interventionist.

Theme 1: Types of distress

Participants reported experiencing significant negative emotion following receiving an HIV positive diagnosis, including suicidal ideation, anxiety, and hopelessness. Participants also engaged in catastrophic thinking and self-isolating behaviors.

*Suicidal ideation*

Participants described *suicidal ideation* following receiving a diagnosis both as thoughts for immediate action in their periods of severe distress as well as a plan for the future when their HIV progressed.

*I felt that my journey had come to an end ... Suicide or leaving may be the proper way for me.* – Male, 42, with wife, child and same-sex partner

*When I develop AIDS ... I will drive off a cliff, making it look like an accident.* – Male, 48, with wife, child, and long term same-sex partner

*Anxiety*

Participants reported *anxiety* in the form of fear of transmitting HIV to loved ones, worry about the future, consequences of others finding out about their status, and avoidance of HIV-related information.

*I'm scared, really scared. I asked a lot of people, some of them told me that saliva is not contagious; some of them told me that saliva is contagious. I'm confused. I don't know if it is really contagious or not.* – Female, 33, with siblings, spouse, and child

*My anxiety is family pressure. What will happen to them in the future?* – Male, 42, with wife, child and same-sex partner

*In the countryside, if they know you are HIV-positive, your whole family cannot live any more.* – Male, 35, with same-sex partner

*I forced myself not to know more about it [HIV/AIDS]. I was afraid that that kind of information would make me even more distressed.* – Male, 29, with same-sex partner

### *Hopelessness*

Many participants described feelings of *hopelessness* about their future, even in the face of scientific information from credible sources.

*When I heard the news [HIV-positive diagnosis] ... I collapsed. It seemed like there is no hope, nothing.* – Female, 52, divorced

### *Catastrophic Thinking*

Participants showed evidence of *catastrophic thinking*, anticipating the worst possible outcomes (Beck, Rush, Shaw, & Emery, 1979).

*Our condition is not like how others say we can still live for twenty years. Even for ten years, I feel that is not true. I feel that I could not live that long.* –Female, 53, with siblings

*Everything is our fault ... if we [self and husband] were not HIV-positive, we would be able to live better, my child wouldn't have dropped out of school, he wouldn't have to be like that.* – Female, 40, separated from husband, with 2 children

### *Self-isolation*

In addition to thoughts and emotions, participants also described behaviors they engaged in, as a result of their negative emotions. These behaviors were often of *self-isolation* and could contribute to further negative emotion, as they were removing themselves from sources of positive social support (See Yang, Xie, Simoni, Shiu, Chen, Lu, & Zhao, under review for further exploration of self-isolation).

*I used to be an outgoing person ... but now I feel self-hate. I used to have a lot of friends, but now I never go out and socialize with my friends. – Female, 58, with siblings*

*I never had the courage to go back home. I do not want to face my classmates and colleagues; I don't know what I should say to others; I really don't dare to see them again. – Female, 49, widow*

### Theme 2: Useful resources

Our qualitative data also showed evidence of types of psychosocial support that our participants wished they could have accessed upon diagnosis. Our interviewees gave suggestions for intervention structure and design for greatest feasibility and acceptability, such as timing, format of the intervention, and acceptable interventionists.

### *Timing of intervention*

In terms of timing of intervention, participants referred to a *critical window* of time immediately following the diagnosis that was particularly difficult.

*I just couldn't believe I was HIV-positive. It is too hard to describe such a feeling ... the most terrible period I have ever experienced ... I was thinking about suicide. – Male, 37, same sex partner*

*I spent a week in fear of my HIV test results ... I cried several times a day ... I walked around with an aimless feeling all day. – Male, 49, single*

*That first half year, it was so difficult to adapt. First, I was afraid for my family and the second, I was afraid that my friends would know. I just did not know what to do or how to respond. – Female, 33, married, 1 adopted child*

#### *Type of intervention*

Participants described that learning ways to cope with what they were feeling would be helpful. They also described wanting individual time with an interventionist, whether it was delivered face-to-face or over the phone.

*At the time I had so much fear I did not know what to do. What was I supposed to do? I think one-on-one treatment would have helped me get through that lonely time. –Female, 30, divorced, 1 child*

*One-on-one would be the best; that would be the most personal. – Female, 32, married*  
*I want to have one-on-one intervention. I think it can also be phone-based...I could leave a message and tell the counselor what was deep in my heart. Then he could give me some professional guidance. I think it is pretty important. Otherwise, I have felt very blind. –Female, 30, divorced, 1 child*

*Interventionist characteristics*

In addition to a mental health counselor as a professional source of support, participants described being amenable to receiving support from more experienced peers as well as doctors or nurses.

*Chatting with peers helps a lot. ... Most people in this situation have the same feeling.*

*Peers who have been diagnosed longer, they are experienced and they know more.*

*– Female, 32, planning to divorce*

*If the doctor or nurse could provide one-on-one intervention ... that would be effective*

*since they could answer the questions I have. – Female, 40, married (separated) with 2 children*

*Intervention location*

Participants described the need for the intervention to be practical and accessible for them, including having the intervention be located at the hospital where they were already receiving medical and primary care.

*It would be better to make the location of the intervention nearer to the hospital, as long as it can be personal [private]. –Female, 52, divorced, with one child*

*I have to travel far and take time off work to come here [SPHCC], so if it can be at the same time, that would be good. –Male, 48, married, with one child*

## Study 2: Quantitative Findings

### *Participants*

Of our 200 participants, 81% were male, ranging in age from 19 to 78 years with a mean of 37 ( $SD = 9.1$ ). Ninety-five of our male participants reported having same sex sexual partners (either only same sex, or both same and opposite sex). Monthly income was reported on a Likert-type scale categorizing income in increments of RMB 1000, with the mean response corresponding to earning between RMB 2000 – 2999 per month, which is comparable to the average national wage of RMB 2396 per month (International Labor Organization, 2012). Demographic characteristics are presented in Table 1.1.

### *Depression*

The majority of our participants (68.5%) were above threshold for current depression on the C-BDI-II (scores below 13 are considered ‘normal’) according to Chinese norms (Chinese Behavioral Sciences Society, 2000), with 24.5% screening positive for moderate depression, and 17.0% falling in the range of severe depression. Cronbach’s  $\alpha$  (Cronbach, 1951) for the C-BDI-II was 0.921.  $M = 18.3$  ( $SD = 11.7$ ). The C-BDI-II has a somatic and affective subscale; the mean somatic subscale score was 11.3 ( $SD = 7.7$ ) and the mean affective subscale score was 7.0 ( $SD = 4.9$ ). A dependent samples  $t$  test indicate that the scores are different  $t(199) = 11.3, p < .001$ . This phenomenon has been reported in the past, where somatic symptoms are often more endorsed than affective symptoms by Chinese populations (Parker et al., 2001).

### *Suicidality*

Suicidality was measured by Item 9 on the C-BDI-II, with 34% of our sample endorsing, “1- I have thoughts of killing myself, but I would not carry them out”, 4% endorsing, “2 - I would like to kill myself”, and 5% endorsing, “3 – I would kill myself if I had the chance”.

### *Anxiety*

The total score for anxiety on the Zung Self Rating Anxiety Scale was  $M = 38.7$  ( $SD = 7.9$ ), indicating that the mean responses endorsed by participants was experiencing every anxiety symptom *Some of the time* (scale ranges from 1= *A little of the time*, 2 = *Some of the time*, 3 = *A good part of the time*, 4 = *Most of the time*). Items with particularly high endorsement were, “I feel more nervous and anxious than usual”; “I feel weak and get tired easily”, “I am bothered by dizzy spells”, and “I am bothered by stomach aches or indigestion”. Cronbach’s  $\alpha$  for the SAS was 0.815.

**Table 1.1** Socio-demographic characteristics of recently diagnosed patients living with HIV/AIDS in Beijing and Shanghai, China ( $N = 200$ )

<b>Characteristic</b>	<b><i>n</i> (%*)</b>
<b>Sex</b>	
Female	38 (19.0)
Male	162 (81.0)
<b>Age</b> in years; <i>M(SD)</i>	37 (9.1)
<b>Marital status</b>	
Married or steady partner	69 (34.5)
Single, never married	84 (42.0)
Other (divorced, widowed, separated)	44 (22.5)
<b>Sexual partner</b>	
Same sex	84 (42.6)
Opposite sex	67 (33.5)
Both	11 (5.5)
Refuse to answer	27 (13.5)
Missing data	11 (5.5)
<b>Education</b>	
Primary or lower	8 (4.1)
Middle school graduation	27 (13.5)
High school graduation	39 (19.5)
Professional/vocational training school	25 (12.5)
Above high school (college & post-college)	98 (49.0)
<b>Employment</b>	
Full time	96 (48.0)
Part time	22 (11.0)
Unemployed	78 (39.0)
<b>Monthly household income (RMB)</b>	
≤ 2,000	70 (35.7)
2,001 – 5,000	87 (43.5)
≥ 5,000	29 (14.5)

\*Percentages may not add up to 100 due to missing data

## **DISCUSSION**

Individuals who have recently received an HIV diagnosis experience significant stress with adjusting to their new status. In China, PLWHA have a particularly difficult time as they are faced with significant HIV stigma, while having little access to psychosocial support. Indeed, we were unable to locate existing research on behavioral interventions for recently diagnosed PLWHA. Our mixed methods study sought to better understand the mental health needs of recently diagnosed individuals, including their levels of distress and resources that they hoped to access. In our qualitative data, our participants reported experiencing significant negative emotion following receiving an HIV positive diagnosis, including suicidal ideation, anxiety, hopelessness, as well as catastrophic thinking and self-isolating behaviors. They also gave suggestions for intervention design, in particular highlighting the critical window after diagnosis when they experienced maximum stress, and their desire for one-on-one psychological support. In our quantitative data, 68.5% of participants were above threshold for depression, 43% endorsed some degree of suicidality, and the mean responses for anxiety were experiencing every symptom assessed at least “some of the time”.

To develop our intervention, we used the first three phases of the Formative Method for Adapting Psychotherapy (FMAP; Hwang, 2006; 2009): a) generate knowledge in collaboration with stakeholders, b) integrate information with expert theoretical, empirical, and clinical knowledge, and c) review initial intervention with stakeholders. Specifically, we synthesized our qualitative and quantitative data analysis with an extensive literature review of evidence-based behavioral strategies (see Appendix B), as well as consultation with Chinese mental health experts and our Community Advisory Board to develop a brief 3-session skills-based distress reduction intervention called the Psychology Toolbox. We created all the materials in English

and Chinese simultaneously. It was developed to be integrated into an HIV primary care setting with minimal burden to patients and disruption to clinic routine. Sessions are to be scheduled as close to a weekly basis as possible to coincide with initial HIV primary care visits as this minimizes participant burden, thereby increasing the likelihood that the intervention will be a feasible model of care. Research suggests that timing psychotherapeutic sessions a week apart is useful and highly common as it allows ample time for skills acquisition, practice, and consolidation, while allowing maintenance of momentum and therapeutic alliance (Erekson, 2013).

The intervention was developed with a cognitive behavioral therapy (CBT) skills-based theoretical framework (Linehan, 1993) due to literature on predictors of better outcomes of mental health interventions with both local and overseas Chinese populations (Leong, 1986). These include having the interventionist adopt a more authoritative versus collaborative role to convey expertise in the therapeutic relationship (Lee, 1997), use of educational approaches such as psychoeducation, role play, and assignment of tasks at home (Uba, 1994), and goal-directed problem-solving behavioral strategies over an insight-oriented approach (Kam & Ng, 2009), which are in line with a CBT skills-based framework. An intervention of individual CBT skills is also more easily manualized and non-mental health professionals can be trained to deliver it (Simoni et al. 2015; Montgomery, Kunik, Wilson, Stanley, & Weiss, 2010).

Additionally, we developed our intervention to be implemented within a brief intervention in primary care context (O'Donnell, Wallace, & Kaner, 2014). Brief interventions in a primary care context have been demonstrated to be efficacious for a number of public health concerns ranging from increasing fruit and vegetable intake (Buyuktuncer, Kearney, Ryan, Thurston, & Ellahi, 2014) to decreasing alcohol-related problems (Kaner, Dickinson, Beyer, Campbell,

Schlesinger, Heather, et al., 2007) as well as in HIV-positive populations (St. Lawrence, Eldridge, Shelby, Little, Brasfield, & O'Bannon, 1997). Opportunistic brief interventions in primary care typically use a contact model of between 1 – 5 sessions, with a mean of 25 minutes per session with an upper bound of 50 minutes per session, with overall treatment exposure ranging between 60 – 175 minutes (about three fifty minute sessions) (O'Donnell et al., 2014).

The participants in our qualitative and quantitative data reported that their main difficulties were fear and anxiety about their HIV including thinking about worst case scenarios resulting from their HIV, thereby leading to isolation and depression. To address these difficulties, three skills are taught in the intervention: Session 1 – an automatic thought record skill to address catastrophic thinking about HIV and subsequent elevated distress; Session 2 – a behavioral activation avoidance pattern and alternative coping cycles skill to address isolation and depressive feedback cycles; Session 3 – a paced breathing skill to address anxiety.

An Automatic Thought Record skill (Beck, 2011) is a component of evidence based cognitive therapy for unhelpful core beliefs (e.g., Bennet-Levy, 2003; De Oliveira, Hemmany, Powell, Bonfim, Duran, Novais et al., 2012). The Trigger, Response, Avoidance Pattern (TRAPs) and Trigger, Response, Alternative Coping (TRACs) skill (Martell, Dimidjian, Herman-Dunn, 2010) are part of an evidence-based behavioral activation for depression package (e.g., Gortner, Gollan, Dobson, & Jacobson, 1998) with some evidence also suggesting utility as an early intervention for posttraumatic stress disorder (Wagner, Zatzick, Ghesquiere, & Jurkovich, 2007). Paced Breathing (Linehan, 1993) is part of an evidence-based dialectical behavioral therapy skills course (e.g., Panos, Jackson, Hasan, & Panos, 2013). Below we describe each session, with a summary of agenda, goals, and suggested language in Table 1.2 (contact first author for full manual).

Session 1

The first session focuses on quickly building rapport with participants through understanding their HIV diagnosis story, in particular the thoughts and emotions immediately upon confirmation of an HIV-positive status. An unstructured assessment of the patient's mental health, substance use, suicidality, disclosure story, and coping skills will be conducted for adequate tailoring.

An Automatic Thought Record (See Figure 1) is taught using the following example (derived from aggregating stories from our qualitative data), with the interventionist helping the participant fill in the columns to teach the skills. The situation (Column 1) is the following: Da Wei is a 25 year old man who went to the CDC with his friend Li Hong who is a long time member of a QQ community for gay men and regularly gets HIV and other STD testing. Since Da Wei was there, he decided to get tested as well. A few days later, the CDC called him and told him to come back in to collect his results. Immediately, Da Wei feels fear and anxiety (Column 2) at about 95 / 100 in intensity. He starts to have a lot of automatic thoughts that come up immediately (Column 3) such as "I am HIV-positive", "I am going to die", "My parents will have no one to take care of them", "I have brought shame to my entire family". Assign a percentage rating of how much we think Da Wei believes in each of automatic thoughts. Now we want to take a pause to understand that automatic thoughts are often catastrophic and the worst case scenarios possible; it is not hard to understand that because of fear, these thoughts can happen very quickly and often we don't have control over them. However, what happens afterwards, we *can* do something about. We want to think about the facts of the situation that support the automatic thoughts (Column 4), not our interpretation, meaning these are points about reality that are completely true. For example, "HIV is a disease sounds scary and I know

that people have died from it”. Next, we think about facts that do NOT support the automatic thought (Column 5) such as, “I know many people who have HIV and live for a long time”, “These people are still close to their families and are able to work and do normal things”, “Just because the CDC is calling me, it does not mean that my entire family knows already”, “I can deal with disclosure later on as I have more time to make a good decision”. After coming up with facts supporting and against the automatic thought, we work to list a more balanced and realistic thought (Column 6), such as “HIV is a scary disease, and if I do have it, I will be able to live with it and face the problems that come up because of it”. In the last column (Column 7), we re-rate what we think Da Wei’s emotion of fear is in the moment, maybe a 60 / 100. We can see that he has decreased from his initial very intense emotion of 95 / 100. Also, we will go through and re-rate how much Da Wei believes in each automatic thought as well, and notice the changes.

For homework, participants are asked to complete at least one automatic thought record during the week when they suddenly notice feeling particularly distressed. Participants are encouraged to fill the record out as soon as possible in order for it to be the most useful. If they do not have access to the record immediately, filling it out later is acceptable as well.

## Session 2

The second session begins with reviewing the Automatic Thought Record homework assignment from the previous week. If homework has not been completed, troubleshoot barriers to completion such as forgetting, lack of buy-in to the skill, or lack of opportunity to practice the skill. The skill is then practiced in session in order to consolidate learning; the interventionist

will assist participant in filling out a record for something that occurred in the week when the participant was particularly distressed.

The focus of the second session is to explore avoidance patterns that have arisen in the participant's life as a result of HIV, in particular, ones that may contribute to negative affect or lower mood. Participants are given a behavioral activation TRAP (Trigger, Response, Avoidance Pattern) and TRAC (Trigger, Response, Alternative Coping) visual cycle (See Figure 2) delineating a real life example from our qualitative data. Again, the interventionist assists the participant in filling out the cycle worksheet.

The following vignette is used to illustrate TRAP/TRAC: Xiao Ming is a 30-year-old man who has just received an HIV diagnosis. After receiving the diagnosis, he has many emotions of sadness, shame, and fear. The Trigger – His friends call him to go out to dinner with them, something they do often. The emotional Response – As he sees his friend's contact image coming up on his phone, he feels shame about his HIV status and worries that his friends will no longer like him or will somehow know about his status and stigmatize him, so he doesn't pick up the phone call. The Avoidance Pattern – Because he doesn't pick up the phone, he doesn't make plans with his friends to go out to dinner. He ends up staying at home and just staying in bed. This isolation means that he doesn't get to have the positive experience of going out with his friends to enjoy a good time hanging out. As a result, he feels even worse. The Avoidance Pattern feeds on itself as a feedback cycle that gets more severe over time. Each time his friends call, he doesn't pick up the phone, which means that his friends start to call him less and less. Instead of perpetuating this avoidance pattern, Alternative Coping is a more adaptive way to address the situation. With the same Trigger and emotional Response (where Xiao Ming's friends call him to have dinner and he feels shame when he sees the incoming call), an

Alternative Coping method would be for him to engage in opposite action to the shame, pick up the phone and make plans to meet up with his friends. He goes out and has a good time with his friends, just like they usually do. By doing this action, he has allowed himself to receive evidence that his friends still care about him as they always have, he gets to engage in a positive evening, and therefore he feels better. Additionally, he maintains good relationships with his friends, rather than in the avoidance situation where he distances himself from them. As a result, he breaks the cycle of isolation and avoidance, and feels better over all.

The interventionist then works with the participant to fill out a TRAP/TRAC that is relevant to his or her own life. Collaboratively, they brainstorm an alternative coping strategy. For homework, participants are asked to complete at least one iteration of the alternative coping strategy.

### Session 3

The third session again begins with homework review of the participant trying out an alternative coping behavior when noticing experiencing the TRAPs discussed in the previous session. Similarly, if homework has not been completed, troubleshoot barriers to alternative coping and create a new plan to engage in the behavior.

The focus on the third session is on experiences of anxiety as a result of having an HIV diagnosis. Assess whether the participant has ever had an anxiety attack, such as symptoms of increased heart rate, sweating, shaking, or difficulty breathing. Also assess for situations when participant often notices feeling anxious or worrying as opportunities to practice paced breathing.

Provide psychoeducation about paced breathing: the human peripheral autonomic nervous system is divided into two parts, a parasympathetic nervous system and sympathetic

nervous system. The parasympathetic nervous system is responsible for rest and digest functions whereas the sympathetic nervous system is responsible for fight or flight. In other words, the parasympathetic nervous system is the one we want to activate to get relaxation and calming to occur when we feel anxious. In order to do that, we engage in a simple breathing exercise. Breathing out activates the parasympathetic nervous system, whereas breathing in activates the sympathetic nervous system (both of these are necessary for different versions of equilibrium for daily living). The participant is asked to experience this for him or herself by trying to breathe in rapidly a few times, similar to gasping. This may feel like getting anxious and ready to run. The objective is the opposite effect to calm the body down. Therefore, paced breathing is done, where the out-breath is longer than the in-breath. While it depends on each individual's own lung capacity and comfort with deep breathing, breathing in for 4 counts and breathing out for 6 counts can be a good place to start. After paced breathing is taught, all three skills are reviewed with the participant to consolidate learning.

**Table 1.2** Detailed Intervention Outline

SESSION 1

Agenda item	Goal and Sample Text
<ul style="list-style-type: none"> <li>Overview of intervention goals</li> </ul>	<ul style="list-style-type: none"> <li>Orient participant to what s/he can expect over the next several weeks</li> </ul> <p><i>Many HIV-positive individuals have talked to us about how difficult it is to receive an HIV diagnosis, from trying to figure out whether to keep your diagnosis a secret, to trying to manage the sadness and anxiety you experience as a result of your diagnosis. We have developed a program of tools to assist you in dealing with this distress. Our hope is that at the end of this time, you will feel less distressed as well as more confident that you have some answers and skills you can use when you are distressed in the future.</i></p>
<ul style="list-style-type: none"> <li>Explore diagnosis story</li> </ul>	<ul style="list-style-type: none"> <li>Normalize and validate reactions to diagnosis process</li> <li>Develop rapport with participant</li> </ul> <p><i>Please tell me more about your diagnosis story. How did you feel when you received your diagnosis? Have you told anyone about your diagnosis? How did you decide to do this? How did they react?</i></p>
<ul style="list-style-type: none"> <li>Explore existing coping skills</li> </ul>	<ul style="list-style-type: none"> <li>Informal assessment of participant’s familiarity with and acceptability of psychological skills</li> </ul> <p><i>How have you handled your diagnosis so far? What are some ways you have coped with it? In what ways are you proud of how you have been handling it?</i></p>
<ul style="list-style-type: none"> <li>Explore current functioning, including family functioning, social support, and distress</li> </ul>	<ul style="list-style-type: none"> <li>Informal assessment of participants’ social support network, interpersonal relationships, and psychological functioning</li> </ul> <p><i>What is your social support network like? How are your relationships with your family members? What are some HIV-related stressors you have experienced?</i></p>
<ul style="list-style-type: none"> <li>Highlight example of catastrophic thinking; psychoeducation of automatic thought cycle</li> </ul>	<ul style="list-style-type: none"> <li>From participant’s previous description of stressors, identify example where automatic negative thinking likely occurred.</li> </ul> <p><i>Teaching point: research on people who are distressed shows that they are more likely to engage in automatic thinking that is more negative and more extreme. For example, “I can’t do this” might turn into “I will never be able to do it”, or “I am sick right now” might become “I will never, ever get better”. We call this catastrophizing, which is thinking about the worst possible outcome. Have you found yourself doing this?</i></p>

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<ul style="list-style-type: none"><li>• Psychoeducation of the cognitive-behavioral triangle</li></ul>	<ul style="list-style-type: none"><li>• Describe ways that thoughts, behaviors, and emotions are connected <i>We know that people's thoughts (what they are thinking) are closely connected to their emotions (what they are feeling) as well as their behaviors (what they are doing). Each aspect of the triangle affects the others. This means that when we start automatically thinking catastrophic thoughts, we can feel very distressed.</i></li></ul>
<ul style="list-style-type: none"><li>• Teach Automatic Thought Record</li></ul>	<ul style="list-style-type: none"><li>• Describe objective of skill and teach skill using participant's example</li><li>- <i>The main take-away from today's session is to learn a new way of thinking that may decrease automatic negative thoughts. An automatic thought record is used when you notice significant negative emotion. We will fill this Automatic Thought Record out together with the example you described to learn a new way of thinking through it. In the first column is we will write down the situation you described briefly. E.g., you received your diagnosis from the doctor, who said that you have HIV.</i></li><li>- <i>In the second column we write down the emotions you felt at the time (e.g., sad, angry, scared), and on a scale of 0 – 100 with 0 being not intense at all and 100 being very intense. E.g., you felt fear at an 80 and sadness at an 80</i></li><li>- <i>In the third column, we write down the automatic thoughts that went through your mind. E.g., "I am going to die", "I brought shame to my family". How much did you believe them?</i></li><li>- <i>In the fourth column, we take a step back and think about the FACTS (remember, facts are points about reality that are completely true and not just our interpretation) that support this automatic thought. E.g., "HIV is a disease that sounds scary and I know people who have died from it"</i></li><li>- <i>In the fifth column, we will think about facts that do NOT support this automatic thought. E.g., "I know people who have lived with HIV for a long time"</i></li><li>- <i>In the sixth column, we think of a more realistic/balanced thought, e.g., "HIV is a scary disease and people are able to live with it"</i></li><li>- <i>In the last column, we re-rate your feeling of fear and sadness. Are they both still at 80?</i></li></ul>
<ul style="list-style-type: none"><li>• Assign homework</li></ul>	<ul style="list-style-type: none"><li>• Explain function of homework <i>Research suggests that practicing a new skill consolidates learning. I'd like you to fill out at least one automatic thought record in the next week, when you notice yourself suddenly feeling bad. This could be feeling sad, down, angry, or any kind of strong emotion that is uncomfortable.</i></li></ul>

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- Close session
    - Reinforce participant, build rapport, and generate hope  
*We have covered a lot today. Thank you for spending the time to talk with me about your HIV, your family, and how you have felt since receiving an HIV diagnosis. This is a difficult process, and my hope is that as we continue working together, we can help you experience less distress related to HIV as well as increase your ability to cope with stress. See you next week.*
- 

SESSION 2

Agenda item	Goal and Sample Text
<ul style="list-style-type: none"> <li>• Review homework</li> </ul>	<ul style="list-style-type: none"> <li>• Reinforce participant for homework completion, troubleshoot barriers, clarify understanding, consolidate learning of Skill 1</li> <li>- <i>Welcome back! How did your last week go in terms of learning to use the automatic thought record? Did you get a chance to go through the worksheet?</i></li> <li>- <i>Let's review the worksheet (if you did not do it, that is okay, let's do it together now). Tell me about the situation that happened that caused you to have strong negative emotions. What happened at that moment? What were the emotions you felt, and how intense on a scale of 0 – 100? What were the automatic catastrophic thoughts you had? How much did you believe in them? What were the facts supporting those beliefs? What were the facts that did NOT support those beliefs? What was the more realistic thought that you arrived at? And after all of this, what were your emotions at the end again, from 0 – 100?</i></li> <li>- <i>What was it like going through this automatic thought record? What did you find helpful or unhelpful about it? Can you think of a time in the future when you might want to use this, or anybody in your life that you might want to teach this skill/tool to?</i></li> </ul>
<ul style="list-style-type: none"> <li>• Teach TRAP/TRAC</li> </ul>	<ul style="list-style-type: none"> <li>• Describe objective of skill and teach skill using a relevant example. Match name to participant's demographic</li> <li>- <i>Today we are going to learn about a new skill. The goal of this skill is to think about a negative pattern in your life that you have started to engage in, as a result of your HIV. I'm going to start by giving you an example that many HIV-positive people describe experiencing. There are three steps in this process. A trigger/situation, a response, and an avoidance pattern.</i></li> </ul>

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- *Xiao Ming is a 30-year-old man who has just received an HIV diagnosis. After receiving the diagnosis, he has many emotions of sadness, shame, and fear. The Trigger – His friends call him to go out to dinner with them, something they do often. The emotional Response – As he sees his friend’s contact image coming up on his phone, he feels shame about his HIV status and worries that his friends will no longer like him or will somehow know about his status and stigmatize him, so he doesn’t pick up the phone call. The Avoidance Pattern – Because he doesn’t pick up the phone, he doesn’t make plans with his friends to go out to dinner. He ends up staying at home and just staying in bed. This isolation means that he doesn’t get to have the positive experience of going out with his friends to enjoy a good time hanging out. As a result, he feels even worse. The Avoidance Pattern feeds on itself as a feedback cycle that gets more severe over time. Each time his friends call, he doesn’t pick up the phone, so his friends start to call him less and less.*
  - *Instead of perpetuating this avoidance pattern, Alternative Coping is a more adaptive way to address the situation. With the same Trigger and emotional Response (where Xiao Ming’s friends call him to have dinner and he feels shame when he sees the incoming call), an Alternative Coping method would be for him to engage in opposite action to the shame, pick up the phone and make plans to meet up with his friends. He goes out and has a good time with his friends, just like they usually do. By doing this action, he has allowed himself to receive evidence that his friends still care about him as they always have, he gets to engage in a positive evening, and therefore he feels better. Additionally, he maintains good relationships with his friends, rather than in the avoidance situation where he distances himself from them. As a result, he breaks the cycle of isolation and avoidance, and feels better over all.*
  - *So as you can see, instead of AVOIDING, when he APPROACHES it is very likely that he starts to feel more energized, better, and cared for, and he can see that his friends still like him and want to be around him. This is called an alternative coping method that breaks the vicious cycle of avoidance.*
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- Use participant example for TRAP/TRAC worksheet
    - Find example of TRAP in participant’s life and collaboratively brainstorm alternative coping
      - *Are there examples from your life of avoidance patterns similar to what Xiao Ming was experiencing? Are there things you avoid or no longer do as a result of receiving an HIV diagnosis, such as things you used to enjoy or people you used to see? Tell me about them.*
      - *We will use your example to fill in this worksheet. The Trigger refers to the situation that happens; Response is what you typically think, feel and do, and Avoidance Pattern refers to what you do that is withdrawing, avoiding, or escaping. We will fill the boxes in based on your example. What are the short and long term consequences of this avoidance pattern?*
      - *What are some possibilities we put instead for Alternative Coping, where you respond in a way that is more in line with your values and will keep you from an avoidance pattern?*
- 
- Create a plan for Alternative Coping and assign homework
    - Be behaviorally specific in setting a goal for Alternative Coping action steps to take this week
      - *What steps are involved in alternative coping? Let’s make a plan for those steps. What would get in the way?*
      - *What would it look like for you to take some steps in terms of alternative coping this week?*
      - *Your homework for this week is to take X of those steps we discussed. I’d like you to take home this TRAP/TRAC worksheet as a reminder of the pattern and the coping steps to take.*
-

SESSION 3

Agenda Item	Goal and Sample Text
<ul style="list-style-type: none"> <li>• Review homework</li> </ul>	<ul style="list-style-type: none"> <li>• Reinforce participant for homework completion, troubleshoot barriers, clarify understanding, consolidate learning of Skill 2</li> <li>- <i>Welcome back! How did your last week go in terms taking steps to get out of your TRAP and get back on TRAC? Did you get a chance to do any of the steps we discussed?</i></li> <li>- <i>Troubleshoot barriers that participant experienced in terms of taking active steps, reinforce any movement toward change that participant engaged in.</i></li> </ul>
<ul style="list-style-type: none"> <li>• Teach Paced Breathing</li> </ul>	<ul style="list-style-type: none"> <li>• Describe objective of skill and practice in session</li> <li>- <i>Often times, patients living with HIV tell us that they experience anxiety or ruminative cycles. What this means is that sometimes you can start worrying about something, and find yourself unable to stop worrying. The more you think about it, the worse and worse it gets. Or, you find yourself in a situation where you might be having an anxiety attack – this is when you might experience a lot of symptoms at one time, such as increased heart rate, sweatiness, shaking, feeling like it’s hard to breathe, feeling pressure on your chest, and it happens all of a sudden. Have you ever had an experience like that?</i></li> <li>- <i>In situations like what we just discussed, when you notice an increase in your anxiety, a skill called paced breathing could be really helpful.</i></li> <li>- <i>Paced breathing is simply breathing out longer than breathing in. We do this because the human peripheral autonomic nervous system is divided into two parts, a parasympathetic nervous system and sympathetic nervous system. The parasympathetic nervous system is responsible for rest and digest functions whereas the sympathetic nervous system is responsible for fight or flight.</i></li> <li>- <i>When we breathe in, the sympathetic fight or flight nervous system is activated; when we breathe out, the parasympathetic rest and digest nervous system is activated. Both of these are necessary for different versions of equilibrium for daily living. For example, if you breathe in more than you breathe out and do it rapidly, it can feel like you’re getting ready to move quickly or even hyperventilating/gasping if you do it long enough. We’ll try it together; can you feel your body getting activated?</i></li> <li>- <i>When we do paced breathing for anxiety, we are going for the opposite effect. Just like breathing in</i></li> </ul>

*a lot and rapidly can quickly elevate your heart rate and kick you into gear, breathing out more deeply can lower your arousal.*

- *We are going to try it out together. We want our out-breath to be longer than our in-breath. Pay attention to your breathing right now without trying to change it. What is your natural breath count? A comfortable paced breathing count depends on each person's own lung capacity and comfort with deep breathing. For example, my natural breath is about 4 counts, so when I do paced breathing, I will breathe in for 4 counts and breathe out for 6 counts. We will try paced breathing together with our individual counts for a few minutes.*
- *What do you notice in your body after that exercise?*
- *In the future when you notice yourself getting anxious, try to pace breathe for a few minutes. This skill is useful because it is easy to do and you can do it anywhere, even when people are around without them even realizing.*

- 
- Review all 3 skills

- Consolidate learning, troubleshoot barriers, and answer questions

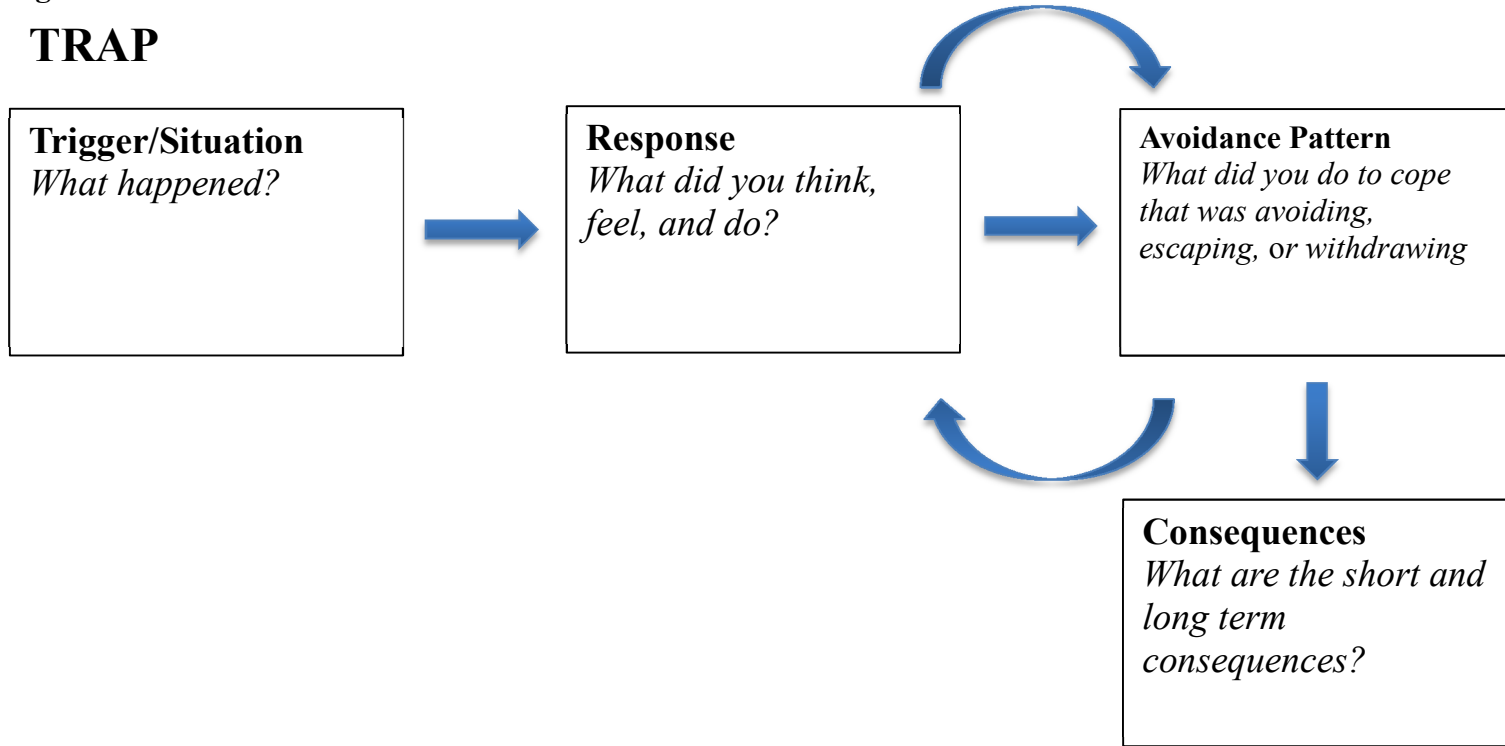
- *We have learned 3 skills in total for different forms of distress. We have the Automatic Thought Record that is for practicing a new way of thinking that may decrease automatic negative and catastrophic thoughts, TRAP/TRAC to help break avoidance patterns that lead to isolation, escaping and withdrawing, as well as paced breathing to lower anxiety. What questions do you have?*
-

**Figure 1.1** Automatic Thought Record (ATR)

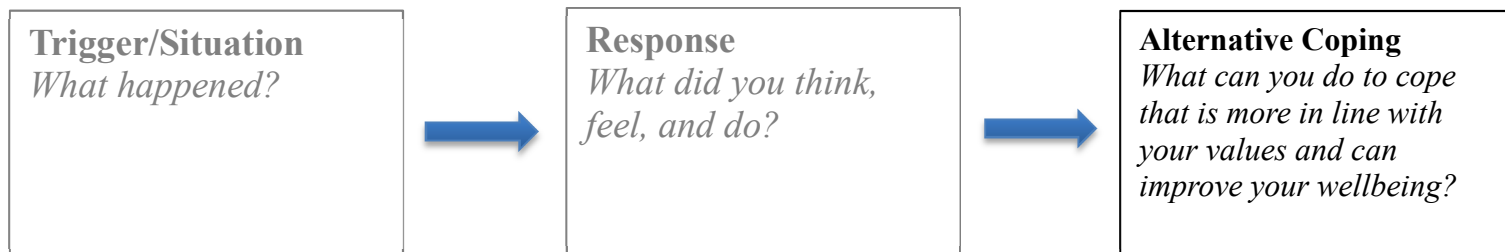
<b>1. Situation</b>	<b>2. Emotions Pre ATR</b> (Label and rate from 0 – 100 in intensity)	<b>3. Automatic Negative Thoughts</b>	<b>4. Facts supporting</b>	<b>5. Facts against</b>	<b>6. Alternative, more balanced thought</b>	<b>7. Emotions Post ATR</b> (Label and rate from 0 – 100 in intensity)
<i>What happened?</i>	<i>How did I feel?</i>	<i>What did I think about right away?</i>	<i>What is the evidence supporting my automatic thoughts?</i>	<i>What is the evidence against my automatic thoughts? E.g., which “facts” in column 4 are actually opinions?</i>	<i>What is another way to think about this situation? What would I say to someone else experiencing it?</i>	<i>How do I feel now? What would be more effective?</i>

Figure 1.2 TRAP/TRAC Worksheet

### TRAP



### TRAC



## CONCLUSION

We conducted what we believe is the first study focusing on intervening for mental health of individuals recently diagnosed with HIV in China. Our qualitative and quantitative data converged to demonstrate the primary areas of stressors for recently diagnosed PLWHA, as well as the structural factors surrounding the resources they need and are able to access. Participants experienced significant depression, suicidality, and anxiety as a result of receiving an HIV diagnosis. Our findings informed the development of an evidence-based brief intervention focused on cognitive behavioral skills to reduce HIV-related distress, which we described in some detail.

This study has several limitations. We recruited convenience samples from premier HIV treatment centers in the major metropolitan areas of Shanghai and Beijing. Given that these settings have better resources for PLWHA (indeed many travel specifically to these locations to receive HIV-related care), our findings may not be generalizable to other areas in China. Specifically, participants in our sample may have different demographics including higher education (although a range was seen in our quantitative data where 17.6% had completed middle school or less), which may contribute to a more nuanced understanding of mental health as well as higher acceptance of psychosocial resources. Furthermore, our development of an intervention for reducing psychological distress for recently diagnosed PLWHA for integration into HIV primary care also presupposes the availability of a primary care structure amenable to this integration. This infrastructure may not exist in other less developed areas of China.

Despite these limitations, our intervention provides the first attempt that we know of to attempt to address psychosocial stress of individuals recently diagnosed with HIV in China, using evidence-based behavioral strategies. Future research is necessary to test the intervention

on samples of recently diagnosed PLWHA in order to examine intervention efficacy and implementation likelihood. Ongoing work is addressing the feasibility and acceptability of the intervention to understand the facilitators and barriers of implementation (Yang et al., in prep). If shown to be acceptable, future work is needed to demonstrate efficacy, and ultimately, effectiveness in real-world settings.

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**Title:** A pilot trial of a brief HIV-related distress reduction intervention among recently diagnosed men who have sex with men in China

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## **ABSTRACT**

People living with HIV/AIDS (PLWHA) in China experience significant mental health distress, in part due to high rates of stigma and low availability of mental health resources. Recently diagnosed Chinese PLWHA who are men who have sex with men (MSM) are particularly vulnerable to psychological distress as they face both HIV and sexual orientation stigma. We have previously developed the Psychology Toolbox, a brief 3-session CBT skills-based distress reduction intervention for recently diagnosed Chinese PLWHA (Yang et al., in preparation). In this study, we conduct a pilot Type 1 hybrid effectiveness-implementation trial (Curran et al., 2012) with recently diagnosed MSM for mental health outcome data as well as feasibility, acceptability, and appropriateness information. Ten recently diagnosed MSM at an HIV treatment center in Shanghai China completed the intervention provided by the first author. Paired-samples *t* tests demonstrate significant reduction in HIV-related distress, depression, problems with adjustment, as well as improvements in coping and perceived social support. Participants found the intervention highly acceptable and appropriate. Community advisory board members of nurses, physicians, a caseworker, a hospital administrator, and community peer leaders suggested that the intervention is feasible and appropriate. Future research will involve randomized controlled testing of the intervention in larger samples as well as among other recently HIV diagnosed populations.

**Keywords:** HIV, MSM, distress, behavioral intervention, China, implementation

## INTRODUCTION

People living with HIV/AIDS (PLWHA) in China experience significant mental health distress, in part due to high rates of stigma and low availability of mental health resources (Yang, Xie, Simoni, Shiu, Chen, Zhao, et al., 2015). HIV stigma is prevalent; for example, a 2008 survey of HIV attitudes in over 6000 urban residents found that 48% of respondents would not eat with someone who had HIV and 30% thought children with HIV should not be allowed to attend the same schools as children without HIV (China AIDS Media Partnership, 2008).

While the overall prevalence of HIV in China is stabilizing (UNAIDS, 2015; CDC, 2012; UNAIDS, 2002), rates of HIV among men who have sex with men (MSM) in China are increasing. A study published in 2007 that assessed MSM independently in the three years prior found that HIV prevalence was 0.4% in 2004, 4.6% in 2005, and 5.8% in 2006, indicating rising prevalence of HIV among MSM (Ma, Zhang, He, Sun, Yue, Chen, et al., 2007). Governmental reports indicate that from 2005 to 2015, the HIV prevalence among men who have sex with men increased from about 1.5% to about 8.5% in 2015 (UNAIDS, 2015). Of the new cases diagnosed each year, MSM transmission increased from accounting for 2.5% in 2006 to 25.8% in 2014 (UNAIDS, 2015). Data reported in 2009 indicated that MSM made up 11.1% of all HIV/AIDS cases in China (Wong, Huang, Wang, He, Marzzurco, Frangos, et al., 2009). The disproportionate burden of HIV among MSM is paralleled in other Asian countries (amfAR, 2006) such as South Korea (where MSM account for 35.8% of HIV cases), Sri Lanka (where MSM account for 13% of HIV cases), and Singapore (where MSM account for 22% of new infections) as well as the U.S. where MSM account for 57% of all PLWHA (CDC, 2011).

In addition to HIV stigma, MSM in China face intense sexual orientation related stigma (Feng, Wu, & Detels, 2010; Li, Lu, Ma, Sun, He, Li, et al. 2012). In a survey of self-identified

gays and lesbians ( $N = 1000$ ; HIV status not assessed), 40.5% reported having at least one suicide attempt in their lifetime (Liu & Lu, 2005; as cited in Zhang & Chu, 2005). Due to discrimination, MSM in China remain a largely hidden population. In a qualitative study of focus groups and individual interviews with 46 MSM, participants detailed a primary stressor as pressure from families due to strong Chinese traditions to marry and have children (Feng, Wu, & Detels, 2010). The emphasis on the Confucian custom of filial piety has been further intensified in the current social climate under the one-child policy, where many MSM are their parents' only hope for grandchildren. As a result, many MSM marry women to have children, leading to increased negative emotion such as shame and anxiety due to secrecy (Choi, Gibson, Han, & Guo, 2004). Some sources suggest that 80% of gay men in China are married to women (Zhang, 2001 as cited in Kaufman & Jing, 2002). For MSM who are HIV-positive, this practice can lead to increased transmission risk, as they simultaneously have sex with men as well as unprotected sex with their wives (who are often unaware of either their HIV or MSM status) (Feng, Wu, Detels, Qin, Liu, Wang, et al., 2010; Qian, Vermund, & Wang, 2005; Choi, Liu, Guo, Han, Mandel, & Rutherford, 2003).

We were able to locate 3 studies of mental health focused on HIV-positive MSM in China (one was an unpublished dissertation and the other a conference presentation). Among a sample of 366 recently diagnosed MSM, Tao et al. (2015) reported that 36% had borderline or suspicious depression according to the Hospital Anxiety and Depression Scale. Wu's (2012) convenience sample of 225 recently diagnosed MSM in Chengdu reported high rates of distress, with 48% reporting suicidal ideation, 2.67% attempting suicide since receiving a diagnosis, and 23.2% were current heroin users. Another study found that 47.8% of MSM on ART were smokers in the last year (Xu et al., 2014 as cited in Niu et al., 2016).

While mental health needs are high, psychological resources are few. The substantial political, economic, and societal forces at work in relatively recent Chinese history begin to explain the wide gap between supply and demand for mental health treatment in present-day China (Bond, 2010). As the scientific study of psychology became largely outlawed during the Cultural Revolution from 1966 – 1976, mentally ill individuals were hidden from society by family members fearing stigma, and providers in the psychological profession sought alternative occupations (Zhang, 2007). The effects of this period of arrest in the advance of psychological science are visible today. In a nationally representative epidemiological study conducted between 2001 – 2005, the adjusted 1-month prevalence of any mental disorder in adults was 17.5%, with psychotic disorders at 1% (Liu et al., 2011). The treatment gap is high: an epidemiological survey of  $N = 63,004$  estimated that 91.8% of individuals with a diagnosis of any mental disorder never seek help; of those with psychotic disorders, 27.6% never sought help (Phillips, Zhang, Shi, Song, Ding, Pang et al., 2009). The gap in access to care results from a combination of cultural attitudes towards mental illness, specifically the high rate of stigma present juxtaposed against the low availability of supply of resources.

The majority of mental health professionals in China are psychiatrists or psychiatric nurses; there are few clinical psychologists, social workers, or otherwise licensed mental health professionals. In 2004, there were 16,103 licensed psychiatrists and psychiatric registrars, effectively 1.24 per population of 100,000, and 24,793 licensed psychiatric nurses, equating to 1.01 per 100,000 (WHO, 2005). Mental health resources are limited in China compared to the global average mental health workforce of 4.15 psychiatrists and 12.97 psychiatric nurses per 100,000 (and certainly the US rate of 55.6 psychiatrists per 100,000; US Bureau of Labor Statistics, 2010).

Not surprisingly, we could not locate intervention studies in China focusing on behavioral strategies to improve the mental health of MSM. Given the disparity between need among PLWHA, especially those who are MSM, and the availability of treatment, research is necessary on psychosocial interventions to address this gap.

We have developed a brief cognitive-behavioral skills based intervention called the Psychology Toolbox, designed to reduce distress for individuals recently diagnosed with HIV and to be implemented in a primary care setting (see Yang, Simoni, Cheryan, Shiu, Chen, Zhao, & Lu, in preparation). The Psychology Toolbox teaches three skills, one in each session, of an automatic thought record, understanding behavioral activation trigger response avoidance patterns in order to engage in alternative coping (TRAP/TRAC), and paced breathing. In this study, we conduct a pilot trial to test this intervention with recently HIV diagnosed MSM, a population that is particularly at risk for psychological distress.

This pilot study employs Curran et al.'s (2012) framework for a Type 1 hybrid effectiveness-implementation trial that combines *a priori*, testing effects of an intervention on outcomes of interest while simultaneously collecting data on implementation of the intervention. Specifically, mental health outcomes of distress, depression, adjustment, coping, and social support are assessed as well as implementation outcomes of acceptability, feasibility, and appropriateness. Acceptability, assessed at the individual consumer/patient level refers to satisfaction with the intervention; feasibility, assessed at the individual provider/stakeholder level refers to suitability or practicability of the intervention; and appropriateness, assessed at the individual consumer and provider level refers to perceived fit, relevance, and suitability (Proctor, Silmere, Raghavan, Hovmand, Aarons, Bunger, et al., 2011). This Type 1 hybrid trial design allows for more rapid translational gains as well as the gathering of useful information to assist

in uptake of the intervention for future research (Curran, Bauer, Mittman, Pyne, & Stetler, 2012). Implementation outcomes are examined with a mixed methods design with simultaneous goals of convergence to examine if participants provide similar answers qualitatively and quantitatively as well as complementarity to examine related questions of evaluation of outcomes and process (Aarons, Horwitz, Chamberlain, Hurlburt, & Landsverk, 2010). Intervention participants will provide qualitative and quantitative data for convergence and complementarity, and Community Advisory Board members will provide qualitative data for complementarity in order to better understand and overcome barriers to implementation.

## **METHODS**

### Procedures

Data were collected from June to August 2015 at Shanghai Public Health Clinical Center (SPHCC), a premier infectious disease treatment center. Institutional Review Boards at University of Washington and SPHCC approved all study procedures. Eligibility criteria were a) male; b) diagnosed with HIV within the last 12 months; c) acquired HIV via having sex with men; d) at least 18 years of age; e) receiving care at SPHCC; f) willing and capable of attending intervention sessions at SPHCC. An advertisement for the research study with contact information for research staff was posted in the waiting room. Healthcare providers at SPHCC also provided referrals and interested individuals were referred to research staff. After the study was explained, written informed consent was obtained from those willing to participate, and the first meeting began immediately or was scheduled for a more convenient date. The two subsequent sessions (3 in total) were each scheduled for approximately a week apart, coinciding with participants' primary care visits whenever possible. (At SPHCC, when individuals initiate

antiretroviral treatment, they are scheduled for several follow-up primary care appointments including 1 week and 3 weeks after the initiation visit. At least one session of the Psychology Toolbox intervention was scheduled on the same day as a follow-up appointment, resulting in participants only having to travel to the clinic one extra time for the intervention.)

The intervention was delivered by the first author, a sixth year doctoral candidate in clinical psychology who is fluent in Mandarin and a developer of the Psychology Toolbox intervention (Yang et al., in preparation). At baseline and immediately post intervention (4 weeks), participants filled out an approximately 1 hour-long paper-and-pencil assessment survey with a separate research staff assessor. At both assessments, the assessor instructed the participants to answer truthfully and highlighted that the assessment was only identified with a participant ID number. At the end of the last intervention session, the interventionist administered a semi-structured exit interview that lasted between 15 – 30 minutes. Prior to the interview, the interventionist explained that the function was to understand components of the intervention that were not useful and the components that were useful, so that future iterations of the program could be the most helpful for recently diagnosed PLWHA. Participants were encouraged to provide as much honest feedback as possible in order to improve the program. Participants were reimbursed RMB 150 (~ USD 25) for each study session, which is typical for participation at SPHCC and not considered coercive. One day prior to each intervention session, a reminder text message was sent to participants.

### Measures

Participants responded to standard socio-demographic questions of age, sex, education, employment, income, marital status, and sex of sexual partner. Intervention outcomes of mental

health, and post-intervention assessment of acceptability, appropriateness, and feasibility are described below.

### Outcome measures

#### *Patient Health Questionnaire (PHQ-9)*

The PHQ-9 is a brief measure of depression severity that has been psychometrically validated in primary care settings (Kroenke, Spitzer, & Williams, 2001). PHQ-9 scores of 5 or higher represent mild depression and scores greater than 10 represent moderate depression. The measure assesses each of the 9 DSM-IV criteria for depression such as being bothered by “little interest or pleasure in doing things” and “thoughts that you would be better off dead or of hurting yourself in some way” from *0-not at all* to *3-nearly every day*. The Chinese version has been validated (Yeung, Fun, Yu, Vorono, Ly, Wu, et al., 2008) as well. Cronbach’s  $\alpha$  (Cronbach, 1951) was .865 at baseline and .685 at post intervention.

#### *Brief Adjustment Scale (BASE -6)*

The BASE-6 (Peterson, Gordon, Cruz, Fagan, & Smith, under review) is a measure of problems in general psychological adjustment that assesses emotion distress (depression, anxiety, and anger) and related interference (impact on self-esteem, personal relationships, and occupational functioning) on a seven-point Likert-type scale (1 = *Not at all*, 4 = *Somewhat*, 7 = *Extremely*), with higher scores indicating poorer adjustment. We translated and back translated (WHO, 2015; Brislin, 1970) this measure for use in this study. Cronbach’s  $\alpha$  at baseline was .922 and at post intervention was .796.

*HIV Distress and Coping Questionnaire (See Appendix C for full measure)*

This is a questionnaire we developed to assess frequency and intensity of HIV-related distress as well as coping skills to deal with the HIV distress. Ten items of HIV-related distress are assessed on a scale of 1 (*never/not at all*) to 4 (*always/completely*). Items include “How often do you experience distress about your HIV status?” “How much stress do you feel as a result of your HIV?” Higher scores indicate more distress. Cronbach’s  $\alpha$  for the distress subscale at baseline was 0.836 and at post intervention was 0.932. The coping subscale of the HIV Distress Questionnaire uses the same scale markers to assess the degree to which participants feel able to use psychological skills to deal with their HIV distress, with higher scores indicating greater ability to cope. Items include, “How much are you able to use psychological skills to cope with your HIV status?” “How much self-confidence do you have in your ability to cope with your HIV-related distress?” Cronbach’s  $\alpha$  for the coping subscale at baseline is .721 and post intervention is .720.

*Medical Outcomes Study – Social Support Scale*

The Chinese adaptation (Yu, Lee, & Woo, 2004) of the Medical Outcomes Study – Social Support Scale (Sherbourne & Stewart, 1991) is a psychometrically validated measure of perceived social support for patients living with chronic illness. It has been used previously with HIV-positive patients in China (e.g., Yang, Leu, Simoni, Chen, Shiu, & Zhao, 2015; Yu, Yang, Shiu, Simoni, Xiao, Chen, et al., 2015). The MOS-SSS assess perceived availability of support on a 5 point scale from 0 (*none of the time*) to 5 (*all of the time*) on four subscales of tangible support (e.g., someone to take you to the doctor), emotional/informational support (e.g., someone to listen to you when you need to talk), affectionate support (e.g., someone to love you and make

you feel wanted), and positive social interaction (e.g., someone to get together with for relaxation). Cronbach's  $\alpha$  for baseline was .938 and .954 at post intervention.

### Implementation Measures

As this was a pilot Type I Trial (Curran et al., 2012) designed to assess preliminary efficacy as well as feasibility, acceptability, and appropriateness of implementing the intervention in a primary care setting, upon completion of the intervention and post-intervention assessment, participants answered additional questions about their perspectives on implementation. Participants filled out measures about implementation outcomes of treatment acceptability and appropriateness. All measures were translated and back-translated (WHO, 2015; Brislin, 1970) for this study as they have not been previously used in Mandarin. After the quantitative assessment, each participant underwent a qualitative exit interview where they described their experience of the intervention in their own words. We also consulted a Community Advisory Board of nurses, physicians, a caseworker, a hospital administrator, and Red Ribbon Society (an HIV/AIDS non-governmental organization) peer leaders who were on site at the primary care ward (e.g., in the waiting room, seeing and referring patients to the study) for their expert opinions on the feasibility and appropriateness of the intervention. These members were chosen as they represent stakeholders invested in the research population, who will also influence potential future implementation efforts (Berg, 2004).

### *Client Satisfaction Questionnaire (CSQ-18)*

The CSQ is a global measure assessing satisfaction or acceptability with services received, and is well suited for adaptation to refer to the particular intervention of interest

(Attkisson & Zwick, 1982; Attkisson & Greenfield, 1996). Fifteen adapted items include, “Have the skills you learned from the *Psychology Toolbox Intervention* helped you to deal more effectively with your problems?” “If a friend were in need of similar help, would you recommend our program to him?” Items are assessed using Likert-type scales with different anchors such as *Strongly Disagree* to *Strongly Agree*, or *Poor* to *Excellent*, as is appropriate for each item. Cronbach’s  $\alpha$  in our sample was .890.

#### *Acceptability, Feasibility and Appropriateness Scale (AFAS)*

The AFAS (Lyon, 2012; Gopalan, 2016) assesses intervention, program, or training acceptability, feasibility, and appropriateness on a Likert-type scale of 1 (*Not at all*) to 5 (*Extremely*). We adapted 10 items to include the “Psychology Toolbox Intervention” in the intervention name, “distress” as our specific primary outcome, “individuals recently diagnosed with HIV” as our population, and for it to be filled out by patients rather than providers to obtain opinions from participants who experienced the entirety of the intervention. Items include “How satisfied are you with the content of the Psychology Toolbox Intervention?” assessing acceptability, “To what extent do you think you will be able to incorporate the ideas and skills from the intervention into how you typically deal with distress” assessing feasibility, and “How relevant was the Psychology Toolbox to other individuals recently diagnosed with HIV?” assessing appropriateness. Cronbach’s  $\alpha$  in our sample was .720.

#### *Acceptability of Intervention Measure (AIM)*

The AIM is 13-item measure of acceptability of interventions (Henninger, 2010), in which we again supplanted the name of the intervention as “Psychology Toolbox” and

“individuals recently diagnosed with HIV” as the target population. The first item was eliminated as it assesses severity of problems; the remaining 12 items were used, which assess acceptability of intervention. For example, “I would suggest the use of this intervention [Psychology Toolbox] to other people living with HIV” and “Other people recently diagnosed with HIV in my community have problems that this type of intervention is designed to address”. Items are rated on a scale from 1 (*Strongly Disagree*) to 6 (*Strongly Agree*). Cronbach’s  $\alpha$  in our sample was .925.

#### *Treatment Acceptability Questionnaire (TAQ)*

The first item of the Treatment Acceptability Questionnaire (Hunsley, 1992) is used as an overall acceptability rating, “Overall, how acceptable do you find the intervention to be” on a scale of 1 (*Very Unacceptable*) to 7 (*Very Acceptable*).

#### *Qualitative Exit Interview Questions*

A semi-structured qualitative exit interview was designed to assess familiarity with intervention concepts and skills/knowledge acquisition as well as to understand perspectives on the intervention. Open-ended questions for knowledge checks included “In your own words, what was the intervention about?” Each skill was covered independently where participants were asked to explain their understanding of the skill, how to use it, and what circumstances they would use it under. Participants were also queried about likes and dislikes, recommended changes, and opinions about content and process (location, frequency, duration of sessions). For the full qualitative interview guide, see Appendix D.

### Analytic procedures

Descriptive statistics were conducted to summarize characteristics at baseline. A multivariate analysis of variance (MANOVA) was computed as an omnibus test to evaluate overall efficacy. Paired samples *t* tests were conducted to assess differences on each measure of mental health, distress, and coping before and after the intervention. Because multiple comparisons were conducted, in order to correct for the possibility of Type 1 errors in null hypothesis testing, the false discovery rate using the Benjamini-Hochberg procedure was calculated (Hochberg & Benjamini, 1990). The false discovery rate is recommended in health studies (Glickman, Rao, & Schultz), is well suited for multiple tests under dependency, and is more powerful than procedures controlling for traditional family-wise error rate (Benjamini & Yekutieli, 2001). Cohen's  $d_z$  effect sizes for one-sample dependent *t* test measurements were also calculated (Cohen's  $d_z$  is conceptually similar to the more common Cohen's  $d$  for independent groups, however the denominator uses the standard deviation of difference scores rather than the standard deviation of both groups; Lakens, 2013).

Qualitative interviews were transcribed and examined using thematic analysis (Braun & Clarke, 2006) as used in previous qualitative implementation research (Dittmann & Jensen, 2014; Murray, Skavenski, Michalopoulos, Bolton, Bass, Familiar, et al., 2014). Transcriptions were kept in Chinese for analysis and coding to preserve participants' wording; representative quotes were translated into English for use in this manuscript. The lead author and three research assistants who are Chinese-English bilinguals analyzed the data. Transcripts were reviewed thoroughly via listening to the interview recordings, taking notes on data transcripts, and reviewing notes of key points taken by the facilitator during interviews to establish familiarity. Themes relevant to implementation were then summarized.

## **RESULTS**

### *Participants*

Providers approached 15 recently diagnosed MSM about the study; 7 were not interested, and 8 were referred to research staff, given information, and wanted to participate. Of the 7 who were not interested, 6 said they had no time to participate or did not want to return to the hospital for an extra visit, and 1 described having no distress. Three MSM independently contacted research staff with interest in the study after seeing the advertisement in the waiting room. Eleven participants were consented; 10 completed the entire study protocol, as 1 participant attended only the first session. When he was contacted to confirm his appointment for the second session, he expressed that he was going back to university in another city and therefore unable to attend the subsequent sessions. Although he knew this during the consent process, he still enrolled in the study out of curiosity about the intervention. There was no other attrition. Due to the small sample size, median demographics are reported. The median number of days since diagnosis was 66 days (just over 2 months), the median age of participants is 26.5 years ( $SD = 8.0$ ). The sample was overall highly educated, with 70% having graduated from professional/vocational training school, college, or graduate school. No one in our sample was unemployed. Eighty percent of the sample reported that no one in their household knew of their HIV-positive status. Seventy percent of our sample earned over 4000 RMB per month, which is comparable to the national average (Ministry of Human Resources and Social Security, 2015).

### Psychological outcomes

A repeated measures MANOVA was computed as an omnibus test to evaluate overall efficacy of the intervention across all the psychological outcomes of depression, adjustment,

distress, coping, and social support. The Hotelling's  $T^2$ -test statistic (Hotelling-Lawley trace; Kariya, 1981)  $T^2(1,9) = 8.752$  ( $p = .257$ ) was not significant. Due to the possibility that the omnibus test was insignificant because of the limited degrees of freedom afforded by the small sample size, individual measures were still probed to examine differences.

Paired samples  $t$  tests were conducted to compare nine mental health indicators at baseline and post intervention (See Table 2.1). Participants reported significant reductions in PHQ-9 depression symptoms,  $t(9) = -2.62$ ,  $p < .05$  and BASE-7 problems in adjustment,  $t(9) = -2.40$ ,  $p < .05$ . Participants also reported significant improvements in HIV coping skills,  $t(9) = 5.16$ ,  $p < .001$ ; total social support,  $t(9) = 3.31$ ,  $p < .01$ ; emotional/informational support,  $t(9) = 2.47$ ,  $p < .05$ ; affectionate support,  $t(9) = 2.9$ ,  $p < .05$ ; tangible support,  $t(9) = 2.29$ ,  $p < .05$ ; and positive social interaction,  $t(9) = 3.55$ ,  $p < .01$ .

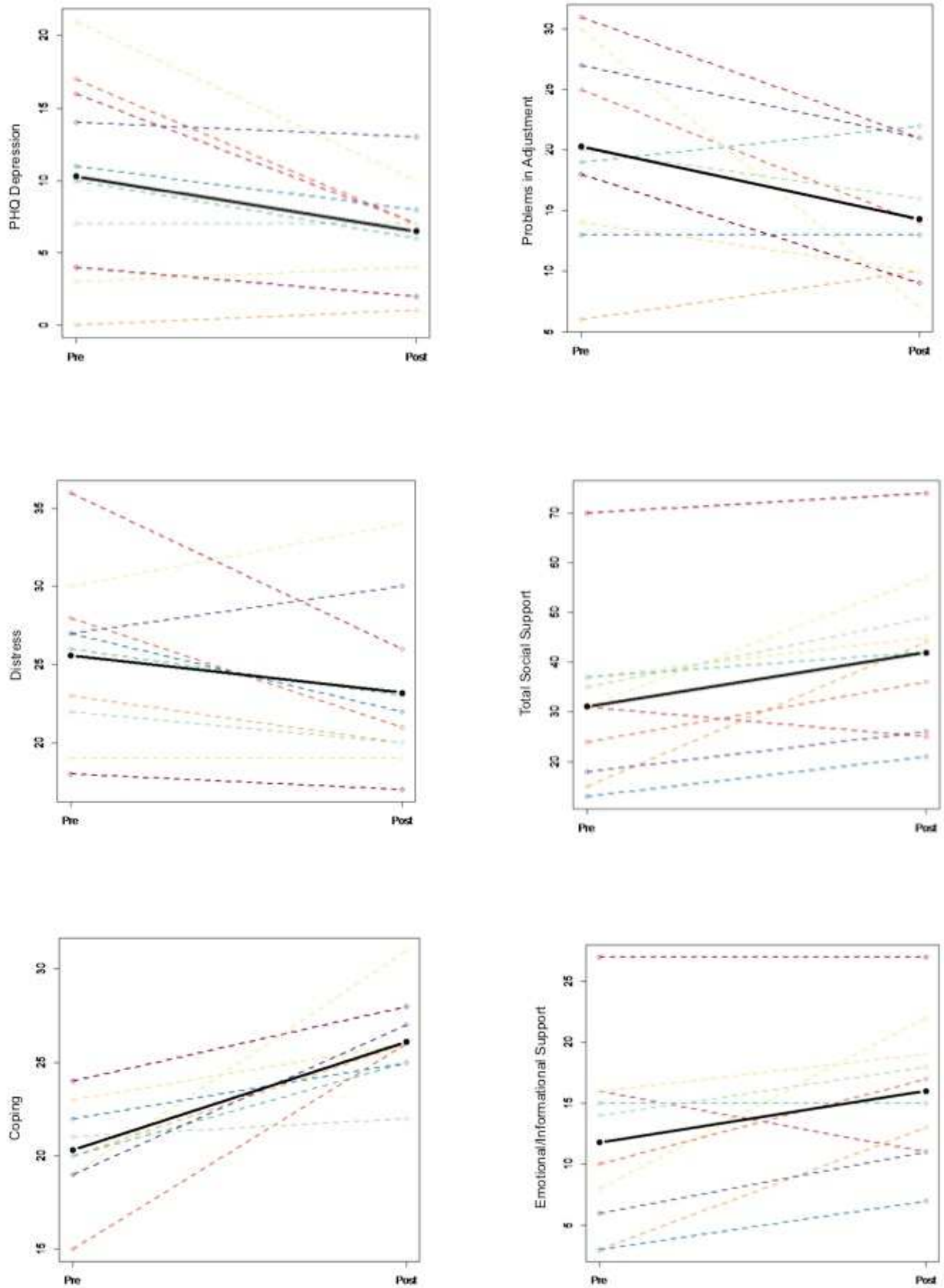
**Table 2.1.** Dependent samples *t* tests of mental health indicators from baseline to post-intervention

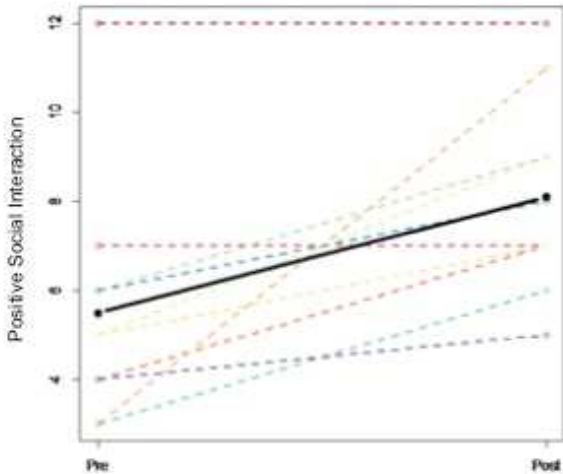
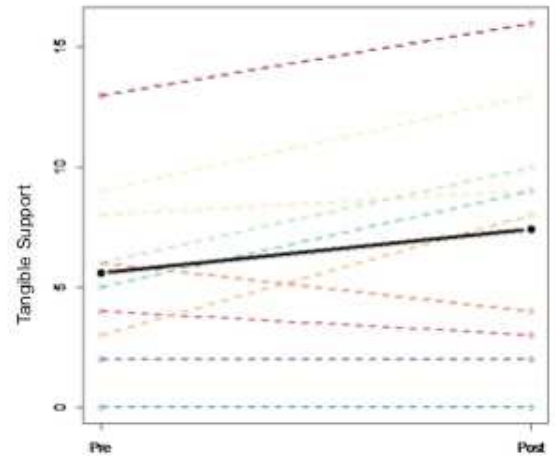
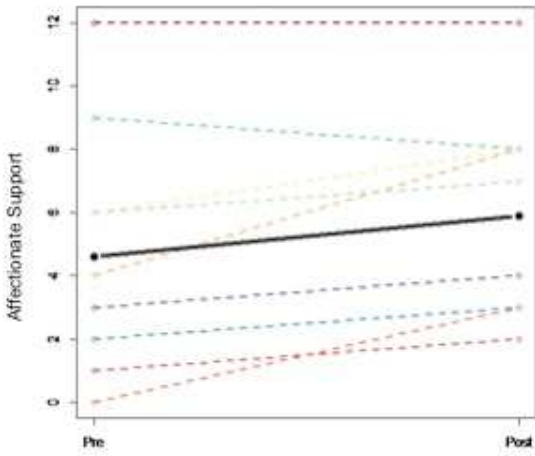
Measure	Baseline		Post Intervention		<i>t</i> ( <i>df</i> = 9)	<i>p</i>	Effect size <i>d<sub>z</sub></i>
	<i>M</i> ( <i>SD</i> )	Range	<i>M</i> ( <i>SD</i> )	Range			
HIV Distress	25.60 (5.36)	18 - 36	23.20 (5.31)	17-34	-1.78	.11	-.562
BASE-7 Problems in Adjustment	20.30 (8.03)	6-31	14.30 (5.50)	7-22	-2.40	.04	-.758
PHQ Depression	10.30 (6.80)	1-21	6.50 (3.57)	1-13	-2.62	.03	-.828
HIV Coping	20.30 (5.31)	15-24	26.10 (2.33)	22-31	5.16	.001	1.63
Total social support	31.10 (16.35)	13-70	41.90 (16.10)	21-74	3.31	.009	1.05
Emotional support	11.80 (7.36)	3-27	16.00 (5.89)	7-27	2.47	.035	.78
Affectionate support	4.60 (3.72)	0-12	5.90 (3.18)	0-16	2.90	.018	.92
Tangible support	5.60 (3.75)	0-13	7.40 (5.08)	2-12	2.29	.048	.72
Positive interaction	5.50 (2.64)	3-12	8.10 (2.18)	5-12	3.55	.006	1.12

When the false discovery rate (Hochberg & Benjamini, 1990) was calculated to control for family-wise alpha, only improvements in coping skills, general social support, affectionate support, and positive social interaction remained significant.

Despite statistical significance decreasing when the false discovery rate correction was implemented, given that the sample size was 10 participants, it is useful to note that effect sizes for every comparison ranged from medium (0.5) to large (0.8) effects (Cohen, 1988). Detailed results are provided in Table 2.1. Individual trajectories of change on each outcome are plotted in Figure 2.1.

**Figure 2.1.** Individual trajectories of participants





### Feasibility and Acceptability

#### *Quantitative*

The mean Client Satisfaction Questionnaire score was 66.5 ( $SD = 6.55$ ) out of a possible maximum 76. On 4-point Likert-type items, the average rating for each item was 3.51, which corresponds to anchors between *Somewhat/Generally* and *Very/Extremely Satisfied*. On 6-point

Likert-type items, the average rating for each item was 5.23, which corresponds to anchors between *Agree* and *Strongly Agree* to liking and being satisfied with the intervention.

The mean acceptability, feasibility, and appropriateness score as measured by the AFAS was 44.3 ( $SD = 3.2$ ) out of a possible maximum of 50, indicating an average rating for each item of 4.4 out of 5, landing between verbal anchors of *3-Moderately* (3) and *5-Extremely* acceptable, feasible, and appropriate.

The mean Acceptability of Intervention score was 62.9 ( $SD = 6.28$ ) out of a possible 72, indicating an average rating for each item of 5.24, between *Agree* and *Strongly Agree* for acceptability.

The mean score on the Treatment Acceptability Questionnaire single item was 6.20 ( $SD = .63$ ) out of a possible 7 (*Very Acceptable*) for the intervention overall.

### *Qualitative*

Participant responses fell into broad themes of 1) positive responses to the Psychology Toolbox intervention; 2) perceived changes as a result of the intervention; and 3) suggestions for future implementation.

#### *Theme 1: Positive responses to the Psychology Toolbox intervention*

All participants reported that they found the intervention helpful and that they learned useful skills as a result of it.

*I learned a lot of new things – these skills allow me not to be as agitated as I was before when I face new problems; I have not completely acquired them fluently but I will use*

*them in the future...It was so helpful that I recommended it to my boyfriend. – Male, 25 years old*

*I have not encountered this kind of help before. I am surprised that it was actually more useful than I thought it was going to be. –Male, 32 years old*

*I was so happy to know about this intervention. Most of what we talked about I am now able to use in daily life. A small part I cannot use yet, but if I use it more, maybe I can handle life better. –Male, 33 years old*

### *Theme 2: Perceived changes as a result of the program*

Participants articulated changes they observed in their daily living as a result of going through the intervention.

*The Automatic Thought Record was the most helpful for me – now I don't think about the worst-case scenario only, I think about every possibility... At the moment, I have some but not very obvious and big improvements, but I think I will continue to use it in the future, and if my situation gets worse, it will be even more helpful. –Male, 25 years old*

*“The long term results are unclear. But in the short term, I think the results are very good! I already recommended this to other people. I think people would pay for it. – Male, 21 years old*

### *Theme 3: Suggestions for future implementation*

The participants overwhelmingly indicated appreciation of the interventionist's role as a non-hospital doctor or nurse, suggesting that her position facilitated non-judgmentalness and

non-directive interaction, which is typical of existing doctor/nurse and patient relationships.

They highlighted this as a critical component in their acceptance of the intervention.

*The nurses and doctors have met too many HIV-positive people. I want to tell them that I feel bad, but I can't because they will say, "Stop! You don't need to be worried!" – Male, 32 years old*

*I feel you support me, give me your examples, and are authentic and equal. It helps me feel more secure. If it's a nurse or someone else in the hospital, no matter how nice they are, there is a power differential. They think about healing illness not about mental health thoughts. Also, doctors and nurses have more professional concerns so their suggestions will be cooler and not as warm. – Male, 24 years old*

*If it [the intervener] was a doctor or nurse, I would not accept it. If it was a volunteer, I would be okay. –Male, 25 years old*

Participants had varying ideas about the process of the intervention, articulating that the intervention was “*too short*” (Male, 32 years old), and “*if it could go on for longer, that would be helpful*” (Male, 21 years old). Some thought that the hospital location was ideal “*It is convenient for me at the hospital because I have to come here anyway*” (Male, 49 years old), whereas others preferred elsewhere “*Every time I come to the hospital I get stressed out. Maybe if we could do it outside somewhere else*” (Male, 32 years old).

While participants responded positively to Automatic Thought Record and Paced Breathing, many thought that TRAP/TRACs did not apply to them.

*If there were more physiological skills, that would be even better, like the paced breathing –Male, 21 years old.*

*TRAP/TRAC was not as helpful because I think the big things you cannot avoid anyway, and small things you don't even need to avoid it and it will just go away.* – Male, 32 years old.

*TRAP is not as helpful for me since I am not an avoidant person.* –Male, 25 years old.

The Community Advisory Board (CAB) consulted regarding implementation of the intervention echoed participants' positive responses to the intervention, in particular that topics were useful and timing was opportune. CAB members highlighted several difficulties: that implementation would require staff who are already engaged in a full-time case load (whether nursing, physicians, the case worker) and would need to be taking on additional responsibilities to deliver an intervention. For a sustainable future model, the CAB highlighted the importance of either finding additional staff or re-distribution of responsibility for particular nurses/case workers to fulfill this role.

## **DISCUSSION**

To the best of our knowledge, this is the first study examining a behavioral intervention to reduce HIV-related distress among recently diagnosed MSM in China. Our pilot trial yielded promising results. Although the sample size was small and not powered for efficacy, we detected differences in hypothesized directions for depression, adjustment problems, coping skills, total social support, tangible support, affectionate support, emotional/informational support, and positive social interaction due to large effect sizes. When the results were adjusted with the false discovery rate for multiple comparisons, improvements in coping skills, general social support, affectionate support, and positive social interaction remained significant. Notably, all the remaining significant findings were indices of positive gains in protective factors

against distress (i.e., coping and support) rather than a reduction in distress symptoms. This may point to the mechanisms of change throughout the sessions, suggesting that brief interventions may be particularly useful in improving patient wellbeing through the provision of new skills or coping methods. Indeed, behavioral psychologists have explored the importance of focusing on skills acquisition rather than symptom reduction for greater long-term gains (e.g., Linehan 2015; Key & Craske, 2002; Blom, 1991)

As previous studies have been conducted employing mixed methods to examine implementation (e.g., Palinkas et al., 2011), upon completion of the intervention and post-intervention assessment, participants filled out additional measures of treatment acceptability, appropriateness, and feasibility. We also conducted qualitative exit interviews with participants to understand their perspectives on the implementation of the intervention. Overall, participants responded positively to the intervention, indicating that it was helpful, acceptable, and appropriate.

There are several limitations to this study. Due to limited resources, we conducted a preliminary study without a control sample, therefore analyzed differences between pre and post intervention. Future research may take advantage of experimental design including a control sample receiving treatment as usual to ensure that differences do not arise simply due to assessment. Another limitation is that our sample size was small and a convenience sample, suggesting that generalizability may be limited. Therefore, while improvements in mental health were consistently observed across all 10 participants, further exploration with a larger and more representative sample is warranted. It is likely our qualitative interviews on implementation did not reach data saturation due to small sample size. Additionally, the convenience sample of participants willing to engage in a 3-session mental health intervention (who were overall highly

educated, employed, and made comparatively high incomes) at a premier HIV treatment center in a major metropolitan area in China may have greater psychological openness than other PLWHA. Furthermore, although the assessments were administered by a separate research staff member than the interventionist and identified only by a study ID number, participants may have been influenced by demand characteristics to report improvements in mental health as well as give positive feedback for treatment acceptability and appropriateness. Notably, because there were no other personnel available trained in qualitative research methods, the interventionist had to conduct the exit interview. Efforts were undertaken to encourage participants to express negative and constructive feedback such as explaining the rationale for the interviews as, “We would like this to be helpful for future recently diagnosed PLWHA, so your corrective feedback would be particularly useful”. However, demand characteristics could still have affected the participants’ responses, which were generally positive.

Despite these limitations, our pilot trial shows promising results for the Psychology Toolbox intervention. Future implementation and dissemination research is warranted to explore factors of scaling the intervention up and training local interventionists (Simoni et al., 2015) to deliver the intervention. In addition, due to resource constraints, we decided to focus our pilot trial on MSM due to their increased risk for psychological distress. Although preliminarily tested in MSM, it may be helpful for other recently HIV-diagnosed individuals, including men who have sex with women, or women. The constructs primarily targeted distress such as worry, fear, sadness, and isolation common to receiving an HIV diagnosis, therefore may be broadly applied to recently diagnosed individuals with a range of demographics. Future research may explore efficacy and effectiveness in a larger sample of recently diagnosed PLWHA.

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## **Appendix A. Qualitative Interview Guide – Study 1: HIV-related Mental Health Needs**

### **Introduction**

Thank you for taking the time to talk with me today. With this study, we hope to learn about the experiences of HIV+ individuals. The interview will take up to two hours. Some of my questions may not seem relevant or I may ask for more details on your answers that seem obvious to you. The reason I am asking is that we want to be very sure we understand all the different issues people encounter when facing HIV. Everyone has a different experience and we don't want to make any assumptions about you. Also, sometimes I may probe for more details to help us understand how we might help other patients with HIV/AIDS.

This is a completely voluntary interview. If you do not want to answer a particular question or talk about a particular topic, please let me know and we will move on. Also, if you would like me to turn the tape recorder off for any response, just let me know and I can do that, too.

The information you share with us will be kept confidential, which means that in no way will your words be identified to you. We will share general information from the study with clinic staff but they will not have access to the taped interviews.

Do you have any concerns about recording our conversation? What are your concerns?  
[Address concerns as appropriate or do not record.]

### **Warm-up**

We really appreciate your willingness to participate in this project with us. We'd like to get a sense of what motivated you to talk with us.

→ *Can you tell me some of the reasons why you agreed to participate?*

### **1. Experience of the diagnosis**

In this part, I will ask you about your experience when you first heard you were HIV+.

→ *Please describe the experience of how you found out you were HIV+.*

Additional prompts if necessary. Please make sure participant addresses the following:

- When/how did you first learn you were HIV+?
- Who told you?
- What was your reaction to the news?
- Who knows about your HIV status? How did they learn about it?

### **2. Impact of the diagnosis**

In this part, I will ask you about the impact HIV has had on your life.

→ *How has becoming HIV+ impacted you emotionally and psychologically?*

Additional prompts if necessary. Please make sure participant addresses the following:

- Experience with mental health problems, e.g.
  - adjustment: difficulty adjusting to HIV+ status?
  - anxiety: being so worried or anxious that you've had difficulty doing things?
  - depression: feeling sad and down? Suicidal thoughts?
  - substance abuse: using alcohol and other drugs?
  - PTSD: avoidance?
  - stigma

### **3. Process of coping**

In this part, I will ask you about what you have done to cope with your diagnosis.

→ *What have you done to feel better since and/or respond to your HIV diagnosis?*

Additional prompts if necessary. Please make sure participant addresses the following:

- What kinds of resources have been accessed, e.g.
  - traditional Chinese medicine
  - Western medicine
  - mental health services including counseling
  - family support
  - social network support

### **4. Helpful resources**

In this part, I will ask you about what you might want to tell someone else in your situation in order for them to learn from your experience.

→ *What resources do you think would be helpful to someone else in your situation?*

Additional prompts if necessary. Please make sure participant addresses the following:

- Would it be helpful to talk about some of the issues you faced with someone in the clinic, such as a doctor, nurse, another patient, or other patients' families?
- Would you bring a family member or other caregiver with you to access this resource?
- Would it be feasible for you come into the clinic regularly in order to talk about the problems you have been dealing with, or would you prefer to access resources elsewhere?
- What are some areas that you need the most assistance with?
- What kind of assistance would you find or would have found helpful?

**Appendix B.** Generals Literature Review of Evidence-based Mental Health Strategies for Chinese PLWHA

**ABSTRACT**

The field of clinical psychology, from its conceptualization of pathology to its approach to intervention, derives largely from a Western cultural perspective. A more globally relevant and effective discipline must consider local perspectives on mental illness including etiology, symptom presentation, and treatment. A growing population in need of mental health support, people living with HIV/AIDS (PLWHA) in China, may benefit from Western-based treatments but options for care must address co-morbid HIV infection and psychological distress within the Chinese culture and context. This tripartite review considers Western and Chinese perspectives and research on I) evolution of theoretical conceptions of mental health and mental illness, II) mental health of individuals with chronic medical conditions – primarily PLWHA, including epidemiology, formation, and trajectory of psychological symptoms, and III) the treatment of psychological distress in PLWHA.

Section I – Mental health and mental illness

- A. Western perspectives and research
- B. Chinese perspectives and research

Section II – Mental health of people living with HIV/AIDS

- A. Western perspectives and research
- B. Chinese perspectives and research

Section III – Treatment of psychological distress in people living with HIV/AIDS

- A. Western perspectives and research
- B. Chinese perspectives and research

## I. Mental Health and Mental Illness

### **A. Western perspectives and research**

Two major classifications that organize contemporary psychological and psychiatric diagnoses are the Diagnostic and Statistical Manual of Mental Disorders (DSM) published by the American Psychiatric Association since 1952 (currently in the 5<sup>th</sup> revision, 2013) and the International Classification of Diseases (ICD) published by the World Health Organization since 1949 (currently in the 10<sup>th</sup> revision, 1992). While overall rates of usage could not be found, several surveys of psychiatrists and psychologists around the world reported that the ICD-10 is more frequently used for clinical diagnoses while DSM-IV is more frequently used for research (Mezzich, 2002).

Both the ICD and DSM systems are based on the medical model of mental illness, emphasizing classification through symptom clusters rather than underlying causal mechanisms (Bornstein & Gordon, 2012). While the DSM is intended for use by highly trained mental health professionals, the ICD is designed for broader use in health settings around the world by practitioners with divergent levels of expertise (Cuthbert & Insel, 2013). This distinction is readily visible even in their definitions of mental disorder. The DSM-IV (1994) defines a mental disorder as “a clinically significant behavioral or psychological syndrome or pattern that occurs in an individual that is associated with present distress...or disability with a significantly increased risk of suffering, death, pain, disability, or important loss of freedom ... [that is] considered a manifestation of behavioral, psychological, or biological dysfunction to the individual”. A conceptually similar but more succinct definition appears in the ICD-10 (2008), as “a clinically recognizable set of symptoms or behaviours associated in most cases with distress and with interference with personal functions”.

This demarcation between normal and abnormal in order to clarify a distinction between mental health and mental illness is critical for convergence in any form of usage of classifications, from diagnosis to epidemiological research accuracy. For example, epidemiological data on mental illness from the US National Institute of Mental Health (NIMH) has repeatedly been inconsistent, with critics on both ends lamenting excessive or under-reported rates (Regier et al., 1998; Widiger & Sankis, 2000).

Efforts to consider alternative methods of classification include exploration of taxonomy based on underlying psychological mechanisms such as motivation or learning history or a movement towards explicating neurobiological dimensions of mental disorder. Currently, the NIMH is focused towards the latter, in championing the Research Domain Criteria (RDoC) project to develop a research classification system based on “biobehavioral dimensions that cut across current heterogeneous disorder categories” (Cuthbert & Insel, 2013). The RDoC framework conceptualizes mental health research into one of five domains: 1) Negative Valence Systems, 2) Positive Valence Systems, 3) Cognitive Systems, 4) Systems for Social Processes, and 5) Arousal/Regulatory Systems, using 7 units of analysis: a) genes, b) molecules, c) cells, d) neural circuits, e) physiology (e.g., cortisol, heart rate, and startle reflex), f) behaviors, and g) self reports (NIMH, 2011). RDoC is agnostic about current diagnostic categories, and aims

towards a neuroscience-based classification for more universal application. RDoC is in its nascent stages, thus currently utilized mental health diagnostics remain embedded in the DSM and ICD frameworks.

The diagnostic guidelines in the current DSM and ICD have been widely implemented despite their fundamentally Western perspective (Widiger & Sankis, 2000). Theorists contend that wide usage and even reliable application of the DSM and ICD do not necessarily indicate that the underlying constructs or understanding of mental illness has validity in those cultures. In other words, reliability only determines consistency and not legitimacy (Widiger & Sankis, 2000; Lopez & Guarnaccia, 2000; Sher & Trull, 1996). Cross-cultural discourse of the current understanding of psychopathology can be distilled into ‘strong’ and ‘weak’ critiques (Widiger & Sankis, 2000). The ‘strong’ critique questions the fundamental validity of the basic construct of the mental disorder. It posits that the construct *itself* may be a culture-bound idea, reflecting the biases of Western society; therefore, the science of psychopathology is valid only within a specific cultural system in which it is an accepted belief (Lewis-Fernandez & Kleinman, 1995). Indeed, the ‘strong’ critique is a radical stance against the universality of mental illness. Endorsing the ‘strong’ criticism would require great sociological and anthropological effort when attempting to conduct research in any non-Western setting, starting from the root of what human behavior means and the associated values in that particular culture. In fact, even the initiative to study pathological human behavior in a non-Western culture in the first place could potentially already be a violation of the ‘strong’ criticism, if it assumes that meanings of “pathological” are consistent. It is useful to note that theorists of this persuasion do not excuse diagnoses of physical disorders from these criticisms; they contend that diagnostic categories of any kind inherently carry value judgments of necessary, adequate, or optimal functioning (Sadler, 1997; Wakefield, 1992). For example, for a category such as ‘disabled’ to exist, the social construction of what being ‘able-bodied’ entails, must also be delineated. Furthermore, a value assessment is attached to ‘able-bodied’ rather than ‘disabled’, therefore motivating attempts to assist movement from ‘disabled’ to more ‘able-bodied’. The ‘strong’ critique stands as a philosophical exercise, but is rarely acknowledged or implemented in reality.

In contrast to the essentialist ‘strong’ critique, the ‘weak’ (non-essentialist) critique allows for the existence of a core construct of mental disorder, while requesting an acknowledgment of the socio-cultural factors that may affect and bias the science of psychopathology. Specifically, bias occurs through processes such as a) selection of the population (including demographics of participants as well as topography of behavior) for mental health research; b) highlighting the purported clinically relevant parts; c) dictating the descriptive language used; d) masking symptoms of that which is not considered disorder; e) biasing the observer and diagnostician; and f) shaping the goals and targets of treatment (Fabrega, 1994). The ‘weak’ critique therefore recommends caution when observing, diagnosing, and prescribing treatments for mental illness within and across cultures, via appreciation of the biases and lenses through which the science of psychopathology has formed.

The current field of clinical psychology is likely trending towards acknowledgement of the ‘weak’ critique, as evidenced by efforts to research adaptations of psychosocial treatments for the same disorder in different cultures. For example, attempts to research efficacy of cognitive behavioral treatments for treating depression in Mainland China with the recognition that a cultural adaptation or reconceptualization of treatment is essential, coupled with the simultaneous acknowledgment of differential presentation of depression symptoms (e.g., higher presence of somatic symptoms compared to endorsement of “feeling blue”), would fall under the guidance of ‘weak’ critiques of the science of psychopathology.

Currently, there is movement to recognize that cultures vary significantly in the value they attach to subjective wellbeing, as well as the components that lead to it, such as happiness, autonomy, or social ties. Efforts to incorporate these considerations was observed in the publication of the DSM-IV (APA, 1994), in the inclusion of “culture-bound syndromes” in an appendix, which were defined as “recurrent, locality-specific patterns of aberrant behavior... that may or may not be linked to a particular DSM-IV diagnostic category.... Culture-bound syndromes are generally limited to specific societies or culture areas” (DSM-IV: Appendix I, APA, 1994). However, the introduction of cultural factors into the DSM-IV was considered a pyrrhic victory by many, in that disorders or concepts from non-Western cultures were included in the back of the manual as “culture-bound”, implying that the rest of the document of ‘standard’ psychiatric diagnoses from Western cultural phenomena are actually universal (Kleinman, 1997; Jilek & Jilek-Aall, 2001). Indeed, scholars have since contended that diagnoses such as Anorexia Nervosa (Banks, 1992) and personality disorders (Tseng, 2006) are in fact Western culturally bound.

The presently recommended synthesis under the ‘weak’ critique is to consider the impact of culture on every psychiatric disorder, not only culture-specific syndromes, in order to recognize the lenses through which disorders were defined and shaped, and better provide care for individuals experiencing them.

## **B. Chinese perspectives and research**

Exploration of the Chinese perspective of mental illness allows for an investigation of how cultural factors influence the experience and understanding of psychosocial stress, formation and manifestation of psychopathology, and shape a pattern of coping mechanisms. As mental health issues deal with the normal and abnormal states of mind, culture can be seen as the “arbiter of rules of conduct” dictating normality and abnormality in the mind of individuals of a particular culture (Tseng & Wu, 1985).

Several accounts have corroborated that mental illness as a concept first appeared in China in 1100 B.C. in *Shangshu* (The Book of Historical Documents; one of the famous Five Classics of ancient China), manifesting as madness, called *kuang*, etymologically linked to rabies from dog bites (Tseng & Wu, 1985). Systematic management or treatment of the mentally ill was first documented during the Tang Dynasty (AD 618-907) in a charity facility managed by

Buddhist monks for the mentally ill, and homeless widows and orphans (Lan, 1994). Western-style psychiatric treatment arrived in China in 1898 in the form of a hospital for the homeless mentally ill, founded by an American missionary (Liu et al., 2011). Shortly thereafter, the first Western psychiatric education was initiated in a Chinese university in 1919 (Livingston & Lowinger, 1983).

The number of psychiatric hospitals and psychiatric higher education, all from a colonial, Western perspective, grew slowly and steadily for the next 50 years. After the People's Republic of China was founded in 1949, psychiatric hospitals were established gradually in every province. Following the National Mental Health Meeting in 1958, community-based mental health work focusing on the prevention and treatment of psychosis began in major metropolitan areas such as Beijing and Shanghai.

During the Cultural Revolution from 1966 – 1976, however, progress in mental health training, treatment, and resource generation virtually ceased. In this ten-year span, the Maoist dictate that mental distress reflected wrong political thinking effectively arrested the field. Mentally ill individuals were hidden from society by family members who feared stigma for the ill member as well as the rest of the family. Even providers in the psychological profession sought alternative occupations (Zhang, 1995). Individuals who were associated with mental illness (as one who exhibited mentally ill symptoms or treated mental illness) could be seen as counter-revolutionary and suffer public denouncement. The scientific study of psychology became largely outlawed, as Mao Zedong famously declared that psychology was “90 percent useless” and 10 percent “distorted and bourgeois phoney science” (Bond, 1993). Given the dangers of involvement with psychology, whether those suffering from or observers of psychopathology, it is not surprising that the field was stymied for decades.

The substantial political, economic, and societal forces at work in relatively recent Chinese history begin to explain the wide gap between supply and demand for mental health treatment in present-day China. In a large, nationally representative epidemiological study conducted between 2001 – 2005, the adjusted 1-month prevalence of any mental disorder in adults was 17.5%, with psychotic disorders at 1% (Liu et al., 2011). The treatment gap is high: one study estimated that 91.8% of individuals with a diagnosis of any mental disorder never seek help. Of those with psychotic disorders, 27.6% never sought help. The gap in access to care results from a combination of cultural attitudes towards mental illness, specifically the high rate of stigma present, as well as the low availability of supply.

The majority of mental health professionals in China are psychiatrists or psychiatric nurses; there are few clinical psychologists, social workers, or otherwise licensed mental health professionals. In 2004, there were 16,103 licensed psychiatrists and psychiatric registrars, effectively 1.24 per population of 100,000, and 24,793 licensed psychiatric nurses, equating to 1.01 per 100,000. Mental health resources are limited in China compared to the global average mental health workforce of 4.15 psychiatrists and 12.97 psychiatric nurses per 100,000 (and the US rate of 55.6 psychiatrists per 100,000 (US Bureau of Labor Statistics, 2010)).

Mental health is also slowly becoming a major public health concern in China, as evidenced by recognition of phenomena such as suicide, which is the fifth leading cause of death in the nation (Phillips, Li, & Zhang, 2002). The overall annual suicide rate in China (19/100,000) is higher than the range reported by the United States (11/100,000) (Zhang, Ziao, & Zhou, 2010). Similar to the West, elevated past and current rates of suicidal ideation and attempts have been observed in individuals with psychiatric disorders, particularly major depression and schizophrenia (Ma et al., 2009).

In terms of large-scale treatment, China initiated national-level mental health service reform following a mental health seminar convened by leaders of ten Chinese Ministries and the World Health Organization in 1999. The meeting resulted in an official declaration that all levels of the Chinese government would increase their support of mental health care through strengthening inter-sectoral collaboration and cooperation, enact national mental health law to protect patients' rights, and establish a national mental health strategy and action plan (WHO, 2000). Following the declaration, the first National Mental Health Plan spanning 2002-2010 was enacted forming the main goals of a) establishing a government-led system of mental health care, b) accelerating process of mental health legislation, c) increasing public awareness of mental health, d) strengthening services, and e) developing human resources to enhance capacity of current psychiatric organizations (Ministries of Health, Public Security, Civil Affairs, and China Disabled Persons' Federation, 2002). Furthermore, in August 2004, a *de facto* Chinese national mental health policy was approved by various Chinese ministries in the form of the Proposal on Further Strengthening Mental Health Work which outlined explicit guidelines for interventions for psychological problems among children, women, elderly, and victims of disasters, in terms of treatment, rehabilitation, and surveillance of mental disorders as well as protection of rights of the mentally ill (Liu et al., 2011).

Mental health diagnosis in China is primarily conducted using the Chinese Classification of Mental Disorders (CCMD), currently in its 3<sup>rd</sup> revision (Chinese Society of Psychiatry, 2001), which was first published in 1985, based on cultural adaptation of the ICD (Zou, Cui, Han, Ma, Li, & Fan, 2008). Adaptations include sections on psychiatric disorders associated with Qigong practice (a Chinese practice related to Tai Chi) (Shan, 2000) and the absence of personality disorders which are conceptualized as moral rather than medical or psychological problems (Lee, 2001). A study assessing concordance of diagnosis of depression in Chinese patients based on DSM-IV and CCMD-3 found only slight differences in depression diagnoses despite the differences in diagnostic criteria (Wang, Yang, & Zhang, 2008).

## II. Mental Health of People Living with HIV/AIDS

### **A. Western perspectives and research**

People suffering from chronic physical illnesses are a population who experience significant psychological distress. Chronic illness is defined as a long-term physical health condition that can be controlled but not cured, and has the effect of imposing limitations on an individual's functioning (Dimond & Jones, 1983). According to the Center for Disease Control

(CDC), in the United States, chronic disease is the leading cause of death and disability, accounting for 70% of deaths in 2011 (Harris & Wallace, 2012). Common chronic illnesses include heart disease, cancer, diabetes, chronic lung disease, and HIV/AIDS. Psychosocial adaptation in individuals living with chronic illnesses is critical in enhancing their long-term survival, in terms of improving self-management of illness, routine access to care, and increasing medication adherence (Wagner, Austin, & Von Korff, 1996; Eiser, 1991).

Rates of psychiatric distress in chronically ill populations are often reported to be higher than general rates of distress. In the US, nationally representative data from the National Comorbidity Survey Replication indicated that adult lifetime prevalence of Major Depressive Disorder (MDD) is 16.2% and 12-month prevalence is 6.6% (Kessler et al., 2003). According to the CDC, current depression in the US, including both major and other depression exists at about 9.1% (CDC, 2010). Among those who are chronically ill however, the figures tend to be higher. For example, a meta-analysis of 42 studies looking at comorbid depression and diabetes found that in controlled studies, the odds of depression in the diabetic group were twice that of the non-diabetic comparison group ( $OR = 2.0$ , 95% CI = 1.8 – 2.2); 28% of diabetic women and 18% of diabetic men had comorbid depression (Anderson, Freedland, Clouse, & Lustman, 2001). Depression and cancer comorbidity is also very high (Jeffrey & Linton, 2012), ranging from meta-analytic figures such as 24.5% from 94 studies using diagnostic psychiatric interviews (Mitchell, Chan, Bhatti, Halton, Grassi, Johansen, & Meader, 2011), to 66% in an adult oncology outpatients via self-reported Hamilton Rating Scale – Depression scores (Grassi, Rosti, Albieri, & Marangolo, 1989).

People living with HIV/AIDS (PLWHA) have also been widely documented to be at increased risk for mental health problems such as depression, suicidality, and substance abuse (Stoskopf, Kim, & Glover, 2004; Klinkenberg & Sacks, 2004). For example, a meta-analysis of 10 studies world-wide comparing populations of HIV-positive and HIV-negative individuals found that rates of major depressive disorder were twice as high in HIV-positive adults compared to HIV-negative adults (Ciesla & Roberts, 2001). Reporting similarly high rates, a nationally representative study in the US of 2864 adults receiving care for HIV infection (the HIV Cost and Service Utilization Survey (HCSUS); a RAND study from 1994 – 2000 with data on over 3700 HIV-positive persons in the US) found that 48% screened positive for at least one psychiatric disorder in the past 12 months, specifically: 36% major depression, 27% dysthymia, 16% generalized anxiety disorder, and 11% panic disorder (Bing et al., 2001). Comparison data from the HCSUS and the National Household Survey on Drug Abuse (NHSDA; an annual nationwide survey on substance use and mental health in the US) found the following differences among percentages of individuals screening positive for: a) major depression: HCSUS = 36.0%, NHSDA = 7.6%; b) anxiety disorder: HCSUS = 15.8%, NHSDA = 2.1%; c) panic attack: HCSUS = 10.5%, NHSDA = 2.5%; and d) drug use: 50.1%, NHSDA = 10.3% (NASTAD, 2005). While it is important to acknowledge the different methodologies in assessment (e.g., various self-report measures versus psychiatric diagnostic interviews), the reliably higher rates of mental health symptoms among PLWHA compared to general populations remains concerning.

Psychological distress among PLWHA, particularly in the form of depressive and anxious symptomatology is reliably associated with more HIV/AIDS symptoms, negative disease progression, and increased or earlier mortality (Ickovics & Meade, 2002; Ironson et al., 2005; Leserman, Barroso, Pence, Salahuddin, & Harmon, 2008). Depression and anxiety impact medication adherence and access to routine HIV care (Mugavero et al., 2006; Gordillo et al., 1999). Additionally, mental distress is also associated with increased risky transmission behaviors, such as unprotected sexual intercourse, multiple sex partners, trading sex for money or drugs, and contracting other sexually transmitted diseases (Bradly et al., 2008; Hart et al., 2008; Hutton, Lyketsos, Zenilman, Thompson, & Erbeding, 2004). Indeed, mental health is a critical component of worldwide efforts to treat those who are already infected or affected by HIV as well as essential to prevention of the spread of HIV (Cournos, McKinnon, & Wainberg, 2005). There is ample evidence indicating that behavioral interventions promote safer practices and reduce high-risk behaviors.

Kalichman (1998) details common psychological sequelae and adjustment to each phase of HIV infection. First, initial reaction to receiving an HIV diagnosis due to testing positive is often characterized by shock and denial. Indeed, receiving a positive test result can be so traumatic that information provided during posttest counseling is difficult to retain (Perry et al., 1993). Following immediate reactions of shock, people often experience emotions of anger, reactive depression, very salient concerns about health, and generalized anxiety (Huggins, Elman, Baker, Forrester, & Lyter, 1991). HIV-related stressors include facing threats to long-term survival, the need to make lifestyle changes, fear of potentially transmitting HIV to others, access to treatment, declining quality of life, and hyper-vigilance due to uncertainty about disease progression. Beyond the first shock experience of diagnosis, other phases of HIV disease progression can also be accompanied with similar emotional or distress responses (see Figure 1). Distress responses are often related to losses that PLWHA experience as a direct result of their HIV. These can include losses in domains of: a) finances and employment (and subsequently health insurance) due to infection status or disability; b) relationships including family, friends, or sexual partners (and subsequently social support and physical/affectionate contact) due to fears and stigma or inability to cope; c) physical functioning and lifestyle changes due to disease progression; d) future goals and aspirations due to chronic illness; and e) pets due to potential to carry pathogens.

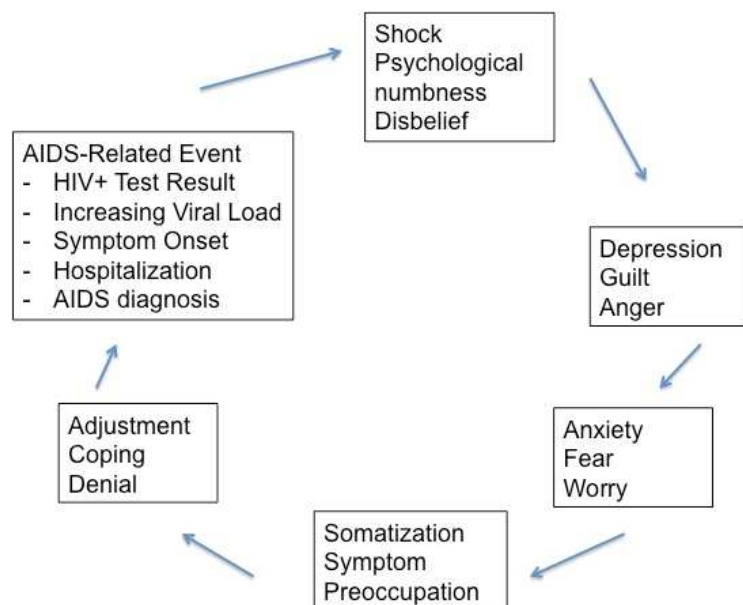


Figure 1 reconstructed from Kalichman (1998)

PLWHA must also face the chronic stressor of the issue of disclosure of their HIV-status, including whether to disclose, to whom, when, and how. Derlega and colleagues (2004) developed a model for HIV-disclosure decision-making (based on Omarzu (2000)'s framework for studying self-disclosure decision making across situations) describing factors leading to disclosure or non-disclosure. These include considerations about the social and cultural environment in which the PLWHA lives, proximate conditions of the interpersonal relationship with the target of disclosure (e.g., recipient is currently depressed or in another city thus not affording face-to-face conversations), and current relational and temporal contexts of the social network (availability of support), progression and length of time living with HIV, and personal and network members' characteristics (e.g., sexual orientation, physical health, and temperament) .

### **B. Chinese perspectives and research**

In China, the first HIV/AIDS cases were reported in 1985 among hemophiliac patients in Zhejiang; concurrently a foreigner in Beijing was diagnosed with AIDS. The first epidemic was discovered in 1989, when 146 HIV-positive cases were found among intravenous drug users (IDUs) in Yunnan province (border of the opium producing Golden Triangle of Myanmar, Laos, and Thailand) (Chu & Levy, 2005). In the early 1990s, over two-thirds of HIV/AIDS cases were reported in IDUs in the southwest border. The topography of HIV shifted in the mid-1990s to inland provinces, such as Henan in central China, initiating the second wave of the HIV/AIDS epidemic with large numbers of commercial blood plasma donors contracting HIV. Thousands of for-profit plasma collection centers were set up in rural areas of China between 1990 – 1994, in which farmers, villagers, and others as a valuable source of income sold their blood with high frequency. In order to prevent anemia, it was common practice for the red blood cells to be re-

infused into donors allowing for more frequent plasma collection. Collection tools were reused and blood of multiple donors of the same blood type were regularly centrifuged together to extract red blood cells for re-infusion, thus facilitating rapid HIV infection (Li et al., 2010). Upon discovery, large-scale blood contamination was quickly contained. HIV transmission among the IDU population, however, remained at a fast pace. The spread of HIV from high-risk groups to the general population then occurred mainly through sexual transmission (Shao, 2006). In some areas, more than 10% of commercial sex works (CSW) are also injection drug users (Zhang, Detels, Liao, Cohen, & Yu, 2008). High rates of inconsistent condom use among CSW (Liao et al., 2012) as well as concurrent sexual relationships with both men and women among men who have sex with men (MSM), many of whom are married to women due to stigma about homosexuality in China (He et al., 2009) have contributed to HIV transmission to the general population. Currently, HIV prevalence among men who have sex with men (MSM) has also increased significantly, with MSM accounting for 32.5% of new HIV cases in 2009, leading to a new wave in the epidemic (Guo, Li, & Stanton, 2011).

Presently, there are an estimated 780,000 people living with HIV/AIDS (PLWHA) in China (China CDC, 2012). In 2009, an estimated 26,000 people died from AIDS in the country, causing it to be the leading cause of death among infectious diseases for the first time in China's history (UNAIDS, 2010; BBC News, McGivering, 2009). Given the increasing epidemic, the Chinese government made considerable progress in addressing HIV/AIDS medical care. In the early 2000s, reports were regularly distributed that warned of projected annual 30% rates of increase in new HIV infections, anticipating nearly 10 million PLWHA by the year 2010 (as cited in Li et al., 2006; France-Presse, 2002; Rosenthal, 2002; Chinese Xinhua News Agency, 2002). These reports led to aggressive governmental action (Wu, Sullivan, Wang, Rotheram-Borus, & Detels, 2007). On World AIDS Day in 2003, a national AIDS control policy "Four Frees and One Care" was initiated to provide nation-wide free anti-retroviral drugs, free prevention of mother-to-child transmission (PMCT), free voluntary counseling and testing (VCT), and free education for children orphaned by AIDS, as well as care for PLWHA (Shao, 2006). Due to rigorous efforts to control transmission, current figures appear to indicate that the HIV/AIDS epidemic in China is near stabilizing, with an estimated prevalence of HIV infection of 0.058%, a rate similar or lower than that of neighboring countries (Zhao, Shi, McGoogan, Rou, Zhang, & Wu, 2012). Certainly, the widely cited 2012 number for the PLWHA population in China of 780,000 is far lower than the 10 million by the year 2010 that experts had predicted a decade ago.

While transmission prevention efforts have been the focus of governmental energy, there has been limited attention paid to the mental health of PLWHA. Indeed, there is a relative lack of research conducted on psychological aspects of Chinese PLWHA. The available work, however, has consistently demonstrated a high rate of psychological distress among Chinese PLWHA. One sample of HIV treatment seeking adults in Beijing found a 54.2% endorsement of "significant depressive symptomatology" as indicated by a score of 10 or above on the brief 10-item Center for Epidemiological Studies Depression Scale (CES-D), as well as a 30.8% positive

screen for generalized anxiety disorder, and 42.9% positive screen for panic attacks (Yang et al., under review). In HIV-positive former plasma/blood donors in China, Meade et al. (2010) reported 47% moderate and 36% severe depression (using the Chinese version of the Beck Depression Inventory (BDI), Beck et al., 1991; Zheng et al., 1988), as well as 52% mild-moderate and 8% marked-severed anxiety (using the Chinese version of the Zung Self-rating Anxiety Scale, Zhang, 1993; Zung, 1971). Jin et al. (2013) reported on psychological distress in HIV-positive intravenous drug users (IDU) seeking methadone treatment in Yunnan province, finding that 43.1% endorsed suicidality, compared to 8.5% in controls (HIV-negative, non-IDU) using the BDI. Another study in China of general HIV-positive participants reported that nearly 80% met criteria for lifetime major depressive disorder, compared to 4% of their HIV-negative counterparts, and 20% expressed current suicidal ideation (assessed with the Chinese Composite International Diagnostic Interview and the BDI; Jin et al., 2006).

PLWHA who are men who have sex with men (MSM) in China face intense sexual orientation related stigma in addition to HIV-related stigma. In a survey of self-identified gays and lesbians ( $N = 1000$ ; HIV status not assessed), 40.5% reported having at least one suicide attempt in their lifetime (Liu & Lu, 2005; as cited in Zhang & Chu, 2005). Due to discrimination, MSM in China remain a largely hidden population. In a qualitative study of focus groups and individual interviews with 46 MSM, participants detailed their primary stressor as pressure from families due strong Chinese tradition, to marry and have children, which has been intensified in the current social climate under the one-child policy (Feng, Wu, & Detels, 2010). As a result, many MSM marry women to have children, leading to increased negative emotion such as shame and anxiety due to secrecy (as well as increased transmission risk via having sex with other men while continuing to engage in unprotected sex with their wives) (Choi, Gibson, Han, & Guo, 2004).

### III. Treatment of Psychological Distress in People Living with HIV/AIDS

#### **A. Western perspectives and research**

Treatment of mental distress among PLWHA has been extensively researched in the West. Several systematic and meta-analytic reviews have been published in the last several years summarizing research on interventions for psychological symptoms associated with living with HIV/AIDS; they are aggregated below.

Mental health interventions most commonly conducted with PLWHA are cognitive behavioral therapy (CBT - typically involving cognitive restructuring and reappraisal), supportive psychotherapy (validation and normalization), and coping and stress management interventions (relaxation and problem-solving training) (Sikkema, Watt, Drabkin, Meade, Hansen, & Pence, 2009). A meta-analysis by Crepaz and colleagues (2008) using aggregate effect sizes of CBT based interventions in PLWHA drawn from data on a combined total of 1,246 participants from 15 controlled trials found significant improvements in mental health outcomes of anger ( $d = 1.00$ ), stress ( $d = 0.43$ ), depression ( $d = 0.33$ ), and anxiety ( $d = 0.30$ ), as well as a limited effect on immune functioning (CD4+ cell counts;  $d = 0.08$ ). All CBT interventions evaluated contained core components of cognitive restructuring and reappraisal

skills. The authors also found that interventions with the greatest impact on anxiety and depression included components of stress management skills training and had more than 10 intervention sessions.

Himelhoch, Medoff, and Oyeniya (2007) conducted a systematic review and meta-analysis on the efficacy of double blind, randomized controlled trials (RCTs) of group psychotherapy in reducing depressive symptoms among PLWHA. With data from 8 RCTs totaling 665 participants of group CBT (5 studies), supportive therapy (2 studies), and coping effectiveness training (1 study), the authors found a pooled moderate effect ( $d = 0.38$ , 95% CI: 0.23 – 0.53) for group psychotherapy on reducing depressive symptoms overall, and CBT based interventions specifically ( $d = 0.37$ , 95% CI: 0.18 – 0.56).

A more recent systematic review by Sherr, Clucas, Harding, Sibley, and Catalan (2011) evaluated 90 studies (of which 81 were conducted in North American and Europe) for depression in PLWHA and found that psychological interventions with CBT components were particularly helpful. Additionally, psychotropic medication (anti-depressants) and HIV-specific health psychology interventions (e.g., medication adherence support, sexual risk reduction interventions, and self-care symptom management interventions) were generally effective. Evidence was mixed for physical therapies (e.g., massage therapy, exercise training, and acupuncture) and what the authors conceptualized as psychosocial interventions (e.g., art therapy, case management community care, psychoeducational family therapy) were generally ineffective. Interventions focused on HIV and HIV-associated conditions (e.g., immunological functioning) were associated with decreased depression.

A Cochrane Review of physical exercise interventions for adults living with HIV/AIDS indicated that engaging in exercise (including constant aerobic, interval aerobic, or combination of constant aerobic and progressive resistive exercise) for at least 20 minutes at a minimum of three times per week for four weeks led to significant reductions in depression symptomatology and potentially clinically important cardiopulmonary improvement (Nixon, O'Brien, Glazier, & Tynan, 2005).

Scott-Sheldon et al. (2008) conducted a meta-analysis of stress management interventions for HIV-positive adults, examining efficacy of 46 separate interventions across 35 RCTs. The authors found that stress management interventions were efficacious in decreasing anxiety, depression, distress, and fatigue symptoms, and improving quality of life ( $d$ 's ranging from 0.16 – 0.38). The interventions did not appear to affect immunological (CD4+ and viral load) or hormonal (cortisol, DHEA-S, and testosterone) outcomes. Brown and Venable (2008) also conducted a review of stress management interventions in the same year, focusing only on those with both cognitive and behavioral skills components. They found an overall improvement in perceived stress, depression, anxiety, global psychological functioning, social support, and quality of life, with mixed results on coping and health status outcomes.

A systematic review of published anxiety intervention studies for PLWHA from 1980 – 2009 assessed 50 interventions (77% implemented in North America), finding that 65% of interventions directly targeting anxiety were effective (Clucas, Sibley, Harding, Liu, Catalan, &

Sherr, 2011). Psychological interventions (especially CBT and cognitive behavioral stress management) were generally more effective than pharmacological treatment.

Another systematic review assessing effectiveness of interventions on the outcome of enhanced coping (also defined as “living well”) among PLWHA (Harding, Liu, Catalan, & Sherr, 2011) found that of 28 studies of psychological interventions ( $n = 21$ ), drug therapy ( $n = 3$ ), spiritual ( $n = 1$ ), diet and exercise ( $n = 1$ ), mixed models ( $n = 1$ ), and information management ( $n = 1$ ), 16 studies were effective for enhancing coping, particularly cognitive behavior and stress management interventions.

Taken together, the meta-analytic and systematic review results suggest that behavioral interventions including CBT, stress management, and physical exercise delivered in both individual and group psychotherapeutic formats significantly improved mental health symptoms such as anxiety, depression, stress/distress, quality of life, and anger.

A review of the effect of psychological interventions on PLWHA’s biological outcomes of neuroendocrine regulation and immune status (14 RCTs reported these outcomes) concluded that interventions successful in improving psychological adjustment are more likely to have beneficial effects on neuroendocrine regulation and immune status, reinforcing the bidirectional nature of PLWHA’s mental and physical well-being (Carrico & Antoni, 2008).

In addition to behavioral interventions, pharmacological treatment has been found to have a positive impact on mental health symptoms of PLWHA. Specifically, a systematic review and meta-analysis by Himelhoch and Medoff (2005) of double blind RCTs of antidepressant medication among HIV-positive participants determined a pooled effect size of 0.57 (95% CI: 0.28 - 0.85), indicating that antidepressants are efficacious in treating depression symptoms among PLWHA. It is important to note that all of the meta-analyses discussed in this section highlighted across the board that the virtual absence of women and minority participants in all the studies, in addition to being conducted predominately in Western countries affect generalizability of findings.

## **B. Chinese perspectives and research**

### *Complementary Medicine*

In China, complementary/alternative medicine (CAM) has a strong history of cultural acceptance. Several reviews have attempted to understand whether CAM is effective for HIV and HIV-related symptoms (including side effects and mental health symptoms) around the world. A systematic review by Mills, Wu, and Ernst (2005) looked at 30 RCTs concluding, “the data were insufficient to demonstrate effectiveness” due to lack of clinical trials and methodological flaws. Their inclusion criteria included trials on stress management, natural health products, massage/therapeutic touch, acupuncture, and homeopathy, thus could have been too broad to determine specific efficacy. Furthermore, the majority of the treatments tested outcomes that were supportive rather than curative for HIV, assessing factors likely to influence the experience of HIV rather than attempts to counteract the virus itself.

A review of 11 RCTs (8 in China, 1 in Thailand, 1 in the US, and 1 in Switzerland) of 998 patients on using Traditional Chinese Herbal Medicines (TCHM) to treat HIV, HIV-related

disease, or AIDS was not able to draw firm conclusions on efficacy due to mixed results as well as mixed quality of study methodology (Zou, Liu, Wang, Li, & Liao, 2012). Outcomes include immunological, ART-related side-effects such as diarrhea and oral candidiasis, as well as overall quality of life. The studies showing no effects were conducted primarily in Western settings. A pilot RCT of 12 weeks of Chinese herbal treatment compared to placebo pills for adults with symptomatic HIV in San Francisco found no significant differences in life satisfaction outcomes (Burack, Cohen, Hahn, & Abrams, 1996). Another study in the West of 68 HIV-positive adults with CD4+ cell counts  $< 0.5 \times 10^9/L$  in Switzerland compared to placebo for 6 months demonstrated no difference in all domains assessed (plasma viral loads, CD4+ cell counts, symptoms, and psychometric parameters; Weber et al., 1999). Interestingly, the studies conducted in China were more likely to find positive biological outcomes such as increased CD4+ cell count, decreased HIV RNA levels, increased peripheral leukocytes, and quality of life outcomes (e.g., Shao, 2008; Jiang et al., 2011; Wang et al., 2008; Wang et al., 2006; Shi & Peng, 2003). The discrepancies between findings in the West and China could be related to cultural acceptability, as well as the specific formulation and quality of the traditional Chinese herbal medicine used, as the compositions were not consistent (and in general not strictly controlled or monitored substances like Western medications).

### *Behavioral Interventions*

While there have been several comprehensive meta-analyses and systematic reviews of mental health interventions for PLWHA in the West, to date, a review was not locatable for behavioral interventions for mental distress of PLWHA in China. (Published literature in both English (PsycInfo and PubMed) and Chinese journal databases (the three main mental health journals: the *Chinese Mental Health Journal*, *Chinese Journal of Clinical Psychology*, *Acta Psychologica Sinica*) were searched for systematic or meta-analytic reviews.

Behavioral interventions represented in the literature focused on HIV transmission risk prevention/reduction (for a review see Hong & Li, 2009), medication adherence, and stigma reduction, which are closely connected with mental health outcomes (such as depression, anxiety, or substance use), although these typically were not primary target outcomes. Other researchers have also noted this absence in the literature. Indeed, Collins, Holman, Freeman, and Patel (2006) in an attempt to survey the literature on the relevance of mental health to HIV/AIDS care and treatment in developing countries (including China) were only able to locate 2 studies of psychosocial interventions and no studies were located describing the impact of psychosocial interventions on disease outcomes (published reports were primarily epidemiological, describing mental health consequences of HIV).

### *Stigma Reduction*

In China, a great deal of stigma surrounds HIV, with its effects impacting PLWHA, their immediate and extended families, and even those providing them medical care. For example, a 2008 survey of more than 6000 urban Chinese residents on their attitudes toward HIV found that

48% of respondents indicated they would not eat with someone who had HIV, and 30% thought that children with HIV should not be allowed to attend the same schools as uninfected children (China AIDS Media Partnership – CHAMP & UNAIDS, 2008). Service providers of HIV-related resources, such as physicians, nurses, and lab techs at county and city hospitals working in HIV/AIDS wards, also experience significant stigmatization and shame from their family and environments (Li et al., 2006). This stigmatization affects their attitudes towards PLWHA, their willingness to provide care, as well as the quality of their provision of care (Lin et al., 2012). Stigma reduction efforts therefore have attempted to target individuals at all points along the continuum of being affected by HIV. For example, Wu et al. (2008) examined a 4-hour single session brief intervention for HIV healthcare providers involving psychoeducation and training about HIV policies and procedures, universal precautions and post-exposure prophylaxis, and HIV transmission, to increase comfort level of working with PLWHA. This intervention used a game called Rescue Mission focusing on equal medical treatment for all, followed by a testimony from HIV advocates, then small group discussions of commonly heard discriminatory attitudes toward PLWHA, and a role play of “Discrimination among us” to emphasize the high prevalence of discrimination in society that makes everyone potential victims. Participants took turns role-playing PLWHA, family members, and providers to increase empathy of impact of discrimination. This single session intervention was successful in increasing likelihood of keeping patients’ confidentiality, respecting patients’ rights after HIV testing, correct practice of universal precautions, and reducing negative feelings towards PLWHA at 3 and 6 month follow-ups. Another, more extensive RCT for providers was recently conducted with similarly encouraging results. Service providers ( $N = 1760$ ) at 40 county-level hospitals were enrolled in the “White Coat, Warm Heart” intervention of 4 group sessions across the span of 1 month, during which participants engaged in group discussion, games, and role-play to cover psychoeducation about occupational safety, stigma reduction, and improving the provider-patient relationship (Li et al., 2013). Significant improvements in reducing prejudicial attitudes, avoidance intent towards PLWHA, and increasing institutional support were found at both 6 month and 12 month follow-ups. Overall, stigma reduction among care providers appears effective in both brief and more concentrated group intervention formats (Li et al., 2010).

To address stigma in the general population beyond HIV care providers, a large NIMH collaborative trial looked at 4510 market workers in southern China (Li et al., 2010). The intervention capitalized on engaging community popular opinion leaders (C-POL), those who most often and most positively interacted with others, who were given 4 weekly group training sessions to deliver HIV education conversations messages to people in the markets. Market workers showed reduced level of HIV-related stigmatizing attitudes at 12-month follow-up and the effect increased by two-fold at 24-month follow-up. This intervention is an example of an initiative implemented by fully engaging the community and social network in the target population, with evidence of moving collective attitudes towards HIV.

### *Medication Adherence*

Several behavioral studies have attempted to test interventions to enhance medication adherence among Chinese PLWHA using varying strategies. Simoni and colleagues (2010) conducted an RCT examining efficacy of a nurse-delivered intervention including counseling sessions and electronic drug monitoring devices (EDM), which led to improvement in self-reported and EDM- assessed adherence. Another study attempted a cultural adaptation of an evidence-based medication adherence treatment protocol called the 11-step Chinese Life Steps (Shiu et al., 2013). This intervention incorporated importance of interpersonal relationships and family in China and cultural ideas about health, demonstrating face validity of acceptability, although only case examples were reported so outcomes are difficult to assess.

A small pilot study ( $n = 6$ ; selected for initial non-adherence) of a behaviorally based program lasting 3 months including individualized education about antiretroviral medication and their side effects, positive reinforcement and encouragement, weekly individualized counseling was conducted at an outpatient clinic in Hong Kong. At 6 month follow-up, enhanced adherence rates and slight improvement in CD4+ counts were observed (Molassiotis, Lopez-Nahas, Chung, & Lam, 2003).

An example of an intervention directed at another HIV-related outcome, namely medication adherence, also had an effect on depression. A study of 98 HIV-positive heroin users in Hunan, a mid-southern province in China, using 4 nurse-delivered home visits combined with telephone calls every two weeks on medication adherence found improved quality of life (psychological, physical, social, and environmental domains of the World Health Organization Quality of Life – Abbreviated version; WHOQOL-BREF) and depression at 8 months (Wang, Zhou, Huang, Li, Fenni, & Williams, 2009). This intervention was adapted from Kalichman et al. (2005), and Williams et al. (2005) manuals of medication adherence.

### *Mental Health Interventions*

Outside of risk transmission, stigma reduction, and medication adherence, studies assessing mental health symptoms as the primary target for behavioral interventions among PLWHA in China are less represented in the literature.

One study of 16 heterosexual HIV-positive men in Hong Kong who were enrolled in a wait-list control trial of a 7-week cognitive behavioral program (CBP) group based on the coping effectiveness training protocol developed by Chesney et al. (1997) found significant improvement in quality of life and depressed mood (Chan et al., 2005). This group intervention highlighted cognitive restructuring (particularly around irrational beliefs related to their illness) and behavior change strategies, as well as relaxation techniques for stress management.

Another pilot study in Hong Kong (Molassiotis, Callaghan, Twinn, Lam, Chung, & Li, 2004) of 10 participants in cognitive behavioral group therapy (CBT), 10 in peer support/counseling group therapy (PSC), compared to 26 in treatment as usual of 12 weekly sessions over 3 months found that those in the CBT group improved on dimensions of anger, tension-anxiety, depression, confusion, and overall mood, quality of life, and uncertainty in illness both at 3 months (post intervention) with only partial maintenance at 6 months (3 month

follow-up). Those in the PSC group however demonstrated worsened psychological functioning immediately post-intervention, but significantly improved (compared to baseline) in every domain at 6 month follow up.

Li and colleagues (2011) conducted an RCT enrolling 79 families in Anhui province of central China, into a family-based multi-level intervention called Together for Empowerment Activities (TEA) or a control condition to test efficacy in decreasing depressive symptoms and improving social support for PLWHA and their families. The TEA intervention involved TEA Gathering (small groups for PLWHA and family members), TEA Time (homework or activities to conduct at home with children following gatherings), and TEA Garden (community events) activities over the course of 2-3 months. PLWHA and family members in the TEA intervention condition reported improved depression symptoms, social support, and family functioning compared to control at both 3 month and 6 month follow-up.

Taken together, behavioral interventions that incorporate HIV psychoeducation, with cognitive behavioral components that integrate a family based approach appear to be promising for improvement in psychological symptoms among PLWHA in China.

### **Summary and Conclusions**

Western perspectives and research on mental health issues are pervasive. In order to better meet psychological needs of individuals around the world, local perspectives on psychopathology, symptom presentation, and treatment are needed. People living with HIV/AIDS in China require support that address co-morbid HIV infection and mental health symptoms within the Chinese culture and context. At present, little behavioral intervention research has been conducted with Chinese PLWHA, despite high levels of psychological distress, which affects not only wellbeing but also HIV transmission risk and disease progression. Mental health intervention development and research for this population has potential for significant public health impact.

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**Appendix C. HIV Distress and Coping Questionnaire**

Think about the last two weeks and answer the following questions:

		<b>Never/ Not at all</b>	<b>Rarely/ A little</b>	<b>Some of the time/ Very</b>	<b>Most of the time/ Extremely</b>
1	How often do you experience distress about your HIV status?	1	2	3	4
2	How distressed are you about your HIV status?	1	2	3	4
3	How difficult do you think having HIV is?	1	2	3	4
4	How anxious are you about your HIV status?	1	2	3	4
5	How much stress do you feel as a result of your HIV?	1	2	3	4
6	How much does having HIV interfere with your daily life?	1	2	3	4
7	How much does having HIV negatively affect your occupational/job life?	1	2	3	4
8	How much does having HIV negatively affect your family life?	1	2	3	4
9	How much does having HIV negatively affect your relationship with your friends?	1	2	3	4
10	How much does having HIV negatively affect your relationship with yourself, such as self-esteem or self-worth?	1	2	3	4
11	How much are you able to cope with your HIV status?	1	2	3	4
12	How much do you know about psychological skills?	1	2	3	4
13	How much self-confidence do you have in your ability to cope with your HIV-related distress?	1	2	3	4
14	How familiar are you with psychological skills to regulate your negative emotions?	1	2	3	4
15	How much are you able to use psychological skills to deal with your HIV status?	1	2	3	4
16	How helpful do you think psychological skills are to regulate your negative emotions?	1	2	3	4
17	How often do you use psychological skills to regulate your negative emotions?	1	2	3	4
18	How often do you wish to use psychological skills to regulate your negative emotions?	1	2	3	4

**Appendix D.** Qualitative Interview Guide – Semi-structured Implementation Interview

1. Tell me about your experience with the Psychology Toolbox intervention.
2. In your words, what was the intervention about?
3. Let's go over each skill independently. Please tell me what you learned about the Automatic Thought Record and what that is about? (e.g., what is your understanding of the skill, can you explain it to me, when is it useful for you?) Please tell me what you learned about TRAP/TRACs and what that is about? Please tell me what you learned about Paced Breathing and what that is about?
4. What did you find helpful about the intervention?
5. What did you find not as helpful?
6. If we were to do the intervention again, what would be more helpful?
7. What did you like about the intervention? Dislike?
8. Describe any changes you have experienced because of this intervention. Where there any changes in your skills use? In how you felt? In your relationship with family or friends?
9. I'd like to ask you about the content of the intervention; this includes skills we covered and what we talked about. What did you think about that?
10. Now I'd like to ask you about the process. What did you think about the procedure, such as timeline, the frequency of the sessions, location of the intervention?
11. What about the interventionist? How would you feel if a nurse or someone else offered the intervention?
12. What about the effects of the intervention, e.g., such as whether it was helpful for you, whether you'd recommend it to other people, whether you think people would pay for it?
13. Tell me about any other recommendations you have for the program.