Using Online Methods to Develop and Examine the Hong Kong Chinese Translation of the Dissociative Experiences Scale

Chitat Chan, PhD

Assistant Professor

Department of Applied Social Sciences

The Hong Kong Polytechnic University

Hong Wang Fung

Department of Applied Social Sciences

City University of Hong Kong

Tat Ming Choi

Department of Psychology

The Chinese University of Hong Kong

Colin A. Ross, M.D.

The Colin A. Ross Institute for Psychological Trauma

Correspondence concerning this article should be directed to: Chitat Chan, Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong. Email: chitat.chan@polyu.edu.hk

Abstract

Identifying dissociation is important for mental health services because it could fundamentally affect one's diagnosis and treatment plan. The Dissociative Experiences Scale (DES) is a widely-used self-report scale for measuring dissociative experiences. It has been translated into many languages and used in many countries. However, there is no validated Hong Kong Chinese version of the DES available in the field, and there is no other validated Hong Kong Chinese instrument for assessing dissociative disorders. This pilot study used online methods to translate the Dissociative Experiences Scale to Hong Kong Chinese (HKC-DES). The results indicated that the HKC-DES has excellent internal consistency ($\alpha = .953$) and very good test-retest reliability ($r = .797$). Bilingual participants' responses to the DES and HKC-DES indicated high similarity, and were significantly correlated ($r = .960$). These results initially verified the reliability and cross-language equivalence of the scale. Implications for healthcare practice and research are discussed.

Using Online Methods to Develop and Examine the Hong Kong Chinese Translation of the Dissociative Experiences Scale

Dissociation is a psychological phenomenon covering a wide array of experiences in our daily life, such as daydreaming, trance-like feelings, absorption, and forgetfulness. The concept of "dissociation" has been operationalized in the literature for almost 30 years (Bernstein & Putnam, 1986; Ross, 1997) and it is regarded as one of the "big five" in the mental health field, the other four are depression, anxiety, substance abuse and psychosis (Ross, 2007). Dissociation may be used pathologically or as a normal coping strategy. It is widely perceived that pathological dissociation is associated with psychological trauma, especially childhood trauma (Irwin, 1999; Putnam, 1985; Van der Hart, Nijenhuis, & Steele, 2006). Pathological dissociation can be found in patients with dissociative disorders (DD), post-traumatic stress disorder (PTSD) and some other mental health conditions (Van der Hart et al., 2006).

Identifying dissociation is important for mental health services because it could fundamentally affect one's diagnosis and treatment plan. There are several reasons. First, high level of dissociation increases the chance of having an undiagnosed dissociative disorder. Second, high level of dissociation may indicate the needs of trauma-informed and psychosocial services because dissociation is generally associated with adverse life experiences (e.g., trauma, neglect, parental dysfunction,

chronic stress) (Draijer & Langeland, 1999). Third, certain dissociative symptoms require specific interventions (e.g., dissociation-focused psychotherapy) and they would improve as long as they are specifically targeted (Brand & Webermann, 2015; International Society for the Study of Trauma and Dissociation, 2011; Jepsen, Langeland, Sexton, & Heir, 2014).

The Dissociative Experiences Scale (DES) (Bernstein & Putnam, 1986; Van IJzendoorn & Schuengel, 1996; Waller, Putnam, & Carlson, 1996; Waller & Ross, 1997), which has 28 items, is a widely-used self-report instrument with good reliability and validity. Each of the 28 items scored on a 11-point scale, asking the subject to choose a number to indicate what percentage of the time a particular experience happens to them (from 0% to 100%). The overall score is the mean of the 28 items. An overall score equal to or greater than 30% is generally perceived as a cutoff score to indicate potential DD (Carlson et al., 1993; Ross, 1997). In addition, the DES-Taxon (DES-T) is an eight-item measure drawn from the DES (Items 3, 5, 7, 8, 12, 13, 22, and 27), which can be used to assess pathological dissociation (Waller et al., 1996; Waller & Ross, 1997). It has been found that the DES-T can diagnose complex DD with excellent agreement (Cohen's kappa) with clinical interview and other structured instruments (Ross, Duffy, & Ellason, 2002).

Although the DES is not a diagnostic instrument, it is a very useful screening tool and had been used in more than 100 studies in the first ten years of its existence (Van IJzendoorn & Schuengel, 1996). The DES has been translated into many languages and used in many countries (International Society for the Study of Trauma and Dissociation, 2011; Ross, 1997; Şar, 2011). However, to our knowledge, there is no validated Hong Kong Chinese version of the DES available in the field, and there is no other validated Hong Kong Chinese instrument for assessing DD too. The lack of a validated Hong Kong Chinese version of the DES may hinder rigorous academic research and cross-cultural comparisons. This may in turn obscure our perception about the prevalence of DD among Hong Kong Chinese, and mislead the helping professionals to underestimate the prevalence of unrecognized DD cases (Fung, 2016a, 2016b). In addition, inappropriate treatments may create a vicious cycle that may be harmful to DD patients (International Society for the Study of Trauma and Dissociation, 2011; Steinberg & Siegel, 2008). As such, lacking a local DD assessment tool does not just affect our understanding of the situation, but it may do harm to DD patients.

A Hong Kong Chinese version of the DES is important for supporting the helping professionals in Hong Kong to accurately assess DD and related clinical conditions (e.g., dissociative subtype of PTSD) in the local context, and to research about

relationships between dissociative experiences and other mental health issues. In the process of this cross-cultural instrument adaptation, the cultural and technological contexts of Hong Kong may have unique contributions:

First, the process of cross-cultural adaptation of scale involves translation, back-translation, and testing the bilingual version using bilingual subjects (Beaton, Bombardier, Guillemin, & Ferraz, 2000; C. Chan & Holosko, 2017; Sousa, Zauszniewski, Mendes, & Zanetti, 2005), local university students can serve as a convenient participant pool participant pool to help examine translated instruments. Hong Kong was a British colony before 1997, many citizens in Hong Kong actually can use English as a second language (ESL), and some were even raised bilingual. Although Chinese is the native tongue of most citizens, both English and Chinese are official languages in the local context, English is the official language in higher education settings, and most of the university-level programs used English as the medium of instruction and required certain English proficiency as an entrance requirement. As such, many university students in Hong Kong can read English pretty well, although much less of them can write and speak English equally well. If questionnaire items are presented in plain English, university students in Hong Kong are competent enough to understand them.

Second, previous studies indicated that the psychometric properties of "paper and pencil" based DES and web-based DES are equivalent, and suggested that the Internet could be an efficient means of data collection and research (Collins & Jones, 2004; Rutherford et al., 2016). The technological infrastructure of Hong Kong may further facilitate such online methods. Online methods have been commonly used in subject recruitment (Amon, Campbell, Hawke, & Steinbeck, 2014), data collection (C. Chan & Holosko, 2016), large-sample epidemiological surveys (Youn et al., 2013), respondent identity verification (Paolacci & Chandler, 2014), and scale development (Jelenchick et al., 2014). In this study, online methods were used in all these processes, as the technological infrastructure of Hong Kong is mature enough to support such methods. In 2015, there were more than 7.3 million people residing in Hong Kong, and 84.9% of those aged 10 and over reported that they were regular Internet service users (Census and Statistics Department of the HKSAR, 2016). There were 66% of the population in Hong Kong had an account with some social media network, in which Facebook was the most popular platform, indicating a 50% penetration rate in the entire population (Statista, 2016). In February 2016, the residential fixed-line penetration rate was 94.83%, and the mobile subscriber penetration rate was 228.7%, meaning that each person, on average, has got more than one mobile phone number (Office of the Communications Authority of the HJKSAR, 2016).

Taken together, this pilot study served a dual purpose: First, it aimed to translate the original DES to the Hong Kong Chinese version of the DES (HKC-DES), and initially examine its psychometric properties (Bullinger, 1995; Leplège, Ecosse, Verdier, & Perneger, 1998; Sousa & Rojjanasrirat, 2011). Second, it also aimed to open discussion of the use of online research methods in scale development, and help explore the potentials and limitations of such methods.

Method

The study made reference to a range of widely accepted protocols for scale translation (Beaton et al., 2000; Bracken & Barona, 1991; Cabrera-Nguyen, 2010; Sousa & Rojjanasrirat, 2011; Sousa et al., 2005) and guidelines for online research methods (British Psychological Society, 2007; Eysenbach, 2004), and finally adopted the following steps:

Collaborative Translation Facilitated by the Internet

Different experts in Hong Kong, Macau, Canada, and U.S.A. were connected via the Internet. The scale was translated from English into Chinese and back-translated to English using a three-step process. i) Translation: Two translators (the second and the third author of these article) respectively provided their Chinese versions of the Scale. ii) Back-translation: The two Chinese versions of the scale were back-translated into two English versions by a translator (a professional reporter who is

extremely fluent in English and Chinese) who had not seen the instrument before. iii) Compare and synthesis: A panel reviewed and compared the two Chinese versions translated from the original English DES, compared their corresponding back-translations, and compared them with the scale in its original language. In this study, the panel members included Dr. Im Wai Lao (psychiatrist, Macau), Dr. David Yeung (retired psychiatrist, Canada), and Dr. Chitat Chan (first author of this article, assistant professor, registered social worker, Hong Kong). All of the panel members are fluent in English and Chinese. After discussion, selection and refinement, the panel reached a consensus, and the HKC-DES was produced and used in the subsequent pilot test.

A Preliminary Psychometric Testing

Recruiting bilingual local university students via social media: In this study, local university students served as a bilingual participant pool to examine the cross-language relevance of the HKC-DES. Bilingual herein refers to people who use both Chinese and English in their everyday lives, regardless whether it is in bilingual families or in the context of immigration or study (B. Chan, Parker, Tully, & Eisenbruch, 2007; Thumboo et al., 2002). This study used social media to recruit college students, because it is part of daily life for most of the university students (ONS, 2014; PEW Research Center, 2014a, 2014b). We used a short article to make a pitch to invite university students to voluntarily help answer our questionnaire. The

algorithm of social media helped associate like-minded people and largely facilitated our snowball sampling. We embedded a Google online form in our short article to invite potential participants to provide their official university student email addresses. This online form was posted on various popular online platforms in Hong Kong, such as Facebook, Online Media for Human Services (A Hong Kong based group blog on Blogger) and Stand News (Hong Internet-based media). A snowball sampling method was used because a random sampling method would result in low reply rates when sensitive topics are involved (Hsaio et al., 2010). Registered participants from different universities were motivated students who voluntarily took part in the study and did not receive any monetary incentives. This helped ensure they had basic motivation to provide genuine responses.

Verifying student identity online: Verifying research participants' identity is a key challenge in online research (Eysenbach, 2004), as the participants and researchers are not physically brought together during the research process. Therefore researchers have employed a variety of mechanisms to authenticate participant identity, such as checks made by credit cards, using passwords, or registration of an e-mail (British Psychological Society, 2007). In this study, participants needed to fill in an online form to provide their official university student email addresses. The actual online questionnaires were sent to these official student email addresses via the MySurvey

system of the Hong Kong Polytechnic University (PolyU). Participants' access rights of their own official student email accounts served as a proof to authenticate their student identity in local universities. Each registered participant received an email indicating a unique hyperlink to access the online questionnaire. This unique hyperlink represented a unique participant identity code, therefore the responses from individual participants could be identified by the system. This authentication process served to ensure participants' identity and get their formal consents.

Collecting data via a secured online questionnaire system: Data were collected online via the MySurvey system of the PolyU. All study participants completed a questionnaire having both Chinese version and the English version of the Scale. After they completed the Chinese version, they needed to complete the English version. The items were randomly assigned, so that the question sequences of both versions were not corresponding to each other. All fields were mandatory and submission was not allowed in case there was any field missing. Therefore, there was no missing data in a submitted response.

The retest was facilitated by the unique identity codes assigned by the system: Each participant who answered the questionnaire would have their unique participant identity code, in which the responses from individual participants could be traced and paired up with subsequent retests. A retest of the HKC-DES was conducted one month

after the first test. Given that we aimed at examining the test-retest reliability of the HKC-DES, the retest did not include the DES. All individual participants took part in the first test would receive a system generated email showing a unique hyperlink to access the same questionnaire.

Analyzing the psychometric properties of the scale: The Statistical Package for the Social Sciences (SPSS) was used in the data analysis. Collaborators can access the software hosted by the PolyU web-based platform via VPN. Psychometric properties of both language versions of the instrument provide evidence of their equivalence. The reliability (the degree to which the HKC-DES is stable and reliable) and validity (the degree to which the HKC-DES is equivalent to the DES) of the scale were tested. Characteristics of the sample were depicted by computing frequencies for categorical variables and descriptive statistics. Reliability analyses involved examination of Cronbach's alphas, inter-item correlations, and item-to-total scale correlations. Validity testing involved the use of similarity check, paired t-tests, and Pearson's correlations between the English and Chinese item scores and total scale scores.

Results

Overall Profile

We started the recruitment on May 4 2016 and recruited more than 200 participants on a rolling basis within a month without paying any monetary incentives

or advertising fees. After collecting participants' registration information, we manually checked the submitted email addresses, rectified obvious typos, and made sure that they were associated with local universities. Unqualified entries were out. We then rolled out the online survey batch by batch between May 5 and June 1, and collected 108 valid responses coming from more than 9 institutes. Among the 108 responses, 20% were male, 80% were female, average age was 26.4 (Table 1). We started the retest on June 13 and collected more than 47 valid responses in a week (i.e., 44% return rate). The mean score of the DES is 20.2 (SD = 16.5), and the mean score of the HKC-DES is 22.9 (SD = 15.8).

Reliability

Reliability was assessed by Cronbach's alpha, the results of the DES was .964, and the HKC-DES was .953. These results were consistent with the results from a previous study which reported .95 (Frischholz, Braun, Sachs, & Hopkins, 1990). The results indicate excellent reliability, as .8 is a widely accepted standard (Gliem & Gliem, 2003). Moreover, Cornbach's alpha was not increased by deleting any items and all items showed good item-to-total correlations, indicating homogeneity across items and across different language versions. All items in both the DES and HKC-DES indicated significant correlation at 1% level, except Item 17 in the HKC-DES which indicated significant correlation at 5% level (see Table 2). The means of inter-

item correlations were .489 and .418 for the DES and HKC-DES respectively. This indicated homogeneousness of items without losing uniqueness, as they were within the recommended range (Clark & Watson, 1995, from 0.15 to 0.50; Nunnally & Bernstein, 1994, from 0.30 to 0.70). Cronbach's alpha and item to item correlation for both genders were also assessed separately and showed similar reliability as aggregated results.

The HKC-DES showed good test-retest reliability. There were *n*=47 subjects (44%) responded to the retest invitation. The whole sample and the retest sample showed similar demographic information, except in the distribution of affiliated universities. The difference between the overall mean scores of the tests taken by same participants at the two time points was insignificant. Differences between the scores of individual items at the two time points were also insignificant, except two items which reported a difference at 5% level of significance (see Table 3). The overall scores of the tests taken at the two time points were also highly correlated ($r = .797$, $n = 108$, $p < .01$). The test-retest reliability of the HKC-DES is lower than the test-retest reliability of the DES reported in a previous study which reported .93 (Frischholz et al., 1990), and yet both results are considered very good to excellent.

Validity

The similarity of the results of equivalent items in the DES and HKC-DES from same participants was examined. There were 83% responses which were deemed similar. We considered two responses similar when their difference was not greater than 1 Likert scale point (i.e., 10%).

Pearson correlations between the DES items and HKC-DES items were used to examine the validity of the translated scale (Polit & Beck, 2004; Son, Zauszniewski, Wykle, & Picot, 2000; Zauszniewski & Harman, 1996). The overall scores of the DES and the HKC-DES were significantly correlated ($r = .960$, $n = 108$, $p < .01$). In addition, correlation between the DES and the HKC-DES is significant at 1% level for both genders (Male = .920; Female = .968).

Paired t-test was used to examine the significance of the mean difference between the results of same item in the DES and HKC-DES from the same participant (see Table 4). The findings showed that 2/3 of the 28 items did not indicate significant mean differences, implying cross-language equivalence. Among the 1/3 which indicated significant mean differences, the scores from the HKC-DES were generally higher than that from the DES. The paired t-test is not shown for various subgroups (e.g., genders, institutions) of the sample because the sample size of subgroups are too small ($n < 30$) for conducting t-test.

Discussion

The results indicated that the HKC-DES has excellent internal consistency (α = .953) and very good test-retest reliability (r = .797). Bilingual participants' responses to the DES and HKC-DES indicated high similarity, and were significantly correlated (r = .960). These results initially verified the reliability and cross-language equivalence of the scale.

Yet, there were some limitations in this pilot study. First, we only used a small sample size of about 108 participants, though the variety of the study backgrounds may help offset some sampling bias. Second, as the study was conducted purely online, all the recruited participants might have some common Internet habits reflecting common personality traits. Third, although most of the online methods used in this study demonstrated good effectiveness and had largely facilitated the research process, we still needed to check manually the email addresses submitted by the participants to ensure that they were university-based email addresses, and we lost contact with some registered participants because of the typos in the email addresses they submitted. Notwithstanding these limitations, the methods used in this study demonstrated high efficiency, and allowed for much unique data to be collected from motivated and voluntary participants in a short period of time.

Some observations require further discussion. First, Item 17 in the HKC-DES has indicated a low correlation with other items as well as the entire scale. This item refers to the experience that: “Some people find that when they are watching television or a movie they become so absorbed in the story that they are unaware of other events happening around them”, and participants were asked to indicate how frequent was that experience in their daily life. The average score of this item tended to be on the high side, regardless of the average scores the individuals or the sub-groupings of the sample. In fact, based on our daily observations in Hong Kong, the experience of immersing in television, movie or any media products is a very common experience among Hong Kong people. This raises questions about whether Item 17 is still a valid indicator assessing people living in a highly mediated city, although this may also mean that the results indeed revealed a prevailing type of dissociation experience in such environment. We suggest that researchers may need to review the clinical implications and the relevance of Item 17.

Second, 17% responses in English version were different from that in Chinese version by more than 1-Likert point. It should be noted that, the DES is virtually a 11 point Likert scale (0% to 100%), which is different from a commonly used 5-7 point Likert scale in much psychological research. This means, in principle, the scale will result in a wider range of variance, and will pose greater challenges in giving same

responses. Inferences based on comparing differences or similarities may need to take this factor into consideration. Moreover, the time taken for the retest was too long (2 to 3 weeks) in this study. Result of retest may be affected by different factors, such as interventions provided for them (if any) or participants may have discussed the items among themselves. A week or less test-retest interval would be better.

Third, among the 28 items, 9 consistently reported a slightly higher score in the HKC-DES than in the DES at 1% level of significance (see Table 4). These differences were found in various subgroups of the same sample set (e.g. different combinations of Universities, subject areas, education levels). Nonetheless, rather than a sign of inequivalent translation, we see the tendency of having higher scores in the HKC-DES, a result related to the everyday language context of the bilingual subjects. It is possible that the English medium is not as effective as the Chinese medium in facilitating subjects living in a Chinese context to recall their daily experiences. Local university students are living in a Chinese context, even though they can master the two languages pretty well, they would recall more experiences in a language medium that they used more frequently, and therefore the HKC-DES may possibly return slightly higher scores. Recent studies did consistently show that subjects' autobiographical memory will be affected by their language medium

(Marian & Fausey, 2006). An alternative explanation is that the English (as a second language) scale may, in fact, provide a "less biased" representation of one's experience. Recent research indicated that when individuals interpret emotion-laden texts, they think and judge more rationally and objectively in a second language than in their native tongue (Costa et al., 2014; Gao, Zika, Rogers, & Thierry, 2015; Hsu, Jacobs, & Conrad, 2015; Keysar, Hayakawa, & An, 2012; Pavlenko, 2012).

These inferences, though very preliminary and inconclusive, raise questions about whether the Hong Kong Chinese population would recall their dissociative experiences equally "valid" when they use an English scale and in a Chinese scale. That is, it is worthwhile to further explore whether the results from a native language instrument are a "less biased" representation, a "less accurate" representation, or an equally valid representation in researching bilingual Hong Kong Chinese. As both English and Chinese are official languages endorsed by the Hong Kong Government, and citizens are used to have the options to choose their preferred language in working with official documents, this inevitably implies a practical question concerning which language should be used in psychological tests among educated Hong Kong Chinese. Further research using a larger sample size or using a different bilingual Chinese population in Hong Kong may help enrich the discussion.

Concluding Remarks

To conclude, this pilot study used a cost-effective method to translate the DES from English to Chinese, and initially showed that the HKC-DES demonstrates acceptable reliability and validity. This has significant implications on local healthcare practice and research. At a practice level, the HKC-DES and HKC-DES-T can support the assessment of DD in Hong Kong. When doing psychiatric assessment, measuring dissociation is a recommended step (Fung, 2016b; Ross, 2007; Steinberg & Siegel, 2008; Welburn et al., 2003). We suggest that Chinese helping professionals, especially those who work with traumatized clients, can use the HKC-DES and HKC-DES-T in their actual practice. It can be used as a pretest-posttest instrument, and support outcome evaluations of local services for traumatized and dissociative clients. At a research level, HKC-DES may facilitate the development and validation of other Chinese trauma and dissociation instruments (e.g., the Dissociative Disorders Interview Schedule) (Ross et al., 1989), and help further explore mental health issues among Chinese populations in different regions. Future studies can employ this HKC-DES to investigate dissociative experiences among various clinical and non-clinical populations in Hong Kong. This instrument may also facilitate cross-cultural comparison, for example, comparing the clinical features between DD patients from Hong Kong and those in the other countries.

Our online methods have largely facilitated the research process. It shows that using online methods to translate scales/instruments into Chinese is promising and cost-effective. However, we also see that there is still room for further improvement. As mentioned elsewhere, we lost contact with some of the registered participants because of the typos in some of the email addresses they submitted. We suggest that the steps of registration, screening, sending invitations, and authentication can be further automated and streamlined. That is, in principle, once a potential participant has submitted their university-based email address, the program should be able to verify whether it is a valid email address belongs to a web domain registered in a list of targeted domains, and then the program should be able to automatically send an invitation email embedded with a unique questionnaire hyperlink. Further technological adaptation and development will be required.

Finally, we recommend a more comprehensive psychometric testing of the HKC-DES in a larger Hong Kong Chinse sample and/or in Chinese populations in other Chinese contexts. The more complete the testing of the HKC-DES, the more we can know about its reliability and validity. Moreover, with a larger sample, exploratory factor analysis and confirmatory factor analysis can be applied. Further, we also see that scale translation is a dialectic complex. Both the cultural contexts and the scale have informed each other, and they may co-construct the reality of what is to be

measured. The true potential of any well-crafted scales can only be fully actualized in the local context if the local research community can take a more proactive role in adapting and indigenizing the scales.

References

Amon, K. L., Campbell, A. J., Hawke, C., & Steinbeck, K. (2014). Facebook as a recruitment tool for adolescent health research: A systematic review. *Academic Pediatrics, 14*, 439-447. doi:10.1016/j.acap.2014.05.049

Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine, 25*, 3186. doi:10.1097/00007632-200012150-00014

Bernstein, E. M., & Putnam, F. W. (1986). Development, reliability, and validity of a dissociation scale. *The Journal of Nervous and Mental Disease, 174*, 727-735. doi:10.1097/00005053-198612000-00004

Bracken, B. A., & Barona, A. (1991). State of the art procedures for translating, validating and using psychoeducational tests in cross-cultural assessment. *School Psychology International, 12*, 119-132. doi:10.1177/0143034391121010

Brand, B. L., & Webermann, A. R. (2015). An update on treatment research for severe dissociative disorders. *Becoming More Disability Friendly: Trauma Psychology and People With Disabilities*, 9. doi:10.13140/RG.2.1.1246.4488

British Psychological Society. (2007). *Report of the working party on conducting research on the Internet: Guidelines for ethical practice in psychological research online*.

Bullinger, M. (1995). German translation and psychometric testing of the SF-36 health survey: Preliminary results from the IQOLA project. *Social Science & Medicine, 41*, 1359-1366. doi:10.1016/0277-9536(95)00115-N

Cabrera-Nguyen, P. (2010). Author guidelines for reporting scale development and validation results in the Journal of the Society for Social Work and Research. *Journal of the Society for Social Work and Research, 1*, 99-103. doi:10.5243/jsswr.2010.8

Carlson, E. B., Putnam, F. W., Ross, C. A., Torem, M., Coons, P. M., Dill, D., . . . Braun, B. (1993). Validity of the Dissociative Experiences Scale in screening for multiple personality disorder: A multicenter study. *The American Journal of Psychiatry, 150*, 1030. doi:10.1176/ajp.150.7.1030

Census and Statistics Department of the HKSAR. (2016). Hong Kong Statistics. Retrieved from http://www.censtatd.gov.hk/

Chan, B., Parker, G., Tully, L., & Eisenbruch, M. (2007). Cross-cultural validation of the DMI-10 measure of state depression: The development of a Chinese

language version. *The Journal of Nervous and Mental Disease, 195*, 20-25. doi:10.1097/01.nmd.0000252008.95227.88

Chan, C., & Holosko, M. J. (2016). An overview of the use of Mechanical Turk in behavioral sciences: Implications for social work. *Research on Social Work Practice, 26*, 441-448. doi:10.1177/1049731515594024

Chan, C., & Holosko, M. J. (2017). Selected recent articles about Chinese instrument/scale development and intervention research. *Research on Social Work Practice, 27*, 5-7. doi:10.1177/1049731516659541

Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment, 7*, 309. doi:10.1037/1040-3590.7.3.309

Collins, F., & Jones, K. (2004). Investigating dissociation online: Validation of a web-based version of the Dissociative Experiences Scale. *Journal of Trauma & Dissociation, 5*, 133-147. doi:10.1300/J229v05n01_08

Costa, A., Foucart, A., Hayakawa, S., Aparici, M., Apesteguia, J., Heafner, J., & Keysar, B. (2014). Your morals depend on language. *Plos One, 9*, e94842. doi:10.1371/journal.pone.0094842

Draijer, N., & Langeland, W. (1999). Childhood trauma and perceived parental dysfunction in the etiology of dissociative symptoms in psychiatric inpatients. *American Journal of Psychiatry, 156*, 379 - 385. doi:10.1176/ajp.156.3.379

Eysenbach, G. (2004). Improving the quality of Web surveys: the Checklist for Reporting Results of Internet E-Surveys (CHERRIES). *Journal of Medical Internet Research, 6*, e34. doi:10.2196/jmir.6.3.e34

Frischholz, E. J., Braun, B. G., Sachs, R. G., & Hopkins, L. (1990). The Dissociative Experiences Scale: Further replication and validation. *Dissociation: Progress in the dissociative disorders, 3*, 151 - 153.

Fung, H. W. (2016a). Trauma-related pathological dissociation in a case with cerebral palsy. *Journal of Trauma & Dissociation, 17*, 286-293. doi:10.1080/15299732.2015.1080780.

Fung, H. W. (2016b). Trauma, dissociation and mental health service in Hong Kong (in Chinese: 創傷、解離與香港精神健康服務). *Hong Kong In-media (in Chinese: 香港獨立媒體網)*. http://www.inmediahk.net/node/1042252 Retrieved from http://www.inmediahk.net/node/1042252

Gao, S., Zika, O., Rogers, R. D., & Thierry, G. (2015). Second language feedback abolishes the “hot hand” effect during even-probability gambling. *The Journal of Neuroscience, 35*, 5983-5989. doi:10.1523/jneurosci.3622-14.2015

Gliem, R. R., & Gliem, J. A. (2003). *Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales*.

Hsaio, G. Y., Chen, I. J., Yu, S., Wei, I. L., Fang, Y. Y., & Tang, F. I. (2010). Nurses' knowledge of high-alert medications: Instrument development and validation. *Journal of Advanced Nursing, 66*, 177-190. doi:10.1111/j.1365-2648.2009.05164.x

Hsu, C.-T., Jacobs, A. M., & Conrad, M. (2015). Can Harry Potter still put a spell on us in a second language? An fMRI study on reading emotion-laden literature in late bilinguals. *Cortex, 63*, 282-295. doi:http://dx.doi.org/10.1016/j.cortex.2014.09.002

International Society for the Study of Trauma and Dissociation. (2011). Guidelines for treating dissociative identity disorder in adults, third revision. *Journal of Trauma & Dissociation, 12*, 115-187. doi:10.1080/15299732.2011.537247

Irwin, H. J. (1999). Pathological and nonpathological dissociation: The relevance of childhood trauma. *The Journal of Psychology, 133*, 157-164. doi:10.1080/00223989909599730

Jelenchick, L. A., Eickhoff, J., Christakis, D. A., Brown, R. L., Zhang, C., Benson, M., & Moreno, M. A. (2014). The Problematic and Risky Internet Use Screening Scale (PRIUSS) for adolescents and young adults: Scale

development and refinement. *Computers in Human Behavior, 35*, 171-178. doi:10.1016/j.chb.2014.01.035

Jepsen, E. K., Langeland, W., Sexton, H., & Heir, T. (2014). Inpatient treatment for early sexually abused adults: A naturalistic 12-month follow-up study. *Psychological Trauma: Theory, Research, Practice, and Policy, 6*, 142.

Keysar, B., Hayakawa, S. L., & An, S. G. (2012). The foreign-language effect: Thinking in a foreign tongue reduces decision biases. *Psychological Science, 23*, 661-668. doi:10.1177/0956797611432178

Leplège, A., Ecosse, E., Verdier, A., & Perneger, T. V. (1998). The French SF-36 Health Survey: Translation, cultural adaptation and preliminary psychometric evaluation. *Journal of Clinical Epidemiology, 51*, 1013-1023.

Marian, V., & Fausey, C. M. (2006). Language-dependent memory in bilingual learning. *Applied Cognitive Psychology, 20*, 1025-1047. doi:10.1002/acp.1242

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory*. New York.

Office of the Communications Authority of the HJKSAR. (2016). Data & Statistics. Retrieved from http://www.ofca.gov.hk/en/home/index.html

ONS. (2014). *Internet access quarterly update, Q1 2014*. Retrieved from https://www.ons.gov.uk/

Paolacci, G., & Chandler, J. (2014). Inside the Turk: Understanding Mechanical Turk as a participant pool. *Current Directions in Psychological Science, 23*, 184-188. doi:10.1177/0963721414531598

Pavlenko, A. (2012). Affective processing in bilingual speakers: Disembodied cognition? *International Journal of Psychology, 47*, 405-428. doi:10.1080/00207594.2012.743665

PEW Research Center. (2014a). *Emerging nations embrace Internet, mobile technology.* Retrieved from http://www.pewglobal.org/2014/02/13/emerging-nations-embrace-internet-mobile-technology/

PEW Research Center. (2014b). *Internet user demographics.* Retrieved from http://www.pewinternet.org/data-trend/internet-use/latest-stats/

Polit, D. F., & Beck, C. T. (2004). *Nursing research: Principles and methods*. Philadelphia: Lippincott Williams & Wilkins.

Putnam, F. W. (1985). Dissociation as a response to extreme trauma. In R. P. Kluft (Ed.), *Childhood antecedents of multiple personality* (pp. 63-97). Washington, DC: American Psychiatric Press.

Ross, C. A. (1997). *Dissociative identity disorder: Diagnosis, clinical features, and treatment of multiple personality disorder.* New York: John Wiley & Sons.

Ross, C. A. (2007). *The trauma model: A solution to the problem of comorbidity in psychiatry*. Richardson, TX: Manitou Communications.

Ross, C. A., Duffy, C. M., & Ellason, J. W. (2002). Prevalence, reliability and validity of dissociative disorders in an inpatient setting. *Journal of Trauma & Dissociation, 3*, 7-17. doi:10.1300/J229v03n01_02

Ross, C. A., Heber, S., Norton, G. R., Anderson, D., Anderson, G., & Barchet, P. (1989). The Dissociative Disorders Interview Schedule: A structured interview. *Dissociation, 2*, 169-189.

Rutherford, C., Costa, D., Mercieca-Bebber, R., Rice, H., Gabb, L., & King, M. (2016). Mode of administration does not cause bias in patient-reported outcome results: A meta-analysis. *Quality of Life Research, 25*, 559-574. doi:10.1007/s11136-015-1110-8

Şar, V. (2011). Epidemiology of dissociative disorders: An overview. *Epidemiology Research International, 2011*, 1-8. doi:10.1155/2011/404538

Son, G.-R., Zauszniewski, J. A., Wykle, M. L., & Picot, S. J. F. (2000). Translation and validation of caregiving satisfaction scale into Korean. *Western Journal of Nursing Research, 22*, 609-622. doi:10.1177/01939450022044629

Sousa, V. D., & Rojjanasrirat, W. (2011). Translation, adaptation and validation of instruments or scales for use in cross-cultural health care research: A clear and

user-friendly guideline. (Report). *Journal of Evaluation in Clinical Practice, 17*, 268. doi:10.1111/j.1365-2753.2010.01434.x

Sousa, V. D., Zauszniewski, J. A., Mendes, I. A., & Zanetti, M. L. (2005). Cross-cultural equivalence and psychometric properties of the Portuguese version of the Depressive Cognition Scale. *Journal of Nursing Measurement, 13*, 87-99. doi:10.1891/jnum.2005.13.2.87

Statista. (2016). Penetration of leading social networks in Hong Kong as of 4th quarter 2015. Retrieved from http://www.statista.com/

Steinberg, M., & Siegel, H. D. (2008). Advances in assessment. The differential diagnosis of dissociative identity disorder and schizophrenia. In A. Moskowitz, I. Schafer, & M. J. Dorahy (Eds.), *Psychosis, trauma, and dissociation: Emerging perspectives on severe psychopathology*. Chichester, Sussex: John Wiley & Sons.

Thumboo, J., Fong, K.-Y., Chan, S.-P., Machin, D., Feng, P.-H., Thio, S.-t., & Boey, M.-L. (2002). The equivalence of English and Chinese SF-36 versions in bilingual Singapore Chinese. *Quality of Life Research, 11*, 495-503. doi:10.1023/A:1015680029998

Van der Hart, O., Nijenhuis, E. R., & Steele, K. (2006). *The haunted self: Structural dissociation and the treatment of chronic traumatization*. New York: W.W. Norton.

Van IJzendoorn, M. H., & Schuengel, C. (1996). The measurement of dissociation in normal and clinical populations: Meta-analytic validation of the Dissociative Experiences Scale (DES). *Clinical Psychology Review, 16*, 365-382. doi:10.1016/0272-7358(96)00006-2

Waller, N. G., Putnam, F. W., & Carlson, E. B. (1996). Types of dissociation and dissociative types: A taxometric analysis of dissociative experiences. *Psychological Methods, 1*, 300-321. doi:10.1037/1082-989X.1.3.300

Waller, N. G., & Ross, C. A. (1997). The prevalence and biometric structure of pathological dissociation in the general population: Taxometric and behavior genetic findings. *Journal of Abnormal Psychology, 106*, 499. doi:10.1037//0021-843X.106.4.499

Welburn, K. R., Fraser, G. A., Jordan, S. A., Cameron, C., Webb, L. M., & Raine, D. (2003). Discriminating dissociative identity disorder from schizophrenia and feigned dissociation on psychological tests and structured interview. *Journal of Trauma & Dissociation, 4*, 109-130. doi:10.1300/J229v04n02_07

Youn, S. J., Trinh, N.-H., Shyu, I., Chang, T., Fava, M., Kvedar, J., & Yeung, A. (2013). Using online social media, Facebook, in screening for major depressive disorder among college students. *International Journal of Clinical and Health Psychology, 13*, 74-80. doi:10.1016/S1697-2600(13)70010-3

Zauszniewski, J., & Harman, G. (1996). Translation of a measure of learned resourcefulness into Spanish. *Journal of Multicultural Nursing and Health, 2*, 13-18.

Table 1

Demographic information	First test		Retest	
	Frequency	Percentage	Frequency	Percentage
Variable	Gender			
Female	86	80%	37	79%
Male	22	20%	10	21%
Variable	Level of education			
Associate degree or equivalent	13	12%	6	13%
Bachelor's degree	56	52%	23	49%
Master's degree or above	38	35%	17	36%
Other	1	1%	1	2%
Variable	Subjects			
Arts & Humanities	10	9%	4	9%
Life Sciences & Biomedicine	6	6%	3	6%
Other	17	16%	8	17%
Physical Sciences	2	2%	1	2%
Social Sciences	72	67%	31	66%
Technology	1	1%	0	0%
Variable	Institutions			
City University of Hong Kong	25	23%	7	15%
The Chinese University of Hong Kong	11	10%	6	13%
Hong Kong Baptist University	1	1%	0	0%
Hong Kong Institute of Education	13	12%	8	17%
The Open University of Hong Kong	8	7%	6	13%
The Hong Kong Polytechnic University	36	33%	13	28%
Hong Kong Shue Yan University	7	6%	2	4%
The University of Hong Kong	4	4%	3	6%
Lingnan University	2	2%	1	2%
Other	1	1%	1	2%

Table 2

Item-to-Total correlation and Cornbach Alpha statistics

Item	HKC-DES		DES	
	Corrected Item-Total Correlation ^	Cornbach's Alpha if Item Deleted	Corrected Item-Total Correlation ^	Cornbach's Alpha if Item Deleted
1	.719	.948	.660	.961
2	.594	.949	.656	.961
3	.640	.949	.697	.960
4	.692	.948	.737	.960
5	.589	.949	.674	.961
6	.570	.949	.659	.961
7	.557	.949	.694	.960
8	.698	.948	.692	.960
9	.698	.948	.689	.960
10	.576	.949	.647	.961
11	.684	.948	.753	.960
12	.680	.948	.764	.960
13	.723	.947	.816	.959
14	.707	.948	.777	.960
15	.632	.948	.710	.960
16	.718	.948	.791	.960
17	.237*	.953	.472	.962
18	.731	.947	.735	.960
19	.653	.948	.575	.961
20	.752	.947	.709	.960
21	.443	.951	.564	.962
22	.674	.948	.685	.960
23	.434	.950	.518	.962
24	.573	.949	.670	.961
25	.651	.948	.707	.960
26	.664	.948	.729	.960
27	.656	.948	.658	.961
28	.708	.948	.753	.960

Note. * $p < .05$; ^ All items' correlation were significant at 1% level except item 17 of the HKC-DES

Table 3
Test-retest reliability of CDES

Item	First test		Re-test		t
	M	S.D.	M	S.D.	
1	20.6	27.5	24.9	27.5	1.3
2	46.6	28.5	45.3	28.9	-0.4
3	9.8	18.6	16.2	24.5	2.6*
4	9.1	21.0	11.7	21.9	1.1
5	18.3	21.1	14.9	16.9	-1.1
6	13.0	20.8	17.0	23.8	1.5
7	11.9	18.7	16.2	23.2	1.5
8	14.3	23.8	13.4	22.6	-0.3
9	16.4	23.4	14.5	22.8	-0.6
10	22.8	24.2	18.3	20.3	-1.3
11	13.0	24.3	12.3	22.1	-0.2
12	19.1	26.4	22.8	29.4	1.4
13	18.3	26.5	17.9	27.1	-0.2
14	31.5	29.6	27.4	29.2	-1.5
15	34.0	28.6	33.6	30.8	-0.1
16	20.6	24.4	21.5	21.3	0.3
17	53.4	24.3	50.4	29.0	-0.9
18	27.4	26.2	26.6	27.0	-0.3
19	23.2	25.7	23.0	24.1	-0.1
20	34.7	30.6	31.5	26.1	-0.9
21	16.8	27.6	23.2	29.4	2.1*
22	28.3	30.5	25.7	27.0	-0.6
23	34.9	24.5	33.8	22.9	-0.3
24	26.2	24.8	25.3	27.1	-0.3
25	24.0	24.8	19.4	22.5	-1.4
26	19.8	22.3	22.6	24.0	1.0
27	26.4	29.1	22.8	28.4	-1.0
28	14.0	25.1	18.9	23.4	2.0
Total	23.2	18.2	23.3	19.4	0.0

Note. * $p < .05$

Table 4
Paired t test between the DES and the HKC-DES

	HKC-DES		DES		
Item	Mean	SD	Mean	SD	t
1	19.7	24.6	17.9	24.5	1.0
2	45.5	28.4	37.6	28.8	4.4**
3	9.7	17.8	10.8	18.6	-1.3
4	7.0	16.5	8.7	17.6	-2.7**
5	18.9	20.2	13.7	17.5	3.9**
6	12.8	19.0	12.7	19.3	0.1
7	13.0	21.1	12.4	20.6	0.5
8	11.6	19.1	10.6	18.3	0.9
9	14.7	22.5	14.9	22.5	-0.2
10	25.2	25.5	16.9	20.2	4.4**
11	10.8	18.9	11.3	19.2	-0.7
12	20.9	25.7	19.4	24.4	1.0
13	17.0	25.1	15.8	23.6	1.1
14	28.3	27.4	26.1	26.9	1.4
15	34.0	28.6	26.1	26.4	3.4**
16	21.7	25.0	20.6	23.8	0.6
17	53.1	26.7	42.0	27.6	5.6**
18	28.1	26.6	26.2	27.1	1.2
19	23.1	23.8	19.4	22.5	3.4**
20	31.5	28.8	30.9	26.8	0.4
21	17.1	27.2	18.6	28.0	-1.5
22	25.6	27.1	24.9	26.2	0.7
23	37.9	26.0	27.3	26.0	5.9**
24	28.1	25.9	25.3	24.6	1.8
25	23.3	21.1	21.8	21.7	1.1
26	20.6	20.8	16.9	20.3	3.0**
27	27.3	28.0	23.9	26.4	2.5*
28	14.9	23.7	13.8	21.5	0.9

Note. * $p < .05$; ** $p < .01$