Current Psychology
https://doi.org/10.1007/s12144-025-07728-9

Cross-validating the Couple Resilience Inventory with individuals in LGBTQ relationships in Singapore: insights from a mixed-methods approach

Muhamad Alif Bin Ibrahim[1] · **Joanna Barlas**[1] · **Patrick K. F. Lin**[1] · **Nigel V. Marsh**[1]

Accepted: 19 March 2025

Abstract
The Couple Resilience Inventory (CRI) was first developed by relationship researchers to assess the strategies that intimate couples use to cope with stressful life events. To date, the inventory has not been cross-validated in non-Western societies. A mixed-methods approach was used to examine the relevance, reliability, and validity of the CRI with individuals in LGBTQ relationships purposively sampled from Singapore's LGBTQ community. In the qualitative phase, researchers conducted semi-structured interviews with 16 participants to assess the face and content validity of the inventory. Data were analyzed using Applied Thematic Analysis (Guest et al., 2011). Findings showed most items were clear and applicable to participants, three items were lacking in comprehension and clarity, and three new resilience strategies were suggested. Findings were used to modify existing items and generate new ones in the CRI. The modified inventory was cross-validated with 213 participants in the subsequent quantitative phase. Confirmatory Factor Analysis revealed that the two-factor model was a good fit, χ^2 (179, N=213)=277.49, p<.001, CFI=0.97, SRMR=0.05. The new items also loaded highly onto the positive resilience factor. The findings generally support the relevance, reliability and validity of the modified CRI among individuals in LGBTQ relationships in Singapore. The study also extends the current understanding of couple resilience by revealing how LGBTQ couples in Singapore utilized stoicism, pragmatism and gratitude to remain resilient against stressors. This study underscores the importance of utilizing qualitative and quantitative methods in developing, modifying, and refining psychological measures.

Keywords Couple resilience inventory · Psychometric evaluation · LGBTQ couples · Cultural adaptation · Mixed-methods cross-validation · Singapore

Introduction

Resilience is a pertinent aspect of human life and society. The ability of individuals, social groups, and communities to adapt and remain strong in the face of stressors and adversities has a huge protective impact on their overall health and quality of life (Bonanno et al., 2007; Haas & Lannutti, 2019). Yet, resilience in romantic relationships remains understudied, particularly in marginalized communities and non-Western societies and cultures (Bin Ibrahim & Barlas, 2021; de Lira & de Morais, 2018). The Couple Resilience Inventory (CRI) was first developed by Sanford et al. (2016) to assess the strategies and behaviours that couples undertook to cope with and overcome stressful life events in the United States. Compared to other instruments on couple coping and resilience (Bodenmann, 2005; Chonody et al., 2016), the inventory developed by Sanford et al. (2016) sought to measure and assess context-specific behavioural processes distinct from relationship satisfaction. In constructing the items for the original CRI, Sanford et al. (2016) generated a set of preliminary codes from open-ended anonymous survey responses regarding couple behaviours that occurred during stressful life events. This preliminary set of codes was then iteratively converted into questionnaire items, and tested in subsequent studies as part

✉ Muhamad Alif Bin Ibrahim
muhamadalif.binibrahim@my.jcu.edu.au

[1] School of Social and Health Sciences, James Cook University, 149 Sims Drive, Singapore 387380, Singapore

Published online: 31 March 2025

of the development and validation of the couple resilience measure.

The CRI consists of positive and negative dimensions covering five conceptual aspects of couple resilience: emotional support, active coping, communication, intimacy, and negative behaviours. The eighteen items in the CRI are scored on a six-point rating scale where participants are asked to think about the times and frequency of each behaviour occurring in their relationships. In the original study, Sanford et al. (2016) found the measure to have good construct validity, predictive validity, and internal consistency. Firstly, the original CRI had a good fit between the positive and negative resilience subscales (CFI = 0.99; SRMR = 0.05). The original study also found the standardized factor loadings ranged from 0.63 to 0.81 for the positive behaviours subscale, and 0.80 to 0.91 for the negative behaviours subscale. Additionally, the positive and negative subscales of the CRI had Cronbach's alphas of 0.89 and 0.93, respectively. Finally, Sanford et al. (2016) also found the couple resilience measure significantly predicted quality of life and well-being after controlling for relationship satisfaction. Since its development, the CRI has been used to measure couple resilience among heterosexual and same-sex couples in North America (Aydogan & Dincer, 2020; Haas & Lannutti, 2019).

Situation in Singapore

Singapore presents a unique context to understand the ways in which couples and families formed by lesbian, gay, bisexual, transgender, and queer individuals (LGBTQ) cope and flourish despite the socio-political impediments to their relationships and family units. Until recently, homosexuality remained illegal in the country through the continued existence of Section 377A of the Penal Code (Mahmud, 2022). The section states, "Any male person who, in public or private, commits […] any act of gross indecency with another male person, shall be punished with imprisonment for a term which may extend to two years" (Government of Singapore, 2020). The public announcement to repeal Section 377A in August 2022 is considered a pivotal step in the advancement of rights for Singapore's LGBTQ community.

Beyond Section 377A, LGBTQ rights and equality remain lacking in the developed Southeast Asian nation. Positive portrayals of the LGBTQ community are not allowed in the media or taught within the education system (Ho & Sim, 2014). Singapore's current social and economic policies also continue to privilege the heteronormative family unit. LGBTQ couples are, therefore, discouraged by the state from setting up their own family units (Bin Ibrahim & Barlas, 2021). While such strategies were implemented to benefit Singapore's neoliberal agenda, they marginalize the needs of LGBTQ individuals, couples, and families. This pragmatic stance of prioritizing economic pursuits and gains is further compounded by the perceived Asian cultural norms and traditional Confucian values underpinning Singapore society (Lazar, 2017).

Despite living in this heteronormative and marginalizing context, many LGBTQ individuals continue to form and maintain long-term intimate relationships and families throughout their lives in Singapore. Without legal recognition and social support, LGBTQ families are more negatively impacted by relational and familial issues compared to heterosexual couples and families (Rashith, 2018). When seeking help for such matters, studies have shown that healthcare professionals remain ill-equipped to provide care and services to LGBTQ clients, especially for LGBTQ couples and families in Singapore (Kok, 2016). Tools and resources to help these clinicians and therapists assess, understand, and draw on LGBTQ couples' strengths, coping strategies and resilience mechanisms remain lacking.

Cross-cultural applicability of the CRI

The CRI has been developed to assess couple resilience among heterosexual and LGBTQ couples in North America. However, the measure has not yet been cross-validated in Asian contexts. Such cross-validation studies would ascertain the replicability, validity, and generalizability of the developed measure with similar groups in a different context. This would provide a deeper understanding of the similarities and differences in resilience strategies that couples use in different cultural settings (de Lira & de Morais, 2018). Moreover, previous studies have alluded to how LGBTQ individuals and couples living in Singapore utilize different coping and maintenance strategies compared to their Western counterparts (Bin Ibrahim & Barlas, 2021; Tan, 2011). Yet, empirical studies to understand the ways in which these marginalized groups remain resilient against stressors in the Southeast Asian context remain limited. The cross-validated CRI would further extend existing knowledge for researchers and practitioners working with the LGBTQ community in Singapore. The culturally validated inventory will also add to the limited number of tools and scales used by researchers and practitioners concerned with issues relating to LGBTQ couples and families, especially in Southeast Asian societies (Kok, 2016).

The current study

Drawing on the strengths of qualitative and quantitative methods is especially pertinent when scholars and researchers are developing new measures or adapting them

to different sociocultural settings (Connell et al., 2018; Sanford et al., 2016). However, incorporating qualitative approaches in assessing and validating psychological and behavioural measures remains lacking. Numerous empirical studies have explicated the ways in which qualitative methods can inform the development of new measures and enhance existing measures (Brod et al., 2009; Goorts et al., 2019). While utilizing quantitative approaches to validate measures is important in ensuring their utility and generalisability, utilizing an emic approach (i.e. qualitative methods) enables scholars and researchers to understand the meaning of targeted constructs from the participants' perspectives rather than these being imposed from the researchers' lens (Vogt et al., 2004). The use of language by participants is crucial in elucidating the ways in which they understand constructs that can enhance the validity of psychological measures and instruments. Hence, such measures and instruments need to be first assessed by the relevant groups and stakeholders using qualitative methods before being quantitatively validated with the broader population.

A sequential exploratory mixed-methods study was conducted to cross-validate the CRI with individuals in LGBTQ relationships in Singapore. Utilizing a mixed-methods design for a cross-validation study also offers insights beyond qualitative or quantitative methods alone (Sung et al., 2019). Integrating qualitative findings to modify and refine the CRI ensures that the measure is adequately grounded in and strengthened by the lived experiences of the LGBTQ community prior to quantitatively assessing its construct validity and generalizability with the broader LGBTQ community in the Singapore context. This empirical strategy ensures that measures are valid for their intended purposes and cultural context (Clark & Watson, 2019). For example, an instrument may appear representative but contain irrelevant items. Conversely, measures may include relevant elements but are not representative of the facets within the targeted construct of interest. Consequently, the use of instruments that lack validity may, in turn, threaten the validity of research findings (Vogt et al., 2004).

This mixed-methods project is underpinned by a post-positivist paradigm. Post-positivism is a major paradigm that underpins much of scientific research. It posits that knowledge about the natural and social world can be obtained through the use of scientific methods (Maxwell, 2011). In utilizing post-positivism in this study, the researchers aim to develop a more nuanced and accurate understanding of couple resilience through the use of qualitative and quantitative methods. The paradigm will enable relationship scholars and researchers to garner a more holistic picture of the similarities and differences of couple resilience strategies in different socio-political contexts. Using post-positivism across both study phases ensures similar research values, norms, and techniques to be utilized throughout the study, particularly in the psychometric evaluation of psychological measures (such as reliability and validity of the findings).

The mixed-methods study consists of two distinct but interrelated phases. In the first phase, the face and content validity of the CRI must first be assessed and evaluated by members of the targeted community before the measure can be assessed quantitatively (Goorts et al., 2019). Face validity refers to the ways in which respondents assess whether the items in an instrument seem appropriate to examine the targeted construct (Connell et al., 2018). On the other hand, content validity assesses the elements within a particular measure to ensure they are comprehensive and adequately reflect the lived experiences of the community of interest (Haynes et al., 1995). Hence, a qualitative descriptive study was first conducted to establish the face and content validity of the CRI among LGBTQ couples living in the Asian society of Singapore. Specifically, the qualitative cross-validation phase aimed to evaluate participants' understanding of the inventory and ensure the items reflect the couple resilience strategies used in this context. In addition, this phase also sought to uncover any additional behavioural strategies that could extend the content validity of the CRI.

The qualitative cross-validation was followed up with a quantitative cross-validation study. Findings from the former were used to modify existing items and create new items for the CRI. Specifically, the modified CRI was used as part of a survey to assess its replicability, validity and generalisability with individuals in LGBTQ relationships in Singapore. The quantitative cross-validation phase also sought to confirm the validity of findings and items generated from the previous qualitative phase. To that end, this mixed-methods study was grounded in the following research questions:

- How comprehensible, relevant, reliable, and valid is the CRI for individuals in LGBTQ relationships in Singapore?
    - How relevant and applicable are the items in the CRI in reflecting the lived experiences of individuals in LGBTQ relationships in Singapore?
    - How comprehensible are the items in the CRI for individuals in LGBTQ relationships in Singapore?
    - What is the internal consistency of the CRI for LGBTQ couples in Singapore?
    - What is the construct validity of the CRI among individuals in LGBTQ relationships in Singapore?
    - Beyond the current CRI, what other strategies do individuals in LGBTQ relationships use when faced with stressful life events in Singapore?

Qualitative cross-validation phase

Participants

The sample size required for this phase was determined using the principles of data saturation. Data saturation is used to determine the point at which additional data collection or analysis leads to no further substantial insights to understand the phenomenon of interest (Hennink et al., 2017). According to Guest et al. (2006), approximately 12 to 15 participants are required to achieve 80 to 90% data saturation in non-probabilistic samples for semi-structured interviews. The researchers assessed for data saturation through preliminary analysis of interview data, which saw new themes emerging infrequently as the data collection and analysis progressed. Building on this recommended range, the researchers also conducted additional interviews to assess sufficient information power during the data collection phase (Malterud et al., 2016). Our analysis of data from additional interviews found the codebook was fairly stable, with no new emerging themes arising from the 15th and 16th interviews.

Participants were sampled from Singapore's LGBTQ community using a purposive sampling strategy (Palinkas et al., 2015). They were recruited based on the following inclusion criteria: Individuals who identified as LGBTQ, were above 21 years of age, and were Singapore citizens or permanent residents. Additionally, participants must be in long-term, same-sex relationships for at least five years. The relationship-duration inclusion criterion is based on studies that found that relationships of less than three years were more likely to be perceived as unstable and transitory, leading to an increased likelihood of dissolution (Rosenfeld, 2014). Conversely, longer relationship durations were significantly associated with a reduced likelihood of relationship dissolution due to perceived compatibility, perceived similarity in personal values and attitudes, and the existence of various couple-specific investments (Rostosky & Riggle, 2017). Sixteen LGBTQ participants in long-term, same-sex relationships were interviewed for this qualitative cross-validation phase.

Materials

Focus groups and interviews are suitable data collection techniques used to assess the face and content validity of psychological instruments with members of the target population (Brod et al., 2009; Vogt et al., 2004). However, interviews are generally preferred where confidentiality cannot be assured in focus groups and are best utilized with sensitive topics such as HIV, gender identity and sexual orientation, and sexual behaviours. As such, this study utilized one-to-one semi-structured interviews with individuals in LGBTQ relationships to enable participants to openly share their lived experiences while evaluating the items in the CRI. A semi-structured interview guide was developed using the existing literature and the eighteen CRI items which guided the interview process (Appendix A). In addition, elements of think-aloud and verbal probing techniques were incorporated as part of the interviews to improve the quality and depth of participants' responses (Padilla & Leighton, 2017).

Procedures

The researchers engaged four LGBTQ non-governmental organizations in Singapore to assist with recruiting participants on their respective social media platforms. After receiving ethical approval, recruitment posters containing the study details were sent to these organizations. Potential participants contacted the first author through the email address provided in the recruitment advertisement. They were subsequently provided with the study information sheet and had their questions clarified when they emailed the first author. If participants agreed to participate in the study, an appointment was made for the interviews. Participants were allowed to undertake the interviews in person within the university campus or online through Zoom. Informed consent and participants' demographics were obtained before each interview. To maintain confidentiality, participants were assigned a study identification number in the qualitative cross-validation phase.

As part of the informed consent, participants were also invited to participate in a member-checking process. Interested participants were sought for their feedback at two points during the research process. They were first asked to review and comment on their de-identified interview transcripts prior to data analysis, and subsequently asked to comment and feedback on themes that emerged from the data analysis. This process ensured that their experiences and perspectives had been captured as accurately as possible. Any feedback and comments received from study participants were incorporated as additional data to further validate the accuracy of our qualitative findings. Participants were given SGD15 (approximately USD11) as tokens of appreciation upon completing their interviews, which lasted between 75 and 90 min. The tokens of appreciation were offered as reasonable compensation for their time and effort in participating in the interviews and were not disproportionate to the time involved such that it might encourage participants to take risks or interfere with their responses. All interviews were audio-recorded and deleted after being transcribed verbatim. To protect participants' confidentiality, the transcripts were reviewed to ensure any identifiable information were removed.

Qualitative data analysis

Data were analyzed using Applied Thematic Analysis (Guest et al., 2011). Applied Thematic Analysis is a qualitative analytical method that seeks to answer problems that are practical or applied in nature. The method was selected as the analysis needed to remain closely grounded to the interview data to establish the face and content validity of the measure. Additionally, the findings from this phase needed to be applicable and transferrable to the subsequent quantitative phase of the cross-validation of the CRI. The researchers began the analysis by developing a preliminary codebook after familiarizing themselves with the interview transcripts. The initial codebook consisted of structural themes that centred on the understanding, clarity and applicability of each item in the CRI. Structural themes are pre-determined themes created based on the objectives of the analysis, which provide some structure and context to the analysis process. The codebook, consisting of eight structural themes, was subsequently used by the researchers to code a randomly selected transcript. Content themes (or themes generated from the data) were added iteratively under each structural theme for the respective items as the analysis proceeded. A finalized codebook was applied to the rest of the dataset before undertaking data display and data reduction. After all transcripts had been coded, textual coding reports were developed and extracted from the qualitative data analysis software. Verbal descriptions in the coding report were charted into a framework in Microsoft Excel to allow the visualization of responses for each CRI item (Guest et al., 2011). The data display framework included participants' views and responses for each item in the CRI as well as exemplar quotes to enable researchers to note the differences and similarities in their understanding, clarity and applicability of CRI items. A sample data display framework that was developed during the data display phase has been included in Appendix E.

A criterion for item modification based on participants' recommendations was also established during these phases. This study utilized a conservative percentage of agreement where two-thirds of participants (or a minimum of 11 participants in this study) needed to highlight items as lacking in comprehension and clarity as a basis for considering any item changes. This criterion was developed based on the extant psychometric literature to ensure that only items deemed problematic by most participants were selected for modifications (American Educational Research Association et al., 2014; Connell et al., 2018). In addition to the established criterion, the verbal description framework was also used during team deliberations to assess whether each item in the CRI would be kept to its original phrasing or modified accordingly (Appendix E). During deliberations for item modification, the team utilized this criterion for item modification and the data display framework to inform decisions on whether to modify an item. Such modifications included rephrasing certain words or sections to improve item clarity. This ensured that the team could balance between participants' views and perspectives while adhering to the psychometric principles and practices needed in evaluating a psychological instrument (Haynes et al., 1995; Tabachnick & Fidell, 2019). Finally, data summarization and interpretation were undertaken during the final stages of the data analysis process. This involved identifying, explaining and summarizing the core meanings of the data while remaining faithful to the participants' perspectives within the sociopolitical context of Singapore. ATLAS.ti 22 and Microsoft Excel were used in the management and analysis of qualitative data.

Credibility and trustworthiness criteria

The qualitative phase utilized the credibility and trustworthiness guidelines set out by Lincoln and Guba (1985). This involved ensuring the credibility, transferability, dependability and confirmability of the qualitative research process. Firstly, the study team consisted of two experienced qualitative researchers as well as two quantitative researchers with psychometric expertise. Such expertise enabled the team to thoroughly consider and balance the requirements of a qualitative study while adhering to the psychometric principles needed to evaluate a psychological instrument. The first author undertook comprehensive note-taking activities throughout the data collection phase. This enabled the first author to set aside preconceptions, thoughts, and feelings from previous interviews. During data collection, the first author familiarized himself with the dataset by listening to the audio-recorded interviews and reading the completed transcripts.

The first and second authors also undertook subjective assessments of intercoder agreement and saturation throughout the data collection and analysis process (Guest et al., 2011). The first and second authors independently coded selected transcripts. They ascertained intercoder agreement by discussing and reviewing the coded transcripts to ensure the structural and content themes were applied in a similar way across the dataset. Any discrepancies in the application of themes were resolved during this coding process. Additionally, coding saturation was also ascertained during the coding process as the point at which no new emergent content themes were added to the codebook. The first author also undertook researcher triangulation with the other authors at various stages of data analysis using the data display framework. These discussions centred around

balancing participants' perspectives in the data with the addition and modification of items in the CRI.

To ensure that participants' views remained central to the research study, they were also invited to participate in the member-checking process, where they were asked to comment on their transcripts and provide feedback on the study findings. All participants consented to participating in this member-checking process. New information that arose from their comments and feedback were considered as new data and used to further refine the analysis. Finally, the first author kept an audit trail of all relevant aspects of the research to ensure the transparency of the data collection and analysis processes. This dependability and confirmability strategy involved the first author documenting decisions made by the study team throughout the project, keeping a log of research notes and reflections generated during data collection, as well as tracking the content themes that were developed and refined as part of the analysis.

Results from the qualitative cross-validation phase

The demographics of the 16 study participants in the qualitative validation phase are provided in Table 1. This phase aimed to elucidate the comprehension, clarity and applicability of the CRI items with study participants. To that end, the findings from the analysis of interview data will be presented in the following three domains: (a) Item comprehension and clarity, (b) Item relevance and applicability, and (c) Other couple resilience strategies.

Table 1 Demographics of participants from the qualitative and quantitative phases

Phase 1 - Qualitative Validation				Phase 2 - Quantitative Validation			
Demographic Variables	Categories	N	%	Demographic Variables	Categories	N	%
Relationship Duration	6 months to less than 1 year	0	0	Relationship Duration	6 months to less than 1 year	8	4%
	1 to 4 years	0	0		1 to 4 years	108	51%
	5 to 9 years	8	50%		5 to 9 years	49	23%
	10 to 14 years	5	31%		10 to 14 years	24	11%
	15 to 19 years	2	13%		15 to 19 years	17	8%
	20 to 24 years	1	6%		20 to 24 years	5	2%
Gender Identity	25 to 29 years	0	0%	Gender Identity	25 to 29 years	1	1%
	40 to 44 years	0	0%		40 to 44 years	1	1%
	Cis-gender male	8	50%		Cis-gender male	123	58%
	Cis-gender female	7	44%		Cis-gender female	57	27%
	Genderqueer	1	6%		Genderqueer	6	3%
	Non-binary	0	0%		Non-binary	9	4%
	Gender-neutral	0	0%		Gender-neutral	10	5%
	No response	0	0%		No response	8	4%
Sexual Orientation	Homosexual - Gay	8	50%	Sexual Orientation	Homosexual - Gay	121	57%
	Homosexual - Lesbian	4	25%		Homosexual - Lesbian	50	24%
	Bisexual	1	6%		Bisexual	29	14%
	Asexual	0	0%		Asexual	1	1%
	Pansexual	2	13%		Pansexual	3	1%
	Queer	1	6%		Queer	8	4%
	No response	0	0%		No response	1	1%
Educational Level	Secondary	0	0%	Educational Level	Secondary	2	1%
	Post-secondary, non-tertiary, ITE	1	6%		Post-secondary, non-tertiary, ITE	3	1%
	'A' Levels, Diploma, Professional Qualification	3	19%		'A' Levels, Diploma, Professional Qualification	34	16%
	Degree, postgraduate degree	12	75%		Degree, postgraduate degree	173	81%
	No response	0	0%		No response	1	1%
Ethnicity	Chinese	10	63%	Ethnicity	Chinese	177	83%
	Malay	2	13%		Malay	16	8%
	Indian	2	13%		Indian	11	5%
	Eurasian	1	6%		Eurasian	6	3%
	Other Asian ethnicities or mixed ethnicities	1	6%		Other Asian ethnicities or mixed ethnicities	3	1%
Grand Total		**16**	**100%**	**Grand Total**		**213**	**100%**

Item comprehension and clarity

Following the administration guidelines for the CRI, participants were asked to describe the most stressful life event they experienced with their partners throughout their relationship at the start of each interview. Using the stressful life events previously described as a reference point, participants were subsequently asked to evaluate the comprehension and clarity of the CRI items. Of the 18 items presented to the participants, 10 items from the measure were easy to understand and unambiguous to study participants. While participants provided various recommendations to improve the comprehension and clarity of the remaining eight items in the inventory, only three met the criterion to be considered for item modification that was established during the data analysis phase. The exemplar quotes for the comprehension, clarity, and recommended modifications for these three items are provided in Table 2.

Positive item 5 This item assessed whether participants and their partners helped each other during stressful life events by "using special skills and abilities". Regarding item comprehension, 11 participants found this item ambiguous and hard to understand. They could not specifically think about what "special skills and abilities" referred to. Three participants asked the interviewer further if the statement referred to having "some special powers like the X-men" (Participant 14). These participants highlighted the ways in which they interpreted this statement as having specialized skills to mitigate or resolve stressful events. These skills included organizing social events, having financial expertise to decipher market fluctuations, or having psychotherapy skills to de-escalate emotionally charged situations (Quote 1). The remaining eight participants saw "special skills and abilities" as having the ability to listen empathically, being optimistic, having a positive outlook on life, and other qualities that helped couples cope with and overcome daily relational stressors (Quote 2).

Regarding item clarity, 11 participants (69%) felt the item was unclear and ambiguous. While three participants suggested defining what "special skills and abilities" referred to, others suggested removing or replacing the word "special" to improve the item's comprehension and clarity. These participants also provided alternative phrases encompassing the differing interpretations of "special skills and abilities", including replacing the words "special skills and abilities" with either "various skills and abilities", "specific skills and abilities", or "personal skills and abilities" (Quote 3). Based on participants' recommendations and the research team's deliberation, this item was rephrased using "personal skills and abilities" prior to the quantitative phase of the cross-validation study. This modification to "personal skills and abilities" allowed for a broader inclusion of the skills and abilities that LGBTQ couples deem as helpful in addressing stressful situations.

Negative item 2 This item assessed whether participants and their partners were abusive to each other during stressful life events. In terms of item comprehension, participants explained how abuse in relationships stemmed from one's inability to control themselves emotionally during stressful life events. This, in turn, could lead these individuals to physically act out on their partners because they cannot redirect their negative emotions elsewhere. Participants added that no one should remain in abusive relationships. While many participants thought about physical abuse upon reading the item, a small number of participants brought up instances of verbal abuse where hurtful words or comments were used on each other during stressful situations (Quote 4).

While all participants understood what abusive meant through their various examples, 13 participants (81.3%) wondered if the item only referred to physical abuse. Participants highlighted how they automatically thought of physical abuse but reiterated that other forms of abuse also occurred in long-term relationships. Hence, these participants suggested that providing examples regarding different forms of abuse could improve the clarity and comprehension of the item when used in the survey (Quote 5). Based on the participants' recommendations and the research team's deliberation, this item included an elaboration of the types of abusive behaviours prior to the quantitative phase of the cross-validation study.

Negative item 9 This item assessed whether participants and their partners "made it difficult for the other by being overly emotional, unstable, or weak" during stressful life events. In terms of item comprehension, eight participants highlighted how this item reflected the behaviours of individuals who tended to be overly dramatic and had something to gain from stressful life events. Participants elaborated on the ways in which these individuals would intentionally milk the stressful situation and manipulate their partners to get their way (Quote 6). The remaining participants interpreted this item as the genuine lack of ability for LGBTQ couples to help one another during stressful life events. This could be due to lacking the necessary skills or capacity to assist their partners. These participants felt that stressful events impacted individuals in the relationship differently due to different strengths and weaknesses. They believed

Table 2 Exemplar quotes regarding the comprehension, clarity, and recommendations for three items in the Couple Resilience Inventory

Item #	Original CRI Item	Quotes for Item Comprehension	Quotes for Item Clarity	Modified CRI Item
Positive Item 5	At the time of your stressful event, one partner helped the other (or both partners helped each other) by using special skills or abilities for addressing the situation.	**Quote 1:** Maybe if the partner was a counsellor and knew how to work through negative emotions? If he has valuable skills to help the situation? Maybe I invested all my money, and my partner is a broker. So, he will be able to share tips before the downfall of the financial market. (Participant 10, Cis-gender male, Gay, Chinese, in a 12-year relationship) **Quote 2:** What I understand from this item is using their talents or skills to help alleviate the situation. So maybe someone who's a good listener, or someone who is more optimistic… more positive in life, and things like that. (Participant 16, Cis-gender gay male, Chinese/Indian, in a 5-year relationship)	**Quote 3:** I think when we use the term special skills, it's more skewed to what you can do that other people cannot do. So, maybe not special? Because I just think of it as very niche, which then lends to what you do for work or what you studied. (Participant 8, Cis-gender female, lesbian, Indian, in an 11-year relationship)	At the time of your stressful event, one partner helped the other (or both partners helped each other) by using personal skills or abilities for addressing the situation.
Negative Item 2	At the time of your stressful event, either you or your partner was abusive.	**Quote 4:** Either you or your partner are abusive? I have not heard of friends who had gone through this. Definitely not me and my partner. Abusive…can be physical. It can be verbal. Even if it's physical, it doesn't have to hurt their partner. They may be hurting themselves. They cannot control themselves. They cannot find a solution, and then they take it out on others. (Participant 9, Cis-gender male, Gay, Chinese, in an 11-year relationship)	**Quote 5:** Of course, the first thing that people think about is physical abuse. But I think abuse can come in the form of mental, emotional, verbal abuse…and so on. (Participant 6, Genderqueer, Chinese, in a 13-year relationship)	At the time of your stressful event, either you or your partner was abusive. (Including physical abuse, emotional/psychological abuse, sexual abuse, financial abuse, or other actions that you would interpret as abusive)
Negative Item 9	At the time of your stressful event, either you or your partner made it difficult for the other by being overly emotional, unstable, or weak.	**Quote 6:** What's the intent behind being so emotional, unstable or weak? So, it's probably trying to fish out certain reactions by the other party. I see it in other couples. Sometimes I feel it might be because, you know… they're testing the situation. Or they just want to break up and therefore behave in a way that makes the other party feel uncomfortable. (Participant 2, Cis-gender male, Gay, Malay, in a 10-year relationship) **Quote 7:** If it's an external event and I'm not there to support my partner, that's my definition of 'weak'. I was not strong enough for her. When one person is emotionally weak, the other has to step up and be strong. So, there's always that balance. For my stressful incident, when I was upset and emotional, she wasn't emotional as well. She listened first. After I got it out of my system, only then did she tell me how she felt. I made a conscious effort to listen instead of being overly emotional, or unstable about it. (Participant 7, Cis-gender female, Pansexual, Indian, in an 11-year relationship)	**Quote 8:** I'm unsure about these two terms [participant pointing to the phrase "unstable or weak"]. I am definitely sure about this term [Note: referring to the phrase "overly emotional"]. When I say unstable, you know…it means so many different things. Weak? It means so many different things as well to different people. Unstable does it mean mentally unstable? Or weak? I mean, I have not…I think this is a term that we're pretty familiar with [Note: participant referring to overly emotional]. The other two words, I think, are too ambiguous. (Participant 3, Cis-gender male, Gay, Eurasian, in a 9-year relationship)	No changes were made to the item after team deliberations.

that partners who were less affected by the circumstances should support the other partners in such times (Quote 7).

In terms of clarity, 12 participants highlighted the ways in which the phrase "unstable or weak" was ambiguous and unclear. They took considerable time to decipher what this phrase meant and expressed how the term was not typically used in their social circles to describe themselves or other couples. These participants suggested the removal of the phrase "unstable or weak" to improve the item's comprehension and clarity (Quote 8) as opposed to a modification of a phrase. While Negative Item 9 met the criterion to be considered for item modification that was set out during the analysis phase, the researchers deliberated using the data display framework and agreed that whilst 75% of the participants found the second part of the item unclear, they could still understand the first part of the item (i.e., "made it difficult for the other by being overly emotional"). Hence,

the researchers left Negative Item 9 as it is to preserve its psychometric properties, as they believed participants could still respond to this item appropriately.

Positive interpretations of negative resilience items

Interestingly, two-thirds of the study participants interpreted two negative resilience items as positive, helpful strategies that they used to cope with and overcome their stressful life events. The findings pertaining to these participants' comprehension and interpretation of negative items 1 and 5 of the CRI are illustrated below. The exemplar quotes for the positive reinterpretations of these two items are provided in the supplementary table in Appendix B.

Negative item 1 These participants described how "withdrawing from communication" referred to isolating themselves emotionally and physically from their partners and giving their partners the silent treatment or cold shoulder when couples faced stressful situations (Quote 9). While this item is located within the negative dimension of the CRI, these participants interpreted it as a positive behavioural strategy. Participants described how withdrawing from communication during stressful life events prevented them from saying hurtful things to their partners. This strategy also allowed both individuals in the relationship to take some time to calm down and collect their thoughts before discussing possible resolutions to the stressful situation. Therefore, a temporary withdrawal from communication was a positive strategy that helped their relationships in stressful times (Quote 10).

Negative item 5 When asked about their thoughts and comprehension of this item, these participants explained that sensitive topics in the relationship stemmed from each individual's insecurities about certain aspects of their lives. These sensitive topics included having differences in views about same-sex marriage, having body image issues or eating disorders, and maintaining relationship finances. Participants described that being together for a long time allowed them to understand and remain aware of these aspects of great sensitivity in the relationship. Whether or not these topics were related to stressful events, they could become points of contention when couples bring them up during stressful life events. To this end, participants would try their best to avoid these sensitive topics or remind themselves to let such issues go whenever they came up in the relationship (Quote 11). Moreover, Participant 5 added how being transparent about everything in one's relationship can be detrimental and harmful, particularly for intimate relationships in Asian contexts. He elaborated on the ways in which he felt that long-term relationships in Western societies were different. Within an Asian context, he believed that speaking honestly and transparently without due consideration of one's partner was not a constructive strategy and would likely cause more fights and resentment (Quote 12).

Relevance and applicability of items in CRI

Participants were also asked if each item was relevant or applicable to their long-term relationships in Singapore as their interviews proceeded. The main aim of this section of the interview was to qualitatively ascertain whether the behaviours listed in the CRI occurred in participants' long-term relationships during stressful life events. Additionally, participants' responses provided researchers with an in-depth understanding of the reasons why certain couple resilience behaviours were more relevant or applicable to their respective relationships. For the positive resilience items, seven items (Items 1–4 and 7–9) were relevant to all study participants as these were familiar strategies used when faced with stressful life events. For positive item 5, six participants were unsure whether the item applied to their respective relationships. This response stemmed from the ambiguity of the phrase "special skills and abilities". For positive item 6, seven participants elaborated that it was hard to maintain clear and accurate communication during stressful life events. They reflected how they were not in a calm state of mind to communicate their needs or frustrations clearly and accurately during stressful life events. While these participants agreed on the importance of having clear and accurate communication, they believed doing so while in a negative emotional state was difficult. Therefore, these participants felt that positive item 6 did not apply to their long-term relationships.

For the negative resilience subscale, only negative item 2 on abusive behaviours was unanimously rejected by participants as not applicable to their relationships. Two-thirds of the study participants interpreted two negative resilience items as positive. These 13 participants described how negative items 1 ("withdrawing from communication") and 5 ("avoiding a topic") were helpful, relevant strategies they used to cope with and overcome stressful life events. These participants felt that these behaviours, when undertaken temporarily, helped them cope with and overcome stressful situations in their relationships. Participant 5 felt that long-term, same-sex relationships in Western societies were different. He further explained that speaking honestly and transparently without due consideration of one's partner "sometimes […] causes more harm than good" within a Southeast Asian context. The relevance and applicability of the remaining negative items were equally split among participants. Participants who outrightly rejected the relevance of the remaining items believed that these behaviours did

not occur in their relationships at all. The other participants acknowledged how these behaviours could have happened in their relationships, particularly at the start of stressful life events. Furthermore, these participants felt that these negative items were simply normal reactions exhibited by anyone faced with stressful events.

Other couple resilience strategies

While many participants highlighted how the CRI was already comprehensive, 14 participants described additional strategies they have used with their partners beyond the existing domains in the CRI. As a result, the analysis generated three additional domains that could be incorporated into the CRI, thereby extending the content validity of the measure. The exemplar quotes, and the items to be developed under these new domains of couple resilience are provided in the supplementary table in Appendix C.

Being stoic and pragmatic during stressful events Nine participants related the ways in which being stoic and pragmatic were valuable strategies they frequently used when facing stressful events. In being stoic, participants highlighted how they would put aside their negative, highly charged emotions and approach the stressors by focusing on resolving the issues at hand. Moreover, they believed that "being stoic allowed for better communication" (Participant 10), which enabled them to work through stressful situations rationally without being clouded by their feelings. Compartmentalizing their emotions also allowed them to continue their routines, such as having meals or working out with their partners, as described by Participant 15 (Quote 13).

In remaining pragmatic during stressful events, many participants related the ways in which they would become more practical or solutions-oriented in resolving relational issues. Five participants described how they and their partners would turn to using money to resolve certain issues. These included talking to a therapist together to work through emotional problems and paying someone who could easily fix broken or damaged equipment at home. Others mentioned how their couple friends avoided using the words "break up" in the relationship. Since they were forbidden from speaking of this negative construct, they were forced to work on their relationship issues and not give up. Such strategies also seemed to reflect the ways in which many heterosexual married couples in Singapore were forced to work out marital problems because of their children and other joint assets (Quote 14).

Showing gratitude and being grateful in stressful times A third of the participants related how implicitly and explicitly showing gratitude to their partners helped them through stressful events. In addition, they felt that showing appreciation for one another reminded them of how far they had journeyed together as an LGBTQ couple. Such positive actions and reminders enabled them to tide through challenging periods in their long-term relationships (Quote 15).

Based on these novel couple resilience domains, the researchers in this study developed additional items as part of the CRI's positive resilience subscale. Therefore, the following items were included and psychometrically evaluated in the quantitative phase of the cross-validation study:

- At the time of your stressful event, you and your partner decided to remain stoic in the face of a difficult situation.
- At the time of your stressful event, one partner helped the other (or both partners helped each other) by remaining pragmatic in addressing the situation.
- At the time of your stressful event, you and your partner showed gratitude towards one another.

Quantitative cross-validation phase

As mentioned earlier, the aim of the quantitative cross-validation was to examine the replicability, validity and generalisability of the CRI with individuals in LGBTQ relationships in Singapore. The quantitative cross-validation phase also sought to confirm the validity of findings and items generated from the previous qualitative phase.

Participants

Data for the quantitative survey were collected between April and July 2023. Based on sample size recommendations for Confirmatory Factor Analysis, researchers aimed to recruit approximately 300 participants to complete the cross-validation of the CRI (Tabachnick & Fidell, 2019). For this phase, a separate participant group was sampled from Singapore's LGBTQ community using a maximum variation purposive sampling strategy (Palinkas et al., 2015). As compared to random sampling, purposive sampling is typically employed when accessing difficult-to-reach populations who can provide rich, in-depth insights into the phenomena of interest. In utilizing a maximum variation purposive sampling strategy, the researchers further aimed to ensure that the study was able to include the experiences of LGBTQ participants from varying sociodemographic backgrounds. Participants in this phase were individuals who identified as LGBTQ, Singapore Citizens or PR, and above 21 years of age. Participants must also be in long-term, LGBTQ relationships for at least six months.

Including individuals who were in intimate relationships as recently as six months would enable the identification of early stressors during the process of relationship formation, some of which may have become too temporally distal for longer-term couples to remember in detail (Frost et al., 2017). Moreover, including individuals with varying relationship durations enabled the researcher to elucidate the impact of relationship duration on the socio-political stressors and resilience levels of LGBTQ couples in Singapore.

At the end of the data collection period, a total of 325 participants accessed the survey on the Qualtrics platform. Of these, 295 met the study's inclusion criteria and provided their informed consent to participate in the study. Of those who provided their informed consent, 52 participants did not proceed to complete any items in the survey, while 30 participants had partially completed responses. For those who partially completed the survey, the researchers believed that some may have reconsidered their decision to participate while others may have dropped out due to survey fatigue, as the survey had a total of 103 questions to complete. The remaining 213 participants completed the entire survey and were included in the final analysis.

Materials

The researchers developed an online survey on Qualtrics using items from the modified CRI along with measures of couple satisfaction, relationship commitment, and relationship maintenance. These measures are further explained below.

Couple resilience After providing their informed consent, participants were first asked to identify and describe the most stressful life event they had experienced with their current romantic partners. They subsequently categorized the event into one of the following categories: hospitalisation or medical problems, disability, financial or employment problems, death, problems involving children, problems involving parents, legal problems, life changes, or other problems. These specific memories provided for each positive resilience item were made to appear below the positive items in the next section of the questionnaire. Participants then rated each positive resilience item on a six-point rating scale, ranging from one ('No, this behaviour did NOT happen') to six ('Yes, I was able to think of a specific example, and I can easily think of several more'). Scores from each subscale were calculated and averaged across items. The final Cronbach's Alphas for the positive and negative couple resilience behaviours subscales in this study were 0.96 and 0.93, respectively. Higher scores in each subscale indicate higher levels of positive or negative couple resilience behaviours that occurred in LGBTQ relationships.

Couple satisfaction The Couple Satisfaction Index (CSI) is a four-item measure that was designed to measure one's satisfaction in their relationship (Funk & Rogge, 2007). Questions in the CSI include how rewarding and happy participants felt about their relationships. Items in this measure were rated on a six-point rating scale ranging from zero ('not at all') to five ('completely'). The scores from the four items in the index were combined to form one variable. The Cronbach's alpha for the CSI in this study was 0.92. Higher scores in this measure indicate higher levels of satisfaction participants had with their partners and current relationships.

Relationship commitment The Relationship Commitment Scale (RCS) consists of two items to assess the levels of commitment among study participants to want their respective relationships to last as long as possible (Haas & Lannutti, 2019; Rusbult & Buunk, 1993). The two questions from the RCS were as follows: (a) "I am committed to maintaining this relationship" and (b) "I want this relationship to last as long as possible". These questions were rated on a five-point rating scale ranging from one ('strongly disagree) to five ('strongly agree'). The two items in the RMS were combined and averaged to form one variable. The Cronbach's alpha for the RCS in this study was.92. Higher scores in this measure indicate higher levels of commitment to their partners and current relationships.

Relationship maintenance The RMS is an eight-item measure grounded in the Social Exchange Theory (Chonody et al., 2016). It assesses the perceived equitability, reciprocity, and benefits of maintaining their current long-term relationships, which, in turn, supports relationship longevity (Haas & Lannutti, 2019). Participants are asked to indicate their agreement to the presence of relationship-maintaining behaviours such as saying "I love you" to one another, making time to be together, and pursuing shared interests. Items in this measure were rated on a five-point rating scale ranging from one ('strongly disagree') to five ('strongly agree'). The eight items in the RMS were combined and averaged to form one variable. The Cronbach's alpha for the RCS in this study was 0.67. Higher scores in this measure indicate higher levels of the relationship being rewarding and beneficial for participants.

Procedures

The researchers engaged four LGBTQ non-governmental organizations in Singapore to assist with the recruitment

of participants on their respective social media platforms. After receiving ethical approval, recruitment posters containing the study details were sent to these organizations. Potential participants accessed the survey through the link or QR code provided on the recruitment poster. Potential participants first completed some screening questions to ensure they met the inclusion criteria. Participants who met these criteria provided their informed consent before completing a series of questionnaires on Qualtrics. Participants provided their responses to the scales and measures in the order they were listed in the materials section above. Participants also provided various demographic information such as age, gender identity, sexual orientation, ethnicity and relationship length at the end of the survey.

No personal identifiers were retained in the survey data due to the sensitive nature of the study. Participants were assigned study identification numbers that were used throughout the duration of the study. Participants were provided with tokens of appreciation (SGD10 / USD7.50) after completing all aspects of the survey. The tokens of appreciation were disbursed to their mobile phone numbers that were registered with PayNow, a secure and private funds transfer service in Singapore (The Association of Banks in Singapore, 2016). The mobile phone numbers provided by the participants were removed from the dataset upon the successful disbursement of the tokens of appreciation.

Quantitative data analysis

Firstly, the survey data were downloaded from Qualtrics. The dataset was then imported into a Microsoft Excel Database for data cleaning before analysis. This dataset was subsequently uploaded onto SPSS Analysis of Moment Structures (SPSS AMOS) Version 27 and Statistical Package for the Social Sciences (SPSS) Version 27 for Confirmatory Factor Analysis and Regression Analysis, respectively. In the quantitative phase, individual participants (i.e., LGBTQ individuals) currently in long-term relationships were recruited. While researchers acknowledge there may be LGBTQ couples who participated in the study, the team does not know this as the couples would have participated individually at different time points. The researchers were also unable to link any participants' responses as they were collected anonymously through Qualtrics. Hence, the researchers approached the data analysis with the assumption of independence of cases. Means, medians, standard deviations, and correlations were calculated using SPSS Statistics Version 27 for all quantitative data variables collected.

The data pertaining to the factor structure of the CRI were analyzed with Confirmatory Factor Analysis using a Maximum Likelihood Model. This commonly used technique of estimation in Confirmatory Factor Analysis is typically used in datasets with continuous and normally distributed variables (Tabachnick & Fidell, 2019). Specifically for this study, the researchers created a two-factor model where the 12 positive resilience items were grouped as behaviours underpinning a positive resilience factor, and the remaining negative resilience items were grouped as behaviours underpinning a negative resilience factor. The two factors were allowed to correlate with each other. All correlations between the error variances were fixed at zero. The study also utilized the model fit cut-off criteria for Comparative Fit Index (CFI$\geq$0.95), Standardized Root Mean Square Residual (SRMR$\leq$0.08), and Root Mean Square Error of Approximation (RMSEA$\leq$0.06) developed by Hu and Bentler (1999). Additionally, the study also used a factor loading threshold of 0.45 to determine if items would be retained or excluded from the analysis (Tabachnick & Fidell, 2019). Items with higher factor loadings indicate a stronger relationship with the latent couple resilience variable. These cut-off criteria were similarly used by Sanford et al. (2016) in their development and validation of the original CRI. As such, the researchers in this study selected the same model fit and evaluation criteria to allow for consistent interpretation of model fit across the different studies in different contexts.

Bivariate correlations were subsequently calculated to test the relationships between the two resilience factors, criterion variables, and control variables. Thereafter, the data were analyzed using Simultaneous Multiple Regression to ascertain if positive and negative resilience factors predicted and explained the variance in relationship commitment and relationship maintenance after accounting for relationship satisfaction. Two regression equations were developed with relationship commitment and relationship maintenance as the outcome variables. Positive and negative resilience factors, couple satisfaction, and control variables (consisting of gender, ethnicity, sexual orientation and relationship length) were entered simultaneously into the regression model. With the exception of the categorical variables of gender identity, sexual orientation and ethnicity, all continuous variables were converted to *Z*-scores before running the multiple regression analysis.

Prior to interpreting the multiple regression results, the researchers evaluated several assumptions about the dataset. Firstly, the inspection of the boxplots generated by SPSS indicated that the data was free from univariate outliers. Additionally, inspection of the normal probability plot of standardized residuals, and scatterplot of standardized residuals against predicted values, indicated the assumptions of normality, linearity and homoscedasticity were met. Furthermore, researchers found that the Maximum Mahalanobis Distance did not exceed the critical χ^2 for df=3 (at

$a = 0.001$) of 16.27 for any participants in the dataset. This indicates that there were no multivariate outliers of concern. Lastly, the researchers also reviewed the multicollinearity measures (i.e. VIF and Tolerance) as part of the multiple regression analysis. All variables had Tolerance values ranging from 0.84 to 0.95 and VIF values ranging from 1.05 to 1.16. Taken together, these values pointed to relatively high tolerances for all predictors in the regression model, which indicated that multicollinearity would not interfere with the ability to interpret the multiple regression outcomes.

Results from the quantitative cross-validation phase

The demographics of the 213 study participants in the quantitative phase are provided in Table 1. Means, standard deviations, and bivariate correlations for the variables used in this phase are presented in Table 3. The standardized factor loadings for individual CRI items are presented in Table 4. The CFA revealed that the two-factor model was a good fit, χ^2 (179, N=213)=277.49, p<.001, CFI=0.97, SRMR=0.05. The standardized factor loadings for the positive couple resilience factor ranged from 0.66 to 0.88. The standardized factor loadings for the negative couple resilience factor ranged from 0.59 to 0.86. The analysis also highlighted a GFI value of 0.93 and an RMSEA value of 0.05. All three new items developed from the previous qualitative phase also loaded highly onto the positive resilience factor. The two resilience factors in this study were nearly orthogonal, with a correlation of −0.12, which was not statistically significant. Additionally, the positive and negative subscales of the modified CRI had Cronbach's alphas of 0.96 and 0.93, respectively.

Beyond the findings from the CFA, the results also highlighted how positive resilience had a moderate, positive correlation with couple satisfaction, relationship commitment and relationship maintenance. Similarly, negative resilience was significantly correlated with couple satisfaction and the two relationship outcome variables. Beyond positive and negative resilience, couple satisfaction was strongly associated with relationship commitment and relationship maintenance. Relationship commitment was also strongly correlated with relationship maintenance. Finally, the results of the regression analyses are listed in the supplementary table in Appendix D. Findings from the regression analysis revealed that both positive and negative resilience did not significantly account for the variance in relationship commitment and maintenance after controlling for relationship satisfaction, relationship length, gender identity, sexual orientation and ethnicity.

Table 3 Correlations and means

Measures	Positive Resilience	Negative Resilience	Couple Satisfaction	Relationship Commitment	Relationship Maintenance	Gender Identity	Sexual Orientation	Ethnicity	Relationship Length (years)
Negative Resilience	-.12								
Couple Satisfaction	.38**	-.21**							
Relationship Commitment	.31**	-.16*	.65**						
Relationship Maintenance	.27**	-.18*	.70**	.58**					
Gender Identity[a]	.04	.04	.17*	.05	.21**				
Sexual Orientation[b]	.03	.01	.09	.04	.15*	.37**			
Ethnicity[c]	-.01	-.06	.02	-.08	.02	.14*	.004		
Relationship Length (years)	-.14*	.08	-.18**	-.05	-.12	-.04	-.09	-.14*	
Mean	4.30	2.09	16.70	4.86	4.24	2.17	1.80	1.33	6.46
SD	1.24	1.16	3.65	0.40	0.50	2.12	1.28	0.88	5.95

[a] variable scored such that Cisgender male = 1', 'Cisgender female 2', 'Transgender male = 3', 'Transgender female = 4', 'Genderqueer = 5', 'Nonbinary = 6', 'Gender neutral = 7', 'No response = 99'

[b] variable scored such that Homosexual - Gay = 1', 'Homosexual - Lesbian = 2', 'Bisexual = 3', 'Asexual = 4', 'Pansexual = 5', 'Queer = 6', 'Demisexual = 7', 'No response = 99'

[c] variable scored such that 'Chinese = 1', 'Malay = 2', 'Indian = 3', 'Eurasian = 4', 'Other ethnicities = 5', 'No response = 99'

**p < .01, *p < .05

Table 4 Standardized factor loadings for items in the modified Couple Resilience Inventory

Item	Behavioural Description	Mean (*SD*)	Factor Loading	Remarks
Positive Factor: Emotional Support				
1	At the time of your stressful event, either you or your partner helped the other view the situation from a good perspective.	3.92 (1.55)	.72	
2	At the time of your stressful event, either you or your partner was attentive to the other's needs.	4.41 (1.46)	.74	
Positive Factor: Active Coping				
3	At the time of your stressful event, one partner helped the other (or both partners helped each other) by maintaining a positive attitude and being optimistic.	4.36 (1.53)	.87	
4	At the time of your stressful event, one partner helped the other (or both partners helped each other) by remaining calm, stable, and strong in the face of a difficult situation.	4.45 (1.42)	.88	
5	At the time of your stressful event, one partner helped the other (or both partners helped each other) by using personal skills or abilities for addressing the situation.	4.27 (1.49)	.86	Revised item from the qualitative phase
Positive Factor: Communication				
6	At the time of your stressful event, you and your partner were clear and accurate in your communication.	4.30 (1.45)	.79	
7	At the time of your stressful event, you and your partner worked together like a team.	4.31 (1.52)	.86	
Positive Factor: Intimacy				
8	At the time of your stressful event, you and your partner laughed together or enjoyed humour together.	4.11 (1.71)	.72	
9	At the time of your stressful event, you and your partner spent time together doing things as a couple.	4.56 (1.52)	.78	
Positive Factor: New items developed from themes in qualitative phase				
10	At the time of your stressful event, you and your partner decided to remain stoic in the face of a difficult situation.	4.04 (1.56)	.66	
11	At the time of your stressful event, one partner helped the other (or both partners helped each other) by remaining pragmatic in addressing the situation.	4.35 (1.44)	.84	
12	At the time of your stressful event, you and your partner showed gratitude towards one another.	4.52 (1.48)	.83	
Negative Factor				
1	At the time of your stressful event, either you or your partner withdrew from communication.	2.60 (1.57)	.69	
2	At the time of your stressful event, either you or your partner was abusive. (Including physical abuse, emotional/psychological abuse, sexual abuse, financial abuse, or other actions that you would interpret as abusive)	1.45 (1.03)	.59	Revised item from the qualitative phase
3	At the time of your stressful event, either you or your partner denied, ignored, or downplayed the seriousness of a problem.	1.9 (1.36)	.74	
4	At the time of your stressful event, either you or your partner was critical, or hostile, or blamed the other.	1.93 (1.44)	.84	
5	At the time of your stressful event, either you or your partner decided that it was best to avoid discussing a topic.	2.09 (1.45)	.75	
6	At the time of your stressful event, either you or your partner made it difficult for the other by having a negative attitude and being pessimistic.	2.23 (1.57)	.84	
7	At the time of your stressful event, either you or your partner failed to notice the other's needs.	2.38 (1.53)	.86	
8	At the time of your stressful event, either you or your partner communicated about the stressful event in a way that was confusing or misleading.	2.01 (1.40)	.84	
9	At the time of your stressful event, either you or your partner made it difficult for the other by being overly emotional, unstable, or weak.	2.19 (1.52)	.83	

Discussion

This paper explicated a mixed-methods approach that was used to inform the modification and refinement of the CRI, a measure of couple resilience initially developed and validated in the United States. The sequential, exploratory mixed-methods cross-validation study assessed the relevance, reliability, and validity of the measure with individuals in LGBTQ relationships purposively sampled from Singapore. The qualitative cross-validation phase first sought to establish the face and content validity of the CRI with these participants living in the Southeast Asian nation. Then, findings from the qualitative phase were used to modify existing items and develop new items for the CRI. The revised inventory was subsequently used in the quantitative cross-validation phase to establish its factor structure, reliability (internal consistency) and construct validity. The quantitative phase also sought to assess whether the modified CRI produced significant correlations with relationship commitment and relationship maintenance after controlling for couple satisfaction and other study variables.

Through an emic lens, the mixed-methods study privileged the perspectives of the LGBTQ participants from Singapore, ensuring that their views remained central in the evaluation and enhancement of CRI. In utilizing a mixed-methods approach in the psychometric evaluation and cross-validation of the measure, researchers drew on the strengths of qualitative and quantitative approaches that synergistically enabled a more holistic understanding of couple resilience among LGBTQ couples in Singapore (Brod et al., 2009; Connell et al., 2018; Vogt et al., 2004). Utilizing only quantitative methods in our evaluation and validation of the CRI would not have been sufficient to garner these in-depth insights into participants' understanding of the items as well as uncover novel aspects of couple resilience relevant for LGBTQ couples in a non-Western context.

Overall, the findings provided an insightful understanding of how participants in LGBTQ relationships in an Asian context understood and interpreted the items from the CRI, which were initially developed in a context with differing socio-political concerns. To that end, the discussion will centre around the insights garnered from using a mixed-methods approach to ensure item development, modification and refinement of psychological measures are grounded in and representative of the lived experiences of the target population.

Firstly, through the use of qualitative methods, the study highlighted how the CRI was comprehensive in capturing the strategies participants used to cope with and overcome stressful life events within a socio-political context that continued to marginalize their relationships. Most positive resilience items were applicable to LGBTQ participants and their partners in Singapore. While most items were clear and understandable, participants from the qualitative phase expressed concerns regarding the comprehension and clarity of three items in the measure. However, only positive item 5 and negative item 2 were modified based on the criterion for item modification in the qualitative phase. While negative item 9 met this criterion, it was apparent that participants could still understand the first part of the sentence and rate the item accordingly. Hence, the item was not modified. The findings from the quantitative phase also supported this particular decision. Negative items 1 and 5 were also not modified as they did not meet the criterion for modification. Additionally, the qualitative phase found many study participants interpreted items 1 and 5 within the negative resilience subscale as positive behaviour strategies. These concerns reflected the ambiguity in item phrasing and interpretation, which impacted how participants answered the respective CRI items. Such issues in clarity and interpretation of items in psychological measures would not be uncovered if quantitative methods were used exclusively in cross-validation studies (Brod et al., 2009; Connell et al., 2018).

Secondly, the quantitative results provided some support for these qualitative findings. Most participants successfully interpreted and rated negative items 5 and 9 as behaviours they could not recall often happening during stressful life events in their relationship. The quantitative analysis further revealed a good model fit for the modified high standardized factor loadings for the existing and new items in the modified measure. Moreover, the quantitative findings also showed high internal consistency of the positive and negative subscales in modified CRI. This indicates empirical support regarding the ways in which existing and additional items within each subscale are indeed measuring various aspects of the same couple resilience construct.

However, findings from the quantitative phase showed a mixture of interpretations for negative item 1 pertaining to participants' withdrawal from communication during stressful events. Compared to the average ratings for the other negative resilience items, ratings for negative item 1 were found to be slightly positive (M=2.60). A further review of the histogram and responses for this item revealed a platykurtic response distribution. While 39.9% of participants rated this item as a behaviour that did not happen in their relationships when faced with stressful events, 38% of participants were able to think of one or more instances of withdrawing from communication in their relationships when faced with stressful life events. Furthermore, 22.1% of participants rated this item as a behaviour that might have or certainly happened to them but could not think of specific examples when they took the survey. Thus, findings from both phases point to the ways in which withdrawing from

communication is seen and interpreted by many LGBTQ couples as a positive resilience strategy to cope with and overcome stressful life events in Singapore. Similar to other studies, this avoidance-oriented strategy may be adaptive and needs to be taken into account when developing measures for LGBTQ couples in an Asian context (bin Ibrahim & Barlas, 2021).

Finally, during the qualitative phase, participants described three additional behaviours they used when faced with stressful life events. These behaviours were subsequently converted into three new items and incorporated to extend the content validity of the CRI. Findings from the quantitative phase supported the qualitative results as the study found that the new items had a good fit and loaded highly onto the positive resilience factor. Being stoic and pragmatic may reflect the effects of Singapore's broader socio-political and cultural contexts on participants and their partners compared to their Western counterparts (Abdullah, 2019; Lazar, 2017). As emotion-focused and avoidance-oriented strategies, being stoic and pragmatic enabled participants to focus solely on resolving the issues at hand without being overwhelmed by their emotions (bin Ibrahim & Barlas, 2021). Showing and receiving gratitude during stressful times is also vital in ensuring the resilience of romantic relationships. Studies have uncovered how showing gratitude and receiving appreciation increases psychological well-being and predicts relational commitment and satisfaction for romantic couples (Gordon et al., 2012; Lambert et al., 2010).

Taken together with the positive interpretation of negative item 1 discussed above, such emotion-focused and avoidance-oriented strategies may enable participants to cope and overcome stressful life events in Singapore. Previous studies have highlighted the ways in which individuals and couples in Asia tended to prefer various collectivistic coping and behavioural strategies (Kuo, 2011; Yeh et al., 2007). These strategies include withholding their opinions and emotions to maintain social harmony, positively reappraizing stressors, and externalizing their locus of control. Beyond maintaining social harmony in such contexts, utilizing collectivistic coping behaviours led to reduced interpersonal stress and fewer moderated stressors such as family conflict and discrimination (Heppner et al., 2006). Overall, these findings point to how a mixed-methods approach was able to capture additional couple resilience behaviours utilized by LGBTQ couples when faced with stressful life events in a Southeast Asian context.

Strengths and limitations

This study adds to the limited published literature on LGBTQ couples and families in Asian societies. This study utilized a mixed-method empirical strategy to aid in establishing the construct validity and ecological refinement of the CRI in Singapore. By privileging the perspectives of the LGBTQ participants from Singapore, the study ensured that their lived experiences remained central in the evaluation and enhancement of an existing measure of couple resilience. The findings provided an in-depth understanding of how LGBTQ participants in same-sex relationships in an Asian context understood and interpreted the CRI. While there were similarities between the couple resilience strategies used in North America and Singapore, LGBTQ couples may prefer more emotion-focused and avoidance-oriented strategies in the latter context. Moreover, the analysis elucidated additional domains that extended the content validity of the CRI. Three items developed from these domains were found to be highly loaded onto the positive resilience factor, thereby adding to the comprehensiveness of the measure. Practitioners and researchers need to remain cognizant as such socio-cultural issues and concerns may, in turn, impact the operationalisation and interpretation of the couple resilience construct.

Despite the study providing insights into the ways in which individuals in LGBTQ relationships understood and interpreted the items of the CRI in the Singapore context, the cross-validation study has some limitations that should be acknowledged. Firstly, the entire project was conducted in English. While English is widely spoken in social and professional settings in Singapore, LGBTQ couples who are more proficient in their native languages (for example, Mandarin, Malay or Tamil) could provide additional insights into the resilience of LGBTQ relationships in Singapore. Future studies could consider translating the modified CRI into the various native languages for further validation with such groups within Singapore's LGBTQ community. Secondly, the study only included 213 participants as part of the final analysis in the quantitative phase. The researchers acknowledge that this is well under the required number of participants needed for a quantitative cross-validation project (Tabachnick & Fidell, 2019). This can impact the generalizability of the study's findings and its transferability to other similar contexts and settings. However, the researchers believe the analysis still provided valuable insights into resilience and LGBTQ relationships, which remain understudied in Southeast Asia. Thirdly, our study participants were recruited through the four LGBTQ non-governmental organisations via their respective social media platforms. Thus, the study may have inadvertently excluded the experiences and perspectives of LGBTQ couples who do not access services provided by these non-governmental organisations due to perceived stigma and discrimination, as well as those from lower-income groups within Singapore's LGBTQ community who may not have

access to smartphones or computers with reliable internet. Finally, the researchers acknowledge the assumptions made regarding the ways in which being in a long-term relationship was used as a criterion and proxy for couple resilience in this study. Since the study is testing the couple resilience measure, the researchers do not know whether participants and their partners were resilient or not from the outset of the study. Nonetheless, the study has provided pertinent insights into the couple resilience behaviours these marginalized couples and families used when faced with stressful events in Singapore.

Conclusion

This paper explicated a mixed-methods approach in examining the relevance, reliability, and validity of the CRI with individuals in LGBTQ relationships purposively sampled from Singapore. The study has shown how this approach provided pertinent insights regarding the psychometric properties of a measure developed in the United States and subsequently cross-validated with a target population living in a different socio-political context. The methods used and findings in this study demonstrated the ways in which researchers and practitioners should leverage the strengths of both qualitative and quantitative methods to aid the construct validation and ecological refinement of psychological and behavioural measures. Utilizing a mixed-methods approach ensures that the constructs and measures remain applicable, relevant, and valid for their intended purposes, target populations, and socio-cultural contexts. Such measures, in turn, have the potential to make substantial contributions to the field of psychological assessment.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s12144-025-07728-9.

Acknowledgements The authors would like to thank Oogachaga, The Purple Alliance, GLBT Voices Singapore, and Sayoni for their invaluable help in disseminating the study's recruitment poster on their respective social media pages. The authors would also like to thank all the LGBTQ individuals who participated in the study.

Funding Open Access funding enabled and organized by CAUL and its Member Institutions.
Tokens of appreciation for study participants in this mixed-methods study were provided through the first author's Higher Degree by Research Minimum Resources Fund (MRF), James Cook University. The purchase of software used in this study was supported by the International Association for Relationships Research (IARR) Geographical Diversity Research Grant 2023. The authors received no other financial support for the research, authorship, and/or publication of this project.

Data availability The data supporting this study's findings are stored in the Research Data JCU (via Research Data Australia). Restrictions apply to the availability of these data, which were used under licence for the current study and so are not publicly available. The data are, however, available from the authors upon reasonable request and with the permission of the respective data custodians in Research Data JCU.

Declarations

Conflict of interest The authors report no conflicts of interest relevant to this article.

Ethical approval Ethical approval for this mixed-methods study was obtained from James Cook University's Human Research Ethics Committee in January 2021 (Qualitative Phase) and December 2022 (Quantitative Phase), HREC Application IDs: H8271 and H8906, respectively.

References

Abdullah, W. J. (2019). Electoral secularism in Singapore: Political responses to homosexuality. *Asian Studies Review*, *43*(2), 239–255. https://doi.org/10.1080/10357823.2019.1593945

American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (2014). *Standards for educational and psychological testing*. American Educational Research Association.

Aydogan, D., & Dincer, D. (2020). Creating resilient marriage relationships: Self-pruning and the mediation role sacrifice with satisfaction. *Current Psychology*, *39*(2), 500–510. https://doi.org/10.1007/s12144-019-00472-x

Bin Ibrahim, M. A., & Barlas, J. (2021). Making do with things we cannot change: An interpretive phenomenological analysis of relationship resilience among gay men in Singapore. *Journal of Social and Personal Relationships*, *38*(9), 2630–2652. https://doi.org/10.1177/02654075211017988

Bodenmann, G. (2005). Dyadic Coping and Its Significance for Marital Functioning. *Couples coping with stress: Emerging perspectives on dyadic coping* (pp. 33–49). American Psychological Association. https://doi.org/10.1037/11031-002

Bonanno, G. A., Galea, S., Bucciarelli, A., & Vlahov, D. (2007). What predicts psychological resilience after disaster? The role of demographics, resources, and life stress. In Journal of Consulting and Clinical Psychology (Vol. 75, Issue 5, pp. 671–682). American Psychological Association. https://doi.org/10.1037/0022-006X.75.5.671

Brod, M., Tesler, L. E., & Christensen, T. L. (2009). Qualitative research and content validity: Developing best practices based on science and experience. *Quality of Life Research*, *18*(9), 1263–1278. https://doi.org/10.1007/s11136-009-9540-9

Chonody, J. M., Killian, M., Gabb, J., & Dunk-West, P. (2016). Understanding everyday relationship work: The development of a relationship maintenance scale. *Advances in Social Work*, *17*(2), 355–368. https://doi.org/10.18060/21155

Clark, L. A., & Watson, D. (2019). Constructing validity: New developments in creating objective measuring instruments. *Psychological Assessment*, *31*(12), 1412–1427. https://doi.org/10.1037/pas0000626

Connell, J., Carlton, J., Grundy, A., Taylor Buck, E., Keetharuth, A. D., Ricketts, T., Barkham, M., Robotham, D., Rose, D., & Brazier, J. (2018). The importance of content and face validity in instrument development: Lessons learnt from service users when developing the recovering quality of life measure (ReQoL). *Quality of Life Research*, *27*(7), 1893–1902. https://doi.org/10.1007/s11136-018-1847-y

de Lira, A. N., & de Morais, N. A. (2018). Resilience in lesbian, gay, and bisexual (LGB) populations: An integrative literature review. *Sexuality Research and Social Policy*, *15*(3), 272–282. https://doi.org/10.1007/s13178-017-0285-x

Frost, D. M., LeBlanc, A. J., de Vries, B., Alston-Stepnitz, E., Stephenson, R., & Woodyatt, C. (2017). Couple-level minority stress: An examination of Same-sex couples' unique experiences. *Journal of Health and Social Behavior*, *58*(4), 455–472. https://doi.org/10.1177/0022146517736754

Funk, J. L., & Rogge, R. D. (2007). Testing the ruler with item response theory: Increasing precision of measurement for relationship satisfaction with the couples satisfaction index. *Journal of Family Psychology*, *21*(4), 572–583. https://doi.org/10.1037/0893-3200.21.4.572

Goorts, K., Vanovenberghe, C., Lambreghts, C., Bruneel, E., Rusu, D., Vandenbroeck, S., & Godderis, L. (2019). Assessment of long-term sickness absence: Content and face validity of a new questionnaire based on qualitative data from nominal groups. *BMC Medical Research Methodology*, *19*(1), 1–11. https://doi.org/10.1186/s12874-019-0852-3

Gordon, A. M., Impett, E. A., Kogan, A., Oveis, C., & Keltner, D. (2012). To have and to hold: Gratitude promotes relationship maintenance in intimate bonds. *Journal of Personality and Social Psychology*, *103*(2), 257. https://doi.org/10.1037/a0028723

Government of Singapore (2020). Penal Code: 377A on Outrages of Decency. Singapore Statutes Online. https://sso.agc.gov.sg/Act/PC1871?ProvIds=pr377A-

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough?? An experiment with data saturation and variability. *Field Methods*, *18*(1), 59–82. https://doi.org/10.1177/1525822X05279903

Guest, G., MacQueen, K. M., & Namey, E. E. (2011). *Applied thematic analysis*. Sage Publications.

Haas, S. M., & Lannutti, P. J. (2019). The impact of minority stress and social support on positive relationship functioning in Same-Sex relationships. *Health Communication*, 1–9. https://doi.org/10.1080/10410236.2019.1687130

Haynes, S. N., Richard, D., & Kubany, E. S. (1995). Content validity in psychological assessment: A functional approach to concepts and methods. *Psychological Assessment*, *7*(3), 238–247. https://doi.org/10.1037/1040-3590.7.3.238

Hennink, M. M., Kaiser, B. N., & Marconi, V. C. (2017). Code saturation versus meaning saturation: How many interviews are enough? *Qualitative Health Research*, 27(4), 591–608. https://doi.org/10.1177/1049732316665344.

Heppner, P. P., Heppner, M. J., Lee, D. G., Wang, Y. W., Park, H. J., & Wang, L. F. (2006). Development and validation of a collectivist coping styles inventory. *Journal of Counseling Psychology*, *53*(1), 107–125. https://doi.org/10.1037/0022-0167.53.1.107

Ho, A., & Sim, T. N. (2014). How lesbian and heterosexual women view relationships, sex, and virginity: Explorations with a Singapore sample. *Journal of Homosexuality*, *61*(2), 307–322. https://doi.org/10.1080/00918369.2013.839913

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Kok, X. H. (2016). *Social workers feel ill-equipped to deal with LGBT clients*. The Straits Times. https://www.straitstimes.com/singapore/social-workers-feel-ill-equipped-to-deal-with-lgbt-clients

Kuo, B. C. H. (2011). Culture's consequences on coping: Theories, evidences, and dimensionalities. *Journal of Cross-Cultural Psychology*, *42*(6), 1084–1100. https://doi.org/10.1177/0022022110381126

Lambert, N. M., Clark, M. S., Durtschi, J., Fincham, F. D., & Graham, S. M. (2010). Benefits of expressing gratitude: Expressing gratitude to a partner changes one's view of the relationship. *Psychological Science*, *21*(4), 574–580. https://doi.org/10.1177/0956797610364003

Lazar, M. M. (2017). Homonationalist discourse as a politics of pragmatic resistance in Singapore's Pink Dot movement: Towards a Southern praxis. *Journal of Sociolinguistics*, *21*(3), 420–441. https://doi.org/10.1111/josl.12239

Lincoln, Y. S., & Guba, E. G. (1985). Establishing trustworhiness. *Naturalistic inquiry* (pp. 289–327). SAGE.

Mahmud, A. H. (2022). *NDR 2022: Singapore to repeal Section 377A, amend Constitution to protect definition of marriage*. Channel News Asia. https://www.channelnewsasia.com/singapore/section-377a-repeal-law-sex-gay-men-marriage-constitution-pm-lee-ndr2022-2891381

Malterud, K., Siersma, V. D., & Guassora, A. D. (2016). Sample size in qualitative interview studies: Guided by information power. *Qualitative Health Research*, *26*(13), 1753–1760. https://doi.org/10.1177/1049732315617444

Maxwell, J. A. (2011). Paradigms or toolkits? Philosophical and methodological positions as heuristics for mixed methods research. *Mid-Western Educational Researcher*, *24*(2), 27–30. https://scholarworks.bgsu.edu/cgi/viewcontent.cgi?article=1248&context=mwer

Padilla, J. L., & Leighton, J. P. (2017). Cognitive interviewing and think aloud methods. In *Understanding and investigating response processes in validation research* (Vol. 69, pp. 211–228). Springer International Publishing. https://doi.org/10.1007/978-3-319-56129-5_12

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., Hoagwood, K., Angeles, L., & Northwest, K. P. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health*, 42(5), 533–544. https://doi.org/10.1007/s10488-013-0528-y.

Rashith, R. (2018). *Gay parents seeking to adopt their kids may find it harder to prove they did not intend to violate policy against same-sex families: Desmond Lee*. The Straits Times. https://www.straitstimes.com/singapore/gay-parents-seeking-to-adopt-their-kids-may-find-it-harder-to-prove-they-did-not-intend-to

Rosenfeld, M. J. (2014). Couple longevity in the era of same-sex marriage in the united States. *Journal of Marriage and Family*, *76*(5), 905–918. https://doi.org/10.1111/jomf.12141

Rostosky, S. S., & Riggle, E. D. B. (2017). Same-sex couple relationship strengths: A review and synthesis of the empirical literature (2000–2016). *Psychology of Sexual Orientation and Gender Diversity*, *4*(1), 1–13. https://doi.org/10.1037/sgd0000216

Rusbult, C. E., & Buunk, B. P. (1993). Commitment processes in close relationships: An interdependence analysis. *Journal of Social and Personal Relationships*, *10*, 175–204. https://doi.org/10.1177/0265407593010002002

Sanford, K., Backer-Fulghum, L. M., & Carson, C. (2016). Couple resilience inventory: Two dimensions of naturally occurring relationship behavior during stressful life events. *Psychological Assessment*, *28*(10), 1243. https://doi.org/10.1037/pas0000256

Sung, Y. T., Chang, Y. T. Y., Cheng, T. Y., & Tien, H. L. S. (2019). Development and validation of a work values scale for assessing high school students: A mixed methods approach. *European Journal of Psychological Assessment*, *35*(4), 526–543. https://doi.org/10.1027/1015-5759/a000408

Tabachnick, B. G., & Fidell, L. S. (2019). Using Multivariate Statistics (7th Editio). Pearson Higher Education.

Tan, C. K. K. (2011). Go home, gay Boy! Or, why do Singaporean gay men prefer to go home and not come out? *Journal of Homosexuality*, *58*(6–7), 865–882. https://doi.org/10.1080/00918369.2011.581930

The Association of Banks in Singapore. (2016). PayNow - PromptPay linkage. https://www.abs.org.sg/consumer-banking/pay-now

Vogt, D. S., King, D. W., & King, L. A. (2004). Focus groups in psychological assessment: Enhancing content validity by consulting members of the target population. *Psychological Assessment*, *16*(3), 231–243. https://doi.org/10.1037/1040-3590.16.3.231

Yeh, C. J., Arora, A. K., spsampsps Wu, K. A. (2007). A new theoretical model of collectivistic coping. *Handbook of multicultural perspectives on stress and coping*, 1985, 55–72. https://doi.org/10.1007/0-387-26238-5_3