EXAMINING THE EFFECTIVENESS OF MENTAL HEALTH WORKSHOPS IN REDUCING MENTAL ILLNESS SELF AND SOCIAL STIGMA AMONG ASIAN MEN IN VANCOUVER, CANADA: A RANDOMIZED CONTROL TRIAL

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Bachelor of Science, University of Lethbridge, 2019

A thesis submitted
in partial fulfilment of the requirements for the degree of

MASTER OF SCIENCE

Faculty of Health Sciences
University of Lethbridge
LETHBRIDGE, ALBERTA, CANADA

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Date of Defense: June 9th, 2022

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Dedication

To my siblings, Priscilla, Nashania, and Darren, for your endless love and support, and free therapy sessions.

Abstract

Background: Asian men may be more susceptible to stigmatizing attitudes towards mental illness and treatment due to the gendered and cultural expectations created by society, compared to Asian women, which may delay or prevent this population from seeking professional help.

Research Hypothesis: All interventions will be effective in reducing self and social stigma, as measured by ISMI and CAMI scores. Furthermore, ACT participation will be effective in reducing self stigma and CEE participation will be effective in reducing social stigma. Lastly, ACT+CEE participation will be effective in reducing self and social stigma.

Methods: Data from a randomized control trial (RCT) were used to examine Acceptance and Commitment Training (ACT), Contact-based Empowerment and Education (CEE), and ACT + CEE anti-stigma interventions and a control group on their effectiveness in reducing self and social stigma. Data have been collected using the ISMI and the CAMI scales to assess self and social stigma, respectively. These self-reported questionnaires have been administered at baseline/pre-intervention, immediately post-intervention, 3 months post-intervention, and 6 months post-intervention.

Statistical Methods: Repeated measures ANOVA were performed to determine if there was a significant interaction between the intervention and multiple time points on ISMI and CAMI scores. Linear mixed effects models were performed on ISMI and CAMI composite scores to control for confounding.

Results: No significant differences in ISMI scores were seen across all time points for all interventions. Significant reduction in CAMI scores were seen for the CEE intervention up to 3 months, suggesting that effects of the intervention were short-lived. Our findings highlight the need of implementing interventions to reduce the mental health stigma among Asian men.

Acknowledgements

I would like to thank my co-supervisors, Dr. Nimesh Patel and Dr. Silvia Koso, for your continuous support and guidance throughout my program. Nimesh, thank you for your unwavering confidence in me and your stimulating discussions that have undoubtedly brought my thesis to a higher level. Silvia, thank you for your unmeasurable amount of patience, guidance, and insightful questions that have pushed me to think outside of the box. I am incredibly grateful to have had the opportunity to be mentored by the both of you the past few years.

I would also like to thank my committee members, Dr. Marina Morrow and Dr. Stephanie Bryson. It has been an honour to have worked alongside you. As members of the original project, Strengths in Unity, your valuable feedback and knowledge has been immensely helpful. Thank you for always making me feel like part of the team.

Lastly, I would like to thank the Faculty of Health Sciences staff that have played an integral role in my learning. To all of the friends I have made throughout this program, it has been a pleasure growing with you. I am so grateful to have had you by my side every step of the way.

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Introduction

Mental illness is characterized by changes in behaviour or thinking, resulting in impaired functioning and distress (1). In Canada, it has been reported that at any given year, approximately 20% of the population will encounter a mental health problem (2). In 2016, 21.9% of the Canadian population were immigrants, with 61.8% of immigrants identifying as Asian between 2011 and 2016 (3). Between 2018 and 2019, Canada had the highest growth rate among the G7 countries, with immigrants contributing to 82% of this rate (4). This has led to the rising issue of mental health in immigrant and racialized populations (5). A study reported that among those that have experienced serious psychological distress in the year of the study, only 28.9% of Asian Americans sought professional help compared to 53.5% of whites (6). In a study conducted in Ontario, Canada, among those that have reported suicidal thoughts in the year of the study, only 19.9% of Chinese participants sought professional help compared to the 51.4% of South Asians and 53.2% of whites (7). Stigma surrounding mental illness poses a major challenge within the Asian population and studies have shown that participants from immigrant and racialized communities believe mental illness is seen as an embarrassment and should not be openly discussed among others (8–10). Men in particular may be more vulnerable to stigmatizing attitudes towards mental illness due to gender expectations created by society. However, there is limited research focusing on men's experiences in the Canadian context and thus, a greater emphasis is needed on this issue to reduce mental health stigma in this population.

The findings from this study will contribute to filling this gap in the understanding of mental health stigma and may aid in future effective strategies to reduce the stigma and promote well-being within this population. This literature review begins with a broad focus and identifies major factors examined in previous research that contribute to the mental health of Asian

immigrants. Within each section, I provide a gender analysis and discuss the effects of each factor on men and women. Next, I discuss the mental health stigma in the Asian population and discuss how the sociodemographic correlates collected in this study may affect stigma. Next, I will discuss the interventions in the study including the history and development, its effect on various populations, and research supporting potential success in reducing stigma in the Asian population. Lastly, I will identify the study's purpose and its research questions. Throughout this literature review, efforts are made to distinguish between different ethnic subgroups (East Asian, South Asian, and Southeast Asian); however, in previous research, the Asian population is often considered a homogenous group. As these studies have reported pertinent findings and thus should be included, it is important to note that it was not always possible to distinguish between subgroups throughout this review.

Mental Illness in Asian Immigrants

Various studies have demonstrated the "healthy immigration effect", whereby immigrants may be physically and mentally healthier compared to the rest of the population (11). Research suggests that immigrants access mental health services less frequently than the rest of the general population (12). While this may be due to better physical and mental health, research also shows that immigrants are met with many barriers in accessing health-related services. With the "healthy immigration effect" phenomena, there is a concern that the mental health of immigrants may decline due to migration stressors such as acculturative stress, employment, and racism (13).

Acculturative stress causes a decrease in the well-being and mental health of immigrant populations during the acculturation period (14). A study in the United States found that acculturative stress was associated with depressive symptoms in Asian Americans (15). Additionally, a negative interaction with friends or family exacerbated the effects of

acculturative stress on depression, whereas social support played a mediating role (15). Another study found that acculturative stress resulted in maladjustment among Korean and Indian immigrant adolescents (16). Moreover, Korean adolescents experienced greater levels of acculturative stress than Indian adolescents (16). While the study found no statistically significant gender differences on acculturative stress, females had more social support than males (16). This suggests that such support may lead to a higher level of integration. Another study also reported a similar finding, whereby Asian men reported significantly more negative social interactions than women (17). However, Leu et al. reported that greater neighbourhood ethnic density served as a protective factor in Asian men and decreased the probability of mood dysfunction, but was not a significant association in women (18). Other studies on Asian American college students reported no statistically significant association between acculturative stress and mental health (19,20).

Unemployment and underemployment are also issues many immigrants face. Despite being a highly educated group, many immigrants face unemployment or accept jobs outside or below their level of education (11). In 2020, 13.5% of immigrants that landed in Canada less than five years ago were unemployed compared to 9.1% of Canadian-borns (21). This percentage has been increasing over the last few years (21). However, the gap between immigrants and Canadian-borns narrows as the length of time spent in Canada increases (21). A study on Asian American immigrants found that employment frustration resulted in low self-rated mental health (SRMH) (22). This may be due to being unable to find work or being overqualified for a job position (22). Similarly, another study on Filipino American immigrants found that those unsatisfied with their jobs were more likely to report psychological distress (23). Beiser and Hou (24) conducted a study on Southeast Asian refugees in Canada and found that unemployment

was significantly associated with depression. Refugees that were unemployed and had a strong ethnic identity had a higher mean depression score compared to refugees with a weak ethnic identity (24). Those unemployed with strong ethnic identities may have experienced a higher level of depression due to feelings of inadequateness or failure in upholding obligations to their families, and experiencing loss of social status (24,25). Loss of social status is also shown to negatively impact mental health in those that are underemployed and working in positions unrelated to their field (25). The study by Dean & Wilson (25) found that underemployed immigrants faced stress and pressure due to unstable jobs and income. Moreover, those that were underemployed reported increased tension and unhappiness due to fear that underemployment would lead to loss of skills acquired in their profession (25). The study also noted that many male participants reported increased tension due to the role of being the "breadwinner" in the family (25). Similarly, an Australian study found that employment was a significant predictor of good mental health in men (26). The study demonstrated that men who were unemployed with partners who were employed had poorer mental health, whereas women were unaffected by their partner's workforce status (26).

Racial discrimination has negative impacts on the mental health of immigrant and racialized populations. Evidence suggests that Asian Americans may be exposed to various forms of racial discrimination (27). Asian immigrants are labelled as the "model minority" due to factors such as educational attainment and socioeconomic status (27). For example, Asian American adolescents have experienced discrimination from educators to adhere to the model minority stereotype (28) and have experienced more peer discrimination than African and Latino American, and Puerto Rican adolescents (28,29). Alvarez et al.'s (30) study of college-aged Chinese and Filipino Americans found that 98% of participants experienced racial

microaggression in the year of the study. Unsurprisingly, a study on 367 Asian Americans found that racism-related stress was positively associated with mental health issues (31). The study also found that racism-related stress significantly predicted mental health in Asian immigrants but not in the U.S.-born Asians, demonstrating a difference across generational statuses (31). However, a study on Chinese Americans found the opposite and reported that the U.S.-born Chinese experienced higher levels of racism compared to Chinese immigrants (32). This suggests the effect of generational status on racism-related stress and that generational groups may experience differing levels of stress (31,32). The exclusion of Asian men in the economic and social contexts due to race can increase mental illness within this population (33). Leu et al. (18) reported that frequent everyday discrimination was associated with an increased probability in mood dysfunction in Asian immigrant men. This association was exacerbated in men with poor or fair English proficiency, but no association was found in women (18). Asian men experiencing discrimination may be more likely to believe discriminatory treatment is due to a personal failure if they have poor English proficiency (18). It is also likely that men with higher educational attainment have high English proficiency and thus, have access to more coping resources than men with poor English proficiency (18,34).

In Canada, an online survey found that religiously committed first-generation immigrants were almost twice the percentage of the total Canadian population (39% vs. 22%) (35). Over the years, recent immigrants have become more likely to follow religions other than Christianity (35). Between 2001 and 2011, 33% of immigrants identified as Muslim, Hindu, Sikh, or Buddhist (36). A majority of Muslim immigrants came from Pakistan, Hindu and Sikh immigrants from India, and Buddhist immigrants from China (36). Unlike the stressors discussed above, studies that have examined the association between religion and mental health have

reported mixed findings. The increased diversity in Canada may lead to religious tensions and issues in accessing mental health services, resulting in psychological distress (36). In another Canadian online survey, 44% reported positive attitudes towards Buddhists and 27% reported positive attitudes towards Hindus; however, 26% reported negative attitudes towards Sikhs and 44% reported negative attitudes towards Muslims (37). Muslim immigrants that move to societies where their religion is perceived as a cause of social tension, may experience psychological distress due to discrimination and negative attitudes (38). In a study on Muslim immigrant women, the authors found that moderate to strong religious identities worsened the effect of religious discriminatory attitudes on psychological symptoms (39). This finding was in accordance with another recent study on Middle Eastern immigrants, whereby religious identity was found to be associated with discrimination, resulting in poorer mental health (40). This could be due to specific religious behaviours or visible markers that differentiate them from the host society, leading to discriminatory attitudes (41). Assari and Lankanari (42) found that Muslim and Christian Arab men were more likely to report psychological distress due to discrimination, compared to women. The authors suggested that men may have experienced higher psychological distress due to stereotypical roles that involve them more in society, resulting in frequent discrimination compared to women (42).

Conversely, in other studies, religious involvement has been found to be a positive factor for mental health, due to increased social support and coping resources. A study on Muslim immigrant youth found that involvement in religious practices reduced acculturative stress, resulting in greater life satisfaction (43). Similarly, another study found that attending religious events led to better mental health in Christian Asian Americans compared to non-Christian Americans. However, the study also found that if faced with discrimination, Christian Americans

reported poorer mental health than non-Christian Americans (44). The authors suggested that the benefits of attending religious events negated the impact of discrimination (44). Furthermore, non-Christian Asian American reported better mental health if they attended religious services, compared to men who did not attend religious services (44). Ai et al. (45) reported that religious attendance had a beneficial impact on mental health in Chinese participants, but not in Filipino and Vietnamese participants. Moreover, Chinese men who used religious coping reported better mental health, but this association was not found in Filipino and Vietnamese participants (45). In a study on South Asians with a majority identifying as Hindu, feeling close to God, theistic daily spiritual experiences, and positive religious coping were associated with greater emotional functioning among theistic participants (46). The authors suggested that feeling close to God may have provided participants with a sense of security, resulting in a positive association with mental health (46).

Mental Health Stigma

There are several diseases associated with stigma such as certain skin conditions and HIV/AIDS; however, mental illness is heavily associated with stigma compared to other illnesses as the stigma goes beyond the individual suffering and affects immediate or remote family members (47). It is often a reality for many individuals affected by mental illness and has been reported as one of the greatest barriers for those seeking help from healthcare professionals (48,49). Mental health stigma is defined as negative attitudes, such as shame or disapproval, towards those affected by mental illness or those seeking help (50). This can be further categorized as self and social stigma.

Self stigma is defined as the internalization of stigma responses and prejudicial attitudes towards one's self, resulting in negative behaviours and emotions (51,52). The constant

stigmatization created by society towards conditions such as mental illness, can lead to internalization and devaluation of self (49). Studies have shown that factors such as ideologies, values, and beliefs shared by society can affect internalized stigma (53). The awareness of stigma's presence in a society impacts an individual even without direct perpetrators as the fear of being labelled due to having a mental illness and due to seeking help causes internalization of stigma (54). Furthermore, these factors may invoke an emotional response from the affected individual such as anger, humiliation, or isolation (54).

Social stigma, on the other hand, is defined as an identity that discredits an individual in society and involves discrimination, stereotyping, and status loss of the individual (55). Stigma may arise from stereotypes and prejudices, which are often negative and inaccurate generalizations towards individuals or groups (56). For example, individuals affected by depression may "lack motivation" or be viewed as "lazy" and "weak" (56). As stigma is ingrained in society, stereotypes and prejudices may not always occur consciously, resulting in unintentional shaping of behaviour towards stigmatized individuals (56). This often leads to discrimination, whereby certain individuals or groups are treated differently due to their status (57). Findings from a United States study revealed that more than half of the participants were unwilling to socialize or work with individuals affected by mental illness (58). Although it is becoming unacceptable to overtly act in a discriminatory manner in modern society, structural inequalities still exist (57). This can result in individuals being marginalized by society and perceived as those with lower social status (57).

Mental Health Stigma in the Asian Population

Immigrant and racialized populations are at risk of developing stigma-associated mental illness due to factors such as the desire to avoid being judged by their community members (8),

the fear of being discriminated by their family and community members (9), and the common belief that it may bring shame to themselves and their family (8). Research has suggested that Asians with stronger cultural ties have more negative attitudes towards accessing mental health services (59,60). Over the last decade, Canada has seen a steady growth of immigrants, with the Asian population contributing as the largest source (61). As the Asian population represents many groups, each with its own language, religion, culture, and immigration history, it is vital for mental health professionals to be aware of the issues that arise with caring for this population.

Mental health stigma among Asian immigrants have led to an underutilization of mental health services due several factors. A systematic review in China found mental health stigma to be reported in 40%-70% of citizens (62). A survey found that approximately 70% of Chinese citizens reported self stigma and concealed their psychiatric treatment from members outside of family due to shame and fear of alienation (63). Other studies in East Asia examining schizophrenia have shown that over 60% of family members hid relationships with those affected (64) and recognize the illness as a weakness rather than a brain condition (65). Culture plays a major role in influencing stigma surrounding mental illness. Religion in East Asian cultures, such as Buddhism, may impede the understanding of mental illness as it is seen as a penalty of the sins committed in an individual's previous life (66). Confucianism, an ancient Chinese belief system, encourages mentally ill individuals to stay at home to maintain the family's reputation (63).

Similar trends are reported among other Asian groups. In the Philippines, mental illness is ranked as the third highest illness in the country (67); however, stigma is a major barrier to seeking professional help. A review found that self and social stigma is directly correlated with loss of face and delay in seeking treatment (68). Comparably, studies on other Southeast Asian

countries such as Singapore, also found a delay in seeking treatment due to stigma (69). Studies conducted in Southeast Asia revealed that adults view individuals affected by mental illness as weak, high risk, and unpredictable (70), while 25% of youth believed mental illness to be nonexistent (71). A study in Thailand revealed that participants were more accepting of the idea of mental illness rather than the actuality, as they fear that the mentally ill are noisy or violent individuals (72). The study also found that stigmatizing attitudes are due to supernatural beliefs such as the ability of non living beings being able to cause mental illness in an individual (72). The contribution of supernatural beliefs towards stigmatizing attitudes are also seen in other Asian countries. In South Asian and Arabian countries, the belief that mental illness is caused by paranormal beings (73,74) and karma (75,76) affects people's attitudes. Social stigma is a major concern in India as families worry that mental illness will result in a decreased likelihood of prospects such as employment and marriage (77). Moreover, studies from these countries have shown that individuals tend to somatize their symptoms to reduce potential negative attitudes from the public (78,79).

Asian communities are affected by the gender roles created by society (80), whereby men are expected to be independent, successful, and in control of their emotions (81). Thus, Asian men perceive mental illness as an inability to meet masculinity standards and to provide for others (82), resulting in more stigmatizing attitudes towards mental illness Asian women (83). A study in Hong Kong found that men exhibited less benevolence and more pessimistic, restrictive, stereotypical, and stigmatizing views towards mental illness, compared to women (84). Men were more likely to perceive mental illness in a negative manner and were less liberal than women (84). Similarly, a study in Japan found that men had less positive views towards mental illness, compared to women, who were more willing to discuss mental illness with others (85).

The expectation to adhere to the masculine role of remaining strong and stoic makes it difficult for men to seek help, putting them at a higher risk of denying mental health concerns (86). There is limited evidence in the Canadian context on gender differences in mental health related stigma. One Canadian study found no gender differences in help-seeking attitudes among older Chinese immigrants (87). Another Canadian study found that racialized men, including Asians, in this had less positive attitudes and more stigmatizing attitudes than racialized women towards mental health services (88). Studies in the United States have reported varying results. One study reported a gender difference among U.S.-born participants, with females having more positive help-seeking attitudes than males; however, no gender difference was found among Japanese participants (89). Other studies have shown that Asian immigrant women have more positive attitudes towards mental illness and are more likely to seek help, compared to Asian men (90–92). Although there are many similarities between Canadian and American societies,the melting pot model embraced in the United States may lead immigrant and ethnic populations to identify more with the local culture, while the multiculturalism approach embraced in Canada may lead to increased acceptance of cultural diversity (93,94). Recent Canadian reviews have highlighted that a majority of research focuses on immigrant women and that there is a gap regarding immigrant men's experiences in seeking healthcare services (95,96). Due to the lack of data on gender differences and the ubiquitous nature of stigma, further research is needed to develop mental health services for these racialized populations and to foster Canada's diversity (5).

Sociodemographic Correlates of Mental Health Stigma

Age.

Age is a strong predictor for many health outcomes and its relationship will be assessed with self and social stigma as studies have demonstrated that older adults identify stigma as a fundamental reason to not seek professional help (97,98). In 2016, 24% of recent senior immigrants (ages 65+) in Canada were from China and 26% were from South Asia (99). Asian cultural values such as saving face and maintaining the family's reputation may contribute to the underutilization of mental health services, particularly in the older population (8). Research suggests that older Asian immigrants are a vulnerable group and thus, are in dire need of mental health services. For example, a study on Chinese seniors in Canada found that the prevalence of depression rates were twice that of the general senior population (100).

It is important to consider attitudes towards mental illness as they are associated with the underutilization of mental health services. In a mixed-methods study, multivariate analyses reported that older Chinese immigrants were less likely to access mental health services than younger Chinese immigrants (101). Another study on 149 older Chinese immigrants reported that help-seeking attitudes varied by 21.8% due to cultural values (87). It may be possible that older Chinese immigrants have stronger ties to their culture than younger Chinese immigrants, resulting in greater self stigma and concern of being labelled and feeling ashamed (101). Park et al.'s study (102) on depression in older Korean Americans found that 68% of participants viewed mental illness as a sign of weakness and 26% of participants reported that being affected by mental illness would be shameful for the family. The older population may strongly adhere to beliefs whereby personal emotions should be suppressed (103). Similar findings were reported in the older South Asian population. Results from a qualitative study in the United Kingdom found

stigma to be a help-seeking barrier (104). Some participants found the stigma surrounding an illness to be worse than the illness itself (104). The authors found that denial of help was due to the stigma of being institutionalized and wanting to maintain their place in society (104). However, a study conducted in the United States, found that participants that were female and older were more willing to seek help than participants that were male and younger (105).

Other studies have found that youth hold more stigmatizing views, with some studies highlighting the role parents play in influencing youth's perception of mental illness. A Canadian study on South Asian youth found that participants with mothers dealing with untreated depression negatively impacted their help-seeking attitudes (106). Another South Asian study reported that parents that blame individuals for their mental illness were more likely to exhibit stigmatizing attitudes and provide unclear explanations of mental illness to their children (107). A Singaporean study on adolescent attitudes found that 46% of participants had a negative perception of mental illness and 35% of participants reported mental illness would be seen as a weakness if revealed (71). The study also reported that male participants were less likely to show social support, whereas females were more likely to show concern towards mental illness (71). The authors suggested that stigmatizing attitudes may be due to stereotypical masculine behaviour (71). Youth may be more likely to have stigmatizing attitudes due to lack of social support (71) and role modelling (106). Several studies on Asian American college students have reported similar findings. Studies on college students have demonstrated that Asian Americans have more stigmatizing attitudes and are less likely to seek professional help compared to European Americans and African Americans (108,109). The role of gender in stigmatizing attitudes towards help-seeking have also been demonstrated among college students. Two studies reported that Asian American women had more favourable attitudes and were more likely to seek

help, compared to Asian American men (108,109). Another study reported that being an Asian American male significantly predicted negative help-seeking attitudes, compared to African Americans, Latino Americans, and non-Hispanic Americans (110). These findings suggest that Asian youth may have more stigmatizing attitudes than older Asians. This may be due to little understanding of mental illness, poor self-esteem, academic achievement, and relationships (111). Stigma may exacerbate these issues and create a barrier to seeking help. It is also possible that the younger population live in a constantly changing society, and anti-stigma approaches may be irrelevant to them (71). Overall, the findings from these studies suggest that age impacts help-seeking attitudes in the Asian population and their willingness to participate in therapeutic encounters.

Ethnicity.

As the Asian population is a heterogenous group, it is important to consider differences in mental health stigma among ethnic subgroups as they have diverse languages, religions, cultures, and immigration histories. In a study by Tiwari and Wang (112), the authors found that Chinese participants were less likely than South and Southeast Asian participants to access mental health services. In a Canadian population-based study, the authors found that only 19.9% of Chinese participants accessed mental health services in the year of the study, compared to the 51.4% of South Asians (7). These findings demonstrate there may be differences in help-seeking behaviours across ethnic subgroups that may be due to factors such as stigma. In a study on 472 Korean Americans, the authors found that 34% of participants had depressive symptoms, but only 6.4% of participants sought professional help (103). Furthermore, 71% of participants believed mental illness to be a sign of weakness and 14% of participants believed it would bring shame to the family to live with a mentally ill family member (103). In one Canadian study, the

authors found that East Asian Canadians had higher self stigma, compared to Caucasian Canadians (113). These participants reported having lower respect for themselves if they were to experience mental illness (113). East Asian participants in this study also had higher social stigma and were found to fear or blame individuals affected by mental illness (113). This may be due to Asian cultural values, such as adherence to familial and societal norms. The adherence to cultural values and fear of mentally ill individuals were also seen as barriers in Southeast Asian American studies, as well as, threat to one's social integrity ("loss of face") (114,115). A study on college students found that South Asians had higher levels of stigma than Caucasians, by reporting less sympathy, but more anger and responsibility towards mentally ill individuals (116). The study also reported that South Asian participants demonstrated greater self stigma towards members of their own ethnic group, compared to Caucasian participants (116). Moreover, women in this study were more likely than men to endorse seeking professional help and participating in coping strategies, such as yoga and stress management seminars (116). The role of gender was also seen in another South Asian study, whereby males reported high self stigma and more negative attitudes towards help-seeking (117).

Despite being a heterogeneous population, there are limited studies that have considered the group differences within the Asian population on mental health stigma. A Singaporean study on youth found that male and Chinese participants were less tolerant towards individuals affected by mental illness than Malay and Indian participants (71). Male and Chinese participants were also less likely to be supportive and more likely to distance themselves and consider those affected by mental illness as a physical threat (71). This may be due to the concept of 'saving face', whereby importance is on an individual's place in society (118). Chinese participants may have placed more emphasis on this concept, resulting in the need to distance themselves from

those affected by mental illness as it may bring shame upon themselves and their family (71). However, in an American study, Indian participants were more likely to consider mental illness as a sign of weakness and reported the highest odds in associating mental illness to family shame, compared to other Asian participants (119). Interestingly, Chinese and Filipino participants were least likely to associate mental illness to family shame, compared to other Asian participants (119). This study also found that women were 20% less likely than Asian men to consider mental illness as a sign of weakness (119). This supports previous research that women are more likely to be concerned and less likely to exhibit stigmatizing attitudes towards mental illness. In another American study, no differences were found among East Asian and Southeast Asian participants in help-seeking attitudes (120).

There are few Canadian studies that have examined gender differences in mental health studies among the Asian population. In a Canadian study on older Chinese immigrants, no differences were found among men and women in help-seeking attitudes (87). Another Canadian study found that racialized men, including Asians, had less positive attitudes and more stigmatizing attitudes than racialized women towards mental health services (88). Studies in the United States have reported varying findings, with some studies reporting no gender differences (89) and other studies reporting that Asian women have less stigmatizing and more positive attitudes towards mental illness than Asian men (90–92). Although data in the Canadian context regarding gender and culture is limited, these varying results demonstrate the influence of cultural values on stigmatizing attitudes towards mental illness among the ethnic subgroups.

Country of birth.

The country of birth may influence stigmatizing attitudes towards mental health and mental health services. It is possible that stigmatizing attitudes towards mental health and help-

seeking is more salient in foreign-born individuals than in Western-born individuals (121). Data from a cross-sectional survey found that U.S.-born Asians were more likely to seek professional help and report satisfaction with treatment, compared to foreign-born Asians (121). Asians born in Western societies may have family members that exposed them to cultural values and influenced their perceptions of mental illness, whereas, foreign-born Asians may have been directly exposed to such values in their home country (122). A study examining the relationship between cultural beliefs and mental illness among European Americans, Chinese Americans, and foreign-born Chinese found that individuals with Western influences were more willing to seek help than individuals with Asian influences (122). Maeshima and Parent's study on Asian American and Asian international students reported that high social stigma was associated with high self stigma for both groups, with a stronger association found among international students (123). The authors also reported that self stigma negatively impacted help-seeking behaviour, with lower odds of seeking help found among international students (123). Stigma may play a bigger role among international students compared to Asian Americans that may have adapted to Western values and exhibit more accepting views towards mental illness and treatment (122,123). Lastly, findings demonstrated that men in this study reported higher levels of self stigma than women (123).

As culture and acculturation may affect the level of stigma surrounding mental illness (124), it is important to consider cultural influences when planning anti-stigma activities. Findings from an Australian study demonstrated that Australian-born Chinese were less likely to maintain a distance from individuals affected by mental illness and to perceive them as incompetent or dangerous, compared to Chinese immigrants (125). Lower levels of these stigmatizing attitudes was found to be associated with greater adoption of mainstream cultural

values (125). While the Australian-born Chinese participants may still maintain their heritage cultural values, adoption to Western values may have resulted in lower levels of stigma (124,125). Foreign-born individuals may seek different forms of support than their Western-born counterparts. Immigrants may seek support from friends, family, or religious services (126) instead of professional support. A study found that 10% of Asian immigrant participants sought informal help, compared to the 4% that sought professional help (127). However, the prevalence was still lower compared to the 26% of the U.S.-born Asians that sought informal help and the 6% that sought professional help (127). The study also found that both immigrant and U.S. born Asian women were more likely to seek informal help than men (127). It is important to note that regardless of the country of birth, participants were less likely to use professional mental health services. This may be due to cultural values preventing this population, especially immigrants, from accessing services to avoid exhibiting weakness and bringing shame upon themselves and their family (8). It is also possible that Asian immigrants lack awareness and trust in Western approaches to recovery, compared to the U.S.-born Asians that may be more accepting of Western treatment (60,128). This was seen in a study on Filipinos in the U.S., where U.S.-born Filipinos were less concerned about "saving face" and had more positive attitudes towards seeking professional help than Filipino immigrants (114). In line with these results, a study on Korean undergraduate students reported among U.S.-born Koreans, positive help-seeking attitudes were associated with that less adherence to Asian values (129). Similar to Lee et al.'s study (127), both immigrant and U.S.-born Korean women exhibited more positive help-seeking attitudes than men in this study (129).

Overall, these findings demonstrate that Asian immigrants are less likely to seek mental health services, compared to their Western-born counterparts. This may be due to stronger

adherence to cultural values (8,129) and lack of awareness and familiarity (60,128) of Western approaches to recovery, resulting in more stigmatizing attitudes towards mental illness. The country of birth is an important factor to consider as differences in immigration status may result in differing levels of stigma and therefore, may affect the effectiveness of mental health services. Interestingly, women are more likely than men to seek help and to have less stigmatizing views regardless of the country of birth (127,129). Although studies are limited on gender differences, findings suggest that gender ideals may not be influenced by the country of birth and the pressure of remaining strong and stoic is still present among Asian men.

Time since immigration.

Research has demonstrated that time since immigration may influence individuals' perception towards mental health and treatment. A study on 363 Korean immigrants in the U.S. found that participants who had immigrated less than 5 years ago were more likely to seek mental health services than participants who had immigrated 5-10 years ago or more than 20 years ago (130). It may be the case that within the first few years, immigrants face many post-migration stressors, such as acculturative stress and employment, that may increase their odds of seeking help (131). However, this finding is inconsistent with findings that have reported recent immigrants are less likely to access mental health services than long-term migrants. An Ontarian study found that newcomer East Asians were less likely to seek mental health services than long-term migrants (> 20 years) (132). Another study found that Asians who had immigrated to the U.S. less than 10 years ago reported higher odds of perceiving mental illness as a personal weakness (119). It is possible that a shorter length of time since immigration is associated with lower levels of acculturation (119). This may be why recent immigrants hold more stigmatizing views and beliefs that mental illness is a weakness and is shameful for the entire family.

Similarly, Chinese immigrant participants who had spent a longer time in the U.S. reported less self stigma than participants who had spent a shorter time in the U.S. (133). This may be due to adaptation to Western individualistic culture, resulting in increased willingness to seek mental health services (133,134).

The findings derived from East Asian participants are consistent with findings among other Asian groups. A study on Indian Americans reported that years of residence was negatively associated with attitudes toward psychotherapy (135). That is, increased stay in the U.S. was associated with more positive attitudes toward psychotherapy (135). Fan's study on primarily Southeast Asian university students reported that while both short-term (≤ 8 years) and long-term (9+ years) participants had high levels of stigma, short-term participants endorsed higher levels of stigmatizing attitudes (136). In line with the previous findings, it may be the case that participants with shorter lengths of stay may be less acculturated to the Western culture (119). A study on Filipino immigrants found that increased length of stay was associated with social connectedness, resulting in greater belief in mental health professionals and intentions to seek help (134). Interestingly however, this does not result in increased stigma tolerance (134). It is possible that while Filipino immigrants had greater intentions to seek help, the stigma surrounding mental illness is so deeply rooted in their culture that it is not affected easily by length of stay and social connectedness (137).

There is limited research examining the relationship between time since immigration and stigmatizing attitudes toward mental illness. Although time since immigration does not entirely capture acculturation, it is possible that recent immigrants have higher levels of stigma due to lower levels of acculturation (119,133,134). Recent immigrants may strongly adhere to Asian cultural values and thus, may be more affected by factors such as loss of face (68). Among the

studies discussed, none have examined the role of gender between time since immigration and mental health stigma. As men are affected by gender expectations rooted in Asian culture (86), it is important to determine if increased length of stay reduces stigmatizing attitudes due to adoption of Western individualistic culture.

Relationship, employment, and student status.

Relationship, employment, and student status will be assessed in this study as potential confounders. Tiwari and Wang (112) found that single Chinese immigrants were more likely to access mental health services than single South Asian and Southeast Asian immigrants. The authors suggested that single South Asian and Southeast Asian immigrants were more likely to live with their family and thus, received greater familial support (112). This may be a plausible explanation as one study found that 72% of Asian Americans lived with their family and reported fewer mental health treatment sessions than those living alone or with unrelated individuals (138). An alternative explanation could be that those not married and living with their family may be less likely to seek help due to the fear of judgement (139). Due to the common belief among the Asian population that mental illness is shameful to the individual and the family (8), it may be the case that individuals not married and living at home hold greater stigmatizing attitudes. Other studies have reported similar findings, with one study reporting that Asian participants that were not married held less socially-stigmatizing views towards individuals affected by mental illness (139). Individuals in relationships may have greater social stigma due to reinforcement of stigmatizing beliefs towards those affected by mental illness, particularly Asian men that perceive mental illness as an inability to meet masculinity standards (82,140). Moreover, the fear of being labelled by partners may contribute to higher levels of

stigma (139,140). However, other studies on the Asian population have reported no association between relationship status and mental health stigma (141).

Studies have demonstrated the role of employment in stigmatizing attitudes towards mental illness. One study found that unemployed men with employed or unemployed partners reported poorer mental health, while women remained unaffected by employment status (26). This may be due to gender cultured roles, such as the expectation to be the "breadwinner" in the family (25). Studies have reported varying results on the role employment has on stigmatizing attitudes. Results from a surveillance system reported that unemployed individuals are less likely to believe that others are caring and sympathetic towards those affected by mental illness (142). It may be possible that unemployed individuals are more concerned regarding the stigma surrounding help-seeking (143). Among those affected by mental illness, unemployment may be a larger issue due to its negative effects on one's self-esteem, resulting in higher levels of stigma (144). Moreover, these individuals may be more likely to prevent or delay help-seeking to avoid further judgement by community members (8) or due to the fear of being unable to integrate into society (145). Employed individuals with a higher socioeconomic status may have greater access to services and may be considered as more privileged than those unemployed and thus, may be less subjected to stigma (146). However, Yuan et al.'s study (139) on the Asian population found that identifying as female and being unemployed was associated with positive attitudes towards mental illness. The female gender and unemployment was found to be associated with increased tolerance and less prejudicial attitudes towards those affected by mental illness (139).

Lastly, student status may have an effect on stigmatizing attitudes towards mental illness. Yuan et al.'s study (139) found that student status was associated with less social stigma and stereotypical attitudes towards individuals affected by mental illness. This finding may be due to

the level of education. Research findings on the Asian population have demonstrated that those with higher educational attainment may exhibit more positive attitudes towards mental illness and treatment (147,148). An alternative explanation could also be that the effect of student status may be due to age, as younger adults are more likely to be students (139). Studies have reported that older adult Asians held greater stigmatizing attitudes and were less willing to access mental health services, compared to younger adult Asians (98,101,105).

However, student status may be associated with greater stigmatizing attitudes towards mental illness. Studies have demonstrated that Asian American students exhibit greater mental health stigma and are less willing to seek help, compared to European Americans and African Americans (108,109,149). Moreover, these studies have also reported that Asian American women had more favourable attitudes and were more willing to seek help, compared to Asian American men (108,109,149). Students may have higher levels of stigma due to factors such as self-concealment, the inclination to hide personally upsetting information from others (150). As maintaining the family's honour and reputation are highly valued among Asians, self-concealment may greatly affect Asian American students (151). Men in particular may be at risk of this behaviour due to cultural values such as maintaining emotional control and adhering to masculine norms (82,86). One study found that self-concealment was negatively associated with help-seeking attitudes among Asian American students, with males reporting greater self-concealment than females (109). Stigmatizing attitudes may also differ based on international student status. Stigma may be a bigger issue for international students as they may not have adapted to Western values and are not as accepting of mental illness and treatment, compared to Asian American students (122,123). A recent study found that international students exhibited greater self stigma and were less likely to seek help than Asian American students (123). The

study also reported that men reported higher levels of self stigma, regardless of international status (123).

These findings demonstrate that single individuals may have less stigmatizing views towards mental illness than partnered relationships. Single individuals may live at home and thus, rely more on familial support than professional services (112). However, it may also be the case that single individuals are less likely to seek help due to fear of judgement from family members and the cultural value of maintaining the family's reputation (8). The fear of judgment and maintaining the family's honour may also influence stigmatizing views in unemployed individuals and students. Men in particular may be more affected due to gender norms such as being the "breadwinner" of the family and concealing emotions to remain strong and stoic (25,150). However, it is unclear whether this may be simply due to age. It may be possible that younger individuals are more likely to be single, unemployed, and students. Further research would be needed to determine whether this is an effect of age.

Educational attainment.

Educational attainment may influence stigmatizing attitudes towards mental illness. Some studies have demonstrated that those with higher levels of education exhibit more positive feelings towards mental illness (147,148,152). Found et al. (147) and Li et al. found that graduate high school participants had more positive attitudes and increased willingness to seek help, with females reporting more favourable attitudes than males (147). Exposure to a post-secondary environment, such as universities and colleges, may introduce various perspectives, which in turn may affect how men view masculine norms (153).

However, another study on Chinese immigrants residing in the U.S. found that education level beyond high school was not a predictor of stigmatizing attitudes (133). Studies on men

have demonstrated that a higher educational attainment is associated with less rigid masculine norms and lowers levels of self stigma (154). Findings from Hammer et al.'s (152) study revealed that men with education beyond the undergraduate level were less likely to conform to masculine norms. Additionally, men with higher educational attainment reported less self-stigma and more favourable attitudes, compared to men with lower educational attainment (133).

These findings suggest that individuals with higher educational attainment may have increased knowledge regarding mental illness. It may also be possible that these individuals have greater access to mental health services and information, as well as, a better understanding towards those affected by mental illness (139). Men with higher levels of education may be less likely to internalize stereotypes regarding help-seeking and may be less likely to perceive mental illness and treatment as an inability to adhere to masculine norms (86,154).

Experience with mental illness.

Research has demonstrated that unfamiliarity or inexperience with mental illness is associated with more stereotypical attitudes. Individuals that have experience or are familiar with mental illness are less likely to be prejudiced and more likely to care and support those with mental illness (155). Studies by Corrigan et al. found that exposure to mental illness resulted in less stigmatizing attitudes (48), such as viewing those affected as dangerous and maintaining distance (156). Another study found that direct experience with mental illness resulted in less stigmatizing attitudes, with family experience demonstrating a stronger association (157). The authors suggested that greater intimate contact reduces stigmatizing attitudes, as other forms of contact collected in the study (i.e., friends) did not influence attitudes towards mental illness (157). However, a recent Canadian study reported that participants with no direct experience with mental illness were less likely to hold stigmatizing attitudes towards men with depression

and suicidal behaviour, compared to participants with direct experience (158). Interestingly, participants with direct experience reported higher levels of self-stigma, with a higher percentage of men reporting embarrassment towards seeking help (158). It may be possible that fears surrounding judgement and being perceived as having a weakness contribute to the self stigma among those with personal experiences (8,159). Although limited, research on the Asian population has reported similar findings. Studies on Asian Indians have found that contact or familiarity was associated with less stereotypical attitudes (160) and more positive attitudes (161) towards those with mental illness.

These findings suggest that those with direct experience with mental illness and have been the subject of stigmatizing attitudes are less likely to have stigmatizing attitudes towards others. Familiarity or experience may eliminate perspectives that those affected by mental illness are dangerous or violent and may reduce the urge to maintain distance (156). This demonstrates the importance of contact with individuals affected by mental illness in reducing stereotypical attitudes towards mental illness and treatment.

Anti-Stigma Interventions Examined in the Present Study

The interventions implemented in this study are Acceptance and Commitment Training (ACT), Contact-based Empowerment Education (CEE), a combination of ACT and CEE, and psychoeducation as the control group. ACT is an evidence-based behavioural treatment that uses mindfulness to enhance psychological flexibility (162). It helps individuals by decreasing the struggle against thoughts and emotions and by increasing awareness of the present moment rather than the past or an imagined future (162). CEE is an evidence-based intervention that focuses on contact-based and empowerment education to address the stigma surrounding mental illness (163). It involves direct encounters with individuals affected by mental illness to develop

a better understanding towards these individuals, thus decreasing the level of prejudice (163). A combination of these two interventions was used in this study due to potential synergistic effects. Lastly, psychoeducation was used as a control group in this study due to previous research supporting its effectiveness in educating individuals about mental health treatment, mental illness literacy, and reducing mental health stigma (164).

Acceptance and Commitment Training (ACT).

Stigmatizing thoughts can be self-protective (165) and rigid (166) to the individual affected by mental illness. Psychological methods, such as mindfulness, may be helpful in enhancing non-judgmental thoughts towards one's self and may also be helpful in decreasing the effect of stigma (52). Acceptance and Commitment Training (ACT) is a behavioural intervention that aims to enhance psychological flexibility by using mindfulness and acceptance strategies (162). This method engages the individual more with the present moment and alters behavioural patterns when it is in line with personal values (162). Steven Hayes developed ACT in 1982 to develop a contextually based approach that could bring about behavioural change, but could also incorporate the essential role human cognition and language has on mental illness (162,167,168). This concept was first presented by B.F. Skinner, who suggested that human cognition and language may be controlled by excessive rule-governed behaviour (168). ACT emphasizes this concept as literature has found that rule-governed behaviour may exacerbate psychological distress (169,170). The intervention consists of six core processes to undermine rule-governed behaviour (162): 1) acceptance - being aware of one's thoughts and experiences, without making any changes; 2) cognitive diffusion - alter the way one interacts with thoughts to reduce the literal content of such thoughts; 3) present moment - being aware of the present moment to engage in more flexible behaviour that is in line with one's values; 4) self-as-context - being

aware of one's experiences without developing an attachment to select experiences; 5) values - developing values around on one's directions in life without basing them on avoidance or social compliance; and 6) committed action - engaging in action associated with one's goals.

ACT has been found to be effective for the management of mental illness. A recent meta-analysis reported that ACT was better than the standard treatments (i.e., psychoeducation or medication) for mental illnesses, such as depression and anxiety (171). Another systematic review and meta-analysis reported that ACT was effective in reducing anxiety, depression, psychological distress, and stress among cancer patients, with effects still lasting at the 6 month follow up (172). Several studies have examined the efficacy of the ACT method on stigma, such as stigma in individuals battling obesity (173), substance abuse (174), and mental illness. One study examined the effects of a 150-minute ACT workshop on undergraduate college students and demonstrated the intervention was successful in reducing mental health stigma in individuals with varying levels of psychological inflexibility (175). Another study on college students compared ACT and education to determine its effects on mental health stigma (175). Findings revealed that participants that demonstrated psychological inflexibility reported no change in social stigma after receiving education; however, participants that demonstrated psychological inflexibility reported lower levels of social stigma after receiving ACT (175). This is an important finding as literature has found that Asian men may conceal emotions to remain strong and stoic (25,86,150). These findings demonstrate that ACT may make a positive impact on Asian men regardless of their level of psychological flexibility.

ACT may be an effective intervention for reducing stigma among the Asian population as its core processes are in line with Asian cultural values, particularly in Buddhist practices (167). The similarities lie in using acceptance and mindfulness strategies to teach the individual to be

aware of themselves without judgement, but not to be separate from reality (167). A Canadian study on racialized populations, including Asian, found that ACT combined with Social Justice Capacity Building (SJCB) resulted in positive changes surrounding self stigma in individuals with HIV/AIDS (176). The study also found that effects of the intervention still remained at the 9 month follow-up (176). However, in regards to stigma-associated mental illness in racialized populations, data is limited.

Contact-based Empowerment Education (CEE).

Contact-based education encourages relationships between individuals with and without mental illness as it helps break stereotypes, resulting in lower levels of prejudice (177,178). Gordon Allport suggested that introducing majority and minority groups may be associated with less stereotypical attitudes towards the minority group (179). Evidence has demonstrated that contact-based education is a leading method and is more effective at reducing stigma, compared to other interventions (180,181). However, educational approaches tend to focus on youth, as early implementation of anti-stigma can encourage help-seeking behaviours and promote respect and diversity, extending into adulthood (182). Additionally, although these approaches have demonstrated positive outcomes, it is important to note that it may be short-lived (183,184). It may be necessary to have repeated contact to counter the effects of social stigma.

Contact-based education has been found effective in reducing mental health stigma (182,185,186). One study among high school students found that contact-based education was effective in reducing mental health stigma (187). The study also found that 60% of males with a self-reported mental illness reported improvement in stereotypical attitudes towards mental illness (187). Another study among Chinese high school students found similar findings, with participants in the contact-based education group reporting less stigmatizing attitudes than the

education group (186). Additionally, the authors found that contact-based education was effective if the education component was presented before the contact component (186). This may be as providing education beforehand allows participants to develop a deeper understanding towards individuals affected by mental illness (186). There are limited studies that have examined the effect of contact-based education across various ethnocultural groups. Wong et al.'s study using contact-based education found that Asian participants had higher levels of stigma, but also reported a greater reduction in stigmatizing attitudes than white participants (188).

Empowerment education has been used to promote various mental health initiatives (163,178) as it involves encouragement to access mental health resources and to bring about change in the community (182). Several studies have examined the relationship between empowerment and mental health stigma (189–191). Brohan et al. (191) found that empowerment was associated with lower levels of self stigma in participants with bipolar disorder or depression. Rüsch et al.'s review on mental health stigma explained that group identification may play a role (192). Individuals who identify with the stigmatized group and agree with the stigmatizing attitudes surrounding mental illness may be more likely to internalize that stigma (192). However, individuals that consider socially stigmatizing attitudes to be unfair or unjust may feel more empowered and driven to take part in initiatives that reduce the stigma (192).

Research has demonstrated that high group identification among ethnic minorities increases empowerment, resulting in improved well-being (193). Thus, Contact-based Empowerment Education (CEE) may be beneficial in reducing mental health stigma among Asian men. It may endorse high group identification by refuting stereotypes, such as being weak (102,119) or incapable (82), and empowering individuals to educate the public and participate in

mental health initiatives (194). A contact-based intervention study incorporating empowerment, partnered students with mental health programs to design and implement anti-stigma interventions (182). This encouraged students to make social changes, while extending the effects of contact-based education to the community level (182). However, research on these approaches is limited in racialized populations. As such, the CEE intervention is a community-based approach built on empowerment and skills development that was implemented in this study for Asian men to engage in mental health promotion activities (163). The CEE intervention in this study involves increasing knowledge, sharing stories from those affected by mental illness, encouraging leadership roles in advocacy, and developing anti-stigma strategies (195).

Psychoeducation.

Psychoeducational approaches have been demonstrated to be effective in various different populations. Psychoeducation was developed in 1980 by Carol M. Anderson to educate patients and family members about schizophrenia (196). It has been associated with illnesses such as anxiety (197), depression (198), and eating disorders (199), and has demonstrated to have a positive effect on attitudes towards mental illness (200). Research suggests that culturally-adapted psychoeducational interventions may be effective in reducing mental health stigma in targeted populations (201). Stigma against mental health in the Asian population may result in a lack of awareness surrounding mental health issues and the services available (202). In a study on older Asian adults, only 11% identified depression as a problem in a case vignette, compared to the 74% of a population-based sample (203).

In a study on Korean Americans, participants randomized to receive culturally-sensitive psychoeducation reported greater understanding and reduced stigma towards mental illness (204). Similarly, studies on Chinese participants that have received psychoeducation reported

increased willingness to seek help (205), greater mental health knowledge, and reduced social stigma (206). Such approaches may reduce mental health stigma among the Asian population, particularly among Asian men, by increasing awareness and disconfirming stereotypes, resulting in acceptance of their illness and increased willingness to seek mental health treatment (204,207).

Purpose of Current Study

Individuals affected by mental illness are met with more stigmatizing attitudes, especially if they seek professional help, compared to individuals affected by physical illness (208). This stigma is associated with help-seeking delay (9) or premature termination in treatment (98). The majority of research on anti-stigma interventions have focused on youth or the general population. Few studies have examined the effect of anti-stigma interventions on racialized populations. In Canada, research is even more limited, particularly among racialized men. The gender cultured roles created by society may leave Asian men to be more susceptible to mental illness, compared to Asian women (80). As Asian men perceive mental illness as an inability to fulfill internalized ideals of masculinity (82), it is important to determine the effectiveness of interventions in reducing stigmatizing attitudes amongst this population. Thus, this thesis seeks to determine:

1) Did participation in the ACT, CEE, or ACT+CEE anti-stigma interventions effectively reduce self stigma associated with mental illness (as measured by ISMI scores) among Asian men in Vancouver, Canada, compared to the control group?
2) Which of the anti-stigma interventions was found to be most effective in reducing self stigma associated with mental illness (as measured by ISMI scores) among Asian men in Vancouver, Canada?

3) Did participation in the ACT, CEE, or ACT+CEE anti-stigma interventions effectively reduce social stigma associated with mental illness (as measured by ISMI scores) among Asian men in Vancouver, Canada, compared to the control group?
4) Which of the anti-stigma interventions was found to be most effective in reducing social stigma associated with mental illness (as measured by CAMI scores) among Asian men in Vancouver, Canada?

The research hypotheses for this study are that all interventions will be effective in reducing self and social stigma, as measured by ISMI and CAMI scores. Furthermore, ACT participation will be effective in reducing self stigma and CEE participation will be effective in reducing social stigma. Lastly, ACT+CEE participation will be effective in reducing self and social stigma.

Methods

Study design and justification.

This study used data from the Strength in Unity (STiU) Project to evaluate the effectiveness of three anti-stigma interventions on reducing self and social stigma in Asian men using a randomized control trial (RCT) study design (209). The original study randomized participants to either one of three anti-stigma interventions or a control group. Baseline data related to self and social stigma were collected from all participants before the interventions and immediately after the interventions, as well as, 3 months and 6 months post-intervention. Manuals were created to aid ACT, CEE, and ACT + CEE interventions and facilitator training. Facilitators were also trained using role-playing strategies. A pilot test was conducted in the first year of the study in Toronto, for the feasibility of the measures selected to assess the

effectiveness of the interventions. All facilitators were trained to deliver the interventions. There was one female facilitator involved in this study. In addition, to ensure proper implementation of the interventions, the research team randomly selected and monitored over 25% of sessions. Within each category, participants were randomly allocated to three intervention groups and one control group with an allocation ratio of 2:1.

Study setting.

The start date of the STiU project involving participants or data was September 15, 2014 and was completed by Spring 2017. This study took place in three provinces in Canada: Ontario, British Columbia, and Alberta. Participants were selected from three cities within these provinces: Toronto, Metro Vancouver, and Calgary. The current study focused on data collected from the Vancouver site only. The 2016 Census data on Metro Vancouver reported 46.5% of the population was of Asian origin, with a majority that identified as East Asian (20.6% Chinese, 2.3% Korean, 1.6% Japanese), South Asian (10% East Indian, 1.3% Punjabi), and Southeast Asian (5.5% Filipino, 1.4% Vietnamese) (210). The study recruited Asian men self-identifying as living with or affected by mental illness or community members unaffected by mental illness but interested in reducing mental health stigma. Workshops were largely hosted at Simon Fraser University's Harbour Centre and Surrey Central campuses, as well as community centres such as libraries.

Sample size and participant recruitment.

The study had aimed to recruit 2160 participants across all sites, with an alpha of 0.05 and a beta of 0.8, to detect moderate-to-large effect sizes. As the participants were informed to commit for at least six months, the study aimed to over-sample by 30% (240 participants), to

account for attrition. For the Vancouver site, the recruitment period occurred over a span of 15 months mainly through community networks and media messages to achieve a sample of 800 participants in Metro Vancouver. The study randomized 721 men, and 428 men attended the workshops at the baseline. Recruiting strategies involved purposeful convenience sampling and snowball sampling. Participants were recruited using a variety of advertising strategies such as displaying posters and delivering brochures to community venues, relevant clubs and organizations, newspaper advertisements, radio messages, and social media. Community venues included recreational centres, faith-based centres, universities and colleges, public and senior housing, healthcare facilities, and public areas such as shopping centres, transit stations, etc. Newspapers and radio stations with wide Asian audiences were selected for advertising. A majority of the advertising material was developed in English, with some material in Cantonese and Mandarin. Contact information was included so potential participants interested in the study could connect through phone, email, or fill out a form on the project website. A step-wise approach was taken for participant recruitment involving an initial phone or website interaction and an information session to ensure only those eligible were recruited into the study.

Participants.

Participants were eligible for this study if they self-identified as:

- Male.
- 17 years or older at the time of recruitment.
- South Asian, Southeast Asian, or East Asian living in Metro Vancouver.
- Able to speak and understand English.

- Living with mental illness OR living with a family member affected by mental illness OR a community member unaffected by mental illness but interested in reducing mental health stigma.

We used “to be able to speak and understand English" as an inclusion criterion for participants randomized into the intervention groups offered in English. However, English language fluency was not required to encourage a more representative sample for the participants randomized into the intervention groups offered in Cantonese and Mandarin.

Participants were ineligible for this study if:

- Participants were unable to participate in group activities.
- Participants displayed disruptive behaviour during group activities.

Allocation of intervention.

A random number generator was used to create an allocation sequence for the participants. Participants either self-identified as living with or affected by mental illness or a community member. Participants were then divided into one of the three intervention groups or the control group. There were approximately 8-15 participants in each intervention and 3-8 participants in the control group for each type of participant group.

Blinding.

Due to the nature of this study, it was not possible to blind the participants after the assignment to interventions as participants needed to be aware of the intervention they were receiving in order to effectively engage in that intervention. It was also not possible to blind research staff as they facilitated the workshops.

Interventions.

The exposures in this study are ACT, CEE, and ACT + CEE. ACT is an evidence-based behavioural treatment that uses mindfulness to enhance psychological flexibility (162). It helps individuals by decreasing the struggle against thoughts and emotions and by increasing awareness of the present moment rather than the past or an imagined future (162). CEE is an evidence-based intervention that focuses on contact-based and empowerment education to address the stigma surrounding mental illness (163). It involves direct encounters with individuals affected by mental illness to develop a better understanding towards these individuals, thus decreasing the level of prejudice (163).

The details of the interventions described below were found in the ACT and CEE training manuals and the study protocol published by Guruge et al. (2018) (209).

Intervention Group One: Participants received only ACT. This intervention involved the presence of two facilitators. The intervention was divided into three sessions for a total of 14 hours (two 3-hour sessions and one 8-hour session), with the first two sessions (3-hour and 8-hour) occurring over the span of one and a half days and the third session (3-hour) occurring a week later. The sessions focused on the six core processes of psychological flexibility: acceptance, cognitive defusion, present moment, self-as-context, values, and committed action. The first session (3-hour) focused on acceptance, defusion, and present moment processes, while the last two sessions (8-hour and 3-hour) focused on all processes. All three sessions involved exercises that focused on specific core processes.

Intervention Group Two: Participants received only CEE. This intervention involved the presence of two facilitators. The intervention was divided into half-day (3.5-hour) sessions for a total of 14 hours, with the first two sessions occurring in one week and the last two sessions

occurring a week later. The sessions focused on critical learning, health promotion, and collective empowerment. The first session focused on developing an understanding of mental health and illness by educating participants on mental disorders, mental health as a continuum, the four P's of mental health, stigma, and recovery-oriented approaches. The second session focused on critical dialogue by sharing experiences of stigma and learning to take an anti-stigma position. The third session focused on defining advocacy through learning about empowerment, examining mental health policies, and discussing strategies to reduce stigma surrounding mental illness. The last session focused on preparing to take action, examining effective responses to stigma and discrimination, and creating an anti-stigma strategy plan.

Intervention Group Three: Participants received both ACT and CEE. These participants attended seven sessions over the span of four weeks.

Control Group: Participants in this control group received one 3-hour traditional lecture on mental health and illness, the stigma associated with mental health, and the principles of equity and justice.

Specific guidelines were set in place for facilitators in the event that a participant was distressed or in crisis. Participants were reminded that participation is voluntary and were able to withdraw at any point during the study, should they choose to do so. The research team held the right to exclude participants during the recruitment process and the study if the participants displayed disruptive behaviour during group activities.

Outcomes Measures.

The outcomes, self and social stigma, were determined using the Internalized Stigma of Mental Illness (ISMI) and Community Attitude Towards Mental Illness (CAMI) scales, respectively. The ISMI scale was administered to participants who self-identified as having

experience with mental illness. The ISMI scale (Appendix I) was designed to determine the subjective measure of self stigma and contains 29 questions that are divided into five four-point Likert scales: alienation, stereotype endorsement, discrimination experience, social withdrawal, and stigma resistance (211). The alienation subscale is composed of 6 items and measures a participant's experience in having a "spoiled identity" (211). The stereotype endorsement subscale is composed of 7 items and measures the extent to which participants identify with mental illness stereotypes (211). The discrimination experience subscale is composed of 5 items and seeks to understand how participants believe they are viewed by others because of their mental illness (211). The social withdrawal subscale is composed of 6 items and captures the extent to which participants may withdraw from engaging with individuals unaffected by mental illness (211). Lastly, the stigma resistant subscale is composed of 5 items and measures the experience of resisting self stigma (211). This subscale is also reverse-coded to serve as a validity check (211). The scores for this subscale were calculated by subtracting five from the initial score provided. A composite score was also created by calculating the average for all subscales, with a higher score on this scale indicating greater self stigma. As per previous research, this score excluded the stigma resistance subscale due to its weak psychometric properties (211–213). The Cronbach's alpha for the ISMI composite score was $\alpha = 0.95$.

The CAMI scale (Appendix II) was designed to determine public stigmatizing attitudes towards individuals affected by mental illness . It contains 40 questions that are divided equally into four five-point Likert scales (214). The authoritarianism subscale reveals how strongly individuals believe that those affected by mental illness are less capable and should be managed (214). The social restrictiveness subscale reveals individuals' perspectives that those affected by mental illness are dangerous to society (214). The benevolence subscale reveals sympathetic

perspectives towards those affected by mental illness (214). Lastly, the community mental health ideology reveals the importance of having those affected by mental illness as members of the community (214). Each CAMI subscale is composed of five positive statements and five negative statements (214). The positive statements were reverse-scored by subtracting five from the initial score provided so that a higher score on this scale indicated greater stigma. The total score for each subscale was calculated by adding the score for each individual item for that subscale. An average was then calculated to determine the average participant score for each subscale. The composite score was calculated by adding the total scores from each subscale. Then, an average was calculated to determine the average overall participant score. The Cronbach's alpha for the CAMI summative score was $\alpha = 0.91$.

Confounding.

The confounders examined in this study were: age, Asian ethnicity, country of birth, time since immigration, relationship status, employment status, student status, educational attainment, and experience with mental illness. Data on these confounders were collected at baseline. Details on how the confounders were measured and analyzed is further discussed in the analysis section.

Statistical Analysis

Descriptive statistics.

Analyses were done using RStudio (215). Descriptive statistics were performed on sociodemographic characteristics collected in this study. The sociodemographic characteristics collected were: age (17-24, 25-55, or 56+), Asian ethnicity (East Asian, South Asian, Southeast Asian, or Other), country of birth (Canada or other), time since immigration (≤ 5 years, 6-10

years, 11-20 years, 20+ years), relationship status (single or partnered), highest level of education (high school or less, undergraduate, or graduate), employment status (employed, unemployed, or student), and experience with mental illness (living with mental illness, has family member with mental illness, or none). For the purpose of this study, the Southeast Asian and Other subcategories under Asian ethnicity were combined. This is further explained below. The number and percentage of participants is presented in a table for each category (Table 1).

Bivariate analysis.

Sociodemographic characteristics of study participants were stratified by intervention group to ensure successful randomization. That is, to ensure equal distribution of potential confounders across the interventions. When stratified by intervention group, each cell under the "Other" subcategory in Asian ethnicity was below a cell count of 5, resulting in an unstable test. Pagano and Gauvreau state that no cell should have a count less than 1 and no more than 20% of cells should have a count less than 5 (216) . Combining the "Other" subcategory with the "Southeast Asian" subcategory (as this has the second least observations) ensured a fair distribution of levels in this variable (Table 2). Removing the "Other" subcategory completely would have resulted in loss of data. As the sociodemographic characteristics were grouped into categories, chi-square tests were performed to determine the statistical relationship of categories across the interventions. A significant relationship ($p<0.05$) for a variable would indicate that the distribution was not equal across the interventions.

Cronbach alpha tests were performed to measure internal consistency or reliability (Table 6). A higher alpha indicates items are highly correlated. In general, an alpha 0.7 or above is considered to have acceptable internal consistency (217).

The outcomes, self and social stigma, were measured by ISMI and CAMI scores, respectively, and were analyzed as continuous variables. ISMI and CAMI means and standard deviations for all time points for each intervention are presented in tables (Table 7 and Table 9, respectively), with a higher score indicating greater stigma. The F statistic and p value for each subscale were also calculated. The values were obtained using repeated measures ANOVA to determine significant interaction between the intervention groups and time and as data was collected at multiple time points for each outcome. Multiple pairwise t-tests were performed to determine differences between groups. P values were adjusted using the Bonferroni correction method. Lastly, linear mixed effects models were performed on ISMI and CAMI composite scores to control for confounding. In these models, the data collected at baseline and the control group were set as reference categories. Additionally, time was treated as a random effect as it was a repeated measure and in order to model individual differences in scores across multiple time points.

Research ethics approval.

The original study was approved by the Research Ethics Board (REB) of Ryerson University, Simon Fraser University, University of British Columbia, and Vancouver Coastal Health. All participants were assigned a unique identification label that is used for all documents associated with each recruit. This information, along with participants' usernames and passwords, are in a code book to keep confidential information safe and protected.

Results

Descriptive statistics.

A total of 428 participants enrolled in the study at baseline. A majority of participants self-identified as East Asian (*n* = 211, 49.9%), were between 25-55 years old (*n* = 211, 49.9%), had immigrated to Canada (*n* = 332, 78.1%), had undergraduate-level education (*n* = 177, 41.5%), were single (*n* = 250, 58.8%), and reported no direct experience with mental illness (*n* = 254, 59.3%). Sociodemographic characteristics of study participants can be found in Table 1, with more detailed information on characteristics found in a previous study (Table 1) (140).

A total of 122 (28.5%) participants were randomized to the ACT intervention, 125 (29.2%) participants were randomized to the CEE intervention, 127 (29.7%) participants were randomized to the ACT+CEE intervention, and 54 (12.6%) participants were randomized to receive psychoeducation (control group). Chi-square analysis revealed that participants did not differ across intervention groups on any sociodemographic characteristics, except for the "direct experience with mental illness" category ($X^2 = 14.156$, $p = 0.028$) (Table 2). Data were not collected for 80 participants at immediate follow-up (Table 3), 288 participants at 3 months follow-up (Table 4), and 200 participants at 6 months follow-up (Table 5). Chi-square analysis revealed that participants who completed follow-up did not differ from participants who did not complete follow-up on any sociodemographic characteristics across all time points ($p > 0.05$).

Table 1. Sociodemographic characteristics of study participants at baseline (Total = 428)**.**

Variables	n (%)
Age	
17-24 years	132 (31.2)
25-55 years	211 (49.9)
56+ years	80 (18.9)

Asian ethnicity	
East	211 (49.9)
South	144 (34.0)
Southeast/Other	68 (16.1)
Country of birth	
Canada	93 (21.9)
Other	332 (78.1)
Time since immigration to Canada	
5 or less years	99 (30.7)
6-10 years	51 (15.8)
11-20 years	74 (23.0)
20+ years	98 (30.4)
Education	
High school or less	128 (30.0)
Undergraduate	177 (41.5)
Graduate	121 (28.4)
Relationship status	
Partnered	175 (41.2)
Single	250 (58.8)
Employment status	
Employed	224 (52.3)
Not employed	204 (47.7)
Student status	
Student	154 (36.0)
Not student	274 (64.0)
Direct experience with mental illness	
Has a mental illness	94 (22.0)
Has family member with mental illness	80 (18.7)
None indicated	254 (59.3)

Table 2. Sociodemographic characteristics of participants stratified by intervention group at baseline (Total = 428).

Variables	ACT (122)	CEE (125)	ACT+CEE (127)	CTRL (54)	Total (428)
	n (%)				
Age					
17-24 years	33 (27.7)	39 (31.5)	42 (33.3)	18 (33.3)	132 (31.2)
25-55 years	60 (50.4)	67 (54.0)	60 (47.6)	24 (44.4)	211 (49.9)
56+ years	26 (21.8)	18 (14.5)	24 (19.0)	12 (22.2)	80 (18.9)
Asian ethnicity					
East	59 (49.2)	71 (57.7)	49 (38.9)	32 (59.3)	211 (49.9)
South	43 (35.8)	34 (27.6)	54 (42.9)	13 (24.1)	144 (34.0)
Southeast/Other	18 (15.0)	18 (14.6)	23 (18.3)	9 (16.7)	68 (16.1)
Country of birth					
Canada	30 (25.0)	28 (22.4)	23 (18.3)	12 (22.2)	93 (21.9)
Other	90 (75.0)	97 (77.6)	103 (81.7)	42 (77.8)	332 (78.1)
Time since immigration to Canada					
5 or less years	25 (28.7)	26 (27.7)	37 (36.6)	11 (27.5)	99 (30.7)
6-10 years	12 (13.8)	21 (22.3)	14 (13.9)	4 (10.0)	51 (15.8)
11-20 years	22 (25.3)	23 (24.5)	19 (18.8)	10 (25.0)	74 (23.0)
20+ years	28 (32.2)	24 (25.5)	31 (30.7)	15 (37.5)	98 (30.4)
Education					
High school or less	40 (33.3)	36 (28.8)	32 (25.2)	20 (37.0)	128 (30.0)
Undergraduate	42 (35.0)	57 (45.6)	53 (41.7)	25 (46.3)	177 (41.5)
Graduate	38 (31.7)	32 (25.6)	42 (33.1)	9 (16.7)	121 (28.4)
Relationship Status					
Partnered	47 (39.2)	56 (44.8)	50 (39.7)	22 (40.7)	175 (41.2)
Single	73 (60.8)	69 (55.2)	76 (60.3)	32 (59.3)	250 (58.8)
Employment status					
Employed	63 (51.6)	62 (49.6)	67 (52.8)	32 (59.3)	224 (52.3)
Not employed	59 (48.4)	63 (50.4)	60 (47.2)	22 (40.7)	204 (47.7)

Student status					
Student	40 (32.8)	52 (41.6)	45 (35.4)	17 (31.5)	154 (36.0)
Not student	82 (67.2)	73 (58.4)	82 (64.6)	37 (68.5)	274 (64.0)
*Direct experience with mental illness**					
Has a mental illness	24 (19.7)	20 (16.0)	32 (25.2)	18 (33.3)	94 (22.0)
Has family member with mental illness	18 (14.8)	21 (16.8)	30 (23.6)	11 (20.4)	80 (18.7)
None indicated	80 (65.6)	84 (67.2)	65 (51.2)	25 (46.3)	254 (59.3)

* Chi-square = 14.156, p = 0.028

Table 3. Comparison of participants who completed immediate follow-up and participants who did not complete immediate months follow-up.

Variables	Participants who completed immediate follow-up (348)	Participants who did not complete immediate follow-up (80)
	n (%)	
Age		
17-24 years	103 (30.0)	29 (36.2)
25-55 years	170 (49.6)	42 (52.5)
56+ years	70 (20.4)	9 (11.2)
Asian ethnicity		
East	170 (51.1)	40 (50.0)
South	114 (34.2)	31 (38.8)
Southeast/Other	49 (14.7)	9 (11.2)
Country of birth		
Canada	75 (21.7)	18 (22.5)
Other	270 (78.3)	62 (77.5)
Time since immigration to Canada		
5 or less years	81 (30.9)	18 (29.5)
6-10 years	45 (17.2)	6 (9.8)
11-20 years	53 (20.2)	21 (34.4)
20+ years	83 (31.7)	16 (26.2)
Education		

High school or less	102 (29.4)	26 (32.9)
Undergraduate	144 (41.5)	32 (40.5)
Graduate	101 (29.1)	21 (26.6)
Relationship status		
Partnered	146 (42.3)	29 (36.2)
Single	199 (57.7)	51 (63.7)
Employment status		
Employed	180 (51.7)	45 (56.2)
Not employed	168 (48.3)	35 (43.8)
Student status		
Student	124 (35.6)	30 (37.5)
Not Student	224 (64.4)	50 (62.5)
Direct experience with mental illness		
Has a mental illness	78 (22.4)	17 (21.2)
Has family member with mental illness	69 (19.8)	11 (13.8)
None indicated	201 (57.8)	52 (65.0)

Table 4. Comparison of participants who completed 3 months follow-up and participants who did not complete 3 months follow-up.

Variables	Participants who completed 3 months follow-up (140)	Participants who did not complete 3 months follow-up (288)
	N (%)	
Age		
17-24 years	35 (25.9)	97 (33.9)
25-55 years	72 (53.3)	138 (48.3)
56+ years	28 (20.7)	51 (17.8)
Asian ethnicity		
East	75 (54.3)	136 (47.7)
South	43 (31.2)	101 (35.4)
Southeast/Other	20 (14.5)	48 (16.8)

Country of birth		
Canada	30 (22.1)	63 (22.0)
Other	106 (77.9)	224 (78.0)
Time since immigration to Canada		
5 or less years	34 (33.0)	65 (29.8)
6-10 years	19 (18.4)	32 (14.7)
11-20 years	18 (17.5)	55 (25.2)
20+ years	32 (31.1)	66 (30.3)
Education		
High school or less	47 (34.1)	81 (28.3)
Undergraduate	53 (38.4)	123 (43.0)
Graduate	38 (27.5)	82 (28.7)
Relationship status		
Partnered	53 (39.3)	121 (42.0)
Single	82 (60.7)	167 (58.0)
Employment status		
Employed	71 (50.7)	152 (52.8)
Not employed	69 (49.3)	136 (47.2)
Student status		
Student	49 (35.0)	105 (36.5)
Not Student	91 (65.0)	183 (63.5)
Direct experience with mental illness		
Has a mental illness	33 (23.6)	61 (21.2)
Has family member with mental illness	27 (19.3)	52 (18.1)
None indicated	80 (57.1)	175 (60.8)

Table 5. Comparison of participants who completed 6 months follow-up and participants who did not complete 6 months follow-up.

Variables	Participants who completed 6 months follow-up (228)	Participants who did not complete 6 months follow-up (200)
	N (%)	
Age		
17-24 years	68 (30.4)	64 (32.2)
25-55 years	110 (49.1)	101 (50.8)
56+ years	46 (20.5)	34 (17.1)
Asian ethnicity		
East	111 (49.3)	100 (50.5)
South	75 (33.3)	69 (34.8)
Southeast/Other	39 (17.3)	29 (14.6)
Country of birth		
Canada	50 (22.1)	43 (21.6)
Other	176 (77.9)	156 (78.4)
Time since immigration to Canada		
5 or less years	56 (32.6)	43 (28.7)
6-10 years	30 (17.4)	21 (14.0)
11-20 years	36 (20.9)	38 (25.3)
20+ years	50 (29.1)	48 (32.0)
Education		
High school or less	73 (32.2)	55 (27.6)
Undergraduate	85 (37.4)	92 (46.2)
Graduate	69 (30.4)	52 (26.1)
Relationship status		
Partnered	93 (41.3)	82 (41.0)
Single	132 (58.7)	118 (59.0)
Employment status		
Employed	124 (54.4)	100 (50.0)
Not employed	104 (45.6)	100 (50.0)

Student status		
Student	87 (38.2)	67 (33.5)
Not Student	141 (61.8)	133 (66.5)
Direct experience with mental illness		
Has a mental illness	47 (20.6)	47 (23.5)
Has family member with mental illness	45 (19.7)	35 (17.5)
None indicated	136 (59.6)	118 (59.0)

Self stigma.

A total of 231 participants completed the ISMI as it was administered to only those that self-identified as having experience with mental illness. We analyzed the data to determine if there were any changes in self stigma immediately after the delivery of interventions, as well as, 3 months and 6 months after the interventions (Table 7). As mentioned in the previous section, with the exception of the stigma resistance subscale, all ISMI subscales were found to have a Cronbach's alpha of 0.7 or higher (Table 6). Thus, in line with previous research (211–213), the stigma resistance subscale was excluded from analyses. The average scores on ISMI subscales for all time points for each intervention are reported in Table 7 and a visual representation of the composite score is shown in Figure 1. Overall, the means across time points for each intervention are comparatively similar, suggesting that none of the interventions were effective in reducing self stigma. However, the distribution seems to vary. For instance, as shown in Figure 1, the 'immediate' boxplot for the ACT+CEE intervention and the control group are shorter compared to other time points. This suggests participants reported a high level of agreement, whereas the taller boxplots suggest that participants have varying perspectives (Figure 1). Bivariate analyses consisting of repeated measures ANOVA did not reveal any significant differences in ISMI scores for the ACT and ACT+CEE interventions and the control group. Interestingly,

participants randomized to the CEE intervention experienced a significant increase for the discrimination experience subscale at 3 months (M = 2.99, SD = 0.52) than at baseline (M = 2.26, SD = 0.63). The linear mixed effects model revealed no statistically significant association between the interventions and ISMI composite score. However, non significant results were seen among key independent variables. Compared to the control group, an overall decrease in self stigma was seen for the ACT+CEE intervention (β = -0.11, 95% CI = -0.37, 0.14) and the ACT intervention (β = -0.13, 95% CI = -0.39, 0.12), but not for the CEE intervention (β = 0.019, 95% CI = -0.24, 0.28). Overall, the model suggests that no interventions were effective in reducing self stigma over time. Results from the model are reported in Table 8.

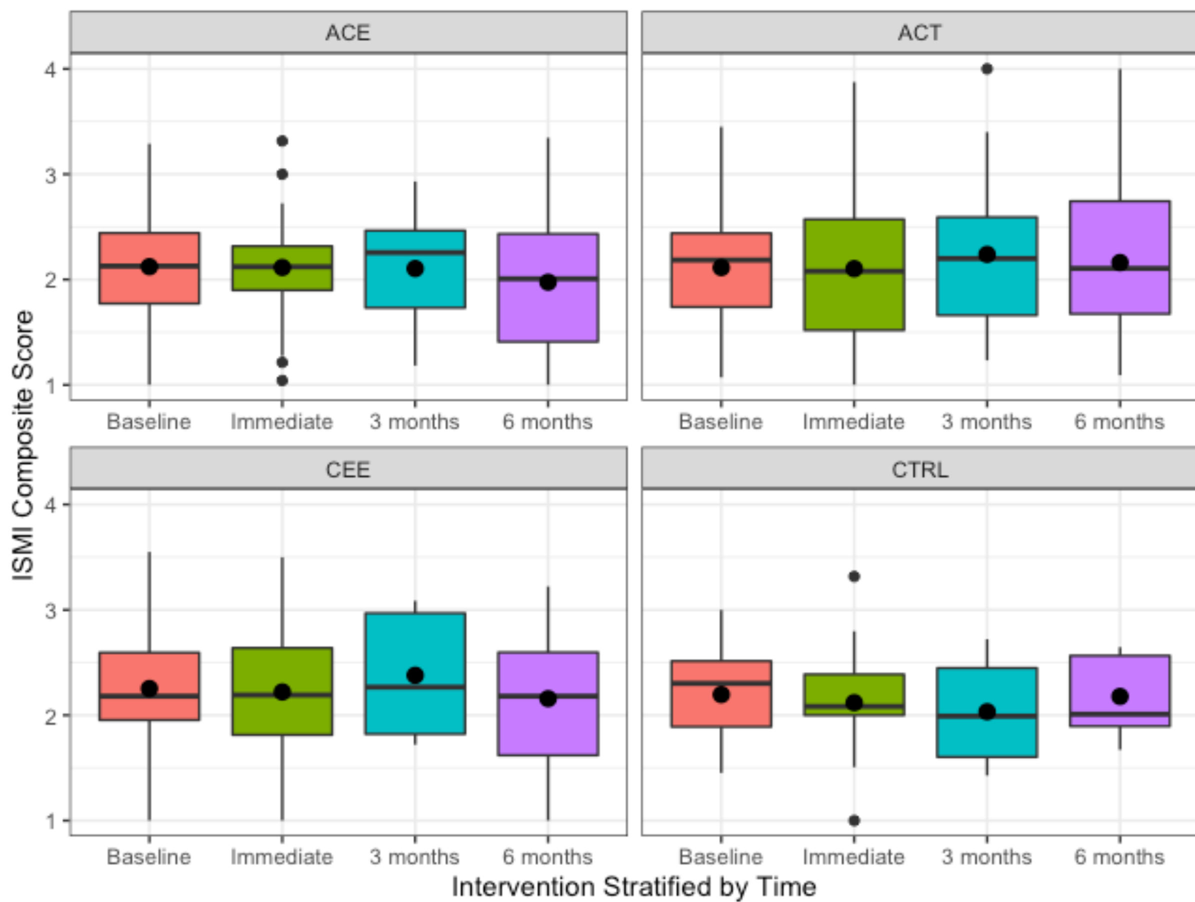

Figure 1. ISMI composite score at each time point across interventions.

Table 6. Psychometric properties (internal consistency reliability) of scales and subscales.

	Number of items	Cronbach's alpha	Range of item-total correlation	Range of inter-item correlation (Pearson's r)
ISMI				
Alienation	6	0.85	0.54-0.79	0.45-0.52
Stereotype endorsement	7	0.86	0.53-0.77	0.45-0.51
Discrimination experience	5	0.82	0.62-0.77	0.45-0.50
Social withdrawal	6	0.86	0.62-0.77	0.49-0.53
Stigma resistance	5	0.64	0.34-0.66	0.21-0.31
Composite score	29	0.93	0.00-0.78	0.32-0.35
CAMI				
Authoritarianism	10	0.70	0.20-0.59	0.18-0.22
Benevolence	10	0.75	0.22-0.65	0.22-0.27
Social restrictiveness	10	0.71	0.27-0.63	0.18-0.22
Community mental health ideology	10	0.82	0.29-0.65	0.29-0.34
Composite score	40	0.91	0.21-0.68	0.20-0.22

Table 7. ISMI means across interventions at each time point.

	ACT					CEE					ACT+CEE					CTRL				
ISMI	B (122)	I (100)	3M (41)	6M (67)	F	B (125)	I (101)	3M (37)	6M (68)	F	B (127)	I (105)	3M (41)	6M (66)	F	B (54)	I (42)	3M (21)	6M (27)	F
	Mean (SD)																			
Alienation	2.29 (0.67)	2.21 (0.76)	2.19 (0.71)	2.32 (0.88)	0.211	2.47 (0.68)	2.38 (0.57)	2.26 (0.76)	2.35 (0.73)	0.314	2.27 (0.62)	2.20 (0.50)	2.17 (0.55)	2.05 (0.69)	0.843	2.51 (0.52)	2.30 (0.56)	2.15 (0.53)	2.22 (0.50)	1.387
Stereotype Endorsement	1.91 (0.61)	1.90 (0.75)	2.02 (0.82)	1.91 (0.74)	0.16	2.04 (0.61)	1.96 (0.57)	2.01 (0.70)	1.87 (0.62)	0.441	1.84 (0.53)	1.87 (0.53)	1.98 (0.60)	1.84 (0.67)	0.319	1.81 (0.59)	1.75 (0.59)	1.60 (0.50)	1.84 (0.67)	0.359
Discrimination Experience	2.16 (0.66)	2.14 (0.73)	2.31 (0.69)	2.18 (0.69)	0.275	2.26 (0.63)	2.31 (0.70)	2.99 (0.52)	2.16 (0.69)	**2.951**†	2.17 (0.66)	2.20 (0.53)	2.20 (0.59)	2.04 (0.67)	0.433	2.07 (0.62)	2.21 (0.67)	2.11 (0.66)	2.23 (0.60)	0.212
Social Withdrawal	2.15 (0.67)	2.17 (0.78)	2.25 (0.79)	2.24 (0.84)	0.153	2.27 (0.73)	2.30 (0.66)	2.25 (0.73)	2.12 (0.69)	0.329	2.23 (0.65)	2.18 (0.51)	2.08 (0.57)	1.98 (0.72)	1.124	2.41 (0.56)	2.26 (0.60)	2.33 (0.66)	2.43 (0.44)	0.251
Total ISMI	2.11 (0.55)	2.10 (0.71)	2.24 (0.76)	2.16 (0.74)	0.223	2.25 (0.58)	2.22 (0.57)	2.38 (0.61)	2.16 (0.63)	0.295	2.12 (0.52)	2.11 (0.46)	2.10 (0.52)	1.97 (0.61)	0.569	2.20 (0.44)	2.12 (0.53)	2.03 (0.49)	2.18 (0.40)	0.306

† $p = 0.036$

Higher score indicates greater stigma

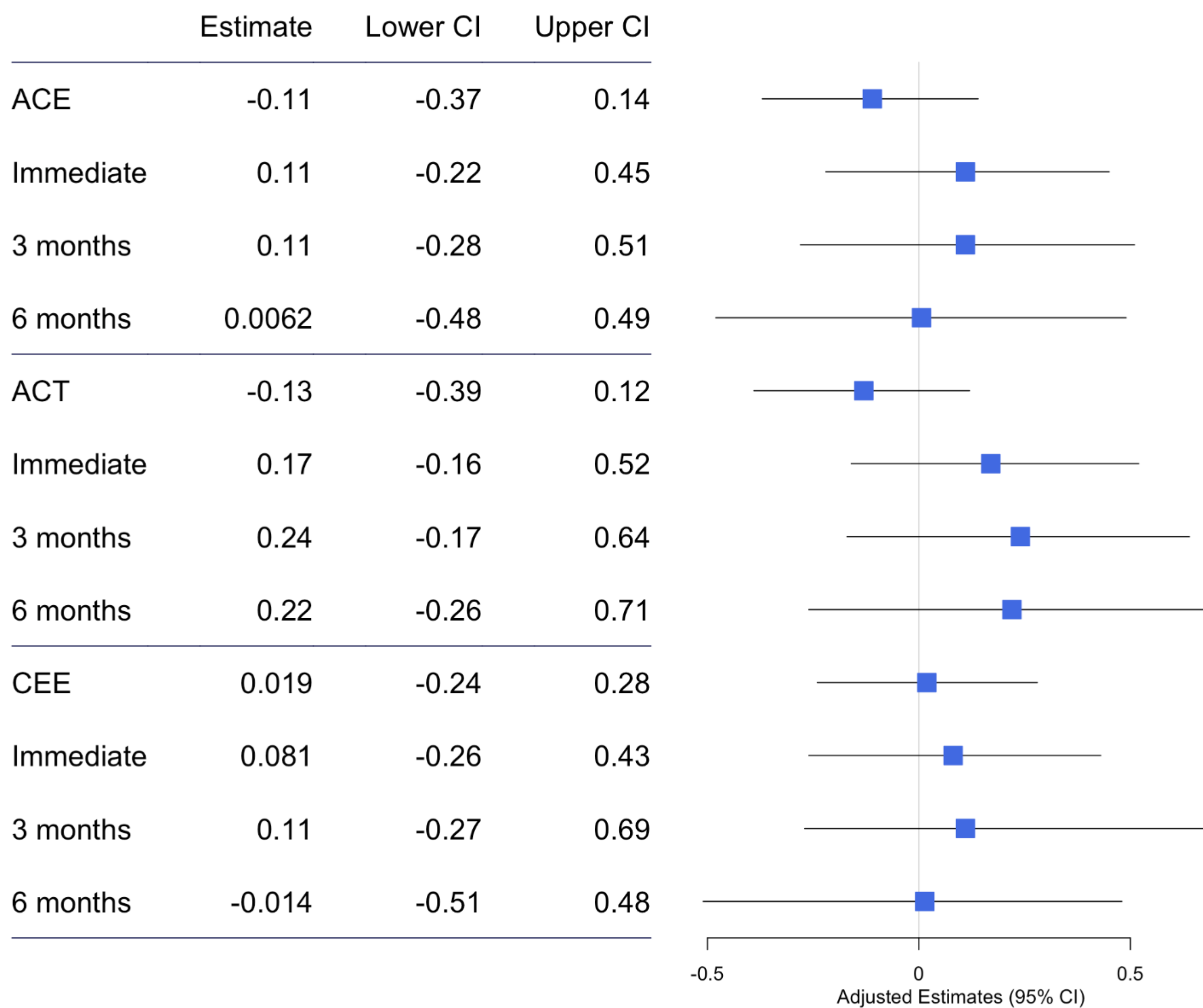

Figure 2. Adjusted estimates (95% CI) of fixed effects of interventions and time on ISMI composite score.

Table 8. Adjusted estimates (95% CI) of fixed effects of interventions and time on ISMI composite score.

	Estimate	Lower	Upper
ACT+CEE (ACE)	-0.11	-0.37	0.14
Immediate	0.11	-0.22	0.45
3M	0.11	-0.29	0.51
6M	0.0062	-0.48	0.49
ACT	-0.13	-0.39	0.12
Immediate	0.17	-0.16	0.52
3M	0.24	-0.17	0.64
6M	0.22	-0.26	0.71
CEE	0.019	-0.24	0.28
Immediate	0.081	-0.26	0.43
3M	0.11	-0.27	0.69
6M	-0.014	-0.51	0.48

Social stigma.

We analyzed the data to determine if there were any changes in social stigma immediately after the delivery of interventions, as well as, 3 months and 6 months after the interventions (Table 9). All CAMI subscales were found to have a Cronbach's alpha of 0.7 or higher, indicating acceptable internal consistency (Table 6). The average scores on CAMI subscales for all time points for each intervention are reported in Table 9 and a visual representation of the composite score is shown in Figure 2. Overall, the means across time points for the ACT+CEE and ACT interventions and the control group are comparatively similar, suggesting that these interventions were not effective in reducing social stigma. However, a notable difference was seen for the CEE intervention between baseline and other time points. For instance, as shown in Figure 2, the baseline boxplot for the CEE intervention is comparatively higher than the other boxplots, suggesting a reduction in social stigma after the intervention. Bivariate analyses consisting of repeated measures ANOVA revealed that the CEE intervention was effective in reducing social stigma for all CAMI subscales at immediate and 3 months. However, only the social restrictiveness subscale was found to be significant at the 6 months follow up for the CEE intervention. The ACT and ACT+CEE interventions and the control group were not found to be effective in reducing social stigma. As the "direct experience with mental illness" category was found to be a confounder ($X^2 = 14.156$, $p = 0.028$) (Table 2), linear mixed effects models were used to control for this category. The linear mixed effects model revealed no statistically significant association between the ACT+CEE and ACT interventions and CAMI composite score. However, non-significant results revealed an overall decrease in social stigma scores for the ACT+CEE intervention ($\beta = -2.99$, 95% CI = -8.54, 2.58) and the ACT intervention ($\beta = -1.13$, 95% CI = -6.71, 4.54). The model also showed that participants scored

lower, indicating less social stigma, over time after receiving the CEE intervention compared to the control group. On average, participants reported greater reductions in social stigma immediately after the CEE intervention (β = -6.55, 95% CI = -13.85, 0.73) than at the 3 months (β = -5.13, 95% CI = -14.61, 4.33) and 6 months (β = -0.04, 95% CI = -8.09, 7.98). Overall, the model did not yield any significant results; however, there was a suggestion that the CEE intervention in particular, may be associated with reduced social stigma. Results from the model are reported in Table 10.

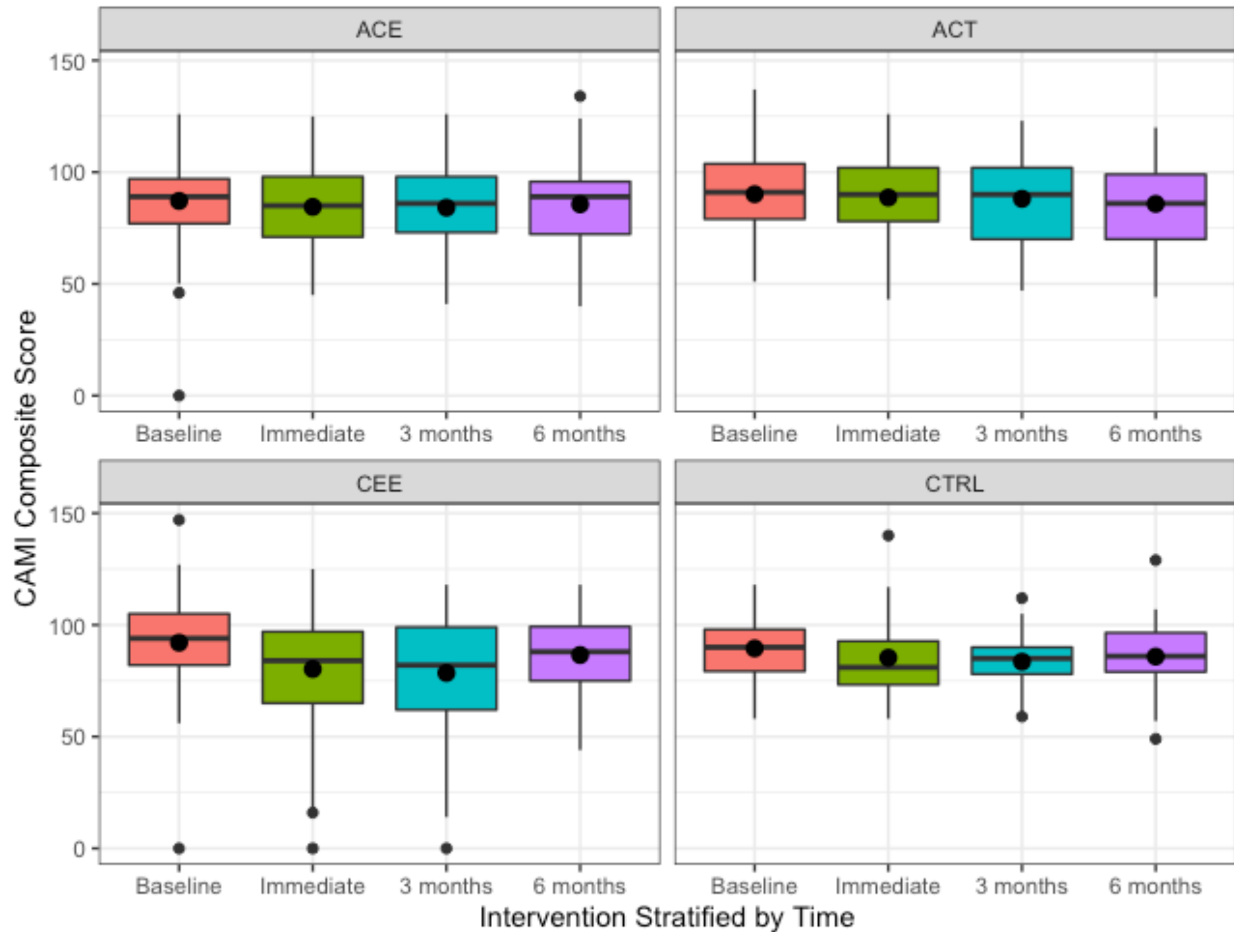

Figure 3. CAMI composite score at each time point across interventions.

Table 9. CAMI means across interventions at each time point.

	ACT					CEE					ACT+CEE					CTRL				
CAMI	B (122)	I (100)	3M (41)	6M (67)	F	B (125)	I (101)	3M (37)	6M (68)	F	B (127)	I (105)	3M (41)	6M (66)	F	B (54)	I (42)	3M (21)	6M (27)	F
	Mean (SD)																			
Authoritarianism	24.02 (5.35)	23.00 (5.38)	22.56 (5.91)	22.40 (5.86)	1.589	23.82 (5.39)	21.11 (6.95)	21.24 (7.74)	22.40 (5.23)	**4.111***	22.37 (5.53)	21.37 (4.90)	20.88 (5.63)	21.56 (6.03)	1.087	23.17 (4.87)	21.81 (5.08)	21.52 (4.95)	21.78 (4.75)	0.97
Benevolence	21.20 (5.16)	21.27 (5.27)	20.98 (5.09)	20.46 (5.11)	0.383	21.58 (5.05)	19.13 (6.70)	18.68 (7.20)	20.71 (4.96)	**4.429****	20.20 (5.22)	20.50 (5.06)	20.10 (4.97)	20.61 (5.45)	0.154	21.19 (4.06)	20.60 (4.79)	19.48 (4.03)	20.00 (3.91)	0.997
Social Restrictiveness	22.02 (4.94)	22.08 (5.61)	22.15 (5.16)	21.10 (4.78)	0.626	22.99 (5.41)	19.91 (6.59)	19.22 (7.00)	21.18 (5.24)	**6.728*****	21.97 (5.42)	21.13 (5.02)	21.54 (5.31)	21.33 (5.33)	0.523	21.93 (4.24)	20.81 (5.34)	20.52 (4.91)	21.41 (5.27)	0.621
Community Mental Health Ideology	22.89 (5.39)	22.30 (5.68)	22.39 (6.20)	21.84 (5.73)	0.538	23.65 (6.05)	20.12 (6.95)	19.38 (7.92)	22.26 (5.41)	**7.757†**	22.58 (5.82)	21.45 (5.74)	21.59 (4.89)	22.12 (6.10)	0.474	23.22 (4.85)	22.14 (4.69)	22.05 (4.41)	22.67 (5.92)	0.488
Total CAMI	90.14 (17.65)	88.65 (18.82)	88.07 (19.58)	85.81 (18.88)	0.801	92.04 (19.14)	80.27 (24.79)	78.51 (28.10)	86.54 (18.17)	**6.897***	87.12 (18.97)	84.46 (18.51)	84.10 (18.87)	85.62 (20.52)	0.475	89.50 (13.59)	85.36 (17.24)	83.57 (14.02)	85.85 (16.29)	1.03

* p = 0.007

** p = 0.005

*** p = <0.001

† p = <0.001

* p = <0.001

Higher scores indicate greater stigma

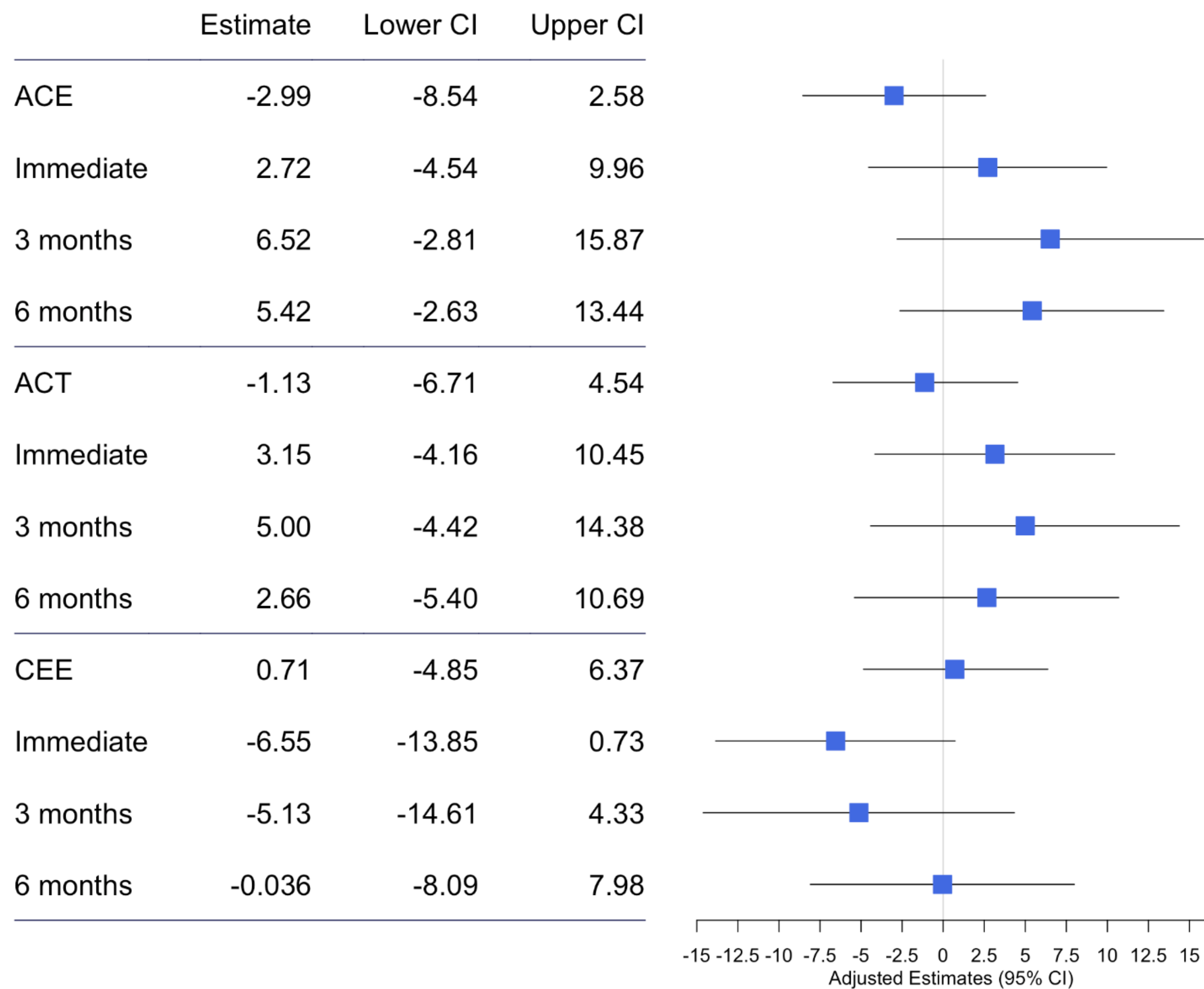

Figure 4. Adjusted estimates (95% CI) of fixed effects of interventions and time on CAMI composite score. Regression models were adjusted for the “direct experience with mental illness” category (has a mental illness, has a family member with mental illness, or none indicated).

Table 10. Fixed effects of interventions and time on CAMI composite score and controlling for "direct experience with mental illness".

	Estimate	Lower	Upper
ACT+CEE (ACE)	-2.99	-8.54	2.58
Immediate	2.72	-4.54	9.96
3M	6.52	-2.81	15.87
6M	5.42	-2.63	13.44
ACT	-1.13	-6.71	4.54
Immediate	3.15	-4.16	10.45
3M	5.00	-4.42	14.38
6M	2.66	-5.40	10.69
CEE	0.71	-4.85	6.37
Immediate	-6.55	-13.85	0.73
3M	-5.13	-14.61	4.33
6M	-0.036	-8.09	7.98

Discussion

Mental health stigma is a rising public health concern as it may delay or prematurely terminate treatment (86) and may result in hiding certain behaviours or actions (218). In 2017, an estimated 10.7% (792 million) of the worldwide population was affected by a mental health disorder (219). A recent survey found that 40% of individuals affected by mental illness did not seek treatment and among those that did seek help, 70% of individuals dropped out during the early stages of treatment (220).

Our findings examine perspectives related to mental health in the Asian population. The focus on Asian men, with a majority identifying as immigrants, contributes to the limited knowledge gathered in the Canadian context as most research has focused on the experiences of immigrant women (95,96). We examined whether anti-stigma interventions would be effective in reducing self and social stigma. Based on previous research (175,176,182), we hypothesized that participation in the ACT intervention would be effective in reducing self stigma and participation in the CEE intervention would be effective in reducing social stigma. Additionally, we hypothesized that participation in the ACT+CEE intervention would be effective in reducing both self and social stigma.

Self stigma.

Results revealed that interventions were not effective in reducing internalized stigma. Predictably, the CEE intervention and the control group did not impact self stigma scores. The CEE intervention allowed participants to directly engage with those affected by mental illness to develop a deeper understanding of mental illness and promote social activism. Unlike the ACT intervention, it is not aimed towards enhancing psychological flexibility and decreasing avoidance of internal experiences. Similarly, the control group, while an effective strategy in

increasing mental health literacy and acknowledgement of cultural factors related to stigma, is not tailored to help participants develop acceptance strategies towards internal experiences beyond their control. It was interesting to find that the ACT+CEE intervention was not effective as we anticipated that the combination of the interventions may have synergistic effects. Additionally, results from the Toronto site found that ACT+CEE reduced self stigma for the "alienation" and "stigma resistance" subscales (195). However, as mentioned previously, the current study excluded the "stigma resistance" subscale due to its weak psychometric properties.

It is possible that the interventions did not yield significant results because the internalized stigma surrounding mental illness was so deeply rooted that it was not easily affected by the interventions and may require repeated contact. One potential reason may be due to religion and culture based on ancient belief systems, such as Confucianism, that play a major role in stigma and may negatively affect how mental illness is perceived (221). For example, Confucianism encourages individuals not to disclose their mental illness in order to maintain the family's reputation (63). Research has suggested that individuals with stronger ties to cultural values and beliefs may exhibit less positive attitudes than individuals with weaker ties (87). Additionally, while the interventions do focus on participants' experiences, particularly the ACT and CEE interventions, patriarchal views towards mental illness may form internalized ideals of masculinity for Asian men (82), resulting in psychological inflexibility and a lack of understanding towards mental illness that is not easily improved by the interventions.

Another potential explanation may be related to Metro Vancouver's large minority population. As of 2016, 46.5% of Metro Vancouver's population was of Asian origin (210). With a large percentage of the population identifying as Asian, it is possible that the communities the participants reside in resemble those of their home countries. Research has shown that Asians

exposed to Western societies have lower levels of stigma and may be more willing to seek professional help (122); however, that exposure may be limited to participants residing in Vancouver. It may be possible that being surrounded by Asian communities constantly reinforces stereotypical attitudes towards mental illness and gendered expectations towards Asian men deters them from seeking help. It is also possible that lack of Western influence led to unfamiliarity and hesitancy towards Western-based approaches (60), negatively affecting the effectiveness of the interventions in reducing mental health stigma.

An especially surprising finding was that participants randomized to the ACT intervention did not report a reduction in self stigma scores as we expected based on previous research (176). This is inconsistent with our hypothesis as we anticipated ACT would make significant improvements on self stigma. Masuda et al.'s (222) study and Kenny and Bizumic's (223) study on undergraduate students found that ACT was effective in reducing mental health stigma and increasing positive attitudes. However, it is important to note that both of these studies focused on students, while our current study includes individuals above 17 years of age. This was also the case in a recent systematic review with similar findings that noted two of three studies examining ACT focused on young adults (224). It is possible that ACT makes a greater impact on youth as research has suggested that youth may be more receptive to such approaches (182,223), and encouraging help-seeking behaviours at a younger age may result in more positive attitudes extending into adulthood (223). As the current study does not examine age groups separately, further investigation would be needed to determine if ACT makes a greater impact on the younger population. Furthermore, a majority of studies examining ACT have not focused on the Asian population and more specifically, Asian men. ACT emphasizes acceptance and mindfulness strategies to engage the individual more with the present moment (162) and to

be aware of themselves without judgment (167). This is in line with Buddhist practices (167) and thus, was interesting that the current study did not yield significant results as previous research has suggested ACT to be an effective intervention for the Asian population. On the other hand, Buddhism may impede the effects of the ACT intervention as it is believed that mental illness is a penalty of the sins committed in an individual's previous life (66). The data published from the Toronto site included exploratory analyses of ethnicity and found that ACT had a greater impact on East Asians compared to other groups (195). The authors suggested that Buddhism is largely practiced in East Asian countries and therefore, East Asians may be more impressionable (195). While the current study did not find Asian ethnicity to be a confounder, further research may be needed to determine the impact of ACT on various Asian subgroups. Another plausible explanation may be that the intervention delivery occurred over a short amount of time, not allowing participants to fully develop skills and strategies related to the core processes of ACT. This was also the case in another study examining the effects of ACT in reducing HIV stigma (176). The study implemented ACT with the Social Justice Capacity Building (SJCB) intervention and found that while the addition of ACT led to positive changes in attitude, the effects were not significant (176). This is unlike the data published from the Toronto site that found participants randomized to the ACT intervention reported reduced self stigma on all ISMI subscales except for the "discrimination experience" subscale (195). Additionally, we were unable to compare sites to determine if effects were present at the 3 month and 6 month follow up as data from the Toronto site only included immediate follow up. Further research is needed to determine whether a longer, sustainable intervention may be effective.

Social stigma.

Results revealed that the ACT and ACT+CEE interventions and the control group did not yield significant reductions in social stigma scores. However, non-significant reductions in social stigma scores were seen for the ACT intervention. One of the core processes for this intervention was committed action, whereby participants were encouraged to take action in line with their personal values (162). Thus, while non-significant, it may be possible that ACT led to shifts in stigmatizing attitudes. Predictably, the control group also did not yield significant reductions in social stigma scores. The psychoeducation intervention involved discussion of stressors that were relevant to our target population such as immigration, gender, and the community. Previous research has demonstrated that culturally adapted psychoeducation is effective in increasing mental health literacy and willingness to seek help (225). However, the intervention was delivered in the format of a presentation and lacks the level of interaction and contact involved with the other interventions and therefore, may not be as effective.

In large part, our hypotheses were confirmed. Results revealed that Asian men randomized to the CEE intervention reported a significant decrease in social stigma, suggesting that the CEE intervention may have been the most effective intervention in reducing negative attitudes towards those with mental illness. This is consistent with findings from previous research. For example, Wong et al.'s (188) study examined the effectiveness of contact-based education on ethnic minorities and found that while Asians exhibited higher levels of stigma, they experienced greater positive outcomes compared to whites. Furthermore, the study also found fewer shifts in stigmatizing attitudes in males than females post-intervention (188). Although this study does not solely focus on Asian men, it supports the findings from our current study and underlines its importance and warrants the need for additional research focusing on the

Asian population. Other studies focusing specifically on the Asian population have also demonstrated similar results. One study found that Chinese participants exhibited less stigmatizing attitudes after contact-based education, with a greater shift in attitudes experienced by youth (226). Another study on Indian college students found that contact-based education significantly reduced social stigma, with effects still lasting at the one week follow up (227). Unlike these studies, the current study did not explore the effects of age and included individuals 17 years or older. It is possible that age plays a role in the effectiveness of contact-based education; however, this is likely not an explanation for the reduction in social stigma scores seen in this study as age was not found to be a confounder. Data published from the Toronto site also revealed reduction in social stigma scores for a majority of CAMI subscales (195). It is important to note that the method used to calculate social stigma scores differs from that used in the current study. Fung et al.'s study calculated an average score (ranging from 1 to 5) for each subscale (195), whereas in this study, we calculated a summative score (ranging from 10 to 50) for each subscale. Thus, a comparison of social stigma scores between sites may not be appropriate. Furthermore, the previous studies mentioned did not have a long-term follow up with participants, whereas the current study analyzed data 3 months and 6 months post-intervention. Results from the follow-up demonstrated that while the CEE intervention was found to be the most effective intervention in reducing social stigma, its effects were not found to be significant at the 6 month follow up. This is consistent with previous research (184,228) and suggests that repeated contact may be necessary to counter the effects of social stigma.

The contact-based component in this intervention provided participants with the opportunity to gain a deeper understanding towards those affected by mental illness (186), while the empowerment component allowed for high group identification (192), leading to improved

well-being and stigma. The CEE intervention in this study invited guest speakers of similar backgrounds to share their experience regarding stigma and its impact and how they addressed it. This intervention was delivered in a similar fashion as a previous study on high school students. The contact-based intervention incorporated empowerment and encouraged students to interact with guest speakers. Additionally, students were partnered with mental health programs to design and implement anti-stigma interventions (182). This encouraged students to make social changes, while extending the effects of contact-based education to the community level (182). Similarly, participants in this study may have been encouraged to adjust their perspectives and behaviour towards those affected by mental illness. Moreover, hearing similar experiences may have helped participants acknowledge the societal demands placed on Asian men and its effect on seeking help. This may have resulted in reduced social stigma due to an established sense of empowerment and new ways to take action in the participants' respective communities.

Study Limitations and Strengths

A limitation in this study may be the potential for selection bias. Asian men who chose to participate in this study may be different from Asian men who chose not to participate. It may be possible that men who chose to participate were more interested in the topic area (reducing stigma) compared to the rest of the population. Additionally, recruiting strategies involved purposeful convenience sampling and snowball sampling. As these were non-random sampling strategies, there may be a possibility that the sample was not entirely representative of the population, thus affecting the generalizability from the sample to the target population. Social desirability bias was also possible in this study. As both the ISMI and CAMI scales were self-reported questionnaires, participants may have answered questions in a manner that was viewed

as favourable to others and what society considers as "good" behaviour. In an attempt to mitigate this bias, each participant had a unique identification label and were given privacy during survey completion, eliminating the need for any identifying information. Lastly, it is important to consider that the gender of the facilitator may have affected the results of the study. A female facilitator for a men's study may have led to questions and uncertainty regarding her ability to understand men's mental health experiences and deliver workshops. Men may have treated female facilitators differently than male facilitators and engaged in flirtatious behaviour or asked personal questions. Men also may have exhibited stereotypical behaviours such as remaining stoic and providing unemotional responses. However, it could have also been the case that men were more willing and comfortable to discuss mental health experiences with a female facilitator than a male facilitator.

Despite these limitations, this study has demonstrated the effectiveness of three evidence-based anti-stigma interventions in reducing self and social stigma mental illness by using measures that have been accepted in previous research on people of various ethnic backgrounds. As the STiU project is the first study to target the effects of mental health stigma in Asian men living in Canada (209), its findings are crucial to contributing to the limited evidence in the Canadian context. Additionally, the large sample size will provide a smaller margin of error, representative results, and a derivation of accurate insights from the study.

Conclusion

In conclusion, our findings highlight the need of implementing interventions to reduce the mental health stigma among Asian men. Previous studies in Canada have found that a majority of research has focused on the experiences of immigrant women and limited studies have focused on immigrant men. The findings from this study may be important in addressing this gap and in facilitating efforts to advocate for change. This study provides evidence that the CEE intervention may be effective in reducing social stigma in Asian men. However, further research is needed to determine the effectiveness of the ACT intervention in reducing self stigma. It would also be worthwhile to determine whether residing in an area with a large percentage of the population identifying as Asian impacts the effectiveness of a Western approach to recovery. Nevertheless, this study may be crucial in the promotion of mental health and may encourage stigma reduction activities within this community.

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