

Evaluating the impact of direct and indirect contact on the mental health stigma of pharmacy students

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Abstract

Purpose Contact with mental health consumers has shown to be a promising strategy to address mental health stigma, particularly in the context of pharmacy education. This research aimed to compare the effectiveness of a direct (face-to-face) contact intervention with an indirect (film based) contact intervention in reducing the mental health stigma of pharmacy students.

Method A two-group, non-randomized, comparative study was conducted with third year pharmacy students ($n = 198$) allocated to the direct contact arm and fourth year pharmacy students ($n = 278$) allocated to the indirect contact arm. Baseline and immediate post-intervention data were collected using a validated 39 item survey instrument to assess the impact of the interventions on mental health stigma as well as attitudes towards providing mental health pharmaceutical services.

Results Participants in the direct contact group showed a significant improvement in 37 out of 39 survey items and participants in the indirect contact group showed a significant improvement in 27 out of 39 items ($P < 0.05$). While direct contact had a stronger impact than indirect contact for 22 items ($P < 0.05$), for numerous key measures of mental health stigma the impact of the two contact interventions was equivalent.

Conclusion Both indirect and direct contact may positively impact mental health stigma. While the strength of the stigma-change process may be heightened by face-to-face interactions, the largely positive impact of indirect contact suggests that stigma reduction may depend less on

the medium of contact but more on the transcendent messages contributed by the consumers facilitating the contact experience.

Keywords Stigma · Mental health · Contact interventions · Consumer · Pharmacy

Introduction

Mental health stigma continues to amplify the suffering and hamper the recovery of individuals with a mental illness [1–4]. It has been widely evidenced that stigma is not limited to the lay public but also extends to health professionals [5–7]; the very people mental health consumers rely on for care. While the literature has largely focused on addressing the mental health stigma held by professionals such as psychiatrists, general medical practitioners and nurses, some studies have identified pharmacists and pharmacy students as important targets for mental health stigma reduction interventions [8–11]. Medications are a major modality of treatment for most mental illnesses and professional pharmacist services such as counselling and medication reviews can increase adherence to medication and resolve psychotropic medication related problems [12–15]. Furthermore, given pharmacists' accessibility and frequent interaction with consumers, pharmacists could potentially have a significant primary health care role in the area of mental health. However, research has consistently found that the suboptimal attitudes towards mental illness held by pharmacists and students can act as a major barrier to professional practice [16, 17].

There has been substantial research into interventions to reduce mental health stigma. Broadly, these interventions can be classified according to the psychological approach;

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‘protest’, ‘education’, or ‘contact’ [18]. Protest-based interventions highlight the injustice of specific stigmas and morally appeal for a suppression of stigmatizing attitudes [18]. Educational interventions centre on highlighting false, emotionally charged assumptions about mental illness and providing counteractive facts [19, 20]. Contact-based interventions facilitate authentic personal contact with consumers with a mental illness [21]. Within the literature, interventions that have incorporated an element of contact have had the most consistent impact on stigma reduction [21–23].

Contact-based interventions have typically involved facilitating *direct* contact between targeted populations such as students, and mental health consumers. Notably, the type and quality of contact between individuals and mental health consumers appears to be an important factor in reducing stigma [24–26]. Mental health professionals such as psychiatrists have regular contact with mental health consumers, yet they hold similar sub-optimal attitudes to the general public [5, 27, 28]. Furthermore, numerous studies have revealed that clinical placements for health care students may have a limited impact on participants’ stigma towards mental health patients [29–31]. It appears that the arguably obligatory contact health professionals have with consumers in the workplace may not be conducive to stigma reduction [5]. Although numerous studies have found significant success in specifically utilizing mental health consumers who have been trained to speak about their illness [32–36], the limited availability of these trained mental health consumers hinders their widespread implementation.

In light of the practical limitations of direct contact, there has been mounting interest in developing ways to *indirectly* incorporate the element of contact into stigma interventions. For example, by using filmed footage of mental health consumers talking about similar experiences and issues to that relayed in direct personal meetings such as symptoms, treatment and personal recovery. Filmed presentations are appealing because they provide an efficient means for impacting stigma on a broader scale and can be incorporated more easily into exportable, reusable interventions. Additional advantages of indirect tools include their ability to allow individuals to maintain anonymity, which may be particularly pertinent in the area of mental health [37]. Furthermore, in such a technologically savvy generation, individuals are likely to respond strongly to media presentations and this technology ‘alliance’ is also an aspect that may be exploited to maximize the impact of interventions. For example, filmed footage can be formatted into programs which can offer interactivity, tailoring and online rewards to facilitate optimum delivery of anti-stigma messages [38].

While recent studies have provided empirical support for the effectiveness of media presentations to facilitate

stigma reduction, the use of such indirect mediums of contact has been unexplored in the pharmacy setting [37–43]. Given the strong success of direct contact interventions involving trained consumers in the context of pharmacy students, it is an important avenue of research [33, 35]. Therefore, the aim of this study was to develop a novel, indirect contact intervention and comparatively evaluate its effectiveness against that of a direct contact intervention on the mental health stigma of pharmacy students.

Methods

This study was approved by the Human Research Ethics Committee at the University of Sydney.

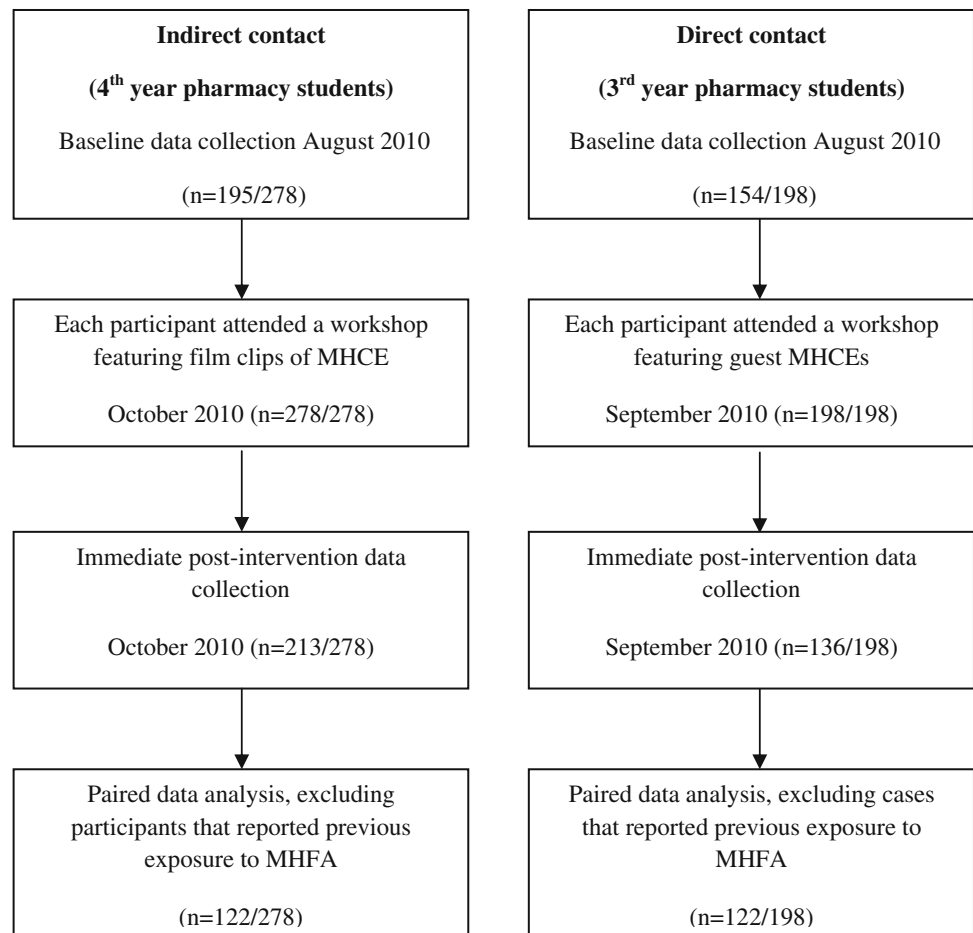
Study design

A non-randomized, two-group, comparative study design was used to compare the indirect (film based) contact intervention to the direct (face-to-face) contact intervention (Fig. 1). All students in the third ($n = 198$) and fourth year ($n = 278$) of a 4-year Bachelor of Pharmacy degree at The University of Sydney, Australia in 2010 were invited to participate in the study. Third year students were chosen to be participants in the direct contact arm because successful trials of consumer participation in mental health pharmacy education had led to a direct contact intervention becoming a formal part of the third year mental health curriculum [33, 35]. The fourth year students were chosen to be participants in the indirect (filmed contact) arm because of their anticipated appreciation of a contact-based mental health intervention that had not been offered previously. The historical data has consistently evidenced these groups to have similar baseline levels of stigma [8, 10].

Baseline data were collected from all consenting participants in August 2010. Immediately following participation in the interventions participants were invited to complete the post-intervention survey instrument (direct contact group in September 2010 and indirect contact group October 2010). The interventions were delivered to all participants as a formal part of both the third and fourth year curriculums.

Interventions

The direct contact intervention involved a previously evaluated 2-h workshop involving mental health consumer educators (MHCEs) recruited from the Schizophrenia Fellowship of New South Wales (SFNSW) [33, 35]. A MHCE is a person who has previously received mental health care and works to inform and educate members of

Fig. 1 Study design

the wider community on mental illness and its effects of individuals, families and society [44]. Four 2-h workshops were conducted in 1 week led by three to four consumer educators and two pharmacist tutors. Participants in the direct contact arm were divided into four groups of approximately 50 participants and each participant allocated to attend one workshop. In each workshop, individual MHCEs sat down and shared their personal experiences of mental illness with small groups of students. There was a strong emphasis on interacting with the consumers and actively discussing mental health related issues. The consumer educators rotated around the small groups to facilitate the communication of a variety of perspectives and experiences.

The indirect contact intervention involved the development of a learning module to engage students with video footage of mental health consumers. Filmed interviews with MHCEs from the SFNSW were conducted using a semi-structured interview guide, based on the content of previous workshops involving direct contact with MHCEs. The topics included the MHCEs' personal experiences of mental illness symptoms, treatment, lifestyle changes, stigma and recovery. The MHCEs also participated in the

development of simulated scenarios depicting patient–pharmacist interactions. These scenarios demonstrated examples of verbal and non-verbal communication that can positively and negatively impact professional interactions with mental health consumers in the community pharmacy setting. These filmed resources were shown in a 90 min workshop led by two pharmacist tutors. Participants in the indirect contact arm were divided into approximately equal groups and allocated to attend one of eight workshops conducted. Both the indirect and direct contact interventions additionally involved active discussion and reflective activities led by the pharmacist tutors.

Survey instrument

A 39 item survey instrument, developed and tested previously by this research group [35], and comprising widely used and previously validated scales with face validity for use in pharmacy students, was used for this study [8, 33, 35]. It included the 7-item Social Distance Scale (SDS), six items from the Attribution Questionnaire (AQ), 10 items relating to professional service delivery by pharmacists, and 16 items relating to specific stigmatizing beliefs. The

SDS is a widely used instrument to measure the behavioral intention of social avoidance towards people with mental disorders and has been previously tested for reliability and validity [45, 46]. The SDS asks how willing participants are to associate with a person previously hospitalized for schizophrenia in various situations, with higher scores indicating a greater willingness to interact. The AQ was derived by Corrigan et al. [47] to examine the relationship between stigmatizing attitudes and discriminatory behavior, and confirmatory factor analyzes have demonstrated the reliability and validity of this model. The six selected items from the AQ reflected violence and dangerousness as a common stigma [47, 48]. The 10 items on professional service delivery were derived from previous studies on pharmacist attitudes towards providing services for consumers with a mental illness [9, 17]. The 16 items relating to stigmatizing beliefs in severe depression and schizophrenia were based on surveys of medical students, doctors and the public [49, 50]. The beliefs included ‘have themselves to blame’, ‘unpredictable’, ‘will never recover’, ‘difficult to talk to’, ‘not improve after treatment’, ‘danger to others’, ‘pull themselves together’ and ‘have different feelings’.

Demographic information was collected from each student including age, gender, country of birth, parents’ country of birth, personal and family experience of mental illness, previous work experience in a pharmacy and whether they had previously attended a Mental Health First Aid (MHFA) course.

Data analysis

The survey instrument was administered electronically and data stored on a secure server. Following de-identification by an external source the data was received by researchers and imported into a database created in SPSS Version 17.0. The individual student’s responses were matched across the two time points of the study using their de-identified student identification codes. All individual Likert items were tested for normality using Kolmogorov–Smirnov and

consequently parametric tests were conducted as the Likert scale data did not violate the normality assumption. The seven items from the SDS were summed for a composite measure of social distance (range = 7–28). All other items were analyzed individually. A two (intervention) × two (time period) mixed model ANOVA was computed for paired data to ascertain whether there were significant interactions between the intervention group and time period. The assumptions for mixed model ANOVA were met and post hoc analyzes were conducted using pairwise comparisons adjusting for multiple comparisons with Bonferroni corrections.

Results

The completed survey instrument was returned by 195 participants in the indirect contact group and 154 participants in the direct contact group at baseline, a response rate of 70 and 78%, respectively. The post-intervention survey instrument was returned by 213 participants in the indirect, contact group and 136 participants in the direct contact group, a response rate of 77 and 69%, respectively. There were 157 participants in the indirect contact group and 123 participants in the direct contact for who matched survey data were available. There were no significant differences between the groups with respect to gender, birthplace, parents’ birthplaces, family experience with mental illness, and personal experience with mental illness (Table 1). However, there was a significantly greater number ($P < 0.05$) of participants in the indirect contact group who reported having employment in a pharmacy (72.4% in the direct contact group vs. 92.4% in the indirect contact group). This was not surprising given the indirect contact group comprised of students in their fourth year of study and who were closer to professional practice. There were significantly more females than males in both groups, however, there were no significant differences based on gender. Thirty-six participants reported participating in a previous study involving completion of a Mental Health

Table 1 Demographics of study participants

	Indirect contact (<i>n</i> = 122) ^a , <i>n</i> (%)	Direct contact (<i>n</i> = 122) ^a , <i>n</i> (%)
Mean age in years (SD)	21.9 (0.20)	20.9 (0.22)
Sex, female	77 (63.1)	75 (61.5)
Born in Australia, yes	64 (52.5)	77 (63.1)
First parent born in Australia, yes	9 (7.4)	15 (12.3)
Second parent born in Australia, yes	11 (9.0)	13 (10.7)
Previously worked in pharmacy*, yes	111 (91.0)	89 (73.0)
Personal experience with mental illness, yes	17 (13.9)	20 (16.4)
Family experience with mental illness, yes	31 (25.4)	30 (24.6)

^a Number of participants in each group who had paired baseline and post-intervention data, excluding participants who reported previous involvement in a MHFA course

* Significant difference between groups at $P < 0.05$

First Aid training course in 2009, and their data was subsequently excluded from the analysis due to the potential to confound results. Following this exclusion there were 122 participants in the indirect contact group and 122 participants in the direct contact with matched data for analysis.

Participants in the direct contact group showed a significant improvement in 37 out of 39 survey items ($P < 0.05$) and participants in the indirect contact group showed a significant improvement in 27 out of 39 items ($P < 0.05$); indicating that both contact mediums had a predominantly positive impact on mental health stigma and attitudes towards mental illness. Overall, for 22 items the mixed ANOVA detected a significant interaction between the intervention type and time period, suggesting that the direct contact intervention had a stronger positive impact than the indirect contact intervention ($P < 0.05$). However, for 17 items there was no significant interaction between intervention type and time period, suggesting that the two interventions impacted these items to a similar extent.

Participants in both groups showed a significant reduction in mean score for all seven individual items in the 7-item SDS and for the total social distance score ($P < 0.05$) (Table 2). The non-significant interaction between intervention type and time suggested that the two interventions led to a similar decrease in social distance scores, which signifies that participants demonstrated a greater willingness to interact with patients with a mental illness after either intervention.

For the six items from the Attribution Questionnaire relating to negative attributions towards mental illness (Table 3) and the 16 items relating to stigmatizing beliefs towards mental illness (Tables 4, 5), the direct contact intervention generally had a stronger positive impact than the indirect contact intervention. For the Attribution items, while the non-significant interaction between the intervention type and time period indicated that the interventions had an equivalent impact for one item, a significant interaction between the intervention type and time period was detected for five items, suggesting that for these items the direct contact intervention had a greater impact than the indirect contact intervention ($P < 0.05$). For the items relating to stigmatizing beliefs, while the non-significant interaction between the intervention type and time period indicated that the interventions had an equivalent impact for six item items, a significant interaction between the intervention type and time period was detected for ten items, suggesting that for these items the direct contact intervention had a greater impact than the indirect contact intervention ($P < 0.05$).

A similar trend was observed in the differential impact of the two interventions for the ten items relating to the provision of pharmaceutical services (Table 6). For three items a non-significant interaction between the intervention type and time period indicated that both the indirect and direct contact interventions had a comparable impact on these items. However, for the remaining seven items the

Table 2 Social distance scale

Item ^a	Indirect contact ($n = 122$) ^b				Direct contact ($n = 122$) ^b				2 × 2 ANOVA: interaction group × time
	Pre-mean (SD)	Post-mean (SD)	Mean difference (SD)	<i>P</i> value	Pre-mean (SD)	Post-mean (SD)	Mean difference (SD)	<i>P</i> value	
Share a flat with	2.92 (0.59)	2.60 (0.68)	−0.31 (0.63)	<0.001	2.93 (0.66)	2.47 (0.71)	−0.46 (0.76)	<0.001	N/S ^c
Work alongside	2.08 (0.64)	1.89 (0.65)	−0.18 (0.58)	0.003	2.12 (0.69)	1.73 (0.56)	−0.39 (0.74)	<0.001	$P = 0.017$
Have as a neighbor	2.07 (0.73)	1.94 (0.68)	−0.13 (0.63)	0.042	2.06 (0.80)	1.84 (0.65)	−0.22 (0.78)	0.001	N/S
Have as a baby-sitter	3.53 (0.55)	3.10 (0.71)	−0.43 (0.68)	<0.001	3.55 (0.66)	3.05 (0.79)	−0.50 (0.73)	<0.001	N/S
Have one of your children marry	3.08 (0.77)	2.78 (0.80)	−0.30 (0.68)	<0.001	3.02 (0.74)	2.83 (0.83)	−0.18 (0.75)	0.006	N/S
Introduce to a single friend	2.89 (0.72)	2.60 (0.71)	−0.29 (0.66)	<0.001	2.85 (0.77)	2.56 (0.80)	−0.29 (0.80)	<0.001	N/S
Recommend for a job	2.18 (0.64)	1.96 (0.60)	−0.22 (0.58)	<0.001	2.13 (0.75)	1.80 (0.58)	−0.33 (0.74)	<0.001	N/S
Total SDS score	18.73 (3.44)	16.81(3.71)	−1.92 (2.82)	<0.001	18.63 (3.64)	16.31 (3.75)	−2.33 (3.49)	<0.001	N/S

Items were scored on a 4 point Likert scale where 1 = definitely willing, 2 = probably willing, 3 = probably unwilling, 4 = definitely unwilling. Total score ranges from 7 to 28

^a Items answered in relation to a person previously hospitalized with schizophrenia

^b Number of participants in each group who had paired baseline and post-intervention data, excluding participants who reported previous involvement in a MHFA course

^c *P* value not significant at $P = 0.05$

Table 3 Attribution questionnaire

Item ^a	Indirect contact (<i>n</i> = 122) ^b				Direct contact (<i>n</i> = 122) ^b				2 × 2 ANOVA: interaction group × time
	Pre-mean (SD)	Post-mean (SD)	Mean difference (SD)	<i>P</i> value	Pre-mean (SD)	Post-mean (SD)	Mean difference (SD)	<i>P</i> value	
I feel threatened	3.29 (0.98)	3.58 (0.76)	0.30 (0.97)	0.001	3.34 (0.97)	3.94 (0.76)	0.61 (1.04)	<0.001	<i>P</i> = 0.017
I feel unsafe	3.10 (1.02)	3.57 (0.80)	0.47 (0.96)	<0.001	2.98 (1.01)	3.74 (0.85)	0.76 (1.17)	<0.001	<i>P</i> = 0.033
Terrify me	3.59 (0.95)	3.84 (0.85)	0.25 (0.77)	0.002	3.45 (0.91)	4.07 (0.74)	0.62 (1.05)	<0.001	<i>P</i> = 0.002
I am frightened	3.45 (0.95)	3.72 (0.89)	0.27 (0.85)	0.002	3.36 (0.96)	3.92 (0.77)	0.55 (1.02)	<0.001	<i>P</i> = 0.021
I would avoid	3.50 (1.00)	3.61 (0.86)	0.10 (0.92)	N/S ^c	3.56 (0.85)	4.03 (0.75)	0.48 (0.96)	<0.001	<i>P</i> = 0.003
I am scared	3.18 (0.94)	3.45 (0.55)	0.27 (1.13)	0.018	3.07 (1.01)	3.50 (1.01)	0.43 (1.32)	<0.001	N/S

Items were scored on a 5 point Likert scale where 1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree, 5 = strongly disagree

^a Items answered in relation to patients with a serious mental illness

^b Number of participants in each group who had paired baseline and post-intervention data, excluding participants who reported previous involvement in a MHFA course

^c *P* value not significant at *P* = 0.05

Table 4 Stigmatisation of people with depression

Item ^a	Indirect contact (<i>n</i> = 122) ^b				Direct contact (<i>n</i> = 122) ^b				2 × 2 ANOVAs: interaction of group × time
	Pre-mean (SD)	Post-mean (SD)	Mean difference (SD)	<i>P</i> value	Pre-mean (SD)	Post-mean (SD)	Mean difference (SD)	<i>P</i> value	
Will not improve after treatment	4.04 (0.83)	4.21 (0.74)	0.17 (0.97)	N/S ^c	4.11 (0.71)	4.34 (0.87)	0.23 (1.04)	0.012	N/S
Are unpredictable	3.13 (0.97)	3.48 (0.80)	0.35 (0.99)	0.001	2.66 (1.06)	3.50 (0.97)	0.84 (1.22)	<0.001	<i>P</i> = 0.001
Will never recover	4.18 (0.69)	4.18 (0.70)	0.00 (0.78)	N/S	4.17 (0.72)	4.36 (0.68)	0.19 (0.62)	0.015	N/S
Have different feelings	3.02 (1.06)	3.08 (1.09)	0.06 (1.28)	N/S	2.54 (1.04)	3.21 (1.25)	0.67 (1.27)	<0.001	<i>P</i> < 0.001
Are difficult to talk to	3.33 (0.92)	3.65 (0.83)	0.33 (1.08)	0.002	2.88 (0.99)	3.95 (0.90)	1.08 (1.15)	<0.001	<i>P</i> < 0.001
Should pull themselves together	3.94 (0.90)	4.03 (0.87)	0.08 (0.87)	N/S	3.39 (1.15)	3.97 (1.06)	0.58 (1.02)	<0.001	<i>P</i> < 0.001
Are a danger to others	3.15 (0.95)	3.40 (0.85)	0.25 (1.19)	0.026	2.67 (0.94)	3.43 (1.07)	0.75 (1.26)	<0.001	<i>P</i> = 0.002
Have themselves to blame	4.21 (0.87)	4.31 (0.76)	0.11 (0.85)	N/S	4.16 (0.90)	4.49 (0.67)	0.33 (0.90)	<0.001	N/S

Items were scored on a 5 point Likert scale where 1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree, 5 = strongly disagree

^a Items answered in relation to patients with severe depression

^b Number of participants in each group who had paired baseline and post-intervention data, excluding participants who reported previous involvement in a MHFA course

^c *P* value not significant at *P* = 0.05

significant interaction between the intervention type and time period indicated that the change in score observed in these items was greater in the direct contact group than in the indirect contact group (*P* < 0.05).

Discussion

This study demonstrated that both direct, face-to-face contact and indirect, filmed contact interventions are effective in reducing mental health stigma among pharmacy students.

This important finding highlights that stigma reduction by contact with mental health consumers may not depend entirely on engagement in physical, face-to-face interactions; but may also be a result of key messages contributed by the consumers—messages that are able to transcend through different mediums of contact.

While the stigma-reducing efficacy of direct contact with mental health consumers in the setting of pharmacy education has been previously established, pharmacy students, as future health care professionals, may also greatly benefit from a readily available, easily disseminated

Table 5 Stigmatisation of people with schizophrenia

Item ^a	Indirect contact (<i>n</i> = 122) ^b				Direct contact (<i>n</i> = 122) ^b				2 × 2 ANOVAs: interaction of group × time
	Pre-mean (SD)	Post-mean (SD)	Mean difference (SD)	<i>P</i> value	Pre-mean (SD)	Post-mean (SD)	Mean difference (SD)	<i>P</i> value	
Will not improve after treatment	4.02 (0.69)	4.09 (0.64)	0.07 (0.80)	N/S ^c	3.93 (0.68)	4.30 (0.68)	0.37 (0.93)	<0.001	<i>P</i> = 0.008
Are unpredictable	2.63 (0.86)	3.07 (0.92)	0.45 (1.06)	<0.001	2.45 (0.86)	3.42 (0.82)	0.97 (1.02)	<0.001	<i>P</i> < 0.001
Will never recover	3.69 (0.87)	4.01 (0.70)	0.32 (0.94)	<0.001	3.72 (0.87)	3.95 (0.92)	0.23 (0.91)	0.006	N/S
Have different feelings	3.19 (1.04)	3.42 (0.99)	0.23 (1.23)	N/S	2.88 (1.05)	3.33 (1.17)	0.46 (1.08)	<0.001	N/S
Are difficult to talk to	3.33 (0.87)	3.69 (0.72)	0.36 (0.99)	<0.001	3.08 (0.93)	4.14 (0.76)	1.06 (1.11)	<0.001	<i>P</i> < 0.001
Should pull themselves together	3.98 (0.90)	4.07 (0.85)	0.10 (0.80)	N/S	3.53 (1.07)	4.16 (1.00)	0.63 (0.91)	<0.001	<i>P</i> < 0.001
Are a danger to others	2.76 (0.72)	3.30 (0.86)	0.54 (1.02)	<0.001	2.56 (0.85)	3.26 (1.03)	0.70 (1.09)	<0.001	N/S
Have themselves to blame	4.36 (0.71)	4.34 (0.74)	0.02 (0.77)	N/S	4.36 (0.74)	4.67 (0.55)	0.31 (0.74)	<0.001	<i>P</i> = 0.001

Items were scored on a 5 point Likert scale where 1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree, 5 = strongly disagree

^a Items answered in relation to patients with schizophrenia

^b Number of participants in each group who had paired baseline and post-intervention data, excluding participants who reported previous involvement in a MHFA course

^c *P* value not significant at *P* = 0.05

intervention that allows the opportunity to gain authentic insights from and develop partnerships with mental health consumers [33, 35]. A key finding was that while the direct contact intervention had a greater impact than the indirect contact for a significant number of items, for items relating to key mental health stigma constructs both interventions had an equally positive impact.

The first of these constructs is social distance which is representative of the desire to avoid contact with mental health consumers. Our results correspond with that of Reinke who found that indirect, filmed contact and direct, face-to-face contact had comparable, statistically significant impacts on social distance [38]. While the small sample size (62 subjects) in Reinke's study promoted a lack of conviction in these findings, our results from a much larger cohort significantly strengthen the support for the effectiveness of contact delivered via indirect mediums such as film. Most encouragingly, both intervention groups led to comparable improvements in both 'intermediate' social distance items such as 'recommend that person for a job' as well as 'close' social distance items such as 'have that person baby sit your child' and 'have one of your children marry'. It was evident that both contact mediums were equally effective in facilitating an encompassing change in attitude towards mental health consumers that was not limited to specific domains of social interaction. The ability of indirect contact to substantially impact social distance is of paramount significance because social distance is an integral proxy measure of the behaviors so

heavily featured in consumers' negative experiences of rejection, and exclusion from society [1, 46].

Another key measure impacted to a similarly positive extent by the two contact interventions was the perceived belief that people with schizophrenia are a danger to others. Furthermore, a similarly significant improvement was observed for the Attribution Questionnaire item 'I am scared of patients with a serious mental illness'. Such findings support those of Kerby who found that a film intervention which conveyed first hand experiences of consumers with a mental illness was able to reduce perceived dangerousness in a group of medical students [41]. The perceived dangerousness of people with a severe mental illness has been recognized as a highly damaging component of stigma evidenced to be as pervasive amongst health professionals as the lay public [5, 27, 28]. Ucock [5] documents that 28% of general practitioners and 78% of non-practitioner hospital staff, such as nurses, believe that patients with schizophrenia are dangerous, despite having a high mental health literacy. The results posit that contact, whether delivered directly or indirectly, may be a powerful approach to address this stigma that is largely resistant to education but fascinatingly, is so subject to modulation by negative influences such as media depictions [51].

An important finding was that the positive impact of the indirect contact intervention extended to the majority of items relating to providing professional services to mental health consumers. The indirect contact intervention was particularly powerful in enhancing participants' perception

Table 6 Provision of pharmaceutical services to consumers with a mental illness

Item ^a	Indirect contact (<i>n</i> = 122) ^b				Direct contact (<i>n</i> = 122) ^b				2 × 2 ANOVAs: interaction of group × time
	Pre-mean (SD)	Post-mean (SD)	Mean difference (SD)	<i>P</i> value	Pre-mean (SD)	Post-mean (SD)	Mean difference (SD)	<i>P</i> value	
Do not want to talk about the duration of treatment	3.59 (0.88)	3.80 (0.78)	0.21 (1.00)	0.031	3.26 (0.92)	3.98 (0.87)	0.73 (1.16)	<0.001	<i>P</i> < 0.001
Receive all the information they need from psychiatrist and/or GP	3.72 (0.86)	3.95 (0.68)	0.23 (1.00)	0.018	3.69 (0.97)	3.77 (1.07)	0.08 (1.13)	N/S	N/S ^c
It requires too much time to adequately counsel patients	3.51 (0.92)	3.58 (0.82)	0.66 (0.93)	N/S	3.27 (0.97)	3.93 (0.82)	0.66 (1.08)	<0.001	<i>P</i> < 0.001
Feel awkward asking a patient why prescribed an antipsychotic	3.06 (1.09)	3.27 (1.02)	0.21 (1.13)	0.04	2.76 (1.08)	3.62 (1.01)	0.86 (1.12)	<0.001	<i>P</i> < 0.001
Psychiatrist/GP is the most qualified to advise	2.97 (1.03)	3.20 (1.05)	0.24 (1.08)	0.026	2.84 (1.13)	3.22 (1.20)	0.39 (1.26)	<0.001	N/S
My opinions don't affect my ability to provide pharmaceutical care	2.78 (1.20)	2.84 (1.19)	0.07 (1.15)	N/S	3.04 (1.15)	3.00 (1.25)	0.04 (1.60)	0.745	N/S
Do not want to talk to pharmacists about the side-effects	3.58 (0.86)	3.91 (0.76)	0.33 (1.03)	0.001	3.34 (0.89)	4.15 (0.75)	0.81 (1.10)	<0.001	<i>P</i> = 0.001
Do not want to talk to pharmacists about their symptoms	3.51 (0.83)	3.82 (0.78)	0.31 (0.95)	0.001	2.98 (0.96)	4.04 (0.80)	1.06 (1.08)	<0.001	<i>P</i> < 0.001
Do not follow the advice of pharmacists	3.08 (0.70)	3.45 (0.77)	0.37 (0.94)	<0.001	3.01 (0.82)	3.55 (0.88)	0.54 (1.06)	<0.001	N/S
Do not understand the information provided by pharmacists	3.60 (0.80)	3.79 (0.72)	0.19 (0.84)	N/S	3.56 (0.76)	4.14 (0.67)	0.58 (0.83)	<0.001	<i>P</i> = < 0.05

Items were scored on a 5 point Likert scale where 1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree, 5 = strongly disagree

^a Items answered in relation to patients with schizophrenia

^b Number of participants in each group who had paired baseline and post-intervention data, excluding participants who reported previous involvement in MHFA course

^c *P* value not significant at *P* = 0.05

of the role of the pharmacist in providing information and advice to mental health consumers, and the appreciation that mental health consumers have for the advice provided. These findings largely correlate with those observed in previous studies demonstrating the efficacy of contact-based interventions conducted in the context of mental health pharmacy education [33–35]. Interestingly, the results showed that while both interventions led to improvements in the majority of attitudes relating to professional practice, both interventions did not impact the item which measured the extent to which participants recognize that their personal opinions about mental illness impact their ability to provide pharmaceutical services. This finding has been also observed in several previous

studies where some pharmacists do not perceive their own opinions to be a barrier and highlights that while contact-based interventions may implicitly have a strong impact on stigma reduction, future interventions may need to more explicitly emphasize that personal attitudes and beliefs can be a barrier to professional practice [33, 52].

The overall positive impact of indirect contact, which for numerous key items was comparable to that of direct contact, suggested that stigma reduction can be independent of the physical, face-to-face interactions originally believed to be central to the strategy of contact [21]. Rationalization of this key finding may be facilitated through an exploration of the forces governing the process of stigma reduction engendered by contact [53–56]. Based

on the seminal work by Allport, it has been postulated that simple contact between groups does not automatically engender improved intergroup relations but that certain ‘conditions’ are required to facilitate the process of stigma reduction by contact [24, 57]. When applied to the context of mental health stigma empirical research has proffered consideration for the presence of such conditions as; equal status amongst interacting parties, common goals, the level of intimacy and structure in the interaction, a voluntary motivation to engage in contact and whether the experience was perceived as positive and pleasant [22–24, 58]. Indeed, the potency of the direct contact intervention may fittingly have been attributable to the amplification of certain positive contact conditions such as level of intimacy and engagement facilitated by the face-to-face delivery medium. However, the filmed intervention’s positive impact strongly indicates that it is not the medium of contact but the trained consumers themselves who innately ‘fulfill’ many of the positively moderating conditions.

Of great significance is the concept that the MHCEs’ personal experiences have the ability to engender positive emotional reactions regardless of whether they were relayed in direct interactions or indirectly through the medium of film. The consumers, in their simple act of sharing personal experiences both positive and negative, overall represented a balanced, human portrayal of mental illness that generated an affective response and promoted a connection to the ‘person behind the illness’. The results strongly insinuate that the mere process of stabilized mental health consumers, such as the MHCEs, sharing their personal experiences may effectively undermine the one-dimensional stereotypes of people with a mental illness.

Furthermore, likely present in both the direct and indirect contact intervention was the condition of ‘equal status’. The MHCEs, in their definition as educators, had inherently been elevated in status from a standard consumer encountered in the pharmacy workplace, to peer-level guests with valuable insights to offer. The greater sense of equality was significant because even though they have not officially begun their professional practice duties, the pharmacy students are likely to already interact with consumers with a sense of professional authority. A further condition likely facilitated by contributions from the consumer educators themselves and not the contact medium is that of ‘mutual goals’. In the educational setting promoted by both interventions, the MHCEs were likely to be more motivated to contribute positively than if they were in a health care service setting. Our results support the notion that contact with trained consumers in an educational setting, whether delivered indirectly or directly, may promote stigma reduction by subverting the hierarchical professional-patient mentality and encouraging the mutual learning alliance of consumers and students. Furthermore,

these results show that both types of contact-based interventions had significantly positive impacts on stigma levels, suggesting that contact in an educational setting is an important strategy for helping students gain a deeper insight into mental health issues and empathize with the person behind the mental illness. This is in contrast to previous data which shows that students consistently have similar levels of stigma before and after clinical placements or standard mental health curriculums [59, 60]. This difference in effect between a contact-based educational intervention and clinical placements may be due to the conditions of contact seen in the educational interventions where the MHCEs are seen to have equal status, common goals for the interaction are established and there is a voluntary motivation to engage. In addition, many clinical placements involve contact with patients in an acute stage of their mental illness in an institutional setting which may not be conducive to having an equal status in their interactions with students.

Despite the significantly positive effects observed for the indirect contact intervention the finding that the direct contact intervention had an *overall* broader effect warrants a discussion of direct contacts’ distinctive attributes. While witnessing authentic mental health consumers share their experience in ‘real life’ carries in itself the benefit of increased intimacy and engagement, an additional strength of the direct contact intervention was that it allowed active two-way interaction between the interacting parties. While previous studies involving direct contact interventions generally involved a consumer giving a ‘lecture’ about their personal journey [32, 61, 62], the direct contact intervention in this study placed an emphasis on students talking to and questioning the consumers from the start. In allowing students free reign over the interaction, the experience uniquely promoted students to address personal stigmas and attitudes. An additional strength of the direct contact intervention was its substantial duration compared to previous studies [62]. Effectively, the direct contact intervention’s ability to generate such a broadly powerful shift in attitudes may lie in the fact that it offers the opportunity for prolonged, personalized engagement in dialogue with mental health consumers.

The differential impact of the indirect-contact intervention compared to the direct-contact intervention on the disease-specific stigmatizing attitudes is likely attributable to a variety of reasons. First, the lack of opportunity to ask personalized questions and engage in dialogue with the consumers potentially limited the ability to confront more complex stigmas such as controllability and blame. Such stigmas have been evidenced to be complicated by their relationship to limited and inconsistent education about etiology and treatment [63–69]. Another factor may be the fact that while the majority of MHCEs were involved in

both interventions the MHCEs in the direct contact workshops generally appeared to talk more substantially about their experiences with a variety of mental illnesses including psychotic, affective and anxiety disorders, than in the filmed interviews. Exercising more stringent control over the recruitment of MHCEs and the filming process to increase the focus on personal experiences of depression could possibly enhance the positive impact of the indirect contact on depression stigma in future studies. Notably, it may simply be an inherent limitation of indirect contact, such that the impact of indirect contact is more reliant on the tangible messages relayed while the impact of the direct contact may, more powerfully, be extrapolated to mental illness in general. This phenomenon was observed by O'Reilly et al. [33] who documented that even though a direct contact intervention was conducted with mental health consumers with primarily psychotic disorders, significant improvements were seen for items relating to both severe depression and schizophrenia.

A key strength of our study was the presence of a comparison group. Due to the proven efficacy of the direct (face-to-face) contact intervention in this study it provided a good standard against which to assess the impact of the indirect (film based) contact intervention [33, 35]. Additionally, the large sample size recruited significantly strengthened our findings. The only previous study to investigate the comparability of direct and indirect contact involved a small sample size of 62 subjects [38]. Notably, there are also several limitations in the study that must be taken into account when interpreting the results. First, the multifaceted nature of the indirect-contact intervention which involved not only the media clips of the MHCEs relaying their experiences, but also clips of acted out scenarios of pharmacist–patient interactions, reflective activities and discussion may limit our ability to generalize our results to interventions involving purely indirect, filmed contact. However, it must be emphasized that the main focus of the intervention was largely on the filmed footage of the consumers and the simulated scenarios were also based on the consumers' personal experiences. While the interventions delivered the two different mediums of contact in a manner that is reflective of practical educational interventions, future studies may strive to conduct a purer evaluation of indirect contact by only showing the filmed clips of the consumers.

It should also be noted that all the MHCE who participated in the development of the indirect contact intervention also participated in the direct contact intervention. However, due to the availability of the MHCEs for all of the direct contact intervention workshops there were also additional MHCEs who participated who were not part of the indirect contact development. All of the MHCEs had a diagnosis of a psychotic illness and participated in the same

training program to become a MHCE through the Schizophrenia Fellowship of New South Wales and while this could potentially be a limitation of the study, the variety of MHCEs used in the intervention may have also enhanced the generalizability of the intervention.

Another possible limitation is the differing educational curriculums that the students participated in during the study. Although the contribution of activities such as mental health lectures, clinical placements and contact with mental health consumers in a pharmacy workplace were not controlled for, it is unlikely they had a significant influence on the results. Historical data have persistently reported similar attitudes amongst pharmacy students, pharmacy graduates and practicing pharmacists, indicating that standard university education and clinical experiences do not lead to significant improvements in mental health stigma [8].

Conclusions

The results from this research highlight that contact with mental health consumers in an educational setting, whether facilitated in direct, face-to-face interactions or indirectly through filmed media, may significantly impact key constructs of mental health stigma. It is strongly suggested that mental health consumers may contribute messages and attributes that are able to transcend through different mediums of contact and perpetuate stigma reduction. Easily disseminated, readily available indirect contact interventions may be a powerful method of addressing the mental health stigma of health care professionals on the broad scale that is required. Key avenues of future research include the sustainability of the indirect contact's impact and whether the changes in largely attitudinal constructs observed are translated into actual behavior change.

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References

1. Thornicroft G, Brohan E, Rose D, Sartorius N, Leese M, Group IS (2009) Global pattern of experienced and anticipated discrimination against people with schizophrenia: a cross-sectional survey. *Lancet* 373:408–415

2. Corrigan P (2004) How stigma interferes with mental health care. *Am Psychol* 59:614–625
3. Link BG, Struening EL, Neese-Todd S, Asmussen S, Phelan JC (2001) Stigma as a barrier to recovery: the consequences of stigma for the self-esteem of people with mental illnesses. *Psychiatr Serv* 52:1621–1626
4. Wahl OF (1999) Mental health consumers' experience of stigma. *Schizophr Bull* 25:467–478
5. Ucock A (2007) Other people stigmatize. But, what about us? Attitudes of mental health professionals towards patients with schizophrenia. *Noropsikiyatri Arsivi* 44:108–116
6. Ross CA, Goldner EM (2009) Stigma, negative attitudes and discrimination towards mental illness within the nursing profession: a review of the literature. *J Psychiatr Ment Health Nurs* 16:558–567
7. Roth D, Antony MM, Kerr KL, Downie F (2000) Attitudes toward mental illness in medical students: does personal and professional experience with mental illness make a difference? *Med Educ* 34:234–236
8. Bell JS, Johns R, Chen TF (2006) Pharmacy students' and graduates' attitudes towards people with schizophrenia and severe depression. *Am J Pharm Educ* 70:Article 77
9. Cates ME, Burton AR, Woolley TW, Cates ME, Burton AR, Woolley TW (2005) Attitudes of pharmacists toward mental illness and providing pharmaceutical care to the mentally ill. *Ann Pharmacother* 39:1450–1455
10. Bell JS, Aaltonen SE, Airaksinen MS, Volmer D, Gharat MS, Muceniec R, Vitola A, Foulon V, Desplenter FA, Chen TF (2010) Determinants of mental health stigma among pharmacy students in Australia, Belgium, Estonia, Finland, India and Latvia. *Int J Soc Psychiatry* 56:3–14. doi:10.1177/0020764008097621
11. Volmer D, Maesalu M, Bell JS (2008) Pharmacy students' attitudes toward and professional interactions with people with mental disorders. *Int J Soc Psychiatry* 54:402–413
12. Finley PR, Rens HR, Pont JT, Gess SL, Louie C, Bull SA, Bero LA, Finley PR, Rens HR, Pont JT, Gess SL, Louie C, Bull SA, Bero LA (2002) Impact of a collaborative pharmacy practice model on the treatment of depression in primary care. *Am J Health Syst Pharm* 59:1518–1526
13. Finley PR, Rens HR, Pont JT, Gess SL, Louie C, Bull SA, Lee JY, Bero LA, Finley PR, Rens HR, Pont JT, Gess SL, Louie C, Bull SA, Lee JY, Bero LA (2003) Impact of a collaborative care model on depression in a primary care setting: a randomized controlled trial. *Pharmacotherapy* 23:1175–1185
14. Finley PR, Crismon ML, Rush AJ, Finley PR, Crismon ML, Rush AJ (2003) Evaluating the impact of pharmacists in mental health: a systematic review. *Pharmacotherapy* 23:1634–1644
15. Gisev N, Bell JS, O'Reilly CL, Rosen A, Chen TF (2010) An expert panel assessment of comprehensive medication reviews for clients of community mental health teams. *Soc Psychiatry Psychiatr Epidemiol* 45:1071–1079
16. Maslen CL, Rees L, Redfern PH (1996) Role of the community pharmacist in the care of patients with chronic schizophrenia in the community. *Int J Pharm Pract* 4:187–195
17. Phokeo V, Sproule B, Raman-Wilms L (2004) Community pharmacists' attitudes toward and professional interactions with users of psychiatric medication. *Psychiatr Serv* 55:1434–1436
18. Corrigan PW, River L, Lundin RK, Penn DL, Uphoff-Wasowski K, Campion J, Mathisen J, Gagnon C, Bergman M, Goldstein H, Kubiak MA (2001) Three strategies for changing attributions about severe mental illness. *Schizophr Bull* 27:187–195
19. Corrigan PW, Wassel A (2008) Understanding and influencing the stigma of mental illness. *J Psychosoc Nurs Ment Health Serv* 46:42–48
20. Mann CE, Himelein MJ (2008) Putting the person back into psychopathology: an intervention to reduce mental illness stigma in the classroom. *Soc Psychiatry Psychiatr Epidemiol* 43:545–551
21. Couture SM, Penn DL (2003) Interpersonal contact and the stigma of mental illness: a review of the literature. *J Ment Health* 12:291–305. doi:10.1080/09638231000118276
22. Stuart H (2008) Fighting the stigma caused by mental disorders: past perspectives, present activities, and future directions. *World Psychiatry* 7:185–188
23. Heijnders M, Van Der Meij S (2006) The fight against stigma: an overview of stigma-reduction strategies and interventions. *Psychol Health Med* 11:353–363
24. Kolodziej ME, Johnson BT (1996) Interpersonal contact and acceptance of persons with psychiatric disorders: a research synthesis. *J Consult Clin Psychol* 64:1387–1396
25. Desforges DM, Lord CG, Ramsey SL, Mason JA, Van Leeuwen MD, West SC, Lepper MR (1991) Effects of structured cooperative contact on changing negative attitudes toward stigmatized social groups. *J Personal Soc Psychol* 60:531–544. doi:10.1037/0022-3514.60.4.531
26. Dovidio JF, Gaertner SL, Kawakami K (2003) Intergroup contact: the past, present, and the future. *Group Process Intergroup Relat* 6:5–21
27. Nordt C, Rossler W, Lauber C (2006) Attitudes of mental health professionals toward people with schizophrenia and major depression. *Schizophr Bull* 32:709–714
28. Schulze B (2007) Stigma and mental health professionals: a review of the evidence on an intricate relationship. *Int Rev Psychiatry* 19:137–155
29. Jermain DM, Crismon ML (1991) Students' attitudes toward the mentally ill before and after clinical rotation. *Am J Pharm Educ* 55:45–48
30. Sadow D, Ryder M, Webster D (2002) Is education of health professionals encouraging stigma towards the mentally ill? *J Ment Health* 11:657–665. doi:10.1080/09638230021000058210
31. Arkar H, Eker D (1997) Influence of a 3-week psychiatric training programme on attitudes toward mental illness in medical students. *Soc Psychiatry Psychiatr Epidemiol* 32:171–176
32. Coodin S, Chisholm F (2001) Teaching in a new key: effects of a co-taught seminar on medical students' attitudes toward schizophrenia. *Psychiatr Rehabil J* 24:299–302
33. O'Reilly C, Bell JS, Chen TF (2010) Consumer-led mental health education for pharmacy students. *Am J Pharm Educ* 74:Article 167
34. Buhler AP, Karimi RP (2008) Peer-level patient presenters decrease pharmacy students' social distance from patients with schizophrenia and clinical depression. *Am J Pharm Educ* 72:Article 106
35. Bell JS, Johns R, Rose G, Chen TF (2006) A comparative study of consumer participation in mental health pharmacy education. *Ann Pharmacother* 40:1759–1765
36. Cook JA, Jonikas JA, Razzano L (1995) A randomized evaluation of consumer versus nonconsumer training of state mental health service providers. *Community Ment Health J* 31:229–238
37. Leach LS, Christensen H, Griffiths KM, Jorm AF, Mackinnon AJ (2007) Websites as a mode of delivering mental health information: perceptions from the Australian public. *Soc Psychiatry Psychiatr Epidemiol* 42:167–172
38. Reinke RR, Corrigan PW, Leonhard C, Lundin RK, Kubiak MA (2004) Examining two aspects of contact on the stigma of mental illness. *J Soc Clin Psychol* 23:377
39. Chan JY, Mak WW, Law LS (2009) Combining education and video-based contact to reduce stigma of mental illness: "The Same or Not the Same" anti-stigma program for secondary schools in Hong Kong. *Soc Sci Med* 68:1521–1526

40. Finkelstein J, Lapshin O, Wasserman E (2008) Randomized study of different anti-stigma media. *Patient Educ Couns* 71:204–214
41. Kerby J, Calton T, Dimambro B, Flood B, Glazebrook C (2008) Anti-stigma films and medical students' attitudes towards mental illness and psychiatry: randomised controlled trial. *Psychiatr Bull* 32:345–349
42. Brown S, Evans Y, Espenschade K, O'Connor M (2010) An examination of two brief stigma reduction strategies: filmed personal contact and hallucination simulations. *Community Ment Health J* 46:494–499. doi:10.1007/s10597-010-9309-1
43. Corrigan PW, Larson J, Sells M, Niessen N, Watson AC (2007) Will filmed presentations of education and contact diminish mental illness stigma? *Community Ment Health J* 43:171–181
44. SFNSW (2010) Schizophrenia fellowship of New South Wales. <http://www.sfnsw.org.au/>. Accessed 15 October 2010
45. Corrigan PW, Green A, Lundin R, Kubiak MA, Penn DL (2001) Familiarity with and social distance from people who have serious mental illness. *Psychiatr Serv* 52:953–958. doi:10.1176/appi.ps.52.7.953
46. Jorm AF, Oh E (2009) Desire for social distance from people with mental disorders: a review. *Aust N Z J Psychiatry* 43:183–200. doi:10.1080/00048670903107641
47. Corrigan PW, Rowan D, Green A, Lundin R, River P, Uphoff-Wasowski K, White K, Kubiak MA (2002) Challenging two mental illness stigmas: personal responsibility and dangerousness. *Schizophr Bull* 28:293–309
48. Penn DL, Chamberlin C, Mueser KT (2003) Effects of a documentary film about schizophrenia on psychiatric stigma. *Schizophr Bull* 29:383–391
49. Crisp AH, Gelder MG, Rix S, Meltzer HI, Rowlands OJ (2000) Stigmatisation of people with mental illnesses. *Br J Psychiatry* 177:4–7
50. Mukherjee R, Fialho A, Wijetunge A, Checinski K, Surgenor T (2002) The stigmatisation of psychiatric illness: the attitudes of medical students and doctors in a London teaching hospital. *Psychiatr Bull* 26:178–181
51. Klin A, Lemish D (2008) Mental disorders stigma in the media: review of studies on production, content, and influences. *J Health Commun* 13:434–449
52. Kansanaho H, Puumalainen I, Varunki M, Airaksinen M, Aslani P (2004) Attitudes of Finnish community pharmacists toward concordance. *Ann Pharmacother* 38:1946–1953
53. Batson CD, Polycarpou MP, Harmon-Jones E, Imhoff HJ, Mitchener EC, Bednar LL, Klein TR, Highberger L (1997) Empathy and attitudes: can feeling for a member of a stigmatized group improve feelings toward the group? *J Personal Soc Psychol* 72:105–118
54. Herek GM, Capitanio JP, Widaman KF (2002) HIV-related stigma and knowledge in the United States: prevalence and trends, 1991–1999. *Am J Public Health* 92:371–377
55. Hinshaw SP (2008) Stigma as related to mental disorders. *Annu Rev Clin Psychol* 4:367–393
56. Alexander LA, Link BG (2003) The impact of contact on stigmatizing attitudes toward people with mental illness. *J Mental Health* 12:271–289
57. Pettigrew TF, Tropp LR (2006) A meta-analytic test of intergroup contact theory. *J Personal Soc Psychol* 90:751–783. doi:10.1037/0022-3514.90.5.751
58. Sadow D, Ryder M (2008) Reducing stigmatizing attitudes held by future health professionals: the person is the message. *Psychol Serv* 5:362–372
59. Bell JS, Johns R, Chen TF (2006) Pharmacy students' and graduates' attitudes towards people with schizophrenia and severe depression. *Am J Pharm Educ* 70:Article 77
60. Arkar H, Eker D (1997) Influence of a 3-week psychiatric training programme on attitudes toward mental illness in medical students. *Soc Psychiatry Psychiatr Epidemiol* 32:171–176
61. Mino Y, Yasuda N, Tsuda T, Shimodera S (2001) Effects of a one-hour educational program on medical students' attitudes to mental illness. *Psychiatry Clin Neurosci* 55:501–507
62. Brown S, Evans Y, Espenschade K, O'Connor M (2010) An examination of two brief stigma reduction strategies: filmed personal contact and hallucination simulations. *Community Mental Health J* 46:494–499. doi:10.1007/s10597-010-9309-1
63. Corrigan PW, River LP, Lundin RK, Wasowski KU, Campion J, Mathisen M, Goldstein H, Bergman M, Gagnon C, Kubiak MA (2000) Stigmatising attributions about mental illness. *J Community Psychol* 28:91–102
64. Smith M (2002) Stigma. *Adv Psychiatr Treat* 8:317–323
65. Read J, Haslam N, Sayce L, Davies E (2006) Prejudice and schizophrenia: a review of the 'mental illness is an illness like any other' approach. *Acta Psychiatr Scand* 114: 03–318. doi:10.1111/j.1600-0447.2006.00824.x
66. Walker I, Read J (2002) The differential effectiveness of psychosocial and biogenetic causal explanations in reducing negative attitudes towards "mental illness". *Psychiatry* 65:313–325
67. Schnittker J (2008) An uncertain revolution: why the rise of a genetic model of mental illness has not increased tolerance. *Soc Sci Med* 67:1370–1381. doi:10.1016/j.socscimed.2008.07.007
68. Corrigan PW (2007) How clinical diagnosis might exacerbate the stigma of mental illness. *Soc Work* 52:31–39
69. Read J, Harre N (2001) The role of biological and genetic causal beliefs in the stigmatization of "mental patients". *J Ment Health* 10:223–235