Preferences for e-mental health services amongst an online Australian sample

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Abstract

This study explored whether differences exist between those who prefer using internet-based mental health services (e-preferers) in comparison to those who prefer traditional face-to-face mental health services (non e-preferers). Gender, age, level of education, relationship status, location of residence, country of birth, previous use of mental health services, specific e-mental health service concerns, perceptions of helpfulness and future use of mental health services were investigated. Two-hundred and eighteen Australians (female = 165, male = 53) with ages ranging from 18 to 80 (M = 36.6, SD = 14.5) accessed the online survey. Results indicated that although 77.1% of respondents preferred face-to-face services only 9.6% indicated they would not use e-mental health services. No differences were found between e-preferers and non e-preferers on any demographic variable and on previous mental health service usage, however, several differences regarding perceptions of helpfulness and future use of services and concerns about e-mental health services were observed. In addition, several individual difference variables (stigma, locus of control, learning styles and personality traits) were explored and found to differ between the two groups (stigma, locus of control and personality traits). These results may help inform the future direction of mental health services, including the need to increase public awareness regarding e-mental health services.

Keywords: *e-mental health; stigma; personality; locus of control; traditional face-to-face mental health services*

Introduction

Mental illness is estimated to be responsible for 13% of the total Australian disease burden (Begg et al., 2007). The 2007 National Survey of Mental Health and Wellbeing reported that 3.2 million Australians between the ages of 16-85 years had a mental health disorder during the previous 12 months of the survey; with only 35% accessing mental health services (Australian Bureau of Statistics [ABS], 2008). There is an obvious need to explore and increase mental health service options if a reduction in the disease burden of mental illness is to be achieved (Christensen et al., 2009).

Traditional mental health services principally involve face-to-face contact when delivering care, however, in more recent times a new service delivery modality has emerged: e-mental health services. e-Mental health services makes use of a wide range of e-Interventions defined as "*mental and behavioural health promotion, prevention, treatment and management-oriented interventions that are delivered via the internet or other electronic technologies, with or without human support" (*Klein, 2010, p.20). While there is considerable research regarding the efficacy of e-mental health interventions (e.g., Barak, Hen, Boniel-Nissim & Shapira, 2008; Griffiths, Farrer, & Christensen, in press; Marks, Cavanagh, & Gega, 2007), there is limited data available exploring public perceptions of e-mental health services and its use (Fuller & Stokes, 2009). Furthermore, there is a paucity of research that has explored whether personal/individual differences exist between those who prefer e-mental health services (e-preferers) as compared to those who prefer traditional face-to-face mental health services (non e-preferers).

Turning to the literature, stigmatised beliefs (e.g., Wrigley, Jackson, Judd, & Komiti, 2005), locus of control (e.g., Campbell & Nolfi, 2005; Fogel & Israel, 2009; Wallston, Stein, & Smith, 1994), learning styles (e.g., Drago & Wagner, 2004) and personality traits (e.g., Tsan & Day, 2007) were identified as potential individual difference variables to explore. This study, therefore, sought to partially redress the absence of data by surveying Australians about their use (previous and future preference) and perceptions of helpfulness about e-mental health and traditional services. The study also aimed to investigate whether individual factors such as perceptions of stigma, locus of control (LOC), learning styles and personality traits could distinguish between those who prefer e-mental health services from those that prefer traditional mental health services. If differences between e-preferers and non e-preferers can be identified, this knowledge may assist in creating a

more tailored individualised treatment referral process. In addition, should these individual differences be related to adherence and treatment outcome, a far more efficient and effective process of providing mental healthcare services could be achieved.

It was hypothesised that e-preferers would prefer to use e-mental health services and perceive them as more helpful, would score higher on stigmatised beliefs, score higher on 'internal' and 'chance' LOC but lower on 'doctors' LOC, endorse a greater preference for read/write and visual learning styles and score lower on the personality trait of extraversion in comparison to non e-preferers.

Method

Participants

A total of 53 Australian men and 165 Australian women (age range = 18-80) accessed the open access online survey. Two hundred and eighteen participants completed the entire survey (self-developed survey plus four validated questionnaires) and n = 199 completed the self-developed survey only (completed survey response rate = 91.3%). All available responses were used in the analysis.

Measures

Self-developed survey. The self-developed survey collected a range of demographic information (i.e., gender, age, relationship status, country of birth, residence locality and accessibility to communication technologies); information relating to previous experience with and perceptions of helpfulness across a broad range of mental health services (traditional and e-mental health); information relating to possible concerns respondents may have about using e-mental health services and future usage preferences for a range of mental health services.

Respondents were also asked to choose between using either traditional face-to-face or e-mental health services should they have a mental health concern (e.g., *Overall, which type of mental health service would you prefer to use if you experienced a mental health problem? 1) Traditional face-to-face mental health assistance or 2) Internet-based mental health assistance with or without support [i.e., communication with a therapist via email, instant messaging, web-cam or skype]*). This was then used as the grouping condition (i.e., e-preferers and non e-preferers). Following the self-developed survey, respondents were asked to complete four validated questionnaires.

The Devaluation Discrimination Scale (DDS). The DDS (Link, Mirotznik, & Cullen, 1991) is a 12-item scale that measures the respondent's perception of stigma regarding mental illness and asks them to rate the level to which they agree with each item on a 6-point Likert scale ranging from 1 (*strongly agree*) to 6 (*strongly disagree*). Items are scored so that higher scores reflect a belief that a person labelled with a mental illness will be devalued and discriminated against. Link (1987) reported adequate reliability (α = .78) and internal consistency (α = .82).

The Multidimensional Health Locus of Control Scales, Form C (MHLC-C). The MHLC-C (Wallston & Wallston, 1978) is an 18-item questionnaire, reflecting different aspects of a person's locus of control orientation regarding their mental health. The MHLC-C consists of four domains: (1) internal, (2) doctors, (3) other people, and (4) chance. Internal LOC assesses the respondent's perception concerning the influence that they have over their own mental health status and 'doctors' LOC measures the respondent's perception about the influence that doctors or other professionals have on their mental health. LOC 'others' measures the perception to which the respondent believes that 'significant other people' have on influencing their mental health status and 'chance' LOC assesses the extent to which respondents' perceptions of chance factors (e.g., luck and fate) determines their mental health status. Higher scores reflect stronger endorsement of the items on the subscales. The MHLC-C domain subscales are reported to have adequate internal consistency and reliability (α coefficient ranging from .67 – .77).

The VARK Learning Styles Inventory©. The VARK Learning Styles Inventory (Fleming & Mills, 1992) was used to measure respondents preferred learning styles. This inventory consists of 16-items and each answer reflects the respondent's preferred learning style: visual, aural, reading/writing and/or kinesthetic. The authors report good face and content validity and recent psychometric testing (Leite, Svinicki, & Shi, 2010) reported adequate reliability (α coefficient .85, .82, .84, .77) for the visual, aural, read/write, and kinesthetic subscales, respectively.

The Ten-Item Personality Inventory (TIPI). The TIPI (Gosling, Rentfrow, & Swann, 2003) is a brief, 10-item inventory measuring the Big Five personality dimensions (Extraversion, Agreeableness, Conscientiousness, Openness to experience, Neuroticism). Items are rated on a 7-point Likert scale. Although Gosling et al. report good validity, they report somewhat inferior reliability alpha scores (.68, .40, .50, .73, and .45) for Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Openness to Experience scales respectively. Gosling et al. indicate that in comparison to the longer 5-dimension personality measures, low alpha scores are to be expected with such a brief measure of broad domains and so the TIPI is most useful in research where a brief measure is required and the main focus of the study is not on personality.

Procedure

Permission to conduct the study was granted by the Swinburne University Human Ethics Committee. Survey respondents for this study were recruited from a variety of sources. This included advertising on Facebook, mental health websites and flyers. Respondents were also recruited through the undergraduate Research Experience Program (REP) at Swinburne University and students received credit points towards completion of the course. A total of 31/218 (14.2%) were REP survey respondents. All advertising material directed respondents to the Swinburne University Opinio survey website address where the survey could be accessed. Inclusion criteria included being 18 years of age or older and providing online consent to participate in the study. In total, 227 people responded to the survey, with 218 (96%) residing in Australia, as the focus of the paper is on Australian consumers, only those residing in Australia were included in the data analysis.

Planned Analysis

Descriptive statistics (i.e., percentage scores, *n* values) are provided for demographic information, previous use of and perceptions/issues relating to using mental health services and chi-square and Fisher Exact tests (and adjusted residuals) were used to test for differences between the e-preferers and non e-preferers groups. One Analysis of Variance (ANOVA) and three Multivariate Analyses of Variance (MANOVA) were used to investigate whether differences between e-preferers and non e-preferers existed on several continuous dependent variables including stigma towards mental health, locus of control, learning styles and personality. When significant differences were found on the MANOVA multivariate level, univariate tests were used to identify what the specific differences were.

Results

Data Properties and Treatment

Results were analysed using PASW Statistics 18. Non-normal distributions were found for Openness (TIPI) and the 'chance' LOC domain and adjusted using a negative log transformation and a square root transformation for each respectively.

Assessment of assumptions for chi-square analysis found cell sizes to be greater than 5 therefore the assumptions for using chi-square were met. There were no univariate or multivariate within cells outliers at alpha = 0.001. Although the cell sizes between e-preferers and non e-preferers were uneven, all assumptions for ANOVA and MANOVA testing were met. Results of evaluation of normality assumptions, homogeneity of variance–covariance matrices and linearity were satisfactory with no serious violations occurring. Additionally, Bartlett's test of sphericity was conducted to ensure that the dependent variables in the MANOVA groupings were correlated at the $p<.05$ level.

Demographic variables

Table 1 summarises percentages for demographic information including gender, age, level of completed education, relationship status, country of birth, and location of Australian residence of e-preferers and non e-preferers and total *N*. Overall 50/218 (22.9%) of respondents endorsed a preference for using e-mental health services and 168/218 (77.1%) respondents endorsed a preference for using traditional face-to-face mental health services.

Chi-square, Fishers Exact tests and one t-test were conducted to check for differences between e-preferers and non e-preferers on the demographic variables. There were no differences on any demographic variable between the two groups: Gender (Fishers Exact test $\chi^2(1, N = 218) = .48$, $p = .57$); Age group ($\chi^2(3, N = 217) = .12$, $p = .99$); Education level ($\chi^2(2, N = 217) = .75$, $p = .69$); Relationship status ($\chi^2(6, N = 218) = 6.07$, $p = .42$); Country of birth ($\chi^2(4, N = 217) = 1.61$, $p = .81$); Location of residence ($\chi^2(2, N = 218) = 3.38$, $p = .18$) and Age ($t(215) = -.35$, $p = .73$). Participants were also asked whether they had access to a telephone, home computer, home-based internet access, mobile, mobile with internet access, video-conferencing, web cam facilities, and internet-access other than home and no significant differences between the two groups were found; suggesting equal access to technology.

Previous use of mental health services

Table 2 displays the percentage of e-preferers and non e-preferers that endorsed having had previously accessed mental health services. Overall 54% (27/50) of the e-preferers and 66.7% (112/168) of the non e-preferers had previously accessed mental health services (Total = 63.9%; 139/218) and there was no overall significant difference between the two groups for having previously sought mental health assistance, (Fishers Exact test $\chi^2(1, N=218) = 2.68$, $p = .131$).

However, when comparing the e-preferer and the non e-preferer subgroups (those that had previously used mental health services) on each of the specific types of mental health services, one significant difference was found for online counselling, (Fishers Exact test χ^2 (1, N = 139) = 5.07, $p = .046$; e-preferer Adjusted residual = 2.3). Based on adjusted residual score (and percentage figures), there was a higher proportion of e-preferers who had previously accessed online counselling than non e-preferers.

Table 1
Percentages for gender, age and relationship status, country of birth, country of residence, location of residence and level of education between e-preferers and non e-preferers.

	e-preferers (*N*=50)		non e-preferers (*N*=168)		Total (*N*=218)	
Demographic variables	%	*n*	%	*n*	%	*n*
Gender						
Female	72.0	36	76.8	129	75.7	165
Male	28.0	14	23.2	39	24.3	53
Age groups[1]						
18-25	26.0	13	25.1	42	25.3	55
26-39	36.0	18	34.1	57	34.6	75
40-54	24.0	12	25.7	43	25.3	55
55 and over	14.0	7	15.0	25	14.7	32
Level of education						
Completed secondary education or less	28.0	14	25.1	42	25.8	56
Undertaking or completed tertiary	52.0	26	58.7	98	57.1	124
Postgraduate	20.0	10	16.2	27	17.1	37
Relationship status						
Single	24.0	12	31.5	53	29.8	65
Married	32.0	16	28.6	48	29.4	64
In a committed relationship, not cohabitating	22.0	11	10.7	18	13.3	29
Divorced and single	2.0	1	4.8	8	4.1	9
Separated and single	2.0	1	2.4	4	2.3	5
Cohabitating with partner	18.0	9	20.8	35	20.2	44
Other	0.0	0	1.2	2	0.9	2
Country of birth						
Australia	74.0	37	80.8	135	79.3	172
UK	6.0	3	4.2	7	4.6	10
US	0.0	0	.6	1	0.5	1
India	2.0	1	1.2	2	1.4	3
Other	18.0	9	13.2	22	14.3	31
Location of Australian residence						
Metropolitan	76.0	38	75.6	127	75.7	165
Regional	10.0	5	17.3	29	15.6	34
Rural	14.0	7	7.1	12	8.7	19
Age[1]	(*M*)	(*SD*)	(*M*)	(*SD*)	(*M*)	(*SD*)
	35.94	13.65	36.75	14.79	36.57	14.50

Note*:* [1]*N*=217 (e-preferers, *n*=50; non e-preferers, *n*=167*)*

Table 2
Percentages of respondents previously accessing mental health services

	e-preferers		non e-preferers		Total	
Type of mental health service	N	%	N	%	N	%
GP	27	81.5	112	70.5	139	72.7
Psychologist	27	77.8	112	85.7	139	84.2
Psychiatrist	27	44.4	112	42.0	139	42.4
Counsellor[1]	27	55.6	111	56.8	138	56.5
Self-help book	27	48.1	112	48.2	139	48.2
Information web site	27	77.8	112	69.6	139	71.2
Online counselling*	27	14.8	112	3.6	139	5.8
Internet-based program with therapist-assistance[2]	27	7.4	109	4.6	136	5.1
Internet-based program without therapist-assistance	27	22.2	112	8.9	139	11.5
Telephone counselling service	27	29.6	112	28.6	139	28.8
Prescribed medication	27	66.7	112	62.5	139	63.3

Note: *$p < .05$

Table 3
Perception of helpfulness of type of service between e-preferers and non e-preferers

	e-preferers (*N*=50)		non e-preferers (*N*=168)		Total (*N*=218)	
Type of service	%	(*n*)	%	(*n*)	%	(*n*)
GP**						
Helpful	36.0	(18)	64.3	(108)	57.8	(126)
Neither	58.0	(29)	32.1	(54)	38.1	(83)
Harmful	6.0	(3)	3.6	(6)	4.1	(9)
Psychologist***						
Helpful	62.0	(31)	88.1	(148)	82.1	(179)
Neither	36.0	(18)	11.3	(19)	17.0	(37)
Harmful	2.0	(1)	0.6	(1)	0.9	(2)
Psychiatrist**						
Helpful	46.0	(23)	69.0	(116)	63.8	(139)
Neither	42.0	(21)	27.4	(46)	30.7	(67)
Harmful	12.0	(6)	3.6	(6)	5.5	(12)
Counsellor**						
Helpful	46.0	(23)	70.2	(118)	64.7	(141)
Neither	44.0	(22)	28.0	(47)	31.7	(69)
Harmful	10.0	(5)	1.8	(3)	3.7	(8)
Self-help book						
Helpful	32.0	(16)	32.1	(54)	32.1	(70)
Neither	52.0	(26)	48.2	(81)	49.1	(107)
Harmful	16.0	(8)	19.6	(33)	18.8	(41)
Information website**						
Helpful	68.0	(34)	42.9	(72)	48.6	(106)
Neither	32.0	(16)	48.2	(81)	44.5	(97)
Harmful	0.0	(0)	8.9	(15)	6.9	(15)
Online counselling						
Helpful	56.0	(28)	46.4	(78)	48.6	(106)
Neither	40.0	(20)	47.6	(80)	45.9	(100)
Harmful	4.0	(2)	6.0	(10)	5.5	(12)
Internet-based program with therapist-assistance						
Helpful	74.0	(37)	54.8	(92)	59.2	(129)
Neither	24.0	(12)	42.3	(71)	38.1	(83)
Harmful	2.0	(1)	3.0	(5)	2.8	(6)
Internet-based program without therapist-assistance*						
Helpful	32.0	(16)	17.3	(29)	20.6	(45)
Neither	50.0	(25)	48.8	(82)	49.1	(107)
Harmful	18.0	(9)	33.9	(57)	30.35	(66)
Telephone counselling service*						
Helpful	54.0	(27)	69.0	(116)	65.6	(143)
Neither	38.0	(19)	29.2	(49)	31.2	(68)
Harmful	8.0	(4)	1.8	(3)	3.2	(7)
Prescribed medication*						
Helpful	42.0	(21)	58.9	(99)	55.0	(120)
Neither	34.0	(17)	32.1	(54)	32.6	(71)
Harmful	24.0	(12)	8.9	(15)	12.4	(27)

*p<.05; **p<.01; ***p<.001

Perceptions of helpfulness towards mental health professionals

Table 3 provides respondents perceptions of helpfulness (*helpful, neither helpful or harmful, harmful*) towards various mental health treatments and services, regardless of previous use.

Of the different types of mental health services that e-preferers and non e-preferers endorsed as being helpful, the following differences were found: GP ($\chi^2(2, N=218) = 12.65$, $p = .002$; e-preferer Adjusted residual = -3.6), psychologist ($\chi^2(2, N=218) = 17.86$, $p = .000$; e-preferer Adjusted residual = -4.2), psychiatrist ($\chi^2(2, N=218) = 10.86$, $p = .004$; e-preferer Adjusted residual = -3.0), counsellor ($\chi^2(2, N=218) = 13.71$, $p = .001$; e-preferer Adjusted residual = -3.1), information website ($\chi^2(2, 218) = 11.75$, $p = .003$; e-preferer Adjusted residual = 3.1), internet-based treatment program without therapist-assistance ($\chi^2(2, N=218) = 7.30$, $p = .026$; e-preferer Adjusted residual = 2.3), telephone counselling ($\chi^2(2, N=218) = 6.93$, $p = .031$; e-preferer Adjusted residual = -2.0) and prescribed medication ($\chi^2(2, N=218) = 9.11$, p= .010; e-preferer Adjusted residual = -2.1). Therefore, non e-preferers perceived traditional face-to-face services (GP's, psychologist, psychiatrists, counsellors), telephone counselling and prescribed medication as more helpful, whereas e-preferers endorsed information websites and self-help online treatment programs as more helpful. However, no significant differences between groups were found for the helpfulness of therapist-assisted online treatment programs, online counselling and self-help books.

Issues towards using e-mental health services

Shown in Table 4 are percentages for respondent's endorsement towards a range of issues about using e-mental health services.

Chi-square comparisons revealed significant differences between e-preferers and non e-preferers in three areas: *I would not hesitate before using e-mental health services* (Fisher's Exact test $\chi^2(1, N=218) = 18.50$, $p = .000$); *I would only access internet websites to gain mental health information and not a treatment program* (Fishers Exact test $\chi^2(1, N=218) = 5.68$, $p = .016$ and; *I would not use internet-based mental health services* (Fishers Exact test $\chi^2(1, N=218) = 6.92$, $p = .005$). Non e-preferers were more likely to hesitate before using e- services, more likely to only access websites to source mental health information and not to use e-services at all in comparison to e-preferers.

Table 4
Percentages of respondents endorsing particular concerns with respect to using e-mental health services

	e-preferers (*N*=50)	Non e-preferers (*N*=168)	Total (*N*=218)
	% (*n*)	**% (*n*)**	**% (*n*)**
I would not hesitate to use an e-mental health service***	46 (23)	16.7 (28)	23.4 (51)
I would need to have access to a computer	22.0 (11)	13.1 (22)	15.1 (33)
I would need to know more about e-mental health services	56.0 (28)	53.6 (90)	54.1 (118)
I would only access internet web sites to gain mental health information and not a treatment program*	12.0 (6)	28.6 (48)	24.8 (54)
I would want the assistance of a online therapist while working through a treatment program	48.0 (24)	37.5 (63)	39.9 (87)
I would need the assurance that my personal information is secure	50.0 (25)	41.1 (69)	43.1 (94)
I would need the assurance that my personal information is kept confidential	54.0 (27)	57.7 (97)	56.9 (124)
I would not use e-mental health services**	0 (0)	12.5 (21)	9.6 (21)

*$p<.05$; **$p<.01$; ***$p<.001$

Preference for future use of different mental health services

Table 5 shows the percentages of e-preferers and non e-preferers and their likelihood (*extremely/somewhat likely, neither likely nor unlikely, somewhat/extremely unlikely*) to use a range of mental health services should they have a mental health condition in the future. Chi-square tests comparing the 'extremely or somewhat likely' cells of future service use showed significant differences for using:

Table 5
Percentage endorsement for future use of types of mental health services between e-preferers and non e-preferers

	e-preferers (*N*=50)		Non e-preferers (*N*=168)		Total (*N*=218)	
Type of professional service	%	(*n*)	%	(*n*)	%	(*n*)
GP						
Extremely/somewhat likely	54.0	(27)	66.1	(111)	63.3	(138)
Neither likely or unlikely	14.0	(7)	11.3	(19)	11.9	(26)
Extremely/somewhat unlikely	32.0	(16)	22.6	(38)	24.8	(54)
Psychologist***						
Extremely/somewhat likely	62.0	(31)	85.7	(144)	80.3	(175)
Neither likely or unlikely	4.0	(2)	8.9	(15)	7.8	(17)
Extremely/somewhat unlikely	34.0	(17)	5.4	(9)	11.7	(26)
Psychiatrist**						
Extremely/somewhat likely	24.0	(12)	48.2	(81)	42.7	(93)
Neither likely or unlikely	40.0	(20)	22.6	(38)	26.6	(58)
Extremely/somewhat unlikely	36.0	(18)	29.2	(49)	30.7	(67)
Counsellor*						
Extremely/somewhat likely	40.0	(20)	60.7	(102)	56.0	(122)
Neither likely or unlikely	26.0	(13)	17.9	(30)	19.7	(43)
Extremely/somewhat unlikely	34.0	(17)	21.4	(36)	24.3	(53)
Self-help book						
Extremely/somewhat likely	34.0	(17)	42.9	(72)	40.8	(89)
Neither likely or unlikely	32.0	(16)	18.5	(31)	21.6	(47)
Extremely/somewhat unlikely	34.0	(17)	38.7	(65)	37.6	(82)
Information web site**						
Extremely/somewhat likely	82.0	(41)	61.9	(104)	66.5	(145)
Neither likely or unlikely	16.0	(8)	15.5	(26)	15.6	(34)
Extremely/somewhat unlikely	2.0	(1)	22.6	(38)	17.9	(39)
Online counselling**						
Extremely/somewhat likely	62.0	(31)	34.5	(58)	40.8	(89)
Neither likely or unlikely	20.0	(10)	22.6	(38)	22.0	(48)
Extremely/somewhat unlikely	18.0	(9)	42.9	(72)	37.2	(81)
Internet-based program with therapist-assistance***						
Extremely/somewhat likely	76.0	(38)	36.9	(62)	45.9	(100)
Neither likely or unlikely	16.0	(8)	27.4	(46)	24.8	(54)
Extremely/somewhat unlikely	8.0	(4)	35.7	(60)	29.4	(64)
Internet-based program without therapist-assistance***						
Extremely/somewhat likely	50.0	(25)	22.0	(37)	28.4	(62)
Neither likely or unlikely	30.0	(15)	19.6	(33)	22.0	(48)
Extremely/somewhat unlikely	20.0	(10)	58.3	(98)	49.5	(108)
Telephone counselling service						
Extremely/somewhat likely	42.0	(21)	38.1	(64)	39.0	(85)
Neither likely or unlikely	24.0	(12)	31.0	(52)	29.4	(64)
Extremely/somewhat unlikely	34.0	(17)	31.0	(52)	31.7	(69)
Prescribed medication						
Extremely/somewhat likely	44.0	(22)	45.8	(77)	45.4	(99)
Neither likely or unlikely	26.0	(13)	23.8	(40)	24.3	(53)
Extremely/somewhat unlikely	30.0	(15)	30.4	(51)	30.3	(66)

Psychologists (χ^2(2, *N*=218) = 30.41, *p* = .000; e-preferer Adjusted residual = -3.7), Psychiatrists (χ^2(2, *N*=218) = 10.26, *p* = .006; e-preferer Adjusted residual = -3.0); Counsellors: (χ^2(2, *N*=218) = 6.75, *p* = .034; e-preferer Adjusted residual = -2.6); Information websites (χ^2(2, *N*=218) = 11.50, *p* = .003; e-preferer Adjusted residual = 2.6); Online counselling (χ^2(2, *N*=218) = 13.65, *p* = .001; e-preferer Adjusted residual = 3.5); internet-based treatment programs with therapist-assistance (χ^2(2, *N*=218) = 24.94, *p* = .000; e-preferer Adjusted residual = 4.9); and internet-based treatment programs without therapist-assistance (χ^2(2, *N*=218) = 23.91, *p* = .000; e-preferer Adjusted residual = 3.8). Therefore, non e-preferers indicated that they would be more likely to use psychologists, psychiatrists and counsellors, whereas e-preferers indicated that they

would be more likely to use information websites, online counselling and online treatment programs (with or without therapist-assistance). However, no significant differences between e-preferers and non e-preferers were found for the future use of GPs, self-help books, telephone counselling and prescribed medication.

Stigma, Locus of Control, Learning Styles and Personality

This study was also interested in whether differences exist between e-preferers and non e-preferers on a range of individual variables including stigmatised beliefs towards mental illness, locus of control, learning styles and personality. Table 6 shows the mean scores, standard deviations and numbers of respondents for the measures administered.

Stigma

An ANOVA revealed a significant difference in the stigma scores of e-preferers and non e-preferers ($F(1, 209) = 9.86$, $p = .002$, partial $\eta^2 = .05$, power = .88). e-preferers were found to have higher stigma scores than non e-preferers.

Table 6
Means and standard deviations for measures DDS, TIPI, MHLC-C and the VARK Inventory for preference of mental health service

	e-preferers			Non e-preferers		
Measures	*n*	M	SD	*n*	M	SD
DDS						
Total score**	48	4.14	.99	163	3.67	0.88
MHLC-C						
Internal	46	23.89	5.62	153	22.78	5.76
Doctors***	46	8.85	2.83	153	10.86	3.47
Other people	46	9.09	2.52	153	9.75	2.92
Chance*	46	16.26	5.19	153	14.31	5.37
VARK Inventory						
Visual	47	6.11	3.46	156	5.13	2.82
Aural	47	6.26	3.29	156	6.15	3.14
Read/write	47	8.32	3.53	156	7.25	3.38
Kinaesthetic	47	7.17	2.96	156	7.1	3.05
TIPI						
Extraversion*	47	3.41	1.40	160	4.03	1.49
Agreeableness*	47	4.67	1.17	160	5.13	1.10
Conscientiousness	47	4.65	1.48	160	5.04	1.37
Emotional stability**	47	3.40	1.54	160	4.21	1.52
Openness**	47	4.60	1.27	160	5.15	1.21

Note: DDS = Discrimination Devaluation Scale; TIPI = Ten-Item Personality Inventory; MHLC-C = The Multidimensional Health Locus of Control Scales.
**p<.05; **p<.01; ***p<.001*

Locus of Control

A MANOVA was used to test for between group differences on the four LOC domain subscales and revealed a significant multivariate effect ($F(4, 194) = 5.36$ $p = .000$, partial $\eta^2 = .10$, power = .97). Univariate tests revealed significant differences for 'doctors' LOC ($F(1, 197) = 12.94$, $p = .000$, partial $\eta^2 = .06$, power = .95) and 'chance' LOC ($F(1, 197) = 5.09$, $p = .025$, partial $\eta^2 = .03$, power = .61). There was no significant difference on 'internal' LOC ($F(1,197) = 1.34$, $p = .249$, *partial* $\eta^2 = .01$, power = .21) and 'other people' LOC ($F(1,197) = 1.91$, $p = .169$, partial $\eta^2 = .010$, power = .28) between the two groups. Therefore, participants with higher scores on 'doctors' LOC were more likely to be non e-preferers, whereas those with higher scores on 'chance' LOC were more likely to be e-preferers.

Learning Styles

A MANOVA was used to test for differences on the four different learning styles and did not reveal a significant multivariate effect ($F(4, 198) = 1.77$, $p = .135$, partial $\eta^2 = .04$, power= .54) between the two groups.

Personality

A MANOVA was used to test for differences between the two groups on the five personality factors from the TIPI and revealed a significant multivariate effect ($F(5, 201) = 3.48$, $p = .005$, partial $\eta^2 = .08$, power = .91).

Univariate tests revealed significant differences for extraversion ($F(1,205) = 6.43$, $p = .012$, partial $\eta^2 = .030$, power =.71), agreeableness ($F(1,205) = 6.14$, $p = .014$, *partial* $\eta^2 = .03$, power = .69), emotional stability ($F(1,205) = 10.19$, $p = .002$, partial $\eta^2 = .05$, power = .88) and openness to experience ($F(1,205) = 6.97$, $p = .009$, partial $\eta^2 = .03$, power = .75) between e-preferers and non e-preferers. Non e-preferers scored higher on extraversion, agreeableness, emotionally stability, and openness to experience. There was no significant difference between the mean scores for conscientiousness ($F(1, 205) = 2.89$, $p = .014$, partial $\eta^2 = .02$, power = .40) between e-preferers and non e-preferers.

Discussion

The aim of this study was to investigate whether differences exist between e-preferers and non e-preferers. The majority of respondents stated a preference for using traditional mental health services. No differences were found on any demographic variable or on previous use of mental health services per se between groups. However, several differences were found on perceptions of helpfulness and future use of mental health services, as well as on specific issues relating to the use of e-mental health services. In terms of individual difference variables, e-preferers were found to endorse higher stigmatised beliefs, lower 'doctors' LOC scores, higher 'chance' LOC scores, and lower scores on extraversion, agreeableness, emotional stability and openness to experience personality traits than the non e-preferer group.

Analysis of the demographic data found no differences between e-preferers and non e-preferers. This is contrary to previous research (e.g., Cotton & Gupta, 2004) that has often found that people using the internet for health-related activities are younger, single, higher educated, and female. However, many of these studies focused on searching for 'health' as opposed to 'mental health' information and therefore this particular sub-population may be somewhat different. Alternatively, these results may represent a general demographic shift (i.e., more even spread) with respect to using the internet to search for health-related information. For example, this lack of demographic difference was also observed in another recent online Australian survey ($N = 1214$) investigating content and functionality preferences of alcohol and other drug and health websites (Klein et al., in press). Here, no significant differences were found between groups (alcohol and drug website users) on the demographic variables and internet usage rates.

It was found that 54% of this sample had previously accessed mental health services with no significant difference between groups. However, when investigating each specific mental health service type in isolation, one significant difference was found; the e-preferer sub-group had accessed online counselling at a higher rate than the non e-preferer sub-group. Taken together, these results suggest that both sub-groups had relatively even rates of exposure to the various types of e- and non e-services.

Not surprisingly, non e-preferers perceived many of the traditional face-to-face services as more helpful and endorsed that they would be more likely to use them in the future, whereas the e-preferers endorsed many of the e-mental health services as more helpful and more likely to use them in the future. However, it would appear that the two groups were less polarised regarding their perceptions of helpfulness over e-services that included assistance (i.e., therapist-assisted online programs and online counselling), although e-preferers were more likely to use therapist-assisted e-services in the future. The opposite effect was observed for GP services (i.e., non e-preferers perceived GP services as more helpful, but no differences between groups were found in relation to future use of GPs).

In terms of specific 'e' concerns, the survey results indicated that non e-preferers were more likely to hesitate before using e-services, more likely not to use e-services at all and only seek mental health information (and not treatment) via the internet than e-preferers. However, despite the majority of the sample endorsing a preference for traditional mental health services, only 9.6% (12.5% of non e-preferers and 0% of the e-preferers) were *not* willing to use e-mental health services. e-Awareness raising (i.e., raising public awareness, knowledge and understanding about e-mental health services) appears important given that more than half of the respondents expressed concerns about needing to know more about what e-services are and concerns over the confidentiality of personal information. Overall, these results show that vast majority of the sample are willing to give e-services a try, yet just over half lack sufficient knowledge and understanding about what they are.

The second major aim of this study was to investigate whether individual characteristics could distinguish between e-preferers and non e-preferers. Similar to results of Wrigley *et al* (2005), this study found that stigmatised beliefs were higher in those respondents who preferred e-services. As e-mental health services might lessen the stigma associated with accessing mental health services (as it can be conducted in private and anonymously), promoting and making e-mental health services more widely available could provide those with higher levels of stigma a service option that they may not otherwise seek.

In relation to LOC, it was found that those who preferred e-mental health services scored lower on 'doctors' LOC in comparison to those preferring traditional services. Literature (e.g., Wallston et al., 1994) suggests that people with higher 'doctors' LOC scores are more likely to place their trust in the hands of health professionals regarding their health. This

difference was therefore expected as e-mental health services generally involve far less therapist time/input (if any at all) and so apportions greater reliance on consumer self-management practices. Even when communication between the e-service consumer and healthcare professional is available, indirect channels of communication (e.g., email) are more commonly employed. However, inconsistent with previous research (Fogel & Israel, 2009) no difference was found on 'internal' LOC scores between the two groups. It is important to note that Fogel and Israel investigated 'health' and not 'mental health' concerns and that a lower score on the 'doctors' LOC domain is indirectly suggestive of an 'internal' LOC orientation.

Higher 'chance' LOC scores were found for those respondents who preferred e-mental health services and consistent with Fogel & Israel's (2009) research. Fogel and Israel suggested that those with higher 'chance' LOC scores may be attracted to internet as it is less formal and briefer than traditional health service provision. Interestingly, Campbell and Nolfi (2005) found that 'chance' LOC scores significantly decreased at follow-up when administering an intervention designed to teach elderly people how to use the internet to access health information. However, when conducting sensitivity analysis (i.e., including the non-completer data), the statistical significance disappeared. The authors proposed that the participants believing chance played a major role in determining their health status were more likely to drop out from their study. Taken together, these results might suggest that those with either lower 'doctors' LOC scores or higher 'chance' LOC scores are more likely to be attracted to or prefer e-services, but those with higher 'chance' LOC scores are also more likely not to follow through with the information, advice and/or treatment provided. Therefore 'chance' LOC might be a useful predictor of attrition for e-mental health services.

It was expected that e-preferers would score higher on read-write and visual learning styles in comparison to non e-preferers (as found by Drago & Wagner, 2004), yet no significant between group differences were found. However, as preferred learning style research studies (e.g., Drago and Wagner, 2004) are currently limited to educational settings and largely student samples, it may be that different 'learning processes' are at play. Alternatively, given that the power for the MANOVA was low (power = .54) this may have contributed to the non significant result, as inspection of the individual mean scores for the respective learning styles does show higher scores on the read/write and visual learning styles for the e-preferer group. Learning styles still remains an important variable to investigate.

In terms of personality traits, it was expected that non e-preferers would have significantly higher scores on extraversion than e-preferers. This result was found and consistent with the previous findings of Tsan and Day (2007) who found university students with higher extraversion scores held a more positive attitude towards online counselling than students with lower extraversion scores. In addition, these results found that those who preferred e-mental health services had significantly lower scores on emotionally stability (neuroticism) than those that preferred traditional mental health services. This finding was inconsistent with Tsan and Day's research finding no significant relationship between neuroticism and attitudes towards online counselling. However, the current study considered 'e-mental health services' *per se* and not just one e-service type (i.e., online counselling) and our sample was not confined to a student population. Furthermore, Tsan and Day investigated 'attitudes' towards online counselling and not 'preferences' for mental health services (i.e., measuring different things with preferences more closely representing a person's actual intended behaviour than attitudes).

Limitations

There were several methodological issues and limitations. First, the sample size was small and the questionnaire was only available online; therefore limiting the generalisability of results. Second, we were unable to specifically control for the previous use of all the mental health services listed when analysing respondent's perceptions of helpfulness data. Respondents' previous experience with the specific mental health services may have unduly influenced their responses, despite no significant difference found on previous access to services between e-preferers and non e-preferers. Third, this study only surveyed respondents' preference for the future use of mental health services and did not assess for any current mental health disorders. A person's preference may not equate to their actual future behaviour (or eventual need) and therefore these results represent what the respondent 'might' do 'should' they have a mental health condition in the future. Fourth, and although the survey did provide definitions for all the various e-mental health services listed, it appeared that just over half of the sample did not have a full understanding of what e-mental health services were and therefore responses to some survey items may have been based on 'rough' estimations. Last, the psychometric properties of the TIPI personality inventory were not ideal and so may have impacted the results found here. Therefore, given the above, some caution needs to be taken when interpreting and generalising these findings.

Future research

Apart from efficacy, effectiveness and cost effectiveness e-mental health intervention trials, research is also required to investigate the possible relationships between individual characteristics and actual engagement with the various mental health services. Research investigating whether or not a person's individual preference actually leads to a more

successful treatment outcome is fundamentally important. Also of some potential value; investigating whether or not 'chance' LOC is a predictor for identifying those who are more likely to drop out from e-mental health interventions.

Conclusions

The findings of this study go a small way towards understanding the many factors that might influence a person's preference when choosing between e- and non e-mental health service delivery modalities. Primarily, this study found those preferring e-mental health services differed from those preferring traditional services on several individual variables (i.e., stigmatised beliefs, locus of control orientations and personality traits). Whether or not one, some or all of these variables may also assist in predicting e-intervention drop out and successful outcome is still unknown and requires investigation. However, it would appear that e-awareness raising activities are essential if e-mental health services are to flourish in the immediate future.

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Research Profile

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