Appendix I

Summary of studies investigating the effect of peer support on the mental health of young adults

Author(s)	Study type	Objective(s)	Method of providing peer support (PS); how PS was measured	Participant characteristics	Mental health outcome(s) and instrument(s)	Main findings
Armstrong-Carter et *al.* [44]	Cohort	To determine if providing instrumental and emotional support to friends and roommates during the first year of college is associated with positive or negative affect.	Individual PS provided by untrained friends and/or college roommates; Instrumental and emotional support: Checklist of perceived daily helping behaviour	First-year college students living in university housing with a roommate; n = 411 Male = 34% Female = 66% M_{age} = 18.62 years (SD = 0.37)	Daily emotional well-being including positive and negative affect: Profile of Mood States.	Providing greater instrumental support to a friend resulted in greater levels of positive affect over and above the previous day ($p < 0.05$). There were no other significant direct associations between daily helping behaviours and positive or negative affect. Young adults who provided more instrumental support to a friend on average across days experienced more positive affect ($p < 0.01$) compared to young adults who provided less instrumental support. Young adults who provided more instrumental support to a roommate on average across days experienced more negative affect ($p < 0.001$) compared to young adults who provided less instrumental support. The daily association between the provision of instrumental support to friends and negative affect was significantly moderated by gender ($p < 0.01$); providing instrumental support to a friend was associated with greater negative affect for young men but not young women. The interactions between empathy and provision of support were not significant.
Byrom et *al.* [46]	Cohort	To understand who attends peer support groups via self-referral and what the effects of peer support are on wellbeing.	Group PS provided by trained volunteers (with or without lived experience of depression); N/A	University students attending the peer support programme regardless of current mental health; n = 65 Male = 22% Female = 70% Other = 8% M_{age} = 20.4 years (SD = 2.72)	Mental well-being: Warwick-Edinburgh Mental Well-being Scale.	Students with lower levels of mental wellbeing were more likely to complete the course. By the second measurement period, there was a significant increase in mental wellbeing ($p < 0.01$), from an average of 17.94 (SD = 2.21) at the start of the programme to 19.71 (SD = 3.92). For those completing the whole programme (third measurement), there was a linear trend in improvement in mental wellbeing across the course. A repeated measures ANOVA showed a significant effect of session number on mental wellbeing ($p < 0.01$) with a significant increase in mental wellbeing between Time 1 and Time 2 ($p < 0.01$) and a smaller, non-significant increase in mental wellbeing between Time 2 and Time 3 ($p = 0.092$). Overall, 69% felt the session improved their ability to take care of their own mental health and 54% felt the session improved their knowledge of mental health.
Duncan et *al.* [52]	Cross-sectional	To determine whether higher levels of social leisure engagement are associated with lower levels of depressive symptoms and to assess whether this relationship is	Individual PS provided by untrained friends; Perceived peer support: friend subscale of the Multidimensional Scale of Perceived Social Support.	University students; n = 270 Male = 12.6% Female = 87.4% Age range: 18-25 years	Depressive symptoms: Centre for Epidemiological Studies Depression Scale (CES-D).	Social leisure engagement, peer support, depressive symptoms and gender were generally moderately and significantly correlated (ranging from r = .27-.30) indicating related but distinct constructs. There was a significant negative association between peer support and depressive symptomology ($p < 0.01$). Those who reported higher levels of social leisure engagement reported lower perceptions of depressive symptoms indirectly through increased peer support. Higher levels of social leisure engagement were significantly related to higher levels of peer support ($p < .001$), and higher levels of peer support were significantly

		mediated by perceived peer support.				associated to lower levels of depressive symptomology ($p < .001$). The direct path remained significant ($p < .001$). The model accounted for 7% of the variance in peer support and 14% of the variance in depressive symptomology. The Sobel test was significant ($p < .01$) meaning the relationship between social leisure engagement and depressive symptomology was indirectly linked through peer support.
Gibbs et *al.* [45]	Cross-sectional	To assess which levels of social context are most influential on the depression symptoms of sexual minority male youth.	Individual PS provided by untrained individuals most important to the participant (e.g., friends, co-workers); Perceived support/emotional support	Sexual minority male youth (SMMY), including men who identify as a sexual minority (i.e., homosexual, bisexual and queer) and those who do not (e.g., heterosexual, questioning) using *Grindr* in West Hollywood; n = 195 Males = 100% M_{age} = 22.25 years (SD = 1.63) Age range: 18-24 years	Depressive symptoms: Centre for Epidemiological Studies Depression Scale (CES-D).	Overall, participants had moderately supportive networks, with 61% providing emotional support and 52% providing instrumental support. In the regression model, four variables were found to be significantly associated with depressive symptoms when accounting for all other included social context factors: lifetime experiences of homophobia ($p < 0.001$), enacted gay community connection ($p = 0.047$), the presence of an objecting alter ($p = 0.009$), and greater network emotional support ($p = 0.034$).
Horgan et *al.* [43]	Mixed methods	To determine if an online peer support intervention for students will help decrease depressive symptoms.	PS delivered via an online forum in which untrained students provide PS to each other; Qualitative analysis of forum posts including themes of peer support.	University students experiencing depressive symptoms n = 118 Male = 64.4%, Female = 35.6% M_{age} = 20.6 years (SD = 1.8) Age range: 18-24 years	Depressive symptoms: Centre for Epidemiological Studies Depression Scale (CES-D).	Overall, the median CES-D score was 37 at baseline and 33.5 at post-intervention ($p = 0.133$). Various themes emerged from forum posts including symptoms of depression and loneliness during college life, benefits of the website/sharing and identifying with others, advice giving and receiving emotional and informational support, and increased pressure of third level education/'academic crisis'.
Hughes et *al.* [47]	Non-randomized comparison between groups	To evaluate biopsychosocial services for young adults experiencing psychological distress and compare it to usual	Group PS provided by trained, therapists-in-training and healing practitioners in the community who aligned philosophically with the program model; some also worked as professional therapists	Young adults with moderate-to-severe symptoms of depression and/or anxiety n = 26 Male = 23%	Depression and anxiety: Symptoms Checklist-90-Revised (SCL-90-R) depression and anxiety subscales and global severity index (GSI).	A significant time by group interaction term was found for each primary outcome variable: depression ($p = 0.003$), anxiety ($p = 0.031$), and global severity ($p = 0.029$) indicating that change over time in all mood variables was significantly different between the program and comparison groups. By two-month follow up, program participants showed a clinically meaningful improvement in mood. Program participants demonstrated continued improvement in depression ($p = 0.03$) and anxiety ($p = 0.032$) from

		outpatient psychiatric care.	and were instructed on ways to de-professionalize their role; N/A	Female = 77% Age range: 18-25 years		intervention endpoint to two-month follow-up. No sufficient evidence of change in depression or anxiety was found for the comparison group over the study period.
Jibeen et *al.* [51]	Cross-sectional	To evaluate how social support is associated with mental health problems among Pakistani university students, and to determine the type of social support that is most strongly associated with mental health problems in	Individual PS provided by untrained friends and significant others; Perceived support: Multidimensional Scale of Perceived Social Support.	University students n = 912 Male = 60% Female = 40% M_{age} = 20.50 years (SD = 1.77) Age range: 19-26 years	Depression, anxiety, obsession-compulsion, somatization, interpersonal sensitivity, phobic anxiety, hostility: Brief Symptom Inventory (BSI).	A weak negative correlation between friends' support and depression, anxiety, obsession-compulsion, and interpersonal sensitivity (correlations range from -.10 to -.16; obsession-compulsion was non-significant). In the univariate model, friends support was not a significant predictor of psychological problems. In the univariate model, support from significant others was a significant predictor ($p < 0.05$), with the effects in this model being significant only for depression ($p < 0.01$).
Johnson et *al.* [30]	Non-randomized comparison between groups	To examine the psychosocial effect of providing mental health peer support on college student peer support workers as compared to other trained student workers.	Individual PS provided by trained peer supporters consisting of volunteer students and/or volunteer emergency response medical service workers EMT; ERMS); Social support: 12-item Interpersonal Support Evaluation List.	Undergraduate students trained to provide mental health peer support and student workers not trained in providing peer support n = 75 Male = 19% Female = 81% Age range: 18 and over	Social, emotional, and psychological flourishing: Mental Health Continuum Short Form (MHC-SF). Coping (appraisal, challenge, avoidance, social); Deakin Coping Scale.	Peer supporters displayed significantly lower appraisal and challenge coping, as well as a trend toward higher avoidance scores than the control group. Peer supporters displayed trends toward lower total flourishing due to lower psychological and emotional flourishing than controls based on scores, but this was non-significant. Comparing in-group differences (post-training vs. post-working), peer supporters experienced a significant reduction in their reliance on avoidant coping over the course of their work, as well as a significant increase in their sense of belonging-type social support. Contrary to this, EMT recruits showed no significant differences when compared to the control group.
Li et *al.* [53]	Cross-sectional	To determine the relationship between parental support and peer support as predictors of depression and self-esteem among college students.	Individual PS provided by untrained peers; Support by peers: Inventory of Parent and Peer Attachment (IPPA)	College undergraduates from an urban, private university in the United States Midwest; n = 197 Male = 39% Female = 61% M_{age} = 18.38 years (SD = 0.66) Age range: 17-21 years	Depression: Beck Depression Inventory, Second Edition (BDI-II). Self-esteem: Rosenberg Self-Esteem Scale (RSES).	Significant relationships were noted between peer support and psychological adjustment ($p < 0.01$). There were no significant gender differences on measures of age or peer support. Depression and self-esteem were significantly negatively correlated with peer support.

Llamas et *al.* [54]	Cross-sectional	To determine whether perceived social support by friends mediates the role of intragroup marginalization on acculturative stress and college adjustment.	Individual PS provided by untrained friends; Perceived Social Support from Friends Measure (PSS-Fr)	Latino undergraduate college students n = 83 Male = 31.3% Female = 68.7% M_{age} = 19.39 years (SD = 1.30)	Acculturative stress: Revised Social, Attitudinal, Familial, and Environmental Acculturative Stress Scale. College adjustment: The Student Adaptation to College Questionnaire.	The regression coefficient indicated that the association between intragroup marginalization and acculturative stress, in the presence of perceived social support, did decrease. However, the decrease was not significant; intragroup marginalization remained a significant predictor of acculturative stress (p < .001). For college adjustment, the regression coefficient indicated that the association between intragroup marginalization and college adjustment, in the presence of perceived social support, did significantly decrease this relative association; intragroup marginalization was no longer a significant predictor of college adjustment (p < .01).
Lopez et *al.* [48]	Cohort	To evaluate a peer mentoring program at a dental school in the United States Midwest and determine student perceptions of its benefits.	Individual PS provided by untrained mentors. N/A	University dental students (D1-D4); n = 256 Male = 45% Female = 51% Other = 4% Five age categories reported, with 51.6% of the sample being between the age of 20 and 25.	Relief from anxieties about dental school: Questionnaire responses	Overall, having a dental school mentor allowed students to experience relief from their anxieties about dental school (53% of individuals aged 21 to 25 agreed), with females (55%) agreeing more than males (45%; $p \leq .05$). Having a mentor helped them feel more confident about being in medical school (54% of individuals aged 21 to 25 agreed).
McBeath et *al.* [42]	Qualitative	To explore the relationship between peer support and sense of belonging on the mental health and overall well-being of students in a work-integrated learning (WIL) program to those in a traditional non-WIL program.	Individual PS provided by the untrained social circle of an individual; Interview responses (coded for perceived support).	Participants at a large Canadian university offering both WIL and non-WIL programs (i.e., co-op); n = 25 Male = 44% Female = 56% Age range: 18-24 years	Mental health, sense of belonging, well-being: identification of related themes from qualitative interview.	Peer support and sense of belonging were protective factors for university student's mental health and well-being. A shared concept of sense of belonging emerged whereby both WIL and non-WIL students described it as a feeling of being accepted and recognized within the university community. This contributed to an elevated sense of acceptance, stronger engagement, and higher levels of motivation. A strong sense of belonging and access to high-quality peer support in the context of the school community were critical factors for student mental health and well-being and strengthened their confidence in school-to-work transitions after graduation.
Morelli et *al.* [49]	Cohort	To determine if emotional and instrumental support provision would interact to predict provider well-being.	Individual PS provided by untrained friends; Instrumental support (number of emotional disclosures heard by the provider and tangible assistance provided as measured by the Self-Report Altruism Scale).	Undergraduate students n = 98 Male = 51% Female = 49% M_{age} = 19.41 years (SD = NR)	Loneliness: UCLA loneliness scale. Perceived stress: Perceived Stress Scale. Daily Anxiety: four adjectives (i.e., anxious, stressed, upset, and scared). Daily Happiness: four items (i.e., happy, joyful, excited, and elated).	Provided emotional support moderated the effect of provided instrumental support on loneliness (p = .06), perceived stress (p = .01), anxiety (p = .04), and happiness (p = .03). Regarding happiness, those reporting higher levels of emotional support provision were happier as instrumental support provision increased (p = .003). Provided instrumental support predicted less stress (p = .011), anxiety (p = .017), and loneliness (p = .001) for people with high emotional support provision. Instrumental support provision did not relate to stress (p = .94), anxiety (p = .85), and

			Emotional support (empathy and emotional responsiveness to positive and negative events).			loneliness (p = .44) for providers with lower levels of emotional support provision. Previous day emotional support provision significantly predicted decreases in current day loneliness (p < .05). In addition, previous day emotional support provision showed a marginally significant negative relationship with current day perceived stress (p = .07). However, previous day emotional support provision did not have a significant relationship with current day happiness or current day anxiety. Receiving higher levels of instrumental support predicted less loneliness for those receiving high levels of emotional support (p = .001), whereas receiving instrumental support did not predict loneliness for those receiving low levels of emotional support (p = .13). Given the interaction, receiving higher levels of instrumental support predicted greater happiness for those receiving high emotional support (p < .001), whereas for those receiving low emotional support, receiving instrumental support predicted more modest increases in happiness (p = .047). Effects on perceived stress and anxiety were in a similar, though non-significant direction for those who received high and low levels of emotional support (p = .11).
Parra et *al.* [55]	Cross-sectional	To predict how perceived negative familial attitudes toward homosexuality, experiences of family victimization, and peer support are associated with anxiety, depression, internalized homonegativity and self-esteem	Individual PS provided by untrained friends; Perceived social support: Interpersonal relationship inventory	Lesbian and bisexual young men and women (in college or university) n = 62 Male = 56% Female = 43% Other = 1% M_{age} = 21.34 years (SD = 2.65)	Anxious symptoms: Beck Anxiety Inventory (BAI). Depressive symptoms: Beck Depression Inventory, Second Edition (BDI-II). Internalized homonegativity (IH): Nungesser Homosexual Attitudes Inventory Revised. Self-esteem: Rosenberg Self-Esteem Inventory.	English-speaking participants reported greater depression, lower self-esteem, and lower peer social support than French-speaking participants (p < .05). Participants who reported greater peer social support also reported less depression and IH. Peer support moderated the link between family attitudes and anxiety and between family victimization and depression. More negative family attitudes significantly predicted greater anxious symptoms, but only when LGB emerging adults reported low peer social support (p < .05). There was no association between family attitudes toward homosexuality and anxiety symptoms when peer support was higher (p > .05). Greater family victimization significantly predicted greater depression symptoms when LGB emerging adults reported low peer support (p < .001). There was no association between family victimization and depression when peer support was higher (p > .05).
Pereira et *al.* [50]	Mixed-methods (cross-sectional & qualitative)	To investigate the feelings, behavioural and support needs of students working at a student Nightline services.	A PS helpline in which PS is provided by trained students; Not measured, assessed peer supporters.	Students working on a nightline in the United Kingdom (UK) and Portugal n = 65 Male = 29% Female = 71% M_{age} = 20.97 years (SD = NR)	Emotions/feelings (including stress and anxiety) and coping strategies: questions developed by the authors	Peer supporters that were working reported a mixture of feelings, being anxious, apprehensive, yet eager for calls. When waiting for calls both groups reported being slightly nervous; the Portuguese students were significantly more hopeful and confident (2.81 compared to 1.48), while only the UK students said they were bored. The UK group did not find duties particularly stressful, present stressors could be reduced by talking about stressful calls, encouraging other peer supporters to come in and talk, and knowing their partner better. The Portuguese group, who had many fewer calls, were stressed by the lack of calls, and the other organizational duties put upon them. There was general agreement that calls were stressful and demanding. The most

						stressful were suicide calls, and for the UK sample, also sex-related calls; surprisingly manipulative/hoax calls were also consistently reported as being stressful. Common ways of coping were to talk about it and take deep breaths. When putting the phone down the most common response was to turn and talk to their partner, take a deep breath, and drink, eat or smoke; the Portuguese supporters tended to stand up, and unlike the English, hug/kiss their partner. Males rated themselves as more anxious during a call than females and were more likely to write or doodle at this time. After a call, females were more likely to take deep breaths, and smoke. They also reported being more relaxed at the end of a shift. These were the only gender differences found and in each case were statistically significant ($p < 0.05$).
Sprengel et *al.* [56]	Cohort	To evaluate the value of peer mentoring for nursing students early in the curriculum	<u>Individual</u> PS provided by <u>untrained</u> mentors (second-year students); Peer mentoring: The Clinical Experience Evaluation Forms.	Freshman and sophomore nursing students; n = 30 Sex not reported. Age range: 18-20+ years	Anxiety-provoking situations: The Clinical Experience Evaluation Forms.	Short-term benefits for both groups of students include verbalizing less anxiety, less confusion, and a more positive environment for learning to occur. Peer mentoring encourages greater student responsibility and promotes active learning. Sophomores lacking assertiveness, confidence, or with less knowledge, were found to be poor mentors. Freshmen were more likely to report that working with a sophomore student helped boost my self-confidence and sophomores reported that assisted to help lessen the freshmen student's anxiety today.
Talebi et *al.* [57]	Cross-sectional	To assess psychosocial factors that contribute to the perceived stigma of seeking help for mental health problems among students as they transition into university.	<u>Individual</u> PS provided by <u>untrained</u> friends and partners; Perceived social support: Social Provisions Scale	First year university students at Carleton University in Ottawa, Ontario; n = 328 Male = 30% Female = 70% M_{age} = 18.79 years (SD = 1.74)	Depressive symptoms: Beck Depression Inventory (BDI). Coping: Survey of Coping Profiles Endorsed (SCOPE).	Greater depressive symptoms were associated with lower perceptions of support and more unsupportive interactions with peers. Diminished social support resources appeared to have consequences for how individuals coped with distress, in those perceptions of greater peer support were related to endorsement of more problem-focused coping strategies, and those who experienced more unsupportive responses from their peers were less likely to endorse problem-focused coping and more likely to engage in emotion-focused coping efforts.

Note. Legend: β = standardized beta coefficients; *b* = beta coefficients; *d* = Cohen's *d*; *M* = mean; n = sample size; N/A = not applicable; *p* = p-value; PS = peer support; *r* = Pearson correlation coefficients; SD = standard deviation.