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Disability and mental health among young people: effect modification by social connectedness

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Abstract

Background

Young people with disability are more likely to have poorer mental health than young people without disability and understanding what is driving this is essential for improving mental health and reducing inequalities. Young people with disability experience lower levels of social connectedness across a range of domains, including loneliness, low social support and low frequency of social connection. Given that social connectedness is associated with poor mental health, there is a need to understand the link between different aspects of social connectedness and mental health for young people with disability. We investigated whether four aspects of social connectedness modified the magnitude of mental health inequalities between young people with and without disability.

Methods

We incorporated lived experience from young people with disability into all stages of the project. Using 2022 data from the Household, Income and Labour Dynamics in Australia Survey, we categorised 1,953 young people (15–24 years) by disability status, defined as no disability, psychological disability or non-psychological disability. Population-weighted linear regression models were used to estimate mean differences in mental health scores between the disability groups, including interaction terms to examine effect modification by loneliness, social support, frequency of social connection, and having a pet. Differences in mental health are interpreted as inequalities, comparing people with psychological disability or non-psychological disability to people without disability.

Results

Young people with psychological disability had substantially poorer mental health compared to young people without disability, while young people with non-psychological disability had some evidence of lower mental health. There was evidence of effect modification by loneliness of the inequalities in mental health between young people with psychological disability and young people without disability, with larger mental health inequalities for young people experiencing loneliness, and some suggestion of effect modification by social support and frequency of social interactions.

Conclusions

These findings demonstrate that the inequalities in mental health experienced by young people with psychological disability are larger when associated with loneliness and social isolation. Further research is needed to investigate causal relationships between social connectedness and mental health to better understand the directionality of effects.

Introduction

It is well established that people with disability have substantially poorer mental health compared to people without disability[1–6] and this inequality has persisted for at least two decades.[7] The inequality in mental health is present at all ages but is particularly prominent for young people with disability aged 15–24 years.[7] Mental health is also patterned by age, with poorest mental health observed in adolescents and young adults and then improving with age.

Recent evidence suggests that mental health has been declining over the last decade for young people generally,[7, 8] with the inequality for young people with disability increasing even further.[7] This is particularly concerning given that the prevalence of disability in 15–24 year olds in Australia has also increased in recent years from 9.3% in 2018 to 13.9% in 2022.[9] Thus, understanding what is driving poor mental health in young people with disability is essential to improve mental health and reduce the inequalities.

It is noteworthy that the increasing inequalities in mental health in young people with disability mirrors increasing inequalities in loneliness in this population.[7, 10] Yet, although evidence indicates that loneliness is associated with poor outcomes in mental and physical health,[11–13] a recent scoping review found that evidence regarding the effect of loneliness on health and wellbeing of people with disability is lacking.[14] Loneliness, a subjective feeling that occurs when an individual's existing social relationships do not meet their personal expectations for satisfying social relationships[15], is only one measure of social connectedness that could be impacting mental health. Other important aspects of social connectedness include social support, an individual's perception of the availability and effectiveness of social resources from informal networks to meet their needs for emotional support or practical assistance,[16] and social isolation, which occurs when an individual has lower frequency of social connection than their peers.[17] Adolescents with disability are more likely to be socially isolated, spending less time with peers and more time alone and with mothers, resulting in exclusion from activities that tend to support positive developmental trajectories.[18] It has also been reported that youth with disability have fewer or poor-quality close friendships and few intimate relationships.[19] Furthermore, a study of young people (aged 15–29 years), using data from 2006, found that low social support was associated with poorer mental health in young people with physical, sensory or intellectual disability than in people without these disabilities.[20]

An important evidence gap remains. It is not clear whether low social connectedness explains the magnitude of mental health inequalities for young people with disability. Understanding this potential interaction could be important when developing strategies to improve mental health for young people with disability to identify groups at particularly high risk of poor mental health. This evidence gap can be examined by considering how low social connectedness modifies the magnitude of mental health inequalities between young people with and without disability. Importantly, rather than considering social connectedness as a single concept, various aspects of social connectedness can be examined to determine which types of low social connectedness, e.g. loneliness, low social support, or low frequency of social connection, have greater associations with poor mental health.

Given that measures of social connectedness and social isolation often relate to an individual's subjective perception of their experience, it is important to ensure that measures are appropriate for the population being examined. This can be done by incorporating the lived experience of the population of interest into the research process so that their perspectives and expertise are used to choose and categorise the measures of social connectedness examined. This will also help to decrease potential biases that often occur in population-level observational analyses. This situation is particularly relevant when considering population-level effects of how social connectedness affects mental health in young people with disability since the social experiences of people with disability can differ from those of people without disability, as can the social experiences of young people compared to older people. As such, it is important to use lived experience to ensure that the measures of social connectedness are relevant for this group.

The present study quantified inequalities in mental health between young people aged 15–24 years with and without disability and investigated whether this effect was modified by the presence of high or low levels of social connectedness, measured using four indicators. Lived experience input was used to select relevant measures of social connectedness for young people with disability, and to categorise or modify measures where appropriate.

Given the differences in mental health for people with psychological and non-psychological disability,[7] we disaggregated disability status by the absence or presence of psychological disability.

Methods

Lived experience

The research team included six academic researchers and four lived experience research assistants. Two academic researchers also have lived experience of disability. Together the research team had variable experiences of disability (physical, psychological, intellectual, learning/neurodevelopmental, speech and other disability), social connectedness and mental health, including disabling mental illness.

Incorporating lived experience into all aspects of the research process was a critical component of this project. The lived experience research assistants provided critical perspectives based on their personal experiences that were used to collaboratively refine research questions, select outcome measures and covariates, develop statistical models, interpret results, contextualise findings, and generate policy recommendations and future research ideas. A detailed case study showing the impact of the lived experience on the research process has been published elsewhere.[21]

Data source

This study used data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey, which collects information annually from household members aged 15 years and older through interviews and self-reported questionnaires. Detailed information on community participation is collected every fourth wave, making it well suited for investigating associations between disability, social connectedness, and mental health. This study used data from Wave 22 (collected in 2022 and 2023); further details about Wave 22 are available elsewhere.[22]

Ethics approval

for the HILDA Survey was granted by the Human Research Ethics Committee of the University of Melbourne in 2001 (ID 1955879) and has been updated or renewed annually. Consent for participation in the HILDA Survey is obtained via use of an information letter to potential respondents, which details that informed consent is implied when participants agree to be interviewed. Parents/guardians provide consent for children aged 15–17 years. Further ethics approval was granted by the Human Research Ethics Committee of the University of Melbourne for the secondary analysis of the HILDA Survey data undertaken within this project (ID 26758).

Exposure variable

Disability status (with or without disability) was determined using a question asking participants, “do you have any long-term health condition, impairment, or disability (such as these) that restricts you in everyday activities, and had lasted or is likely to last, for 6 months or more?”. Flashcards were shown to the respondents to provide examples of impairments, disabilities or conditions that align with the biopsychosocial model of disability defined in the International Classification of Functioning, Disability and Health.[23]

We further categorised participants with disability based on the absence or presence of psychological disability. People with psychological disability reported a disability and responded ‘yes’ to at least one of: (i) “a nervous or

emotional condition which requires treatment"; or (ii) "any mental illness which requires help or supervision". In contrast, people with non-psychological disability reported a disability but did not report having either of the conditions associated with psychological disability. Note that both subgroups of disability may have one or more other conditions/impairments that contribute to their overall experience of disability, meaning that people with psychological disability could also report the presence of a non-psychological disability. Thus, the three comparison groups used in this study were: (i) no disability; (ii) non-psychological disability; and (iii) psychological disability.

Outcome variable

Mental health was examined using the five-item Mental Health Inventory (MHI-5), a subscale of the Short Form 36 general health survey. The MHI-5 is an effective instrument with high sensitivity and specificity for detecting symptoms of depression and anxiety, and positive aspects of mental health, in the previous four weeks among the general population and has been validated among the Australian population.[24, 25] Responses to the MHI-5 are transformed into a continuous scale ranging from 0 to 100, with higher scores indicating better mental health. A difference in MHI-5 scores of 4–5 points represents a clinically significant difference in mental health.[26, 27]

Potential effect modifiers

Four potential effect modifiers describing aspects of social connectedness were examined based on a causal diagram that combined lived experience with prior knowledge from other research (see Fig. 1). These were: (i) social support; (ii) loneliness; (iii) frequency of social connection; and (iv) having a pet.

Perceived social support was measured using an established social support index.[28] However, feedback from lived experience research assistants indicated that one of the questions, "I often need help from other people but can't get it", was ambiguous from the perspective of individuals with disability support needs. Thus, this question was omitted, creating a 9-question index. The items included in the index were rated on a 7-point Likert scale (strongly disagree to strongly agree). Negatively phrased questions were reverse coded and the scores for the nine items were summed, creating a continuous measure ranging from 9 to 63, with higher scores representing higher levels of social support. We then dichotomised the score into a binary variable for high or low levels of social support. Since scores of 5–7 for positively-phrased (and reverse coded negatively-phrased) questions indicated agreement that social support was received, total scores of 45–63 points over the nine items were categorised as high levels of social support and scores of 9–44 points were categorised as low levels of social support.

Loneliness was assessed by asking participants how much they agreed or disagreed with the statement "I often feel very lonely", using a Likert scale from 1 (strongly disagree) to 7 (strongly agree). We dichotomised the variable for any type of agreement to the statement, such that 'lonely' was defined as scores of 5–7, consistent with previous research.[10, 24, 29]

Frequency of social connection was measured by the question, "In general, about how often do you get together socially with friends or relatives not living with you?" Based on lived experience input about the competing demands for work, education and social interactions experienced by young people, we collapsed the seven responses into two categories: (i) more than once per month; and (ii) once per month or less often.

Although social connectedness is usually examined from a human-centric perspective, feedback from lived experience research assistants was that pets can provide social connectedness that could be beneficial to mental

health. Thus, we included pet ownership using the question, “Do you have any pets?”, which had binary responses of “yes” or “no”.

Potential confounders

Potential confounders of the exposure and outcome are shown in the causal diagram (Fig. 1). These included age (years), sex (male, female), country of birth (Australia, not Australia), remoteness of residence (major city, regional or remote), and perceived family financial wellbeing. Family financial wellbeing was assessed using the question, “Given your current needs and financial responsibilities, would you say that you and your family are… ?”. We collapsed the six responses into 3 categories: (i) prosperous/very comfortable; (ii) reasonably comfortable/just getting along; and (iii) poor/very poor.

Cohort selection

The cohort for the study was restricted to people aged 15–24 years who provided yes or no answers about disability status (0.18% missing). Participants were excluded if they did not have complete data for the outcome (MHI-5 score), effect modifiers (social support, loneliness, social connection and pets), and confounders (age, sex, country of birth, remoteness). Questions for the MHI-5, social support, loneliness and social connection were contained in the Self-Completion Questionnaire (SCQ), which was not returned by 9.6% of participants. An additional 3.9% of participants who returned the SCQ did not provide complete answers for the essential questions. There was also a very small amount of missingness for location data to determine remoteness (0.27%). The final cohort contained 1,953 participants (86.3% of survey respondents aged 15–24 years). A flow chart of cohort selection is in Fig. 2.

Statistical analysis

To ensure that population-weighted estimates are representative of the Australian population and to compensate for participants who were interviewed but did not return the SCQ, the HILDA Survey provides a set of survey weights for individuals that completed both the interview and the SCQ. This minimises the bias caused by missingness of data in analyses that require responses from questions in the SCQ.

Population-weighted descriptive statistics were used to describe the sample in terms of demographic and socioeconomic characteristics, distribution of potential effect modifiers, and mental health scores, stratified by disability status. We applied HILDA Survey SCQ person weights to adjust for clustering and stratification in the survey design and wave-on-wave non-response,[22] utilising the Taylor Series linearisation method to calculate standard errors.[30]

The association between disability and mental health was estimated using population-weighted linear regression models, including potential confounders as covariates. To assess whether there was evidence of effect modification, we included an interaction between disability and each effect modifier and tested for effect modification using Wald tests.[31, 32] Each effect modifier was analysed in turn in separate models. We estimated the effect of disability on mental health, presented as mean differences in mental health scores between disability groups relative to people without disability, within each category of the effect modifier. The excess effects associated with each effect modifier were estimated, which represent the additional difference in mental health that exceeds the sum of the effects of disability and the effect modifier considered separately. We then estimated population-weighted predicted mean MHI-5 scores for each subgroup (by disability status and each effect modifier). To determine whether there was a

difference between subgroups, we assessed whether the 95% confidence intervals for estimates were non-overlapping.

All statistical analyses were performed using Stata SE version 18.0. Graphs were generated in Excel.

Results

Population characteristics

Within the analytic cohort of 1,953 participants aged 15–24 years, the population-weighted prevalence of disability was 19.6% (95% CI: 17.4%, 22.1%). When disaggregated by the absence or presence of psychological disability, the population-weighted prevalence of non-psychological disability was 11.5% (95% CI: 9.8%, 13.5%) and the prevalence of psychological disability was 8.1% (95% CI: 6.6%, 9.9%). Thus, psychological disability was present in 41.2% (95% CI: 34.7%, 48.0%) of all young people with disability had psychological disability.

Table 1 shows population-weighted demographic, socioeconomic and social connectedness characteristics, stratified by disability status. Mean age was similar between disability groups. There was a similar proportion of males and females for people without disability and people with non-psychological disability, however a greater proportion of young people with psychological disability were female. Most young people were born in Australia with around 10% born in other countries, approximately one-third of young people were in a relationship, and three-quarters lived with parents, with little difference by disability status. Although the majority of the cohort was engaged in employment and/or education, the proportion of people who were not engaged was higher for young people with a disability compared to those with no disability. At least two-thirds of young people lived in major cities rather than regional or remote areas, with little difference by disability status. There was little difference in perceived family financial wellbeing between the three comparison groups.

Table 1

Population-weighted estimates of demographic, socioeconomic and social connectedness characteristics for young people aged 15–24 years. Results are stratified by disability status.

	No disability		**Has non-psychological disability**		**Has psychological disability**	
	(n = 1554)		**(n = 233)**		**(n = 166)**	
	%	95% CI	%	95% CI	%	95% CI
Age (years, mean)	19.5	(19.3, 19.7)	20.0	(19.5, 20.5)	20.1	(19.4, 20.7)
Sex						
Male	53.4	(50.1, 56.7)	55.6	(46.1, 64.8)	30.1	(20.1, 42.3)
Female	46.6	(43.3, 49.9)	44.4	(35.2, 53.9)	69.9	(57.7, 79.9)
Country of birth						
Australia	89.0	(83.1, 93.0)	90.4	(78.5, 96.1)	91.4	(73.4, 97.6)
Not Australia	11.0	(7.0, 16.9)	9.6	(4.0, 21.5)	8.6	(2.4, 26.6)
In a relationship						
Yes	31.6	(28.7, 34.6)	35.3	(26.7, 45.0)	33.2	(25.3, 42.2)
No	68.4	(65.4, 71.3)	64.7	(55.0, 73.3)	66.8	(57.8, 74.7)
Living arrangements						
Living with parents	79.1	(76.3, 81.6)	73.9	(65.3, 81.0)	72.7	(63.7, 80.2)
Living with other family	3.1	(2.1, 4.4)	2.6	(1.1, 5.9)	8.6	(4.6, 15.6)
Part of a couple +/- children	10.3	(8.5, 12.5)	15.7	(9.8, 24.4)	10.2	(6.2, 16.3)
Lone parent	0.4	(0.2, 0.8)	1.9	(0.7, 4.6)	1.9	(0.5, 6.3)
Unrelated to other household members	2.0	(1.3, 3.2)	3.4	(1.4, 7.8)	1.1	(0.3, 3.6)
Lone person	5.1	(4.2, 6.3)	2.6	(1.4, 4.8)	5.5	(3.1, 9.8)
Engagement in employment or education						
Yes	93.2	(91.3, 94.7)	81.7	(72.4, 88.4)	74.7	(66.5, 81.5)
No	6.8	(5.3, 8.7)	18.3	(11.6, 27.6)	25.3	(18.5, 33.5)
Remote area 2011						

	No disability		Has non-psychological disability		Has psychological disability	
	(n = 1554)		(n = 233)		(n = 166)	
Major city	76.0	(72.5, 79.2)	68.0	(59.6, 75.5)	68.0	(56.7, 77.5)
Regional or remote	24.0	(20.8, 27.5)	32.0	(24.5, 40.4)	32.0	(22.5, 43.3)
Family financial wellbeing						
Very comfortable/prosperous	29.5	(26.4, 32.7)	16.2	(11.6, 22.1)	21.5	(12.4, 34.8)
Just getting along/reasonably comfortable	69.1	(65.8, 72.1)	77.2	(70.3, 83.0)	73.9	(61.1, 83.6)
Very poor/poor	1.5	(0.9, 2.3)	6.6	(3.8, 11.3)	4.6	(2.0, 10.4)
Social support						
High level of social support	63.8	(60.2, 67.3)	51.3	(42.0, 60.5)	41.9	(32.4, 52.1)
Low level of social support	36.2	(32.7, 39.8)	48.7	(39.5, 58.0)	58.1	(47.9, 67.6)
Loneliness						
Not lonely	77.9	(75.1, 80.5)	71.9	(63.5, 79.0)	53.6	(41.7, 65.1)
Lonely	22.1	(19.5, 24.9)	28.1	(21.0, 36.5)	46.4	(34.9, 58.3)
Frequency of social connection						
More than once per month	79.9	(75.8, 83.5)	75.1	(67.5, 81.5)	62.5	(51.7, 72.1)
Once per month or less often	20.1	(16.5, 24.2)	24.9	(18.5, 32.5)	37.5	(27.9, 48.3)
Pets						
No pet	29.0	(25.2, 33.1)	28.9	(21.1, 38.2)	21.4	(15.0, 29.6)
Has pets	71.0	(66.9, 74.8)	71.1	(61.8, 78.9)	78.6	(70.4, 85.0)
Mental health score (Mean)	66.3	(65.2, 67.3)	62.8	(60.1, 65.5)	46.6	(42.2, 50.9)

Low social support was more common in young people with psychological disability (58.1%), followed by young people with non-psychological disability (48.7%) and young people without disability (36.2%). A similar pattern was seen for loneliness, with young people with psychological disability (46.4%) more likely to experience loneliness than young people with non-psychological disability (28.1%) or young people without disability (22.1%). Similarly, young people with psychological disability had the least frequent social connection and were more likely to connect with friends or relatives no more than once per month (37.5%) when compared to young people with non-psychological

disability or without disability. In contrast, there was little difference between the comparison groups for pet ownership, with over 70% of young people in all three groups having a pet.

Young people with non-psychological disability on average experienced slightly poorer mental health compared to young people without disability (3.5-point difference), although the confidence intervals overlapped. In contrast, young people with psychological disability on average had substantially lower mean MHI-5 scores compared to young people without disability (19.7 point difference).

Effect modification of mental health inequalities by social connectedness

The linear regression results describing the effect of disability on mental health within categories of social connectedness (Table 2) provided consistent evidence of a difference in mental health scores between young people with psychological disability and young people with no disability across all categories of social connectedness. There was however no evidence of a difference between young people with non-psychological disability and young people without disability.

Table 2

Population-weighted coefficients from the linear regression model representing estimated mean differences in mental health scores. Results are provided for each level of the social connectedness effect modifiers and stratified by disability status.

	Effect of disability on mean mental health score, compared to people without disability						**Excess effect by social connectedness on the additive scale**				**Test for interaction**
	No disability		**Has non-psychological disability**		**Has psychological disability**		**Has non-psychological disability**		**Has psychological disability**		
	Coeff	95% CI	Coeff	95% CI	Coeff	95% CI	Coeff	95% CI	Coeff	95% CI	p value
Social support											
High level of social support	0		-2.8	(-6.2, 0.6)	-12.4	(-17.5, -7.4)					
Low level of social support	0		0.03	(-4.2, 4.3)	-16.9	(-22.2, -11.7)	2.8	(-2.5, 8.2)	-4.5	(-11.8, 2.8)	0.238
Loneliness											
Not lonely	0		-2.5	(-5.4, 0.4)	-10.5	(-14.8, -6.2)					
Lonely	0		-0.5	(-5.3, 4.2)	-17.4	(-21.8, -13.0)	1.9	(-3.6, 7.5)	-6.9	(-13.2, -0.6)	0.069
Frequency of social connection											
More than once per month	0		-2.4	(-5.6, 0.8)	-14.1	(-18.6, -9.6)					
Once per month or less often	0		-3.4	(-8.0, 1.3)	-23.3	(-31.8, -14.9)	-1.0	(-6.7, 4.8)	-9.2	(-18.8, 0.3)	0.165
Pets											
No pet	0		-1.8	(-6.2, 2.6)	-17.8	(-25.3, -10.2)					
Has pets	0		-3.2	(-6.6, 0.1)	-18.4	(-23.8, -13.0)	-1.4	(-7.1, 4.2)	-0.6	(-9.6, 8.3)	0.882

**Linear regression models were adjusted for age, sex, country of birth, remoteness, and family financial wellbeing. p-value for significance = 0.05*

There was no evidence of overall effect modification across the three disability groups by any of the potential effect modifiers from the tests for interaction. However, when comparing young people with psychological disability to young people with no disability, there was evidence of effect modification by loneliness (i.e., a difference in mental health inequalities that exceeded the sum of the separate effects of psychological disability and loneliness) and

some evidence of effect modification by social support and frequency of social connection, but no effect modification by having pets.

For young people who were not lonely, there was an estimated mean difference in MHI-5 scores of -10.5 points (95% CI: -14.8, -6.2) between young people with psychological disability and young people without disability. However, for young people who experienced loneliness, there was a mean difference of -17.4 points (95% CI: -21.8, -13.0) between these comparison groups. Thus, there was an excess effect of -6.9-points (95% CI: -13.2, -0.6) in MHI-5 scores for young people with psychological disability who experienced loneliness on top of the individual effects of experiencing loneliness and psychological disability.

For young people with high levels of social support, there was an estimated mean difference in MHI-5 scores of -12.4 points (95% CI: -17.5, -7.4) between young people with psychological disability and young people without disability (Table 2). In contrast, for low levels of social support, there was an estimated mean difference of -16.9 points (95% CI: -22.2, -11.7) between these comparison groups. Thus, the excess effect of having a psychological disability and low social support (compared to high levels of social support) was an estimated mean difference in mental health scores of -4.5 points (95% CI: -11.8, 2.8).

Among young people who socially connected with friends or relatives more than once per month, there was an estimated mean difference in MHI-5 scores of -14.1 points (95% CI: -18.6, -9.6) between young people with psychological disability and young people without disability (Table 2). In contrast, for social connection once per month or less often, there was an estimated mean difference of -23.3 points (95% CI: -31.8, -14.9) between these comparison groups. Thus, the excess effect of having a psychological disability and socially connecting once per month or less often (compared to more than once per month) was an estimated mean difference in mental health scores of -9.2 points (95% CI: -18.8, 0.3).

For young people without pets, there was an estimated mean difference in MHI-5 scores of -17.8 points (95% CI: -25.3, -10.2) between young people with psychological disability and young people without disability, compared to an estimated difference of -18.4 points (95% CI: -23.8, -13.0) for those having pets (Table 2). The excess effect of having a psychological disability and having a pet was − 0.6 (95% CI: -9.6, 8.3), indicating no evidence of effect modification.

Predicted mean mental health scores due to low social connectedness

Figure 3 and Supplementary Table 1 demonstrate the predicted mean mental health scores for the disability groups stratified by categories of social connectedness, which illustrates the extent of mental health inequalities between disability groups, as well as the average mental health values for each disability group. Young people with psychological disability who experienced loneliness had a predicted mean MHI-5 score of 34.6 (95% CI: 30.6, 38.5) compared to 70.1 (95% CI: 69.0, 71.1) for young people without disability who were not lonely – a difference of more than 35-points on the MHI-5 scale – demonstrating that the joint effect of having psychological disability and being lonely was greater than the sum of the individual effects of loneliness and psychological disability. In comparison, for young people with non-psychological disability who experienced loneliness, the predicted mean MHI-5 scores were 51.5 (95% CI: 46.6, 56.3) – a difference of 18.8-points on the MHI-5 scale, compared to young people without disability who were not lonely – and this difference was consistent with the additive individual effects of loneliness and non-psychological disability.

Discussion

This study found that young people with psychological disability had substantially poorer mental health compared to young people without disability or with non-psychological disability. There was evidence of effect modification by loneliness of the inequalities in mental health between young people with psychological disability and young people without disability, and some suggestion of effect modification by social support and frequency of social interactions. This was observed as a greater estimated mean difference in predicted mental health scores between young people with psychological disability and young people without disability for people who were lonely, had low levels of social support, or less frequent social interactions. In contrast, there was no difference in the impact of social connectedness on mental health scores between young people with non-psychological disability and young people without disability.

This is the first study to have examined mental health for young people with disability based on the presence or absence of psychological disability. Our finding that young people with psychological disability had an almost 20-point difference in mean mental health scores compared to young people without disability was consistent with previous observations that people aged 15 + years with psychological disability had substantially poorer mental health than people without disability.[7] However, our finding that young people with non-psychological disability had similar mental health scores to young people without disability, with a difference of only 3.5 points – lower than the 4-5-point difference in MHI-5 scores considered to be a clinically relevant difference[26, 27] – was surprising. It is important however to understand that the presence of psychological disability and mental illness does not necessarily equate to poor mental health, since mental health exists on a continuum and can fluctuate in response to individual, social and structural factors.[33, 34] The high proportion of psychological disability among young people with disability of 41.2% was also notable, given that previously we observed that 21.4% of people with disability aged 15 + years had a psychological disability.[7] This indicates that psychological disability, and poor mental health, is a pressing public health issue in young people aged 15–24 years. It also indicates the importance of disaggregating different types of disability when examining mental health. Nonetheless, although young people with non-psychological disability had mental health scores similar to those of young people without disability, it remains important to monitor the mental health of young people with non-psychological disability because it has been demonstrated that mental health declines for every additional year lived with non-psychological disability.[35]

Although low levels of social connectedness were associated with lower mental health scores for all young people regardless of disability status, for young people with psychological disability, the differences associated with low levels of social support, being lonely and having lower frequency of social connection were larger (16.9 to 23.3 points lower) than for young people without disability. As such, this finding identifies a group of young people at particularly high risk of poor mental health. Importantly, high levels of social connectedness appeared to be protective for the mental health of young people with psychological disability, substantially reducing the gap in predicted mean mental health when compared to young people with non-psychological disability or no disability. This indicates that although social connectedness is important for all young people, it is particularly important for the mental health of young people with psychological disability, highlighting the need for targeted solutions promoting social connectedness for young people with psychological disability. Our findings are consistent with previous reports that mental health is poorer for young people with disability who have low social support[20] or who are lonely,[36] and aligns with the observations that increasing inequalities in loneliness in young people with disability in recent years mirrors increasing inequalities in mental health in this population.[7, 10] Further research using longitudinal data and appropriate causal methods is needed to determine whether low social connectedness, particularly loneliness, is likely to be a mediator of the disability-related mental health inequalities.

Social connectedness is usually considered in terms of human-centric connections, however lived experience input from young people with disability led us to consider whether pet ownership may modify the effect of disability on mental health. Given public opinion usually asserts that pet ownership is beneficial for mental wellbeing,[37] we were surprised to observe no difference in mental health scores by pet ownership for young people regardless of disability status. However, our results are consistent with a 2023 meta-analysis reporting that pet ownership does not influence mental health,[38] and a 2018 systematic review reporting that the practical and emotional burden of pet ownership could provide both positive benefits and negative effects for people with mental health conditions.[39] Nonetheless, pet ownership has been reported to reduce loneliness in rural adolescents[40] and to be a source of support for people with long-term mental health conditions when other forms of social support were limited.[41] Thus, the effect of pets on the mental health of young people with disability who are also lonely or have limited social support may warrant further investigation. It needs to be considered however that the question about pet ownership did not capture information about how often individuals interacted with their pet or their degree of attachment to the pet, both of which could affect the social connectedness provided by a pet and the impact on mental health.

This study has several strengths. First, the HILDA Survey is a large, nationally representative sample of the Australian population. Second, the structure of the disability question allowed disaggregation of disability based on the presence or absence of psychological disability. This was important because people with psychological disability tend to have poorer mental health than people without psychological disability.[7] Third, the extensive range of questions relating to social connectedness allowed us to tease out these concepts individually and assess their effects on mental health. Fourth, this study was designed to incorporate lived experience into all aspects of the research process, with four young people with disability being part of the research team, as well as two academic researchers with lived experience of disability. This greatly strengthened the study by ensuring that the voice of the population of interest was represented, leading to important adjustments of the research question and analysis strategy that align with young people with disability.[21] Of particular importance was the selection of measures of social connectedness and how they were categorised, including adjusting the social support index to remove a question that had ambiguous interpretation for young people with disability who require support for their disability needs.

There were also limitations. First, the prevalence of disability in our cohort was higher than reported in 2022 national statistics,[9] which may relate to slightly different definitions of disability. Second, the HILDA Survey is limited to people living in the community and excludes people living in care homes or correctional facilities. Third, because we used a complete case analysis, selection bias may have occurred since most measures with missing data were part of the HILDA Survey self-completion questionnaire and 9.6% did not return this part of the survey. However, the bias was minimised by using SCQ survey weights, which adjusts estimates for population representativeness based on individuals who returned the SCQ. Fourth, to improve statistical power of the analyses, we collapsed the levels of the effect modifiers into binary responses, however this may have oversimplified the experiences of individuals in terms of how each effect modifier influenced the impact of disability type on mental health. Fifth, the sample size prevented us from disaggregating the psychological disability group based on the presence or absence of another type of disability, which may have obscured some nuance of the experience of this group and whether the presence of a non-psychological disability in addition to a psychological disability further impacted mental health. Finally, information bias could have occurred with self-reported measures of disability, mental health and social connectedness measures due to systematic measurement error associated with stigma.

Conclusions

The results from this study demonstrate that psychological disability in young people is associated with large inequalities in mental health, and this is further exacerbated by the experience of loneliness and social isolation. When taken together with the known impacts of loneliness on a range of health outcomes,[11–13] this highlights the need to address loneliness for young people generally, but particularly for young people with psychological disability. Given that two out of five young people with disability had psychological disability, this represents a significant group that warrants further attention. Addressing this public health issue is complex given the diverse experiences of young people as they transition from schooling to work or higher education. However, an important step is making mental health care more accessible in terms of availability and costs, as well as ensuring it is appropriate for young people with psychological disability and tailored to the individual. Further research is needed to investigate potential causality between loneliness and social isolation and disability-related mental health inequalities in young people so that the directionality of effects can be better understood.

Abbreviations

CI
confidence interval
HILDA Survey
Household, Income and Labour Dynamics in Australia Survey
MHI-5
Five-item Mental Health Inventory
SCQ
Self Completion Questionnaire

Declarations

Ethics approval and consent to participate

Ethics approval for the HILDA Survey was granted by the Human Research Ethics Committee of the University of Melbourne in 2001 (ID 1955879) and has been updated or renewed annually. Consent for participation in the HILDA Survey is obtained via use of an information letter to potential respondents, which details that informed consent is implied when participants agree to be interviewed. Parents/guardians provide consent for children aged 15–17 years. Further ethics approval was granted by the Human Research Ethics Committee of the University of Melbourne for the secondary analysis of the HILDA Survey data undertaken within this project (ID 26758).

Consent for publication

Not applicable

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Author Contribution

The study was conceptualised by GB, ZA, RB, SD, AK and BH. Funding was obtained by ZA and AK. The methodology was developed and refined by GB, ZA, RB, LY, SD, AK, BH, and BW. The data was prepared and analysed by GB and LY, and LY created the data visualisations. RB, BW and DG assisted with interpreting the results. The original draft was written by GB and LY, and all authors reviewed and edited the manuscript. The final manuscript was approved by all authors.

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Data Availability

The data used are available free of charge to researchers through the Australian Data Archive (ADA) Dataverse, conditional on approval by the Director of Longitudinal Studies. HILDA General Release 22 can be obtained here: https://doi.org/10.26193/R4IN30

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Figures

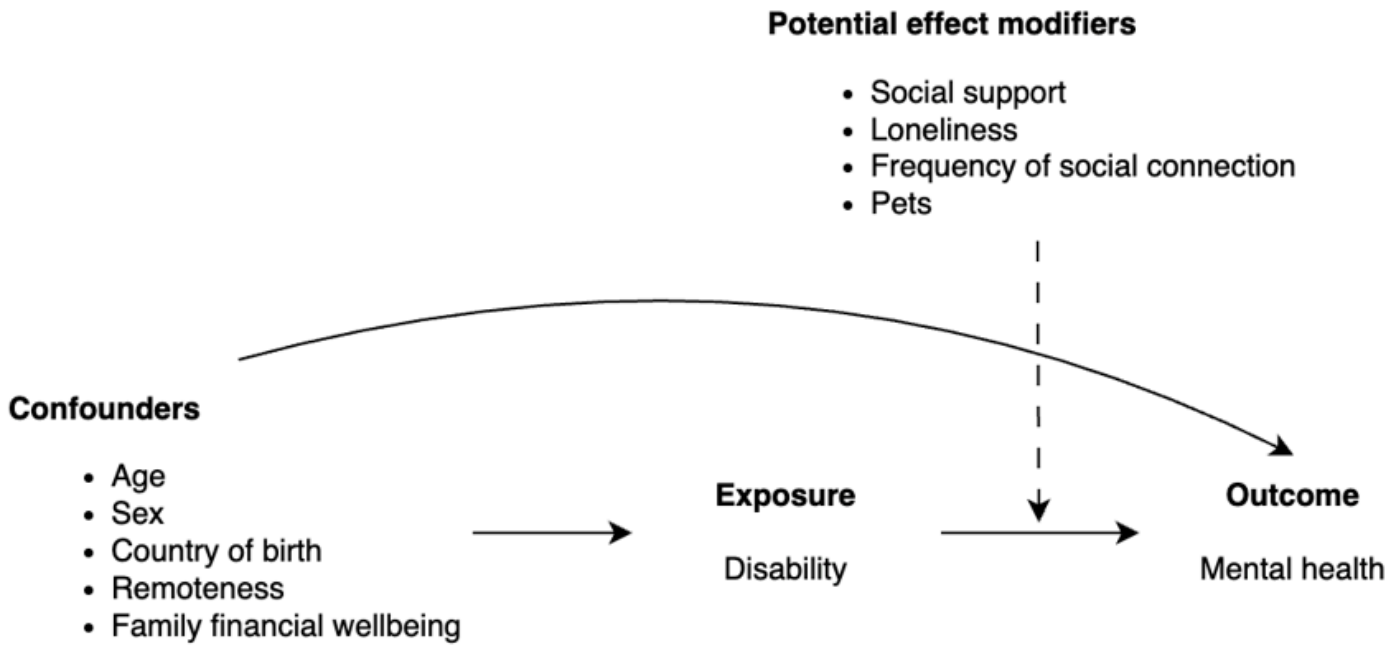


Figure 1

Causal diagram depicting the association between disability and mental health. Potential confounders and social connectedness effect modifiers are included.

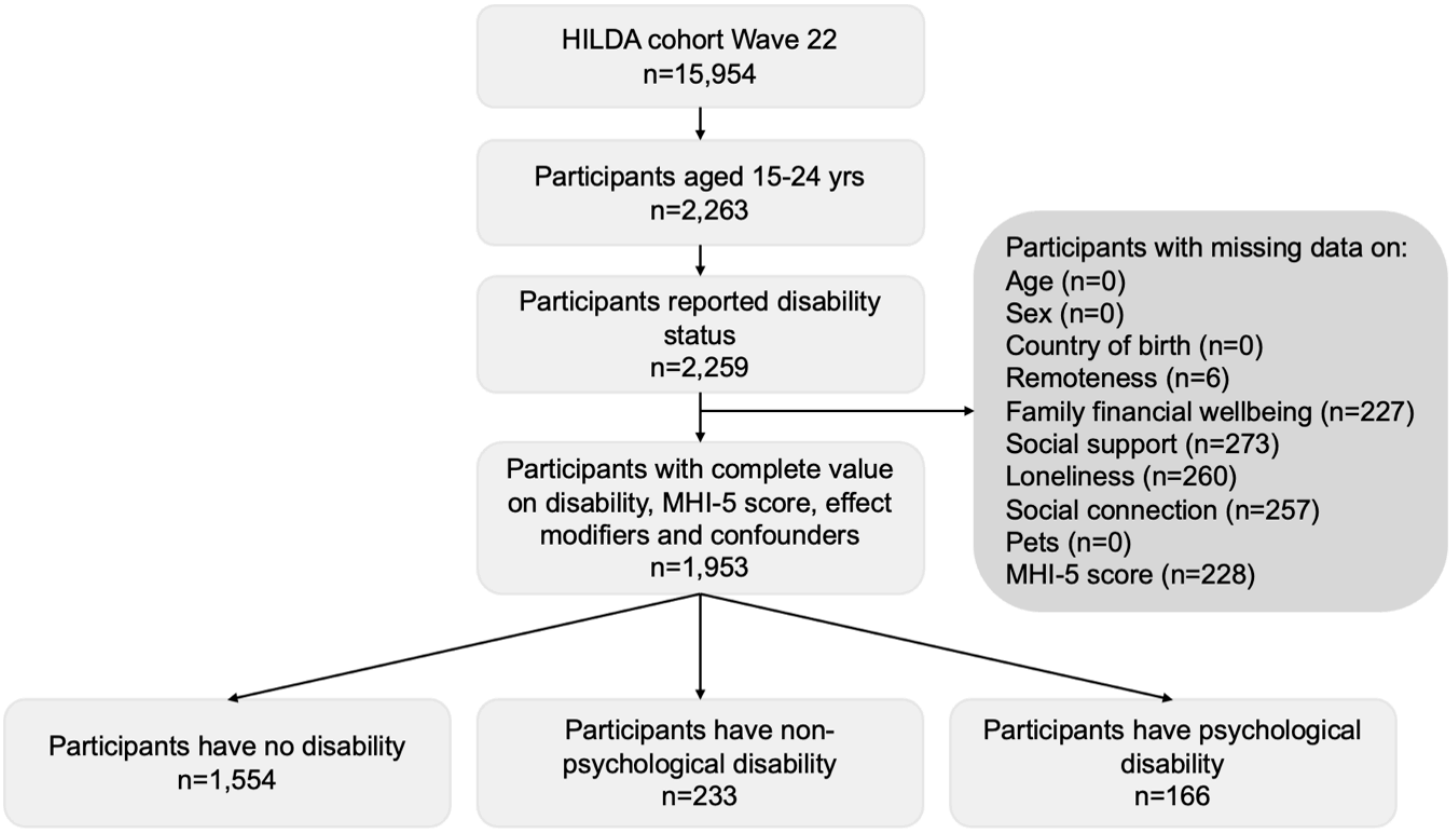


Figure 2

Flow chart showing cohort selection and missing data.

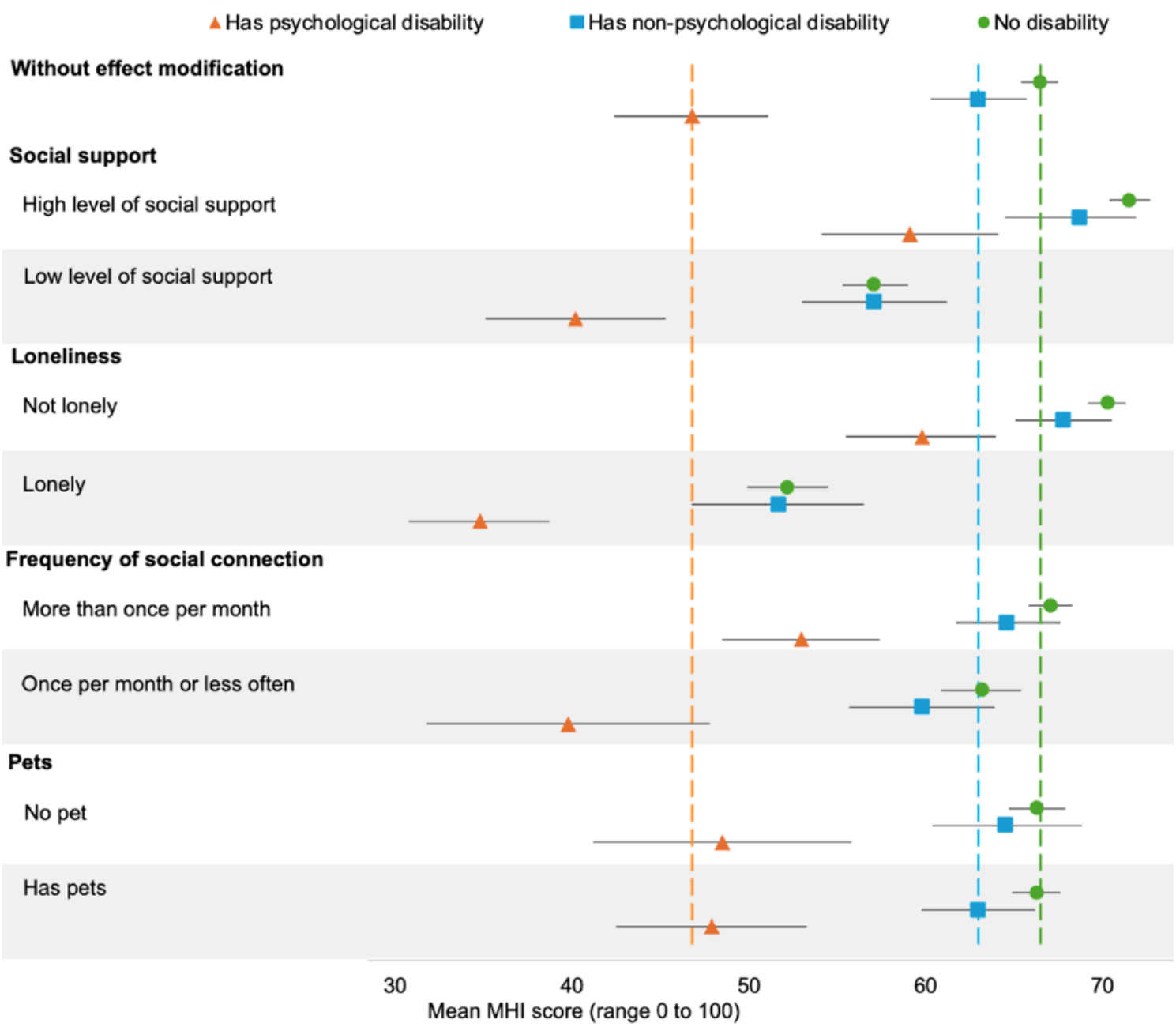


Figure 3

Forest plot of predicted mean mental health scores. The MHI-5 scores represent the joint effect of disability and each social connectedness effect modifier.

Supplementary Files

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- SupplementaryMaterials.docx