ABSTRACT

The poor mental and physical health of people with disabilities has been well documented and there is evidence to suggest that inequalities in health between people with and without disabilities may be at least partly explained by the socioeconomic disadvantage (e.g. low education, unemployment) experienced by people with disabilities. Although there are fewer studies documenting inequalities in social capital, the evidence suggests that people with disabilities are also disadvantaged in this regard. We drew on Bourdieu’s conceptualisation of social capital as the resources that flow to individuals from their membership of social networks. Using data from the General Social Survey 2010 of 15,028 adults living in private dwellings across non-remote areas of Australia, we measured social capital across three domains: informal networks (contact with family and friends); formal networks (group membership and contacts in influential organisations) and social support (financial, practical and emotional). We compared levels of social capital and self-rated health for people with and without disabilities and for people with different types of impairments (sensory and speech, physical, psychological and intellectual). Further, we assessed whether differences in levels of social capital contributed to inequalities in health between people with and without disabilities. We found that people with disabilities were worse off than people without disabilities in regard to informal and formal networks, social support and self-rated health status, and that inequalities were greatest for people with intellectual and psychological impairments. Differences in social capital did not explain the association between disability and health. These findings underscore the importance of developing social policies which promote the inclusion of
people with disabilities, according to the varying needs of people with different impairments
types. Given the changing policy environment, ongoing monitoring of the living circumstances
of people with disabilities, including disaggregation of data by impairment type, is critical.

KEYWORDS

Disability; impairment; social capital; self-rated health; health inequalities
Disabilities are broadly described as health conditions or impairments that impose restrictions in functioning in multiple life areas, resulting from an interaction between people's health conditions and environmental or contextual factors (World Health Organization, 2002). Nearly one in five Australians are living with a disability (ABS, 2013), a prevalence similar to other high income countries (World Health Organization, 2011). Across the Organisation for Economic Co-operation and Development (OECD), people with disabilities are more disadvantaged than people without disabilities including having lower levels of income, education and labour force participation (Organisation for Economic Co-operation and Development, 2009). The extent of this disadvantage varies between countries, with Australia faring poorly on a number of indicators. For example, adult Australians with disabilities earn on average 68% of the income of those without disabilities, which is the lowest relative income of the 27 countries in the OECD (Organisation for Economic Co-operation and Development, 2009). Recent analyses of Australian data have demonstrated large inequalities in levels of education, participation in paid work, and income between people with and without disabilities (Kavanagh et al., 2014) which have persisted or worsened over the last decade (Kavanagh et al., 2013). Australians with intellectual and psychological impairments are particularly vulnerable to disadvantage across a range of outcomes including education (Karmel & Nguyen, 2005), housing (Beer & Faulkner, 2008; Beer et al., 2011) and employment (Hogan et al., 2012; Jones et al., 2011; Kavanagh et al., 2014).
International research has shown that people with disabilities experience poorer health than people without disabilities (Organisation for Economic Co-operation and Development, 2009; World Health Organization and World Bank Group, 2011), including lower self-rated health (Emerson et al., 2011), higher rates of obesity (Ells et al., 2006) and diabetes (Havercamp et al., 2004), lower psychological health (Emerson et al., 2012), higher levels of smoking (Australian Institute of Health and Welfare, 2010; Jablensky et al., 1999) and poorer diet (Department of Health, 2011), and there is evidence to suggest that the poorer health of people with disabilities is at least partly explained by the disadvantaged circumstances in which they live, with the evidence strongest for children and adults with intellectual impairments (Emerson & Hatton, 2007; Emerson et al., 2012; Honey et al., 2011). It is possible that other social and economic resources that are important for health, such as social capital, may also explain health differences between people with and without disability.

There is substantial literature, across a range of populations, indicating that an individual’s social resources (such as those derived through social relationships, networks and interactions, sometimes conceptualised as social capital) are beneficial for health (Berry & Welsh, 2010; Kawachi et al., 2008; Ziersch, 2005). The evidence base regarding whether social capital varies between people with and without disabilities is limited, particularly in relation to different impairment types. This paper aims to describe variations in social capital between people with and without disabilities and according to type of impairment (sensory and speech, physical, intellectual, and psychological). The extent to which variations in social capital explain inequalities in health is also examined.
In the remainder of the introduction to this paper we (1) describe how we conceptualise and operationalise social capital, (2) provide a brief overview of the evidence about the relationship between social capital and health, and (3) outline previous research relating to disability and social capital, with reference to the relationship between social capital and health for people with disabilities.

**Social capital**

We draw on the work of the French sociologist Bourdieu, who conceptualises social capital as the resources that flow to individuals from their membership of social networks (Bourdieu, 1986). Bourdieu argues that social capital is inequitably distributed by social class and inextricably linked to economic and other resources in a reinforcing cycle, such that social capital can further contribute to inequalities. The role of inequitable power relations in determining the type of resources available to individuals through their social networks is central to his theorising. Bourdieu’s approach is particularly relevant here as people with disabilities are often marginalised and economically disadvantaged in society (Beer & Faulkner, 2008; Beer et al., 2011; Hogan et al., 2012; Jones et al., 2011; Karmel & Nguyen, 2005).

We selected Bourdieu’s approach to social capital over that popularised by Robert Putnam who defined social capital as “features of social organisation such as networks, norms and social trust that facilitate coordination and cooperation for mutual benefit” (Putnam, 1995, p. 67). Putnam’s conceptualization of social capital sees it as a community-level resource and public good (Baum & Ziersch, 2003; Putnam, 1995, 2000). Unlike Bourdieu who conceived of social
capital as inevitably inequitably distributed and linked to possession of other resources,

Putnam’s communitarian approach does not explicitly recognise the role of power in the way that individuals (or communities) may have differential social capital, the potential for social capital to exclude ‘outsiders’ (Arneil, 2006; Baum & Ziersch, 2003; Portes & Landolt, 2000; Schuller et al., 2000), and the consequences of this for health equity (Navarro, 2002; Portes & Landolt, 2000).

In operationalising Bourdieu’s approach to social capital we focus on the structural aspects of social capital (Krishna & Shrader, 1999); that is, an individual’s social networks. We consider access to both formal and informal networks and the extent to which they may be bonding, bridging and linking. We also examine potential social support resources which may flow from these different types of ties. This reflects our previous work in this area (Ziersch, 2005; Ziersch et al., 2005) and theorised distinctions between bonding, bridging (Harpham et al., 2002; Putnam, 2000) and linking social networks (Szreter, 2002). Bonding networks refer to close informal networks of families and friends and are often regarded as a means to ‘get by’ (Poortinga, 2006). Bridging networks refer to weaker and heterogeneous ties between people from dissimilar backgrounds (e.g. age, ethnic group) and have the potential to generate resources not available through closer bonding ties, enabling people to ‘get ahead’ (Kawachi et al., 2008). Linking social networks refer to relationships with those in positions of power and authority (Stone et al., 2003; Szreter, 2002) which likewise offer the potential resources to ‘get ahead’.

**Social capital and health**
The association between social capital and health outcomes has been demonstrated in studies both in Australia (Baum et al., 2009; Berry & Welsh, 2010; Kavanagh et al., 2006; Turrell et al., 2006; Ziersch, 2005; Ziersch et al., 2005) and internationally (Elgar et al., 2011; Kawachi et al., 2008; Murayama et al., 2012). However, the findings regarding the associations between social capital and health have been inconsistent. Some studies have found a beneficial effect of social capital for physical (Kawachi et al., 2008; Kim et al., 2008) and mental health (Almedom, 2005; De Silva et al., 2005; McKenzie et al., 2002), while others have demonstrated either null or negative associations (Murayama et al., 2012; Ziersch & Baum, 2004). These inconsistencies may reflect differences in conceptual approaches and measurement as well as the potential for social capital to be both an asset and a liability for health.

Social capital is believed to benefit health through access to resources such as emotional and material support and health information generated by social networks (Kawachi & Berkman, 2001; Poortinga, 2006; Ziersch & Baum, 2004). Detrimental health effects of social capital may occur because of unmanageable demands of networks or exposure to unhealthy behaviours such as smoking (Lundborg, 2006; Osborne et al., 2009; Ziersch & Baum, 2004). Social networks may provide different resources according to the extent to which they are bonding, bridging or linking, and there is some evidence that the potential benefits of different types of social networks for health may vary (Iwase et al., 2012; Poortinga, 2012; Verhaeghe et al., 2012).

Consistent with Bourdieu’s argument that social capital is inextricably related to socioeconomic resources, there is evidence that social capital is inequitably distributed, in particular by social class (Arneil, 2006; Lin, 2000; Ziersch, 2005). A recent systematic review of 60 studies examining
the interactions between social capital and socioeconomic disadvantage found evidence to suggest that social capital was more beneficial to the health of more disadvantaged people (Uphoff et al., 2013).

Disability and social capital

There is evidence that people with disabilities have lower social capital than people without disabilities. In regional Australia people with disabilities reported lower levels of social support than people without a disability, and lower levels of contact with family and friends, but the study did not distinguish between impairment types (McPhedran, 2010). A study of young Australians found lower levels of social capital across a range of indicators (e.g. social contact with friends and someone to turn to in times of crisis) in those with disabilities compared to those without a disability, and for many of the indicators, these differences increased between 2001 and 2011 (Llewellyn et al., 2013). A systematic review of 23 quantitative studies found that people with intellectual disabilities had lower levels of community participation than people without disabilities (Verdonschot et al., 2009), and a recent Australian study demonstrated that people with intellectual impairments were less likely to be able to get help from family, friends or neighbours than people without a disability (Department of Health, 2011). We are only aware of one study that compared people with different types of impairments; a North American study found that people with intellectual impairments had smaller social networks than those with physical impairments (Lippold & Burns, 2009).

Disability, social capital and health
Few studies have examined both social capital and health among people with disabilities. An English study of adults with mild and moderate intellectual disabilities found that self-rated health was associated with socioeconomic disadvantage but not with social participation (Emerson & Hatton, 2008). A small study of 136 people with musculoskeletal impairments in Vietnam found that being a member of a group was associated with overall life satisfaction (Takahashi et al., 2011). Neither study included a comparison group of people without disabilities. We did not identify any studies that have examined whether health differences between people with and without disabilities could be explained by differences in social capital.

Using a large population-based survey of 15,028 Australians, we address three questions. First, do people with and without disabilities have different levels of social capital (informal and formal networks and social support), and are there differences for people with different impairment types (sensory and speech; physical; intellectual; psychological)? Second, does self-rated health vary between people with and without disabilities and for people with different impairment types? And finally, to what extent does social capital contribute to the association between disability, impairment type and health?

METHOD

Data source

We analysed the Confidentialised Unit Record File (CURF) of the 2010 General Social Survey (GSS), a cross-sectional, national population-based survey conducted by the Australian Bureau of Statistics (ABS) on a four-yearly basis. The GSS 2010 collected information about a range of
social dimensions including health, income, family relationships, and social and community
involvement for people aged 18 years and over. The survey included private dwellings in non-
remote areas of Australia (private dwellings included houses, flats, home units, public housing
and other private places of residence; non-private dwellings include hotels, hostels, hospitals
and short-stay caravan parks). Study regions were selected using multi-stage sampling, at the
level of Census Collection Districts (CCDs) in rural areas, and meshblocks in urban areas, which
were the smallest administrative spatial units in Australia (ABS, 2006). Areas with a higher
concentration of disadvantage (defined by the ABS as having three or more of nine indicators
such as low education, household without a car and unemployed, identified in the 2006 Census)
were oversampled. Dwellings were randomly selected and one individual was randomly chosen
from each dwelling (ABS, 2010a). Face-to-face interviews were conducted by trained
interviewers. If the participant was unable to answer due to illness, old age, intellectual
disability or difficulties with English, the interview was undertaken with a proxy, provided that
the interviewer was satisfied that this was acceptable to the person selected for interview. The
response rate was 87.6% with total sample of 15,028 individuals. Individuals in the sample were
assigned weights to represent each person’s probability of being selected into the sample so
that the prevalence estimates reflected the Australian resident population. . The weighting
strategy incorporated age, sex, geographical location, Socio-Economic Indexes for Areas, labour
force status and population density (ABS, 2011).

**Disability measures**
The GSS included the ABS Short Disability Module to identify whether a person had a disability (ABS, 2010b). The definition of disability was based on the International Classification of Functioning, Disability and Health where disability was defined as an impairment or long-term health condition that had lasted, or was likely to last for six months or more, which restricted the individual in core activities including self-care, mobility and communication or resulted in a schooling or employment restriction (such as having difficulty at school, attending a special school, requiring special equipment at school or work) (World Health Organization, 2002). We classified people who reported an impairment or long-term health condition but no specific restriction to core activities, education or employment in the ‘no disability’ group.

Disabilities were categorised by the ABS into the following impairment types: sensory and speech (sight, hearing or speech problems); physical (difficulty gripping things, limited use of legs or feet, conditions that restrict physical activity or physical work, disfigurements or deformities, blackouts, fits or loss of consciousness); intellectual (difficulty learning or understanding things); or psychological (mental illness or a nervous or emotional condition, head injury, stroke or other brain damage) (ABS, 2010c). Individuals could be classified in several of these groups. If a participant reported a disability other than the impairment types defined above (e.g. asthma, heart disease), they were included in the analyses of people with disabilities but not in analyses disaggregated by impairment type.

**Social capital measures**

We used measures of social capital across three domains: two network domains (informal networks and formal networks) and social support. Informal and formal networks were further
characterised as bonding, bridging and linking ties with informal networks indicative of bonding ties and formal networks potentially bridging or linking. Informal networks (bonding) were measured using two variables: direct contact \((\text{face-to-face contact with family or friends once a week or more})\) and indirect contact \((\text{telephone, email or mail with family or friends a few times a week or more})\). Two variables were used to measure formal networks: belonging to a group \((\text{active involvement in a group in last 12 months})\) (bridging) and ties to influential organisations \((\text{personally knew someone in an organisation they would feel comfortable contacting for information or advice, such as state and local government, local council, big business})\) (linking).

For social support, three variables were used: financial support \((\text{could raise $2,000 within a week if needed})\), practical support \((\text{could ask for small favours})\) and emotional support \((\text{had at least a moderate number of friends and/or ex-household family members to confide in})\). A moderate number of friends and/or ex-household family members was derived from two variables, and defined as at least one ex-household family members and one friend, or at least three ex-household family members, or at least three friends to confide in.

All social capital variables were treated as binary variables, having higher social capital categorised as 1 and the referent category of lower social capital categorised as 0.

**Health status**

We used self-rated health as an indicator of health status, which is a strong predictor of mortality (Jylha, 2009) and morbidity (Manor et al., 2001). Responses were collapsed into a binary variable; fair or poor self-rated health was coded as 0 (referent group) and excellent, very good and good health was coded as 1.
Other variables

Demographic and socioeconomic variables that were included in the analyses were age (18-29 (referent group), 30-39, 40-49, 50-59, 60-69 and 70 years and older), sex (men coded as 1, women coded as 2), completion of secondary school education (year 12 in Australia (completion vs non-completion), labour force status (employed vs unemployed or not in the labour force), and income (deciles of equivalised gross household income with the lowest decile used as the referent group). The measure of income was computed by the ABS using an equivalence factor derived from the OECD equivalence scale. The first adult in the household was assigned a weight of one point, each additional adult (≥15 years) 0.5 points, and children under the age of 15 years were allocated 0.3 points. Equivalised household income was derived by dividing total household gross income by the sum of the equivalence points (ABS, 2011).

Statistical analysis

All analyses were performed in Stata/IC 12.1 (StataCorp., 2011) using survey commands (svy commands, person weights and jackknife estimation using 60 replicate weights provided in the GSS data to obtain accurate variance estimates (ABS, 2009).

Descriptive analyses

We calculated population-weighted descriptive statistics to describe the Australian population of people with and without disabilities in terms of the distribution of age, sex, education, labour force status, and household income, stratified by impairment type. To describe the social capital and health inequalities between Australians with and without disabilities, population-
weighted estimates of the proportion of people who reported having higher social capital (for each measure) and good health were calculated, stratified by disability status and impairment type. We used 95% confidence intervals to draw comparisons between the estimates (Sedgwick, 2012).

Regression analyses

We used multivariable logistic regression analyses using three sets of models to address our research questions. The associations between the following variables were tested: (1) disability and each of the social capital measures; (2) disability and self-rated health; and (3) disability, social capital and self-rated health. The third research question was examined by decomposing the effect estimates into direct and indirect effects (ldecomp command in Stata with 1000 bootstrap replications) (Buis, 2010).

The three research questions were modelled for each impairment type, with no disability as the reference category. All models were adjusted for age, sex, education, labour force status, and income. Subjects with missing values for variables included in the models were excluded from the analyses.

Sensitivity analyses

Given Bourdieu’s theorisation of social capital as a driver and consequence of socioeconomic resources, and the bidirectional nature of the association between disability and socioeconomic disadvantage, it is unclear as to whether to include socioeconomic covariates in the models. Depending on the assumptions of the direction of the relationships, socioeconomic covariates
could be confounders, mediators or collider variables; decisions to include or exclude these variables in the analyses could affect the validity of the effect estimates. Therefore, we conducted a sensitivity analysis excluding the socioeconomic covariates (education, labour force status and household income).

Additionally, we compared the characteristics of individuals with and without missing data across all variables using Chi squared tests.

RESULTS

The analytic sample consisted of 15,028 people, of whom 3,734 people reported a disability and 11,294 did not report a disability. Respondents had missing values for two variables; there were 2.8% of respondents with missing data on the social capital measure describing financial support and 13.2% of respondents with missing data on household income.

Prevalence of disability and types of impairments

The population weighted estimate of the prevalence of disability was 16.8% (95% CI: 15.7%, 17.9%). The most common type of impairments were physical impairments (13.8%; 95% CI: 12.9%, 14.7%), followed by sensory and speech (6.5%; 95% CI: 5.8%, 7.2%), psychological (4.6%; 95% CI: 3.9%, 5.4%), and intellectual impairments (2.0%; 95% CI: 1.4%, 2.5%) (Table 1). The prevalence of impairments other than these types was 11.0%.

Demographic and socioeconomic characteristics
People with disabilities tended to be older than those without a disability, with the exception of people with psychological impairments who were mostly aged between 45 and 64 years. The sex distribution was similar in people with and without with disabilities, however there was a higher proportion of men with sensory and speech impairments. For all impairment types, people with disabilities were less likely to have completed secondary school education (35.9%; 95% CI: 31.1%, 40.4% vs 56.6%; 95% CI: 54.5%, 58.6%) or to be in the labour force (34.4%; 95% CI: 31.3%, 37.6% vs 70.8%; 95% CI: 69.8%, 71.8%) compared to people with no disability. People with disabilities were more likely to be in the lower quintiles of the income distribution, and more than half of those with intellectual impairments were in the lowest quintile (Table 1).

--- Table 1 ---

**Disability and social capital (research question 1)**

**Informal networks**

People with disabilities had a lower prevalence of direct contact (73.4%; 95% CI: 69.4%, 77.4% vs 80.1%; 95% CI: 78.3%, 82.0%) and indirect contact with family or friends (75.0%; 95% CI: 71.9%, 77.9% vs 83.2%; 95% CI: 81.5%, 84.9%) compared to people with no disability (Table 2). After adjustment for demographic and socioeconomic covariates, there was only weak evidence of a difference in the odds of direct contact (OR: 0.77; 95% CI: 0.59, 1.01) and indirect contact (OR: 0.82; 95% CI: 0.65, 1.03) between people with and without disabilities. There was no evidence of decreased odds of direct contact for people with sensory and speech and physical impairments compared to people with no disability, however people with intellectual
and psychological impairments had much lower odds of direct contact (intellectual: OR: 0.39; 95% CI: 0.19, 0.80; psychological: OR: 0.57; 95% CI: 0.37, 0.87). There was no evidence of a relative difference in the odds of indirect contact for people with sensory and speech and physical impairments, however people with psychological impairments had much lower odds of indirect contact with family or friends compared to people with no disability (OR: 0.58; 95% CI: 0.42, 0.80) and there was weak evidence of lower odds among people with intellectual impairments (OR: 0.51; 95% CI: 0.25, 1.02) (Figure 1).

--- Table 2 ---

--- Figure 1 ---

Formal networks

A smaller proportion of people with disabilities belonged to groups compared to people without disabilities (62.9%; 95% CI: 59.4%, 66.5% vs 72.8%; 95% CI: 70.7%, 74.8%), but the proportion having ties to organisations were similar (64.4%; 95% CI: 59.7%, 69.1% vs 68.5%; 95% CI: 66.3%, 70.6%), with the exception of people with intellectual impairments who had particularly poor ties to organisations (43.8%; 95% CI: 30.4%, 57.2%) (Table 2). After adjusting for demographic and socioeconomic covariates, there was evidence that people with disabilities had lower odds of belonging to groups than people without disabilities (OR: 0.82; 95% CI: 0.68, 0.98), though once examined by impairment type, this association was only evident for people with physical impairments (OR: 0.79; 95% CI: 0.66, 0.94). There was no
evidence of an association between disability and having ties to organisations (OR: 1.05; 95% CI: 0.81, 1.36), for any impairment type (Figure 1).

Social support

The prevalence of social support was lower for people with disabilities compared to those without disabilities across all three domains, with people with psychological and intellectual impairments generally having the least social support (Table 2). The greatest difference was seen for financial support (73.0%; 95% CI: 69.7%, 76.2% vs 89.1%; 95% CI: 87.9%, 90.4%), which was low for all impairment types with the largest differences demonstrated for people with psychological (62.0%; 95% CI: 53.6%, 70.5%) and intellectual impairments (63.5%; 95% CI: 63.5%, 76.4%). Similar patterns were observed for emotional support, but differences were less marked for practical support (Table 2).

After controlling for covariates, the odds of having financial support were 66% lower among people with disabilities compared to those with no disability (OR: 0.34; 95% CI: 0.26, 0.45), and the size of the association was similar for all impairment types (Figure 1). The odds of having emotional support were 37% lower among people with disabilities compared to those with no disability (OR: 0.63; 95% CI: 0.49, 0.82). Similar relative differences were demonstrated among people with sensory and speech and physical impairments, however people with intellectual and psychological impairments had particularly low odds of having emotional support (intellectual: OR: 0.32, 95% CI: 0.17, 0.62; psychological: OR: 0.43, 95% CI: 0.30, 0.61). There was only weak evidence that practical support was lower for people with disabilities compared to people without disabilities (OR: 0.73; 95% CI: 0.52, 1.03). There was no evidence of a
difference in practical support for people with sensory and speech, physical and intellectual impairments, but those with psychological impairments had 47% lower odds compared to people with no disability (OR: 0.53; 95% CI: 0.32, 0.88) (Figure 1).

Disability and health (research question 2)

Among people with disabilities 46.9% (95% CI: 42.5%, 51.3%) reported their health to be good or better compared to 90.5% (95% CI: 89.2%, 91.7%) of people without a disability. Only 32.0% (95% CI: 20.5%, 43.5) of people with an intellectual impairment reported good health, compared to 35.6% (95% CI: 26.7%, 44.5%) for psychological, 40.3% (95% CI: 33.6%, 47.1%) for sensory and speech and 43.1% (95% CI: 38.3%, 47.8%) for people with physical impairments (Table 2). After adjustment for demographic and socioeconomic covariates, the odds of good health were 86% lower for people with disabilities compared to people without disabilities (OR: 0.14; 95% CI: 0.11, 0.18), and the odds were similar across all impairment types (Table 3, Model 2).

Disability, social capital and health (research question 3)

The addition to the model of the social capital variables from the three domains (either separately or all domains combined) attenuated only slightly the estimates of the association between disability and self-rated health (Table 3, Models 3-6). For people with disabilities, social capital was estimated to account for 9.9% (95% CI: 8.3%, 11.5%) of the association between disability and health, and this was similar for all impairment types (Supplementary Table 1). In the final model adjusted for demographic and socioeconomic covariates and all
measures of social capital, the odds of good health were 85% lower for people with disabilities
compared to people without disabilities (OR: 0.15; 95% CI: 0.12, 0.20) (Table 3, Model 6).

--- Table 3 ---

Sensitivity analyses

For all models, the magnitude of the estimates of effect was larger when socioeconomic
variables were excluded (data not shown), demonstrating evidence of stronger associations in
unadjusted models. The extent of mediation of the association between disability and health by
social capital variables was very similar in models excluding (10.5%; 95% CI: 9.2%, 11.8%) and
including socioeconomic variables (9.9%; 95% CI: 8.3%, 11.5%), for all impairment types.

Individuals with missing values were similar to those with complete data in terms of the
distribution of age, sex, education, labour force status, disability and impairment types, health,
and social capital measures, with the exception of practical support, which was lower among
individuals with missing data (89.6% vs 93.2%, $\chi^2=15.0$, $p=0.002$).

DISCUSSION

Statement of principal findings

Our findings suggest that people with disabilities have lower social capital and poorer self-rated
health than people without disabilities, but perhaps surprisingly, the differences in social capital
between people with and without disabilities explained only a small proportion of the large
inequalities in self-rated health across all impairment types. The largest differences in social
capital were demonstrated for financial and emotional support, but there was also some evidence that people with disabilities had lower levels of informal networks (both direct contact and indirect contact) and formal networks (belonging to groups) than people with no disability. Our findings also highlight the considerable variability in the extent of the differences across different types of impairments for many of the outcomes examined. The low levels of informal networks (bonding capital) among people with disabilities were mainly driven by people with intellectual and psychological impairments who had particularly low levels of both direct and indirect contact, whereas the inequalities in belonging to groups (bridging capital) were driven by people with physical impairments. We did not find evidence to support inequalities in ties to organisations (linking capital) between people with and without disabilities. These results concur with other studies that have shown that people with disabilities have lower levels of social capital (Department of Health, 2011; Llewellyn et al., 2013; McPhedran, 2010; Verdonschot et al., 2009). Our paper extends previous work by comparing social capital and health across a range of indicators and impairment types. There were differences regarding different domains of social capital. For example, the marked finding of lower financial support is particularly concerning given the socioeconomic disadvantage in which many people with disabilities live; people with disabilities who are more likely to experience financial emergencies, also have more limited financial support options to meet these needs, reflecting Bourdieu’s theorised self-reinforcing cycle of inequality (Bourdieu, 1986; Lin, 2000). The absence of inequalities in ‘linking’ ties to organisations could be due to people with disabilities having contact with disability and other services for ongoing support.
Our findings that people with intellectual and psychological impairments tended to have the lowest levels of social capital as well as the poorest self-rated health reinforce the need for further investment for people with intellectual and psychological impairments to reduce the large inequalities they experience. These results are not surprising given that other Australian studies examining socioeconomic disadvantage across a range of outcomes have demonstrated that people with intellectual and psychological impairments were particularly vulnerable to disadvantage (Kavanagh et al., 2014) (Beer & Faulkner, 2008; Beer et al., 2011; Hogan et al., 2012; Jones et al., 2011; Karmel & Nguyen, 2005). Although previous studies have not examined social capital differences between groups of people with different impairments in as much depth as ours, there is evidence to suggest that, relative to people with physical impairments, adults with intellectual impairments have lower levels of social support (Lippold & Burns, 2009). There is considerable literature documenting the high levels of discrimination and associated stigma that people with intellectual and psychological impairments experience which are likely to contribute to their weaker informal networks and lower levels of social support (Schomerus et al., 2012; Scior, 2011; Yazbeck et al., 2004). Indeed there is some evidence to suggest that for people with psychological impairments, discrimination makes a modest contribution to their levels of social capital (Webber et al., 2014) particularly in the year following the onset of the mental health problem (Mueller et al., 2006). It is important to develop and test interventions to improve access to social networks and social support. Results of a recent systematic review suggest that for people with intellectual impairments, educational campaigns and interventions delivered by people with intellectual disabilities may reduce
discrimination; these interventions may also improve social capital among people with
disabilities (Seewooruttun & Scior, 2014).

Of all impairment types, we found that only people with physical impairments had lower levels
of group membership compared to people with no disability may suggest a practical and
logistical barrier to group participation for this group, which needs to be considered in efforts
to bolster group participation amongst people with disabilities.

The modest extent of the mediation by social capital of the health inequalities between people
with and without disabilities is surprising. No previous research has examined this specific
question, however there is evidence that the poor health of people with disabilities is at least
partly explained by the socioeconomic disadvantage in which they live (Emerson & Hatton,
2007; Emerson et al., 2012; Honey et al., 2011), therefore it was plausible to hypothesize that
social capital may be an additional contributor to these health inequalities. It is important to
differentiate the contribution of social capital to the association between disability and health
from the association between social capital and health, which has been demonstrated in a
variety of populations, and which we do not examine in our analyses. The fact that we did not
find that the lower levels of social capital for people with disabilities contributed to a great
extent to the health inequalities does not negate the importance of social capital as a potential
ccontributor to the health of people with disabilities. Further, although self-rated health is a
good predictor of mortality and morbidity, it is a non-specific health outcome; it is possible that
social capital may play a role in partially explaining disability-related inequalities in other health
outcomes such as mental and physical conditions and lifestyle risk factors such as tobacco and alcohol consumption.

**Strengths and limitations**

This study has a number of important strengths. First, it is based on large nationally representative sample of Australian adults with a high response rate and only a moderate amount of missing data (15.5%). Second, data were available for a large number of indicators of the key domains of social capital. Third, unlike previous studies, we assessed social capital and health among people with different impairment types.

The study has several limitations. As the study is cross-sectional, the direction of the association between disability and social capital, and social capital and health is not known. It is possible that the associations are bi-directional, as in the case of schizophrenia where social isolation can exacerbate the condition (Kirkbride et al., 2008). However, the fact that we demonstrated these relationships for people with intellectual impairments, which are predominantly lifelong, suggests that disability is likely to be a determinant, rather than a consequence, of social capital.

The GSS did not include people residing in non-private dwellings. Although the majority of people with disabilities in Australia live in households, it is likely people with more severe disabilities are under-represented in this sample and that this group may have even lower levels of social capital and poorer health.
Although we adjusted for a number of demographic and socioeconomic variables, it is possible that there is residual confounding due to poorly measured or omitted variables. In an attempt to disentangle the pathway between disability and health, we conducted a mediation analysis comparing the total effect (unadjusted for social capital) and the direct effect (adjusted for social capital) of disability on health. Adjusting for potential mediators (social capital variables) in the models may have introduced bias into the estimates of effect (Richiardi et al., 2013).

It is possible that there is error in the measurement of some variables, particularly social capital, because the questions in the GSS may not have completely captured the concepts we attempted to measure. In particular the variable of linking social capital may not adequately capture the dimension of a power differential that distinguishes linking from bridging social capital. Additionally, the definition of psychological impairments used by the ABS included head injury, stroke and other brain injury, which are not usually considered to be psychological impairments thus the results for people with psychological impairments should be interpreted with some caution. Measurement error may be more likely when interviews are undertaken by proxy (i.e. respondent was unable to answer due to illness, old age or intellectual impairment). Information indicating which individuals required a proxy was not included in the dataset.

There is also the possibility of dependent misclassification bias (where the extent of misclassification of two variables is dependent on each other) as self-rated health, disability and social capital are subjectively reported and therefore the extent of misclassification of the variables could be related, which could lead to an overestimation of associations (Kristensen, 1992).
Implications for policy and future research

National and international policies and strategies have emphasised the need to build communities that are more inclusive of people with disabilities (Department of Families, 2011; World Health Organization, 2013). Our findings emphasise the importance of this priority. Much of current policy has focused on the need to improve inclusion of people with disability at a community level through access to formal networks (e.g. being able to gain a job through linking ties). Our paper demonstrates the relative lack of bonding social capital and resources such as social support that may flow from them. Growing intimate ties that can provide the support that people with disabilities may need to live a fulfilling life should be an important goal of future strategies and policies. To achieve this requires input from people with disabilities. For example, it is possible that strategies to reduce discrimination towards people with disabilities may improve social capital as may practical strategies such as providing transport for people with disabilities to visit families and friends if they are unable to travel independently. The lack of financial support is particularly troubling given the disadvantaged circumstances in which people with disability live and requires attention from policy-makers. Particular attention needs to be paid to people with intellectual and psychological impairments. Working with people with intellectual and psychological impairments to improve their social capital and health is a priority. The National Disability Insurance Scheme, which was introduced in four trial sites in Australia in July 2013, and is planned to roll out across Australia in 2018/2019, aims to provide the supports
that people with severe permanent disabilities need to participate more fully in society and
exercise choice and control over their own lives (National Disability Insurance Agency, 2014).

While the scheme may help increase levels of social capital for some people with disabilities, it
will not necessarily improve outcomes for people with disabilities who do not qualify for
support.

Additionally, the Disability Support Pension (DSP) will be reduced and young DSP recipients are
being reassessed and may be forced onto lower income welfare payments (Department of
Human Services, 2014a, b). These changes are likely to further disadvantage people with
disabilities and might widen inequalities in social capital and health. Given the changing policy
environment, ongoing monitoring of the living circumstances and health of people with
disabilities is critical.

Future research

Longitudinal research is required to better elucidate the pathways between disability, social
capital and inequalities in health between people with and without disabilities. In order to
maximise causal inference, research should concentrate on people who acquire a disability so
that the temporal sequence of associations can be disentangled, as well as enabling
comparisons to be made within individuals (rather than just between individuals) thereby
reducing confounding due to variables that do not change over time.
Research should utilise a range of social capital indicators to capture the complexity of Bourdieu’s conceptualisation of social capital. Ideally objective health outcomes (e.g. hypertension, diabetes) should be used to avoid the potential for dependent misclassification.

Qualitative research is essential so as to gain a more intricate understanding of the relationships between disability, social capital and health. This work could concentrate on particularly disadvantaged and ‘harder-to-reach’ groups such as people with intellectual and psychological impairments.

CONCLUSIONS

This is the largest and most comprehensive study that we know of that compares social capital among people with and without disabilities and with different types of impairments. It demonstrates that despite the fact that Australia, like many other nations, is a signatory to the United Nations Convention on the Rights of Persons with Disabilities (which recognises the rights of people with disabilities to participate in society on an equal basis to others), these rights are not being realised. There is an urgent need to develop interventions at a local and population-level to improve social capital among people with disabilities particularly those with psychological and intellectual impairments. Drawing on Bourdieu’s conceptualisation, these interventions must be embedded in an understanding of the ways in which unequal power relations generate these inequalities. Developing interventions which aim to disrupt these unequal power relations and improve social capital for people with disabilities will require collaborative efforts with people with disabilities.
ABBREVIANIONS

ABS, Australian Bureau of Statistics; CURF, Confidentialised Unit Record File; DSP, Disability Support Pension; GSS, General Social Survey; OECD, Organisation for Economic Co-operation and Development
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Berry, H.L., & Welsh, J.A. (2010). Social capital and health in Australia: An overview from the household, income and labour dynamics in Australia survey. Social Science & Medicine, 70, 588-596.


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### TABLE 1: Population weighted estimates of the distribution of demographic variables, by type of impairment (%, 95% confidence interval)

<table>
<thead>
<tr>
<th>Variable</th>
<th>No disability</th>
<th>Any disability</th>
<th>Sensory &amp; speech</th>
<th>Physical</th>
<th>Intellectual</th>
<th>Psychological</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=11,294</td>
<td>n=3,734</td>
<td>n=1378</td>
<td>n=3,041</td>
<td>n=470</td>
<td>n=1,098</td>
</tr>
<tr>
<td></td>
<td>83.2% (82.1%, 84.3%)</td>
<td>16.8% (15.7%, 17.9%)</td>
<td>6.5% (5.8%, 7.2%)</td>
<td>13.8% (12.9%, 14.7%)</td>
<td>2.0% (1.4%, 2.5%)</td>
<td>4.6% (3.9%, 5.4%)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 - 24 years</td>
<td>14.3 (13.8, 14.8)</td>
<td>6.8 (4.4, 9.3)</td>
<td>2.5 (0.6, 4.3)</td>
<td>4.8 (2.2, 7.5)</td>
<td>14.4 (5.5, 23.4)</td>
<td>9.8 (4.3, 15.3)</td>
</tr>
<tr>
<td>25 - 34 years</td>
<td>20.2 (19.7, 20.6)</td>
<td>11.6 (9.4, 13.8)</td>
<td>4.0 (2.0, 6.0)</td>
<td>10.3 (8.0, 12.7)</td>
<td>13.5 (5.4, 21.6)</td>
<td>13.9 (8.7, 19.1)</td>
</tr>
<tr>
<td>35 - 44 years</td>
<td>19.7 (19.1, 20.2)</td>
<td>13.3 (10.4, 16.2)</td>
<td>9.6 (5.7, 13.5)</td>
<td>12.6 (9.8, 15.4)</td>
<td>10.8 (4.7, 17.0)</td>
<td>16.8 (10.0, 23.5)</td>
</tr>
<tr>
<td>45 - 54 years</td>
<td>17.4 (17.1, 17.9)</td>
<td>20.2 (17.9, 22.5)</td>
<td>17.6 (13.2, 22.3)</td>
<td>20.6 (17.9, 23.8)</td>
<td>15.3 (9.1, 21.5)</td>
<td>23.4 (16.4, 30.7)</td>
</tr>
<tr>
<td>55 - 64 years</td>
<td>14.0 (13.3, 14.6)</td>
<td>20.0 (16.9, 23.1)</td>
<td>19.7 (15.5, 23.9)</td>
<td>21.9 (18.5, 25.4)</td>
<td>13.4 (5.8, 21.0)</td>
<td>25.6 (18.5, 32.8)</td>
</tr>
<tr>
<td>65 - 74 years</td>
<td>9.2 (8.7, 9.7)</td>
<td>11.2 (9.1, 13.5)</td>
<td>17.1 (11.3, 22.9)</td>
<td>12.4 (9.9, 14.9)</td>
<td>17.6 (5.5, 34.8)</td>
<td>1.2 (2.4, 5.4)</td>
</tr>
<tr>
<td>75 years or older</td>
<td>5.3 (4.9, 5.7)</td>
<td>16.9 (14.9, 18.8)</td>
<td>29.6 (25.3, 34.2)</td>
<td>17.0 (14.2, 19.9)</td>
<td>14.8 (6.1, 23.6)</td>
<td>6.5 (3.4, 9.7)</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>50.3 (49.6, 51.0)</td>
<td>52.6 (49.2, 56.1)</td>
<td>41.1 (35.6, 46.5)</td>
<td>53.3 (49.1, 57.4)</td>
<td>40.3 (27.8, 52.8)</td>
<td>54.5 (47.7, 61.3)</td>
</tr>
<tr>
<td>Men</td>
<td>49.7 (49.0, 50.4)</td>
<td>47.4 (43.9, 50.8)</td>
<td>58.9 (53.5, 64.4)</td>
<td>46.7 (42.6, 50.9)</td>
<td>59.7 (47.2, 72.2)</td>
<td>45.2 (38.7, 52.3)</td>
</tr>
<tr>
<td><strong>Labour force status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In the labour force</td>
<td>70.8 (69.8, 71.8)</td>
<td>34.4 (31.3, 37.6)</td>
<td>26.8 (21.0, 32.5)</td>
<td>33.3 (30.1, 36.7)</td>
<td>19.0 (10.5, 27.5)</td>
<td>29.3 (21.6, 37.0)</td>
</tr>
<tr>
<td><strong>Household income</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lowest quintile</td>
<td>15.9 (14.4, 17.3)</td>
<td>37.2 (33.1, 41.4)</td>
<td>41.8 (34.7, 48.9)</td>
<td>39.6 (35.0, 44.3)</td>
<td>55.8 (41.7, 69.8)</td>
<td>39.6 (32.0, 47.1)</td>
</tr>
<tr>
<td>Second quintile</td>
<td>17.3 (15.8, 18.9)</td>
<td>26.2 (22.2, 30.2)</td>
<td>29.0 (21.7, 36.4)</td>
<td>25.9 (21.7, 30.2)</td>
<td>27.7 (16.7, 38.7)</td>
<td>31.3 (23.7, 39.0)</td>
</tr>
<tr>
<td>Third quintile</td>
<td>20.3 (18.7, 22.0)</td>
<td>15.0 (11.9, 18.1)</td>
<td>15.3 (8.2, 22.3)</td>
<td>14.3 (11.4, 17.2)</td>
<td>9.0 (30.5, 14.9)</td>
<td>7.5 (4.6, 10.4)</td>
</tr>
<tr>
<td>Fourth quintile</td>
<td>22.6 (20.4, 24.8)</td>
<td>10.8 (7.7, 13.9)</td>
<td>6.8 (3.4, 10.2)</td>
<td>9.5 (6.4, 12.6)</td>
<td>5.4 (0.5, 10.4)</td>
<td>12.5 (4.6, 20.3)</td>
</tr>
<tr>
<td>Highest quintile</td>
<td>23.8 (21.6, 26.0)</td>
<td>10.8 (7.3, 14.3)</td>
<td>7.1 (3.3, 10.9)</td>
<td>10.6 (6.9, 14.4)</td>
<td>0.2 (0.0, 5.2)</td>
<td>9.1 (2.9, 15.3)</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completed year 12</td>
<td>56.6 (54.5, 58.6)</td>
<td>35.9 (31.3, 40.4)</td>
<td>30.0 (23.6, 36.4)</td>
<td>34.1 (28.9, 39.3)</td>
<td>33.0 (17.4, 48.6)</td>
<td>31.0 (24.6, 37.4)</td>
</tr>
</tbody>
</table>

*quintiles of equivalised household gross weekly income
Table 2: Population weighted estimates of the distribution of social capital measures and self-rated health, by type of disability (%, 95% confidence interval)

<table>
<thead>
<tr>
<th>SOCIAL CAPITAL MEASURES</th>
<th>Type of disability</th>
<th>No disability</th>
<th>Any disability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Sensory &amp; speech</td>
<td>Physical</td>
</tr>
<tr>
<td>Informal networks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct contact</td>
<td></td>
<td>80.1 (78.3, 82.0)</td>
<td>73.4 (69.4, 77.4)</td>
</tr>
<tr>
<td>Indirect contact</td>
<td></td>
<td>83.2 (81.5, 84.9)</td>
<td>74.9 (71.9, 77.9)</td>
</tr>
<tr>
<td>Formal networks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belonging to a group</td>
<td></td>
<td>72.8 (70.7, 74.8)</td>
<td>62.9 (59.4, 66.5)</td>
</tr>
<tr>
<td>Ties to organisations</td>
<td></td>
<td>68.5 (66.3, 70.6)</td>
<td>64.4 (59.7, 69.1)</td>
</tr>
<tr>
<td>Social support</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial support</td>
<td></td>
<td>89.1 (87.9, 90.4)</td>
<td>73.0 (69.7, 76.2)</td>
</tr>
<tr>
<td>Practical support</td>
<td></td>
<td>93.2 (92.0, 94.4)</td>
<td>89.1 (86.7, 91.6)</td>
</tr>
<tr>
<td>Emotional support</td>
<td></td>
<td>88.5 (87.5, 89.6)</td>
<td>77.1 (73.0, 81.1)</td>
</tr>
<tr>
<td>SELF-RATED HEALTH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good or better health</td>
<td></td>
<td>90.5 (89.2, 91.7)</td>
<td>46.9 (42.5, 51.3)</td>
</tr>
</tbody>
</table>
Figure 1: Multivariable logistic regression models for social capital outcomes by type of impairment (population weighted estimates for odds ratios and 95% confidence intervals)
Table 3: Multivariable logistic regression models for self-rated health status by type of impairment (population weighted estimates for odds ratios and 95% confidence intervals)

<table>
<thead>
<tr>
<th>Type of Impairment</th>
<th>Model 1: unadjusted</th>
<th>Model 2: adjusted for demographic &amp; socioeconomic measures</th>
<th>Model 3: adjusted for demographic &amp; socioeconomic measures &amp; informal networks</th>
<th>Model 4: adjusted for demographic &amp; socioeconomic measures &amp; formal networks</th>
<th>Model 5: adjusted for demographic &amp; socioeconomic measures &amp; social support</th>
<th>Model 6: adjusted for demographic &amp; socioeconomic measures &amp; all social capital measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>No disability</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Any disability</td>
<td>0.09 (0.08, 0.12)</td>
<td>0.14 (0.11, 0.18)</td>
<td>0.14 (0.11, 0.18)</td>
<td>0.14 (0.11, 0.18)</td>
<td>0.15 (0.12, 0.20)</td>
<td>0.15 (0.12, 0.20)</td>
</tr>
<tr>
<td>Sensory &amp; speech</td>
<td>0.07 (0.05, 0.10)</td>
<td>0.14 (0.10, 0.20)</td>
<td>0.14 (0.10, 0.20)</td>
<td>0.14 (0.10, 0.20)</td>
<td>0.15 (0.11, 0.22)</td>
<td>0.15 (0.10, 0.22)</td>
</tr>
<tr>
<td>Physical</td>
<td>0.08 (0.06, 0.10)</td>
<td>0.13 (0.10, 0.16)</td>
<td>0.13 (0.10, 0.16)</td>
<td>0.13 (0.10, 0.16)</td>
<td>0.14 (0.11, 0.17)</td>
<td>0.13 (0.11, 0.17)</td>
</tr>
<tr>
<td>Intellectual</td>
<td>0.05 (0.03, 0.09)</td>
<td>0.08 (0.04, 0.16)</td>
<td>0.09 (0.04, 0.17)</td>
<td>0.09 (0.05, 0.16)</td>
<td>0.09 (0.05, 0.17)</td>
<td>0.09 (0.05, 0.18)</td>
</tr>
<tr>
<td>Psychological</td>
<td>0.06 (0.04, 0.09)</td>
<td>0.09 (0.06, 0.14)</td>
<td>0.09 (0.06, 0.14)</td>
<td>0.09 (0.06, 0.13)</td>
<td>0.10 (0.06, 0.15)</td>
<td>0.10 (0.06, 0.15)</td>
</tr>
</tbody>
</table>

In the Appendix:

Supplementary Table: Proportion of the association between disability and self-rated health explained by social capital measures

<table>
<thead>
<tr>
<th>Type of Impairment</th>
<th>Proportion explained by informal networks</th>
<th>Proportion explained by formal networks</th>
<th>Proportion explained by social support</th>
<th>Proportion explained by social capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any disability</td>
<td>1.4% (0.8%, 1.9%)</td>
<td>2.7% (1.9%, 3.5%)</td>
<td>8.4% (6.8%, 10.1%)</td>
<td>9.9% (8.3%, 11.5%)</td>
</tr>
<tr>
<td>Sensory &amp; speech</td>
<td>1.8% (0.8%, 2.8%)</td>
<td>2.7% (1.6%, 3.7%)</td>
<td>9.4% (7.3%, 11.5%)</td>
<td>10.7% (8.5%, 12.9%)</td>
</tr>
<tr>
<td>Physical</td>
<td>1.2% (0.7%, 1.8%)</td>
<td>2.5% (1.8%, 3.3%)</td>
<td>7.6% (6.1%, 9.2%)</td>
<td>9.0% (7.4%, 10.7%)</td>
</tr>
<tr>
<td>Intellectual</td>
<td>2.4% (1.0%, 3.7%)</td>
<td>4.3% (2.8%, 5.8%)</td>
<td>12.2% (9.1%, 15.4%)</td>
<td>14.5% (11.2%, 17.8%)</td>
</tr>
<tr>
<td>Psychological</td>
<td>1.3% (0.6%, 1.9%)</td>
<td>2.5% (1.6%, 3.4%)</td>
<td>11.3% (8.8%, 13.7%)</td>
<td>12.1% (9.6%, 14.6%)</td>
</tr>
</tbody>
</table>

* The baseline comparison models are the multivariable logistic regression models adjusted for demographic and socioeconomic variables
Author/s:
Mithen, J; Aitken, Z; Ziersch, A; Kavanagh, AM

Title:
Inequalities in social capital and health between people with and without disabilities

Date:
2015-02-01

Citation:

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