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5 **Perceptions of Neighbourhood Quality, Social and Civic Participation and the Self Rated**
6 **Health of British Adults with Intellectual Disability: Cross Sectional Study**

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18

Abstract

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Background: There is extensive evidence from research undertaken on general population samples that people who have more extensive and closer social networks and people who report feeling connected to their local community tend to have better health. However, relatively few studies have examined the relationship between the social connectedness of people with intellectual disabilities and their health.

Methods: Secondary analysis of data from *Understanding Society*, a new longitudinal study focusing on the life experiences of UK citizens. We identified 279 participants aged 16-49 (1.1% of the unweighted age-restricted sample) as having intellectual disability, and 22,927 as not having intellectual disability. Multivariate logistic regression was used to investigate between group differences adjusting for potential confounding personal characteristics (e.g., gender).

Results: British adults with intellectual disability had less favorable perceptions of important neighborhood characteristics and lower levels of social and civic participation than their non-disabled peers. Favorable perceptions of important neighborhood characteristics and higher levels of social and civic participation were associated with more positive self-rated health for adults with and without intellectual disability. For adults with intellectual disability this was particularly the case with regard to employment, feeling safe outside in the dark and being able to access services when needed. The between-group differences in perceptions of important neighborhood characteristics and levels of social and civic participation accounted for a significant proportion of the elevated risk for poorer self-rated health observed among adults with intellectual disability.

Conclusions: This study provides evidence to suggest that the health inequalities experienced by people with intellectual disabilities may be partially attributable to their less favorable

41 perceptions of important neighborhood characteristics and lower levels of social and civic
42 participation.

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44 **Keywords:** health, social participation, civic participation, neighborhoods

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Background

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Intellectual disability refers to a significant general impairment in intellectual functioning that is acquired during childhood, typically operationalised as scoring more than two standard deviations below the population mean on a test of general intelligence [1, 2]. While estimates of the prevalence of intellectual disability vary widely, it has been estimated that approximately 2% of the adult population have intellectual disability [3, 4]. People with intellectual disability have significantly higher age adjusted rates of mortality and morbidity than their non-disabled peers [1, 5-8]. This evidence, when combined with exposés of failings in healthcare systems [6, 9-11] and increased attention to the human rights of disabled people [12], has led regulatory bodies and governments to stress the importance of reducing the health inequalities experienced by people with intellectual disability [13-17].

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Recent research has drawn attention to the role that increased rates of exposure to common social determinants of health (especially indicators of low socio-economic position) may play in accounting for the poorer health of people with intellectual disabilities [1, 18-20]. However, few studies have examined the relationship between indicators of either neighborhood quality or the social connectedness of people with intellectual disabilities (e.g., levels of civic engagement) and their health [21-23]. This may be an important omission given that: (1) there is extensive evidence from general population studies that people who have more extensive and closer social networks, people who report feeling connected to their local community and people living in more supportive neighborhoods tend to have better health [24-34]; and (2) there is also extensive evidence that people with intellectual disabilities often have highly restricted social networks and live in less supportive neighborhoods [23, 35-44].

89 Samples

90 In the first wave of data collection (undertaken between January 2009 and December
91 2011), random sampling from the Postcode Address File in Great Britain and the Land and
92 Property Services Agency list of domestic properties in Northern Ireland identified 55,684
93 eligible households. Interviews were completed with 50,994 individuals aged 16 or older from
94 30,117 households, giving a household response rate of 54% and an individual response rate
95 within co-operating households of 86% [45, 52]. At Wave 3 interviews were completed with
96 49,768 individuals aged 16 or older from 27,715 households, giving an individual response rate
97 within co-operating households of 90% [52]. The follow-up response rate from Wave 2 to Wave
98 3 was 81% [52].

99 Procedures

100 Data collection for all variables used in the present paper was undertaken using Computer
101 Assisted Personal Interviewing.

102 Measures**103 Intellectual Disability**

104 *Understanding Society* does not include information on the formal diagnosis of
105 intellectual disability. As a result, we identified adults with intellectual disability on the basis of
106 the results of cognitive testing undertaken at Wave 3 and self-reported educational attainment.
107 The vast majority of children with intellectual disability have very low educational attainment
108 [53]. As a result, low self-reported educational attainment (no educational qualifications) was
109 used as a selection criterion as evidence that low cognitive ability may have originated in
110 childhood (one of the defining characteristics of intellectual disability). Due to historical changes

111 in educational qualifications and attainment in the UK, we restricted our analysis to the age range
112 16-49.

113 In Wave 3 a battery of five cognitive tests was used to assess memory (two tests) and
114 cognitive functioning (three tests; Number Series, Verbal Fluency, Numerical Ability) [54]. The
115 Number Series test was developed for use in the US Health and Retirement Study (HRS) [55].
116 The Verbal Fluency test has been used in the English Longitudinal Study of Ageing (ELSA) [56],
117 the German Socio-economic Panel Study [57] and the National Survey of Health and
118 Development [58]. The Numerical Ability test was taken from ELSA and some portions of it
119 have been used in the HRS and Survey of Health, Ageing and Retirement in Europe [59].

120 First, we standardized test scores on the latter three tests to have a mean of zero and
121 standard deviation of one. Second, we used linear regression to impute missing standardized test
122 scores from obtained scores on completed tests. No other variables were used in the imputation
123 process. This led to the imputation of Numeric Ability scores for 153 participants (0.6% of the
124 used sample), Verbal Fluency scores for 141 participants (0.6%) and Number Series scores for
125 1214 participants (4.9%). Third, we used principal components analysis to extract the first
126 component (which accounted for 63% of the variance) from the three scales as an estimate of
127 general intelligence [60]. Fourth, we identified participants as having intellectual disability if
128 they scored lower than two standard deviations below the mean on the extracted component (the
129 conventional cut-off point for defining intellectual disability used in ICD-10) and had no
130 educational qualifications. This identified 294 participants (1.2% of the unweighted age-
131 restricted sample) as having intellectual disability. An additional 532 participants scored less than
132 two standard deviations below the mean on the extracted component but did have educational
133 qualifications.

134 Fifth, we included in the intellectual disability group five participants who gave consent
135 for testing but for whom all three tests were terminated due to their inability to understand the
136 test instructions, and also had no educational qualifications. The complete procedure identified
137 299 participants (1.2% of the unweighted age-restricted sample) as having intellectual disability.

138 **Health**

139 Self-rated health was evaluated by a single question incorporating five possible response
140 options: *'In general, would you say your health is ... (1) excellent, (2) very good, (3) good, (4)*
141 *fair, (5) poor'*. Data were recoded into a binary variable; excellent/very good/good versus
142 fair/poor.

143 **Perceptions of Neighborhood Quality**

144 We extracted data from eight questions relating to perceptions of neighborhood quality.

- 145 1. *'Overall, do you like living in this neighbourhood (Yes/No)?'*
- 146 2. *'Are you able to access all services such as healthcare, food shops or learning facilities*
147 *when you need to (Yes/No)?'*
- 148 3. *'I am going to read out a set of statements that could be true about your neighbourhood.*
149 *Please tell me how much you agree or disagree that each statement describes your*
150 *neighbourhood (1 Strongly agree, 2 Agree, 3 Neither agree nor disagree, 4 Disagree, 5*
151 *Strongly disagree): (a) First, this is a close-knit neighbourhood; (b) People around here*
152 *are willing to help their neighbours; (c) People in this neighbourhood can be trusted; (d)*
153 *People in this neighbourhood generally don't get along with each other.'* Data were
154 recoded into binary variables; 1-3 v 4-5 for positively worded questions (a-c), 1-2 v 3-5
155 for question (d).

- 156 4. *'Now I have some questions about crime. Do you ever worry about the possibility that*
157 *you, or anyone else who lives with you, might be the victim of crime? Is this a big worry,*
158 *a bit of a worry, or an occasional doubt?'* Data were recoded into a binary variable; crime
159 is a big worry v not.
- 160 5. *'How safe do you feel walking alone in this area after dark? (1 Very safe, 2 Fairly safe, 3*
161 *A bit unsafe, 4 Very unsafe, 5 SPONTANEOUS: Never goes out after dark)'*. Data were
162 recoded into a binary variable fairly safe/very safe v not.

163 Exploratory analysis of the resulting data indicated that the recoded binary variables from
164 Q1 and Q3(a-d) showed acceptable internal consistency ($\alpha = 0.69$). As a result, they were
165 combined into a five item scale of 'neighborhood quality' (range 0-5 with 5 being highest
166 quality) that was then recoded due to the small proportions of people scoring 0-2 into a three
167 item scale (0-3, 4, 5).

168 **Civic & Social Participation**

169 We extracted data from five questions relating to civic and social participation.

- 170 1. *'How many close friends would you say you have?'* Data were recoded into a binary
171 variable; two or more close friends v not.
- 172 2. *'Do you go out socially or visit friends when you feel like it (Yes/No)?'*
- 173 3. *'What stops you from going out socially or visiting friends when you want to (1 Too busy*
174 */ not enough time, 2 Financial reasons, 3 A health condition, illness or impairment, or*
175 *disability, 4 No public transport available, 5 Public transport is infrequent or unreliable,*
176 *6 Can't access the public transport that is available, 7 No access to a car as a driver or*
177 *passenger, 8 Nowhere to go in the area, 9 No-one to go with, 10 Attitudes of other people,*

- 178 *11 Fear of crowds, 12 Fear of crime, 13 Anxiety / lack of confidence, 14 Caring*
179 *responsibilities, 97 Other reasons)?'*
- 180 4. *'Please tell me how easy or difficult you would find it to visit family or relatives when you*
181 *need to (1 Very difficult, 2 Difficult, 3 Neither difficult nor easy, 4 Easy, 5 Very easy, 6*
182 *Has no family).'* Data were recoded into a binary variable; Easy/very easy v not.
- 183 5. *'Are you currently a member of any of the kinds of organisations on this card (1 Political*
184 *party, 2 Trade Unions, 3 Environmental group, 4 Parents'/School Association, 5*
185 *Tenants'/Residents' Group or Neighbourhood Watch, 6 Religious group or church*
186 *organisation, 7 Voluntary services group, 8 Pensioners group/organisation, 9*
187 *Scouts/Guides organisation, 10 Professional organisation, 11 Other community or civic*
188 *group, 12 Social Club/Working men's club, 13 Sports Club, 14 Women's*
189 *Institute/Townswomen's Guild, 15 Women's Group/Feminist Organisation, 16 Other*
190 *group or organisation, 96 SPONTANEOUS None of these)'. Data were recoded into a*
191 *binary variable; member of one or more organization vs not.*

192 **Socio-Economic Disadvantage**

193 Self-assessed financial status was assessed at Wave 3 by a single item: 'How well would
194 you say you yourself are managing financially these days? Would you say you are... 1 Living
195 comfortably, 2 Doing alright, 3 Just about getting by, 4 Finding it quite difficult or 5 finding it
196 very difficult?' Data were recoded into a binary variable; living comfortably/doing alright v not.

197 **Approach to Analysis**

198 Our approach to analysis was undertaken in five stages. First, we made simple bivariate
199 comparisons between participants with and without intellectual disability with regard to available

200 socio-demographic characteristics that may have a potential association with health (e.g.,
201 financial strain, gender).

202 Second, we made adjusted bivariate comparisons (using multivariate binary logistic
203 regression) between participants with and without intellectual disability with regard to exposure
204 to perceived neighborhood characteristics and reported levels of social/civic participation. These
205 comparisons were adjusted to take account of any potential confounding effects of the socio-
206 demographic characteristics investigated in Stage 1 that were or closely approached being
207 statistically significant different between the two groups.

208 Third, we estimated the strength of the association between measures of exposure to
209 perceived neighborhood characteristics and reported levels of social/civic participation and the
210 primary outcome of interest (self-rated health) separately for participants with and without
211 intellectual disability, adjusting for the same socio-demographic characteristics as in Stage 2.

212 Fourth, we employed binary logistic regression to estimate the unique association
213 between indicators of socio-demographic characteristics of participants, perceived neighborhood
214 characteristics, reported levels of social/civic participation and the primary outcome of interest
215 (self-rated health) for participants with intellectual disability.

216 Finally, we used multivariate logistic regression to estimate the extent to which the poorer
217 self-rated health of participants with intellectual disability could potentially be attributed to
218 confounding between group differences in: (1) demographics; (2) socio-economic advantage;
219 and (3) differences in perceived neighborhood quality, social and civic participation.

220 **Ethical Approval**

221 Understanding Society is designed and conducted in accordance with the ESRC Research
222 Ethics Framework and the ISER Code of Ethics. The University of Essex Ethics Committee

223 approved Waves 1-5 of Understanding Society. Approval from the National Research Ethics
224 Service was obtained for the collection of biosocial data by trained nurses in Waves 2 and 3 of
225 the main survey (Understanding Society – UK Household Longitudinal Study: A Biosocial
226 Component, Oxfordshire A REC, Reference: 10/H0604/2).

227 **Results**

228 In the first stage of analysis we made simple bivariate comparisons between participants
229 with and without intellectual disability with regard to available demographic characteristics that
230 have a potential association with health (Table 1). As can be seen, participants with intellectual
231 disability were significantly more likely than other participants to be older, to have children and
232 to be more likely to experience socio-economic disadvantage. There was also a non-significant
233 trend for them to be women. As a result, all subsequent estimates of effect sizes are adjusted to
234 take account of between-group differences in age, gender, having children and socio-economic
235 disadvantage.

236 [insert Table 1]

237 In the second stage of analysis we made adjusted bivariate comparisons (using
238 multivariate binary logistic regression) between participants with and without intellectual
239 disability with regard to the dependent variables perceived neighborhood characteristics and
240 reported levels of social/civic participation (Table 2). As can be seen, participants with
241 intellectual disability were significantly less likely than other participants to report positive
242 neighborhood characteristics and social/civic participation once results were adjusted to take
243 account of between-group differences in age, de facto marital status and socio-economic
244 disadvantage. Most of the effect sizes were of moderate magnitude (OR <0.54 or >1.88), with

245 having two or more close friends, being a member of a civic organization and being employed
246 for 16 or more hours per week being large effect sizes (OR <0.33 or >3.00) [61].

247 For participants with intellectual disability, the five most common reasons for not going
248 out socially were: a health condition, illness, impairment or disability (36%); financial (20%);
249 nobody to go out with (16%); too busy (16%); and caring responsibilities (11%). For
250 participants without intellectual disability, the five most common reasons for not going out
251 socially were: too busy (47%); caring responsibilities (30%); financial (28%); a health condition,
252 illness, impairment or /disability (10%); and nobody to go out with (8%).

253 [insert Table 2]

254 In the third stage of analysis we estimated the strength of the association between
255 measures of perceived neighborhood characteristics and reported levels of social/civic
256 participation and self-rated health separately for participants with and without intellectual
257 disability (binary logistic regression adjusted to take account of gender, age, having children and
258 socio-economic disadvantage) (Table 3). As can be seen, with one exception (membership of
259 community organisation for participants with intellectual disability) more positive perceived
260 neighborhood characteristics and higher reported levels of social/civic participation were
261 associated with more positive self-rated health for participants with and without intellectual
262 disability. While for participants without intellectual disability all these comparisons were highly
263 statistically significant, for participants with intellectual disability only six of the nine
264 comparisons reached the conventional level of statistical significance. However, four of these
265 associations (crime not being a big worry, going out socially, neighborhood quality and feeling
266 safe outside in the dark) were of moderate effect size, and two (ability to access local services
267 when needed, being employed for 16 or more hours per week) were large [61].

268 [insert Table 3]

269 In the fourth stage of the analysis we employed binary logistic regression to estimate the
270 unique association between indicators of socio-demographic characteristics of participants with
271 intellectual disability, perceived neighborhood characteristics, reported levels of social/civic
272 participation and the positive self-rated health (Table 4). Variables were entered in two blocks:
273 (1) age, gender, whether participants had children and socio-economic disadvantage; (2)
274 perceived neighborhood characteristics and reported levels of social/civic participation. In order
275 to reduce the ratio of variables to participants, only measures that showed significant adjusted
276 associations with self-rated health (Table 3) were entered into the model in a forward stepwise
277 conditional procedure with criteria or variable entry being $p < 0.1$. As can be seen, more positive
278 self-rated health was statistically uniquely associated with younger age, socio-economic
279 advantage, being employed for 16 or more hours per week and feeling safe outside in the dark.
280 However, while not statistically significant the unique association between being able to access
281 services and positive self-rated health represented a large effect size [61]. The robustness of the
282 model was examined by forcing entry of the non-included variables individually and in
283 combinations, none of which changed the overall results.

284 [insert Table 4]

285 Finally, given the similarity in the associations between these indicators of perceived
286 neighborhood quality, social and civic participation and self-rated health among participants with
287 and without intellectual disability, we used multivariate logistic regression to estimate the extent
288 to which the poorer self-rated health of participants with intellectual disability (OR = 0.26, 0.19-
289 0.34, $p < 0.001$) could potentially be attributed to between group differences in: (1) demographics;
290 (2) socio-economic advantage; and (3) differences in perceived neighborhood quality, social and

291 civic participation. Adjusting for between group differences in demographics slightly reduced
292 estimated risk (OR = 0.28, 0.21-0.37). Adjusting for between group differences in demographics
293 and socio-economic advantage reduced the estimated risk further (OR = 0.31, 0.23-0.41).
294 Adjusting for between group differences in demographics, socio-economic advantage and
295 differences in perceived neighborhood quality, social and civic participation significantly
296 reduced the estimated risk further (OR = 0.50, 0.36-0.69).

297 **Discussion**

298 Our results indicate that: (1) British adults with intellectual disability have less favorable
299 perceptions of important neighborhood characteristics and lower levels of social and civic
300 participation than their non-disabled peers; (2) favorable perceptions of important neighborhood
301 characteristics and higher levels of social and civic participation are associated with more
302 positive self-rated health for adults with and without intellectual disability; (3) for adults with
303 intellectual disability this is particularly the case with regard to employment and social contact
304 with friends; (4) the between-group differences in perceptions of important neighborhood
305 characteristics and levels of social and civic participation may account for a significant
306 proportion of the elevated risk for poorer self-rated health observed among adults with
307 intellectual disability.

308 These results add to existing knowledge about the health inequalities faced by people
309 with intellectual disability in four important ways. First, they are based on the analysis of
310 contemporary population-based sampling frames, a relative rarity in this field of study [1].

311 Second, being based on samples drawn from general households, participants are likely to
312 include adults with less severe intellectual disability who may not be in receipt of specialized
313 disability services. Given that most intellectual disability research is based on convenience

314 samples drawn from the users of specialized disability services (typically people with more
315 severe intellectual disability), very little is currently known about the health or well-being of the
316 group that has been termed the ‘hidden majority’ of adults with (mild) intellectual disability [62-
317 64].

318 Third, the results contribute to the very limited literature on the relationship between
319 perceptions of important neighborhood characteristics, levels of social and civic participation and
320 the health of people with intellectual disabilities. The results are consistent with previous studies
321 in highlighting the potential importance of contact with friends and paid employment to the
322 health of adults with intellectual disability [21-23]. Finally, this is the first study (of which we
323 are aware) which provides evidence to suggest that the health inequalities experienced by people
324 with intellectual disabilities may be partially attributable to their less favorable perceptions of
325 important neighborhood characteristics and lower levels of social and civic participation, in
326 addition to their increased risk of exposure to low socio-economic position.

327 However, there are six limitations to the study that should be kept in mind when
328 considering the salience and implications of these results. First, while intellectual disability was
329 identified on the basis of tests of cognitive ability, we have only indirect evidence (through
330 reported lack of educational attainment) that their cognitive impairments may have originated in
331 childhood. Second, the use of a general household sampling frame excludes people with
332 (primarily more severe) intellectual disability living in institutional forms of residential care.
333 Third, the consent and interview procedures used in *Understanding Society* are also likely to
334 exclude people with more severe intellectual disability from participating. Consequently, the
335 results are likely to be particularly relevant to understand the health of British adults with less
336 severe intellectual disability. Fourth, the sole reliance on self-report measures introduces the

337 possibility that some of the observed associations may reflect general evaluative biases of
338 participants. Fifth, no reasonable adjustments were made to the interview process to take account
339 of possible intellectual impairments among participants. As a result, some participants with
340 intellectual disability may have found some questions confusing, reducing the validity of their
341 responses.

342 Finally, while the cross-sectional analyses presented in this paper are consistent with the
343 hypothesis that the poorer health of adults with intellectual disability may be partially
344 attributable to their living conditions (in this case less favorable perceptions of important
345 neighborhood characteristics and lower levels of social and civic participation), the cross-
346 sectional nature of the data do not allow us to rule out other explanations (e.g., people with
347 intellectual disability are more susceptible to social exclusion and downward social mobility if
348 they have poor health than their non-disabled peers).

349 **Conclusions**

350 Recent research has drawn attention to the role that increased rates of exposure to
351 common social determinants of health (especially indicators of low socio-economic position)
352 may play in accounting for the poorer health of people with intellectual disabilities. Our results
353 add to the very sparse literature which is consistent with the hypothesis that the higher rates of
354 social exclusion experienced by people with intellectual disabilities may also partially account
355 for their relatively poorer health status. Further research exploiting the longitudinal nature of
356 *Understanding Society* (and other datasets) is required to test the validity of possible causal
357 pathways.

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Public Health England.

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Competing Interests

366

None of the authors have any financial or non-financial competing interests to declare.

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Authors Contributions

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EE conceived of the study, performed the statistical analysis and led on the drafting of the

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manuscript. CH, JR and SB participated in the design of the study and drafting of the manuscript.

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All authors read and approved the final manuscript.

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537 Tables

538 Table 1

539 Selected Socio-Demographic Characteristics of Participants

Variable	Intellectual disability (n=279)	No intellectual disability (n=22,927)	OR/p
Women	62%	57%	1.26 (0.99-1.59)
Age 30-49	74%	65%	1.58** (1.22-2.05)
De facto married or separated/widowed	63%	66%	0.89 (0.70-1.13)
Has children	39%	32%	1.33* (1.05-1.68)
'Doing all right' or 'living comfortably'	37%	57%	0.43*** (0.34-0.55)

540 OR =Odds Ratio

541 ** p<0.01, *** p<0.001

542

543

544 Table 2

545 Perceptions of Neighborhood Quality, Social and Civic Participation of British Adults with and

546 without Intellectual Disability

Variable	Intellectual disability (n=299)	No intellectual disability (n=22,927)	OR/p
Neighborhood			
Neighborhood quality: High	53%	65%	0.57*** (0.42-0.75)
Medium	23%	20%	0.78 (0.55-1.09)
Low	24%	16%	1.0 (reference)
Crime not a big worry	87%	94%	0.68* (0.47-0.98)
Feels safe outside in dark	59%	78%	0.44*** (0.35-0.57)
Can access local services when needed	96%	98%	0.58 (0.32-1.03)
Civic & Social Participation			
Member of civic organization	16%	49%	0.20*** (0.15-0.28)
Employed 16+ hours per week	15%	58%	0.13*** (0.09-0.17)
Easy to visit family	52%	68%	0.55** (0.44-0.70)
Two or more close friends	67%	92%	0.20*** (0.15-0.25)
Goes out socially	74%	88%	0.47*** (0.36-0.62)

547 OR =Odds Ratio

548 * p<0.05, ** p<0.01, *** p<0.001

549 OR estimates adjusted to take account of between-group differences in gender, age, socio-

550 economic disadvantage and having children.

551 Table 3
 552 Estimated Strength of Association (Odds Ratios) between Indicators of Perceptions of
 553 Neighborhood Quality, Social and Civic Participation and the Positive Self-Rated Health of
 554 British Adults with and without Intellectual Disability

Variable	Intellectual disability (n=299)	No intellectual disability (n=22,927)
Neighborhood		
Neighborhood quality: High	2.02* (1.07-3.81)	1.99*** (1.81-2.18)
Medium	1.99 (0.94-4.22)	1.67*** (1.49-1.88)
Low (reference)	1.0	1.0
Crime not a big worry	2.22* (1.03-4.78)	2.31*** (2.06-2.60)
Feels safe outside in dark	2.15** (1.27-3.64)	1.90*** (1.75-2.07)
Can access local services when needed	4.45* (1.22-16.21)	2.10*** (1.72-2.57)
Civic & Social Participation		
Member of civic organization	0.87 (0.43-1.76)	1.69*** (1.56-1.83)
Employed 16+ hours per week	4.92** (1.88-12.83)	2.10*** (1.94-2.27)
Easy to visit family	1.36 (0.81-2.28)	1.31*** (1.22-1.42)
Two or more close friends	1.36 (0.79-2.34)	1.90*** (1.70-2.12)
Goes out socially	1.88* (1.05-3.37)	2.01*** (1.83-2.21)

555 * p<0.05, ** p<0.01, *** p<0.001

556 Estimates adjusted to take account of effects of gender, age, having children and socio-economic
 557 disadvantage.

558

559 Table 4

560 Estimated Strength of Unique Association (Odds Ratios) between Indicators of Perceptions of
 561 Neighborhood Quality, Social and Civic Participation and the Positive Self-Rated Health of
 562 British Adults with Intellectual Disability

Variable	OR/p
Female gender	1.27 (0.63-2.57)
Age 30+	0.29** (0.14-0.60)
Has children	1.29 (0.65-2.53)
Socio-economic advantage	2.65** (1.44-4.88)
Feels safe outside in dark	1.90* (1.11-3.27)
Can access services when needed	3.30 (0.83-13.07)
Employed 16+ hours per week	4.31** (1.64-11.31)

563 OR =Odds Ratio

564 ** p<0.01, *** p<0.001

565