BEYOND THE DIGITAL DIVIDE: SOCIO-ECONOMIC DIMENSIONS OF INTERNET DIFFUSION IN AUSTRALIA

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Abstract

New technologies affect the distribution of social advantage, and potentially alter social hierarchies. The ability to challenge existing social hierarchies is, however, mediated by the manner in which technologies diffuse. The Internet provides a good example. As a new and rapidly diffusing communication technology, is the Internet a potentially equalising agent that may reduce certain aspects of social inequality or does it reinforce existing social inequalities? We address this question to nationally representative survey data from the 2001 Australian Election Study.

Although a relatively wide diffusion of the Internet has occurred in Australia, recent evidence indicates that the overall rate of this diffusion is slowing. Our analyses indicate that Internet access was initially divided along class, education, age and gender lines, and that these socio-economic indicators remain important predictors of Internet usage. While the pattern of social inequality associated with Internet access is becoming less stark, it persists, and while diffusion should narrow the 'digital divide', we find little support for 'democratisation' of access.

Introduction

The importance of technology as a dimension of social change has been noted in both studies of science and technology (STS) and in contemporary stratification literature (Wajcman 2002, Grusky 2000). The new information and communication technologies (ICT) are inherent to these social changes. The influence of ICT is now diffuse, extending to aspects of everyday life such as the economy, family relationships, workplaces, education and personal identities. Access to and use of the new ICT bring potential economic, socio-cultural and political benefits. The recognition of potential advantage suggests ICT use may alter patterns of social privilege and disadvantage (Stehr 1999).

Digital inequality has developed in advanced societies in relation to ICT, leading to a 'digital divide' between techno-haves and havenots (Norris 2001)[i]. The existence of a 'digital divide' suggests that the unequal access by some sectors of the community to ICT, and to the requisite information, aptitude and technical skills, may generate 'new class' / 'status' divisions and new forms of social privilege and exclusion. Systematic differences in access and use of ICT are therefore important correlates or even aspects of structured social inequality. We therefore question the relationship between the pattern of access to information distribution via the Internet and existing patterns of social inequalities in advanced societies. In short, does access to ICT weaken or reinforce social inequality? Does it overlap with or crosscut established social divisions of class, status and gender?

In the present paper we examine the nature of social advantage associated with the Internet. We establish the degree of overlap of digital inequality with existing divides of class, status and gender through analysis of nationally representative survey data from the 2001 Australian Election Study (Bean *et al.* 2002). We also consider the dynamics of Internet diffusion over time by examining the changing patterns of social inequality in Australia to ascertain if the diffusion of the Internet aides in democratisation or reinforces existing inequalities.

ICT Access and Social Advantage

The assumption that ICT access is entirely advantageous is at the least contentious. When framed as only progressive and liberating in their social implications, the constraints of technological change and access, and the technological systems themselves, become "naturalised and disappear into the landscape" (Wajcman 2002:348). Awareness of the nature of social advantage associated with ICT access has been in part implicit. The claims of several theorists who refer explicitly to the advantages of ICT are represented below. Here, the advantages over other communication technologies (such as the telephone) and computer use in general, reportedly come from the technical skills, access to information and networked communications associated with ICT.

It has been argued that economic advantage derives from the command of ICT skills in both local and national employment sectors (DfEE 2002). National economies benefit by investing in 'knowledge workers' who are able to compete in global markets that are increasingly becoming 'knowledge-based'; whilst small businesses are able to access online niche markets (B-HERT 2002, Norris 2001). At an individual level, investment in

ICT skills and expertise through education and training, may result in higher paying employment compared with occupations that do not involve ICT use (Kim 2001). Further, Kim (2001) argues that those who use the Internet for information access, transmission and distribution at work, earn even more than those who only use ICT for data processing.

Access to online resources is claimed to provide opportunities to find jobs, to obtain education via distance learning, and to provide health, welfare and environmental information and services (Davidson 2002, Kroeker 2000). The Internet allows access to governmental public services and may aid in political participation and provide more transparent and accountable governance (Norris 2001). New social movements and political activists have utilised ICT and global networks for advancing political goals such as increasing human rights, and to oppose the influence of organisations like the WTO (Norris 2001). Finally, as a networked communication, ICT has the potential to build social support networks, connect disparate groups and not least of all, provide avenues for influence by organisations, governments and individuals (Norris 2001).

ICT Inequality and the 'Digital Divide'

Despite the 'opening up' of networked digital communications for public advantage, ICT access has not diffused evenly in advanced countries like Australia. Here, the pattern of ICT access may reflect innovation diffusion in general, where at least initially, new innovations exacerbate societal disparities (Rogers 1995). Rogers (1995) interprets the process of innovation diffusion, as follows. In general, initial access to new technologies, especially high-cost innovations, is limited to those with advantageous status and resources (income, white-collar work, elite institutional locations, educational level, race, urban residence and gender). Such users are also likely to have greater exposure to mass media and interpersonal communication channels, are highly interconnected in the interpersonal networks of their system, engage in more active information seeking, and have greater knowledge of innovations (Rogers1995:433).

When compared to innovation diffusion in general, the variation in ICT access, and the resulting social inequalities, are similar to those outlined by Rogers (1995). At least initially, barriers to ICT access include class, gender and employment status. However, other barriers such as age, household type, geographical location, ethnicity, and disability have been identified (NOIE 2002). Despite these barriers, Internet access in Australia continues to rise. In February 2002, 54.4% of adults used the Internet, placing Australia among the top five counties in terms of access (NUA). However, the rate of adoption is slowing (ABS 2001). Thus in Australia, we may be passing the period of rapid adoption and reaching the tapering off point of the sigmoid shaped (S-shaped) time path of diffusion. This suggests that current levels of diffusion may persist, and that the current pattern of Internet inequality may persevere.

How the concept of a 'digital divide' relates to persistent social inequalities is becoming less clear. Different levels of the 'digital divide' have been identified both in terms of access and ownership of the technology, and the expertise and technical skills associated with effectual use of information from the Internet (Bucy 2000). Even at the level of

access, the concept looses usefulness when the pattern of digital inequality is crosscut by other forms of inequality. These complex relationships are perhaps not captured well by the notion of a 'divide'. Although inequalities still exist, the 'digital divide' concept does not help advance understandings of the complex problem of digital access. Further, these debates are not purely analytical as "governments everywhere legitimate much of their policy in terms of a technological imperative" (Wajcman 2002:348). Rhetoric and discourse about ICT and the 'digital divide' reinforce and frame these very arguments (Wajcman 2002).

The Dynamics of Diffusion - Democratisation or reinforcement

Considering the pattern of ICT diffusion over time should indicate if digital inequalities are transient or more persistent. ICT use has extended across advantaged groups, and spread down to more disadvantaged networks, particularly as the cost of the technology has reduced (Compaine 2001). As these social networks channel information about the new technology to others, access diffuses to the formerly excluded, and variation in access between different categories should decline (Rogers 1995).

Early visions were optimistic that ICT would facilitate the replacement of existing patterns of class, race and gender social inequalities. Essentially the Internet was seen as an equalising agent. ICT access, and the associated information and knowledge acquisition, crosscut or blurred previous inequalities based on property and capital. Inequality then became multidimensional, where new forms of social privilege and exclusions were based on access (and use) of ICT. The monopolies and networks of information were eroded and decentred, and where instead information became available to everyone, everywhere via the Internet. Often entailing technological rhetoric and excessive optimism, these claims are difficult to substantiate.

A critique of optimistic and simplistic analysis, the concern that the advantages of Internet access were entirely limited to those who were already advantaged in terms of economic resources and social status, presented an almost equally polarised view. Here Internet access and use were seen to reinforce and exacerbate existing class, gender and racial inequalities. Despite the network basis of the Internet, centralist tendencies persist - networks of infrastructure create spatial bias at regional, city, and national levels (Gillespie and Robins 1989). Furthermore, advantage accrues to those who are already advantaged and becomes cumulative.

Although there is more evidence for the second argument, conceptualising this debate as two extremes is not unproblematic. In particular, it masks a concern with more utopian approaches and their failure to consider the context of technological innovation. To conceptualise technology and technological change outside of any social, economic, political or cultural context, can have several consequences. The first is that the approach becomes one of technological determinism, where the technology is seen to act as an agent, that has an effect on other social systems. Such accounts ignore the social shaping of technologies, and the fact that technologies and social life are interconnected (Schmidt 2001:1; Groper 1991). These approaches disregard the political, social and cultural processes that necessarily accompany the development of any technological innovation,

not least in the forms of values, judgements and interests in operation that help structure Internet access and use (MacKenzie and Wajcman (1999).

Rather than overriding previous patterns of social inequality, or merely reinforcing structured patterns of inequality, a third more nuanced possibility is that ICT facilitates both the reinforcement and cross-cutting of social inequalities. Here, there will be uneven effects through domains of education, work and production, economy, politics, trade and space. Thus new relationships have the potential to both alter existing class, gender, age and racial inequalities and also open up new inequalities (Walby 2000). In the following sections we trace the uneven diffusion of ICT in advanced societies to consider how the more subtle effects of ICT inequality are expressed.

Uneven Effects of ICT Diffusion

Although the development of a service sector based on knowledge and information facilitates access to, and use of the new ICT, only some service industries involve the specialised knowledge and technical skills that enhance career opportunities, such as computer programming (Walby 2000). The development of both the service sector and a knowledge/technical class from within the service sector, is based on privileging those with high education and technical skills, and provides a more meritocratic society that overrides (at least partly) the inequalities associated with property and production (Bell 1973).

The knowledge/technical class however, partly overlaps with managers and professionals who have access to both capital and to ICT networks (Menzies 1998:90). ICT facilitates the restructuring and integration of different corporate activities, for example, the "transfer of assets from the public sector to the private, and the consolidation of power into the hands of larger corporate units" (Menzies 1998:89).

The effect of globalisation and digitalised control of the work process crosscut the educational basis of merit (Castells 1996:97). Work and employment therefore continue to be stratified, with the potential benefits of ICT access depending on employment position within the service sector. As knowledge workers, managers, technical workers and professionals hold elite roles, rising informational inequalities and increasing polarisation between elites and 'generic labour' are unlikely to result in more meritocratic societies (Castells 1996).

Networked computers are permitting the production of new goods and the digital delivery of services but with reduced or no human involvement (Menzies 1998:90). Here, the new production processes and distribution systems lead to fragmentation of work and increased performance measurement for workers. The digitalisation of work processes also providing the rationale for the replacement of full-time staff with part-time staff, and subcontractors for privatised government services (Menzies 1998:95).

This corporate activity results in a large fringe of low-skilled, replaceable workers in service occupations in secondary labour markets (Castells 1996). These new service sector jobs comprise low pay, minimal training and little opportunity for advancement.

The resulting work is ultimately routine, contingent, generic, and typically part-time (Walby 2002). Deregulation of wage and employment standards means that these workers are often in occupations that are poorly protected (such as call-centre work). This requires an increasingly 'flexible' labour force, with little job security and involves mobile skills to match the new ICT (Menzies 1998). Further, it results in polarisation in terms of income, job stability, hours of work and level of involvement. The polarisation of work around the "overworked wealthy with a host of information tools at their disposal, and the barely working poor" (Menzies 1998:95), points to an overlap between the old property and capital based class and new class divisions associated with ICT.

Women are over-represented in the digital underclass, however, suggesting the overlap of old and new class divisions is further crosscut by inequalities of gender. Women may be advantaged in that many of the new jobs created are in service work, whilst employment in male-dominated agricultural and production occupations are declining (Belt, Richardson and Webster 2000). However, while the service sector is expanding, women's jobs are typically part-time, unstable and entail all the disadvantages outlined above.

Although there is increasing participation by women in higher education, and an increasing exposure to ICT skills, the benefits for women from investment in technical skills are mediated by age and workplace employment (Walby 2000:814). If women obtain well-paid employment in stable jobs, inequalities of education (and possibly income) are reduced. However, if women merely replace unpaid domestic work with poorly paid unstable jobs then the form of inequality is merely replaced. For elderly women, who are not participating in lifelong learning and who are perhaps out of paid employment, inequality based on education may be increased. As Walby (2000:814) argues: "[T]his opens up new inequalities among women that are often correlated with age. These changes cross-cut those traditional divisions between women based on ethnicity and class, producing yet further diversity in the patterning of inequality".

Such inconsistencies in women's access to ICT continue. Women have been encouraged to express unexplored aspects of the self and to try out new identities through digital communications (see Turkle 1995). Issue-based social movements have similarly been an area where access to ICT has proven advantageous for women. Although access to new ICT allows cultural expression and new cultures to emerge, digital opportunities are still restricted for women (Sassen 2002:376). In the engineering, design and programming of the Internet, gender (and race) biases in communication and technology are replicated. Rather than being gender neutral and encouraging participation these aspects of the Internet may increase inequalities based on the sexual division of labour (Butler 2000, Wajcman 2000).

Finally, spatial distributions of ICT and infrastructure may further stratify ICT access and result in divisions that overlap with existing divisions of district, rural, urban, region and nation. Rather than overcoming limitations in accessing information, Internet infrastructure have been concentrated in rich and predominately white regions and only subsequently extended to poorer, smaller and rural communities. ICT then "contributes to new and more complex forms of corporate integration, reinforcing center periphery

problems on a global scale" (Gillspie and Robins 1989:7), thus causing new forms of global subordination and domination between cities and regions. Differential diffusion of Internet access occurs when most of the world's population lacks basic access to a telephone, let alone a computer (see UNESCO 1998:88-95).

To establish the degree of overlap of digital inequality with existing divides of class, status and gender, we examine the divide or gap between early users of the Internet and non-users. We also consider the dynamics of Internet diffusion by examining the changing divides or gaps in Internet access in Australia over time.

Data and Methods

We analyse a large national sample of Australian adults (aged 18 or over, n=2010), from the 2001 Australian Election Study (AES) survey (Bean *et al.* 2002). These data were collected via mail-out administration from all Australian states and territories following the 2001 federal election, with a response rate of 55%. By examining Internet *usage* we seek to overcome problems associated with the notion that ownership and access may not necessarily equate with Internet use.

We use multivariate analysis (binary logistic regression) to assess the most important socio-demographic variables in relation to predicting Internet access. We model 2 dependent variables, representing different aspects of Internet access: a) early Internet usage versus non-access; b) current Internet usage vs non-access[ii]. We then split our sample to consider gender differences in current usage.

We should point out that when we refer to changes 'over time' in the analyses below, our findings are not based on longitudinal data, as these were unavailable. Instead we compare two different questions from the cross sectional Australian Election Study data. We contrast those who indicated that they have been Internet uses for three years ago or more with non users (ie. 'early users' versus non-users). We then compare current Internet users with non-users. We use these proxy measures to model changes over time in patterns of Internet usage, although we are well aware of the limitations of this approach.

The independent variables used in the regression models are socio-economic, and include sex, age, tertiary education, income and location (large city versus other). These variables have all previously been found to be important determinants of Internet access (NOIE, NTIA). Both 'objective' and 'subjective' measures of class are used. Our 'objective' class model is based upon Brint's (1984) 'new class' schema. The new class comprises three sub-groups: social and cultural professionals, human services professionals, and technical professionals while managers, and remaining white workers (clerical and sales) are allocated separate categories. The reference group for our occupational class model are manual (blue-collar) workers. In conjunction with our education measure, we use this class model to approximate class characteristics highlighted by many new class theorists, notably employment in various professions, and high education. We also include a subjective measure of class location, to reflect respondent views of their own class

location, by contrasting upper and middle class identifiers with those who chose working class or no class location.

There are several variables which have been associated with Internet access which we are not able to include in our model due to the nature of the survey instrument. These include household size and/or composition; housing status; race; party identification; and media-use items.

Odds ratios are presented with the regression tables in order to facilitate the interpretation of our regression estimates (Table 1). All independent variables are dummy (dichotomous 1/0) variables, and therefore the odds ratios are interpretable in relation to their respective reference categories. In broad terms, odds ratios less than unity suggest negative relationships, and those greater than 1, positive relationships[iii]. In Table 1 we present estimates from binary logistic regression analyses to show the relationship of sex, age, education, social class, income and location with a dichotomous measure of Internet usage: column one - early Internet users versus non users; column two - current Internet users versus non users; and column three and four - current Internet users versus non users split by sex.

Table 1: Internet Usage and Social Background (Odds Ratios)

	Early vs non users	Current Users vs non-users		
		All	Men	Women
Men	1.74*	1.48*	-	-
Aged 18-29	9.00**	6.50**	8.62**	5.39**
Aged 30-49	2.68**	3.43**	3.92**	3.08**
Aged 50+	1	1	1	1
Degree	6.71**	2.86**	5.46**	2.02
Occupational Class				
Social & Cultural Prof.	12.62**	6.69**	4.34	8.20**
Human Services Prof.	3.73*	3.89**	1.69	5.78**
Technical Prof.	14.52**	7.89**	5.74**	18.77**
Managers	2.88**	3.12**	3.36**	2.82*
Other White Collar	3.31**	3.01**	2.71**	3.48**
Working class (reference)	1	1	1	1
Income				
<$70K (reference)	1	1	1	1
$70K+	4.35**	3.15**	3.15**	2.98**
Live in Large City	2.28**	1.60**	1.60	1.61*
Subjective Middle Class	2.10**	2.12**	2.28**	2.13**
Pseudo R squared	.59	.42	.46	.38

* p <.01 ** p <.001

Notes: Dependent variables:
a) Early vs non-Internet users (began to use Internet three years ago or more vs non-users);

b) 1= use Internet 0= do not use Internet, derived from the question: 'In general, how often do you use the Internet?' Responses; 1) several times a day; 2) about once a day; 3) three to five days a week; 4) one to two days a week; 5) every few weeks; 6) less often; 7) do not use the Internet. Responses 1-6 were classified as users of the Internet, compared to non-users (response 7).
Source: Australian Election Study 2001.

Results

In November 2001, men were approximately 1.5 times more likely than women to use the Internet (OR 1.48). While tertiary education was very important for early Internet access (those with a degree were almost seven times more likely to have access than those without a degree), the tertiary educated are still almost three times as likely to be current Internet users (OR 2.86). However, when the sample is split by sex, there is a rise to men with a tertiary degree are approximately 5.5 times more likely to have access for than those without a degree, whilst tertiary degree is not statistically significant for women's access to the Internet ($p>.01$).[iv]

Very strong age effects are apparent, with negative linear relationships extant for both dependent variables and age. Younger Australians (18-29) were nine times more likely than those aged over fifty to be early users of the Internet, with a distinct gap also evident between the 18-29 category and those aged 30-49. Whilst the size of the effect for younger people has is less stark among current usage, those younger than 29 are still 6.5 times more likely to use the Internet than those over 50 years old. The age effects remain substantial when the sample is split by sex, but are stronger among younger men than younger women.

Also important are the strong class effects apparent in the size of the odds ratios. In particular, technical professionals and social and cultural professionals are much more likely than the working class reference group to be early users of the Internet, although employment in any white collar occupation increases the likelihood of early Internet access. Whilst the strength of these effects have decreased over time for social and cultural professions and technical professionals, the biggest class effect for the full sample of current users is in these class categories (OR 6.69 and 7.89 respectively). Therefore, white-collar workers in any class category, are between three and eight times as likely to be current Internet users as blue-collar workers.

When the full sample of current Internet is split by sex, the importance of occupational based class becomes even more apparent. Overall, by splitting the sample by sex, the effect of class on Internet usage reduces among men compared to the full sample. This is particularly obvious where social and cultural professionals and technical professionals lose statistical significance. However, for women, class estimates increase in strength for most categories, most noticeably for social and cultural professions and human service professionals; and strikingly for technical professionals. Women technical professionals are almost 19 times as likely to use the Internet as working class women.

Those who identify as 'middle class' are also more likely to be Internet users. A positive linear relationship exists between Internet usage and income level[v]. Although the strength of income may have reduced slightly when we compare early users with current users, those who earn $70,000 or more are still more than three times as likely to use the Internet as those who earn less than $70,000.

Finally, the model employed here "explains" almost 60% of the variation in early Internet usage (pseudo R squared 0.59).[vi] The 'fit' of the model when applied to current user patterns varies between 38 to 46% with a somewhat larger amount of variance "explained" for men.

These results indicate several important barriers to access, based upon age, occupational class location (particularly in the professions) and income level. When we split the sample by sex, some of these effects become even more stark. While current access to the Internet for men is almost identical to women,[vii] the sub sample regression results show that the impact of age and education on current access among men are substantially stronger than among women, while compared to the working class, barriers to Internet access are even stronger among professional women than professional men.

Conclusion

New information and communication technologies have been adopted at rapid rates, although diffusion is clearly not at universal levels in advanced countries like Australia. With just over 50% of the Australian population using the Internet, it is not yet a mass medium.

Initial adoption of the Internet in Australia has been through advantaged groups in terms of income, occupational class, education and region. However, age and gender dimensions also stratify Internet access. The early pattern of digital inequality appears to have altered over time, although without longitudinal data, we need to be cautious with these comparisons. Some divisions between users and non-users of the Internet have persisted, whilst other gaps have been more transient or narrowed. There is both overlap of digital inequality with gender and class inequalities, and crosscutting or transformation along the dimensions of education and age. Diffusion patterns have thus become more nuanced, with neither democratisation nor reinforcement forecasts endorsed at this stage.

As persistent features of digital inequality, class and gender divisions overlap or replicate existing structural patterns of social inequality. Divisions in Internet use between white and blue collar workers appear to be enduring, as are divisions between managers and blue collar workers. Whilst still the most important class determinant of Internet access, the effect of professional occupational class appears to be reducing for men, but becoming more important for women. Gender barriers then, crosscut those of occupational class.[viii] While white-collar service sector work in general assists access to the Internet, employment in professions increasingly facilitates access for women. As existing social inequalities, class barriers are typically well acknowledged in relation to Internet use. The gendered nature of class divisions is also well documented (e.g. Crompton 2001; Wright 2001). Gender however, appears to be a hidden dimension of digital inequality, especially in relation to crosscutting class inequalities. These relationships clearly require further study.

As well as overlapping existing social inequalities, Internet diffusion alters established patterns of advantage, and is associated with the formation of new patterns of social privilege. This is evident for both education and age. Although the advantage of educational status persists, and there is a marked advantage of tertiary education for male Internet access, the importance of educational status for women is much weaker. Initially very stark, age barriers to Internet access remain. With computer and Internet skills acquired through higher education and training, young people continue to be advantaged in relation to Internet access. Although age is more important for access among men, gaps between younger, middle aged and elder citizens persist. The large presence of younger people online, suggests a potential for the transformation of social inequalities, since it is the young who are typically least involved in many traditional forms of political activism (Norris 2000). While generational succession may reduce this age gap, the speed of new technological development is now so rapid that existing older cohorts are unlikely to achieve equality of Internet access.

Finally, these complex and often contradictory expressions of digital inequality challenge the notion of a 'digital divide'. Our research highlights the need for a digital metric that can account for the nuanced relationships between social inequality and Internet diffusion in advanced Western nations.

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[i] Inequalities of access to ICT occur both within nations and between developing and developed nations.

[ii] Our dependent variables for Internet usage are dichotomous, and as we wish to explore relationships between our dependent variables and several independent variables using a multivariate approach, binary logistic regression analysis is an appropriate technique (see Long 1997).

[iii] We deleted missing cases from our analyses for all variables. The exception being the income variable, where a reasonably large proportion of cases were missing (n 178). In this case we included a dummy variable in the regression equation to represent missing data. We did not report estimates for the income missing cases variable, as they were not relevant to our argument, and in no cases were the estimates statistically significant, even at the 95% level. As our 'objective' class measures are based upon occupations, we also excluded from the analyses those cases that were not coded to Australian Standard Classification of Occupations (ASCO 2) categories (n 287).

[iv] Given that our analyses are based upon a large sample (n 2010), we prefer to use $p<.01$ as our minimum significance level as opposed to $p<.05$.

[v] We found that usage increased with income, but that the most substantial 'jump' occurred for the highest income group. We therefore present the highest income category as a dummy variable in Table 1.

[vi] Based on the maximum rescaled r-squared produced by PROC LOGISTIC with SAS Version 8.

[vii] Based on estimates from the 2001 Australian Election Study, 57.8% of men currently use the internet, compared to 55.5% of women.

[viii] In separate analyses (not presented here) we considered the frequency of Internet usage. We found that class differences were particularly prominent among men, but absent among women. White collar, particularly professional men accessed the Internet much more frequently than working class men, while no statistically significant class differences were found for women ($p>0.01$). analysis is an appropriate technique (see Long 1997).

[viii] We deleted missing cases from our analyses for all variables. The exception being the income variable, where a reasonably large proportion of cases were missing (n 178). In this case we included a dummy variable in the regression equation to represent missing data. We did not report estimates for the income missing cases variable, as they were not relevant to our argument, and in no cases were the estimates statistically significant, even at the 95% level. As our 'objective' class measures are based upon occupations, we also excluded from the analyses those cases that were not coded to Australian Standard Classification of Occupations (ASCO 2) categories (n 287).

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