



Hearing loss and disability exit: Measurement issues and coping strategies



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ABSTRACT

Hearing loss is one of the most common conditions related to aging, and previous descriptive evidence links it to early exit from the labor market. These studies are usually based on self-reported hearing difficulties, which are potentially endogenous to labor supply. We use unique representative data collected in the spring of 2005 through in-home interviews. The data contains self-reported functional and clinically-measured hearing ability for a representative sample of the Danish population aged 50–64. We estimate the causal effect of hearing loss on early retirement via disability benefits, taking into account the endogeneity of functional hearing. Our identification strategy involves the simultaneous estimation of labor supply, functional hearing, and coping strategies (i.e. accessing assistive devices at work or informing one's employer about the problem). We use hearing aids as an instrument for functional hearing. Our main empirical findings are that endogeneity bias is more severe for men than women and that functional hearing problems significantly increase the likelihood of receiving disability benefits for both men and women. However, relative to the baseline the effect is larger for men (47% vs. 20%, respectively). Availability of assistive devices in the workplace decreases the likelihood of receiving disability benefits, whereas informing an employer about hearing problems increases this likelihood.

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1. Introduction

Hearing loss is one of the most common chronic health conditions of adulthood, affecting around 16 percent of the adult population (Shield, 2006). Its prevalence rises steadily with age and increases steeply from about age 55 (Ries, 1994), so that almost a third of the 50-plus population has some degree of hearing difficulty. With population aging and the younger generation's increased exposure to noise via media consumption, concert attendance, and the use of headphones, ear buds, and Bluetooth devices, the prevalence of hearing problems can be expected to escalate in the future (Meyer-Bisch, 2009; Holgers and Pettersson, 2005).

Growing empirical literature has established a connection between subjective well-being and hearing impairment (Ciorba et al., 2012; Böckerman et al., 2011; Saarni et al., 2006). Because hearing loss affects the fundamental human ability to communicate, it impacts not only the hearing-impaired individual but also his or her quality of social interactions, and—depending on the

severity of the disability—can result in feelings of frustration, low self-esteem, and social isolation (Kochkin and Rogin, 2000; Crandell, 1998).

In terms of work life, having a hearing impairment can result in the loss of job function and lowered job satisfaction. A potential consequence can be reduced interactions with colleagues, as the vast majority of jobs these days require communication skills and the ability to engage in discussions and dialogue with colleagues, customers, and/or collaborators. Indeed, where job satisfaction is concerned good interpersonal relationships have been shown to play an important role (Clark, 1998). A great deal of research shows that people with hearing impairments are more likely than people without such problems to be unemployed or take early retirement (Ries, 1994; Christensen, 2006a; Kochkin, 2005). Receipt of disability benefits is one form of early retirement that is likely to be influenced by loss of job function and lowered job satisfaction caused by hearing problems.

With aging populations, maintaining a high employment rate for the older age groups, as well as redistribution of work, is a

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pressing challenge for the future. In Denmark, the ratio of the population aged 65 and over to the population aged 20–64 is predicted to increase from 30% in 2012 to 43% in 2050 (OECD, 2015). A deeper understanding of the pathways to receipt of disability benefits and the ways to counteract these processes with strengthened incentives to carry on working along with improved employability of older workers appear to be crucial.

The aims of this paper are threefold: Firstly, we seek to investigate to what extent hearing difficulties cause early retirement through the take-up of disability benefits. In Denmark, disability benefits are granted to people who are unable to work or support themselves due to physical, psychological, or social reasons. Since a recipient is only allowed a highly limited labor income in addition to the benefits, the receipt of disability benefits is equivalent to an early exit from the labor market (Ministry of Social Affairs, 2005). Given that it is difficult to become eligible for disability benefits solely on the grounds of a hearing impairment, we hypothesize that the main effect of a hearing difficulty will be a higher probability of applying for disability benefits for the hearing impaired compared to those with normal hearing. Loss of hearing is often combined with other chronic health conditions (Bainbridge et al., 2008; Hull and Kerschen, 2010) and the added effect of a hearing impairment on top of another type of chronic illness could potentially lead the individual to experience exacerbated levels of stress and a diminished quality of life (Kramer et al., 2002). The added effect of a hearing impairment can thus be the straw that breaks the camel's back in terms of pushing people out of the labor market.

Secondly, we are interested in the methodological issues of bias that arises when self-reported measures of hearing are introduced into labor supply equations. Self-reported hearing—for example, individual-reported functional hearing difficulties—is likely to be endogenous to labor supply. Therefore, its estimated effect on disability exit will be biased upwards, if those with low work preferences also report hearing problems as a justification for withdrawing from the labor market (see the literature on justification bias and self-reported vs. objectively measured health in retirement models by Stern, 1989; Bound, 1991; Baker et al., 2004; Datta Gupta et al., 2010, 2013). To circumvent this potential problem of endogeneity, we simultaneously estimate the receipt of disability benefits and functional hearing, using hearing aids as an instrument for the latter. Hearing aids only impact the receipt of disability benefits indirectly via their impact on functional hearing, but do not have any direct impact on the receipt of disability benefits.

Thirdly, we examine the relative effects of the use of different coping strategies on labor force participation. These strategies include: informing one's employer about hearing difficulties and the availability of different assistive devices at work, such as phone amplifiers or wire loops. Since informing one's employer may also be endogenous to labor supply, we simultaneously estimate a three-equation model of disability pension receipt, functional hearing, and coping strategies.

We use a unique Danish survey dataset containing questions about labor force participation, work experience, health, and functional hearing difficulties. We conducted the survey in the spring of 2005 through in-home interviews. In addition to answering the survey questions, all respondents underwent a clinical audiometric hearing test. A total of 2407 respondents between the ages of 50–64 participated. The respondents constituted a survey sample that approximately represents the Danish population within this age group.

Section 2 of the paper addresses the use of coping strategies and associated gender differences. In Section 3, we describe the details of the dataset, including our definition of hearing disability and the measurements we access. In Section 4, we present our empirical

model, and we discuss our estimation results in Section 5. Section 6 concludes.

2. Coping strategies

Alternative coping strategies, such as the availability of assistive devices, or informing people in one's social settings about one's hearing disability, can be used to overcome the difficulties and barriers resulting from a hearing loss. Hearing impairments, however, are often associated—in a prejudicial way—with being physically old or mentally slow. Because of these stigmas, many hearing-impaired persons are reluctant to acknowledge or recognize their own hearing problems (Martin et al., 2000; Héту et al., 1990). They may also hesitate to order or use hearing aids, despite having acknowledged hearing deterioration (Espmark et al., 2002; McCormack and Fortnum, 2013; Meyer and Hickson, 2012). Indeed, concealment of the impairment (since it is not visible) seems to be a coping strategy used by many people with hearing impairments. This strategy, however, does not resolve the communication difficulties. Instead, the hearing-impaired person's co-workers and colleagues might perceive the individual as being arrogant or aloof because he or she does not always respond as expected, which may further lower productivity and job satisfaction.

There appear to be large gender differences when it comes to hearing ability and coping strategies. Men generally tend to be affected by hearing problems earlier in life and more severely than women (Sininger et al., 1998). To a large extent, this is due to gendered occupational segregation, with men more often working in noisy environments. Additionally, men and women seem to be affected by hearing problems in different ways (Christensen, 2006a), and their preferred coping strategies differ. For example, women more often than men inform others and use verbal strategies (Hallberg, 1996; Garstecki and Erler, 1998). Furthermore, studies show that men are often more unwilling to acknowledge their hearing difficulties (Héту et al., 1990; Kricos 2000).

3. Data and approach

3.1. Survey data

In this study, we use a survey data set including 2407 respondents. The data set is representative of the Danish population between 50 and 64 years of age. Personal information on roughly 3000 people in that age range was drawn from Statistics Denmark's administrative data registries, using the central person registry number, which ensures a representative population sample within the chosen age group. Out of the 3000 individuals in the sample, we obtained answers from 2407, yielding a response rate of 80 percent. There is a slight overrepresentation of older respondents and respondents with a higher education level compared to the general Danish population within the corresponding age group. However, there is no indication of a bias regarding hearing impairment (Christensen, 2006b).

The survey, which we conducted in the spring of 2005 through in-home interviews, poses questions about current employment and receiving public benefits as income replacement, as well as an array of questions concerning health and health status. All respondents underwent an audiometric hearing test after the interview was concluded (see Christensen, 2006b for further details on the data collection).

In this study, we include only people on the labor market and those receiving disability benefits. Therefore, we exclude 326 people on an early retirement scheme, 21 people on sick leave, 5 people enrolled in an educational program, 65 housewives not working outside the home, and 5 persons with a missing response

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