Socioeconomic status, achieving occupational aspirations and sickness absence: A population based longitudinal study of Norwegian youths

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ABSTRACT

This paper examines whether the degree of convergence between occupational aspirations and actual occupational achievement can elucidate the relationship between socioeconomic status and sickness absence. The analyses draw on survey data from a longitudinal study following 1,552 respondents from adolescence through young adulthood linked to register data on sickness absence. Occupational aspirations in adolescence were contrasted with actual occupational achievement in young adulthood and used to predict sickness absence. In accordance with existing research, socioeconomic status significantly predicted sickness absence, even after controlling for several relevant variables. Including aspiration achievement in the analysis reduced the relationship between socioeconomic status and sickness absence, while aspiration achievement was significantly related to sickness absence. The findings indicate that aspiration achievement mediates the relationship between socioeconomic status and sickness absence.

INTRODUCTION

Low socioeconomic status has repeatedly been shown to be related to increased risk for sickness absence [1-3]. Previous research has focused on examining health behavior and physical and psychosocial environment at work as potential mechanisms explaining this relationship [2,4-6]. However, the relationship between socioeconomic status and sickness absence is still poorly understood [7].

This paper examines whether achieving occupational aspirations, hereafter referred to as aspiration achievement, is a mechanism that may contribute to explain the relationship between socioeconomic status and sickness absence in young adulthood. The relationship between previous aspirations and current occupational achievement could be related to how rewarding people perceive their work to be, thereby influencing sickness absence [8]. Furthermore, failure to achieve occupational aspirations is probably most common in lower socioeconomic strata because this involves occupying a lower occupational position than expected. Although aspiration achievement may be related to socioeconomic status and sickness absence, this has not yet been examined.

The present study investigates these issues through analyses of survey data derived from a population-based longitudinal study of Norwegian youth linked to register data on sickness absence, covering the period from adolescence to young adulthood. The combination of the two data sources makes it possible to contrast aspirations in adolescence with later occupational achievement and sickness absence.

Sickness absence

Whereas sickness absence is clearly related to health, it is not caused by health problems alone [9]. The relationship between health and sickness absence is complex; people can experience health problems without being absent from work, or they can be on sick leave without experiencing health problems. This means that theoretical and empirical explanations of sickness absence must go beyond simply explaining health and socioeconomic differences in health. The reasons for sickness absence must be made explicit.

The effort-reward imbalance theory by Siegrist provides just such a theoretical framework by proposing that imbalance between work-related efforts and rewards explains sickness absence [8,10]. The theory was originally designed to explain how opportunity structures at work influence health in general, but was later specified to explain sickness absence as well [8]. The basic theory is that the ratio of invested effort to perceived reward at work is related to health, and that imbalance between efforts and rewards (high effort and low reward) influences health and sickness absence through reduced self-esteem [10,11]. Empirical research has confirmed that effort-reward imbalance predicts sickness absence [8,12-14].

Siegrist views effort–reward imbalance as particularly evident in low-status occupational positions [10, 11]. The low wages that characterize low status work are not necessarily followed by low effort, thereby increasing the risk of effort-reward imbalance. However, empirical findings on this are inconclusive. Bosma and colleagues [15] found that effort-reward imbalance was more common in low-status occupations, Kuper and colleagues [16] found it more evident in higher socioeconomic strata, whereas Rugulies and colleagues [17] found it to be similarly present in occupations at all socioeconomic levels.

Status control

In the effort-reward theory, efforts include demands and obligations of an occupational position and the

performance of the individual employee, whereas rewards include money, esteem and status control. The term "status control" refers to the degree of control over one's own occupational position, and is of particular relevance to this paper. Drawing on Mead [18], Siegrist proposes that occupational positions are crucial social roles, and that threats to these roles affect self and identity. According to Mead, people's view of themselves is strongly influenced by the views of others. Social roles have consequences for others' view of a person, and for how persons view themselves. In line with this, Siegrist considers status control as fundamental for perceived rewards from work, and relates it to "those aspects of occupational life that threaten a person's self-regulatory functions, his or her sense of mastery, efficacy and esteem by evoking strong recurrent negative emotions of fear, anger or irritation" [10:30].

For Siegrist, both negative changes in a job situation, such as termination, forced occupational change, downward mobility and stable negative situations such as lack of promotion prospects and inconsistency between education and occupational positions involve low status control and low rewards. By examining effort-reward imbalance and sickness absence, Peter and Siegrist [8] found that status incongruence, the mismatch between efforts and aspirations on the one hand and career achievements on the other, was the most consistent predictor of sickness absence. The authors concluded that status incongruence is probably a particularly frustrating situation that may easily lead to withdrawal and "giving up." The achievement of occupational aspirations is closely related to what Siegrist views as status control. To fail to achieve aspirations could therefore involve low status control, reducing the perceived rewards from work and increasing the likelihood of sickness absence.

Occupational aspirations and aspiration achievement

Occupational aspirations are expressions of expected or preferred future occupation, and have been found to be closely related to actual occupational achievement [19,20]. Adolescence is a particularly important period for the development of aspirations, laying the ground for later aspiration achievement. During adolescence, occupational aspirations stabilize [21] and start to have real-life consequences to a greater extent than before. Many important decisions regarding education and occupation are taken in adolescence, decisions that are influenced by aspirations [22,23]. Having unrealistic aspirations during this period can lead youths towards pursuing educations and occupations they will fail to achieve.

Socioeconomic background is commonly regarded as particularly important for occupational aspirations [24,25]. Empirical research confirms this; socioeconomic background and academic performance have been found to be the two variables that best predict the level of occupational aspirations [21,26-28].

Exactly how socioeconomic background influences occupational aspirations has been much debated. Bourdieu [29] considers socioeconomic background to influence people's habitus, which in turn influences how they act and think. When youths consider their future education and occupation, their decisions are guided by their habitus. Therefore, youths tend to choose occupations that are relatively similar to those of their parents, because this is what they consider appropriate and natural. In contrast to Bourdieu, Goldthorpe [30] sees decisions regarding education and occupation as primarily based on rational consideration of available possibilities. However, he suggests that an important premise when considering possibilities is that the youths must achieve at least the same occupational status as their parents. Hence, Goldthorpe also views socioeconomic background as having a substantial influence on decisions regarding education and occupation.

Furlong and Cartmel [31] have suggested that beliefs on the societal level also influence adolescents' occupational aspirations. They see current Western societies as being characterized by beliefs about the importance of achieving high-status occupations and unrealistic views of the possibilities of achieving such occupations. This situation could pressure young people into setting ambitious goals. Furlong and Cartmel's suggestion is supported by empirical findings that youths in the year 2000 had higher and more unrealistic aspirations than those 20 to 25 years earlier [32,33].

Sickness absence in Norway

Norwegian employers are allowed self-reported sickness absences of up to 12 or 24 days a year, depending on the agreements at the workplace. Beyond this, a medical certificate confirming the inability to work is necessary. Sickness benefits are normally 100% of the income up to six times the basic national insurance amount, which was NOK 453,846 in 2010. This means that for most employees, with the exception of those with high earnings, sickness absence does not involve reduced income. Benefits for the first 16 days of a sickness absence period are covered by the employer, whereas benefits beyond 16 days are covered by the National Insurance Scheme.

Research questions

Empirical findings and theoretical frameworks suggest that aspiration achievement could be related to sickness absence. The present paper aims to investigate whether aspiration achievement can be seen as a mechanism explaining the relationship between socioeconomic status and sickness absence. The analyses were conducted on survey data derived from a population-based longitudinal study of Norwegian youth linked to register data on sickness absence. The combination of the two data sources makes it possible to assess aspiration achievement and whether it is significant in the relationship between socioeconomic status and the number of sick-leave days.

METHODS

Participants

This paper is based on data from the *Young in Norway* longitudinal survey study, with data collected at four time points: 1992 (T1), 1994 (T2), 1999 (T3), and 2005 (T4). The survey data were moreover linked to time series data on sickness absence from Statistics Norway's "FD-Trygd" databases.

The initial sample at T1 was composed of 12,287 students in grades 7–12 (12–20 years of age), drawn from 67 representative high schools in Norway with a response rate of 97%. At T2, students who still attended the same school as in T1 were followed up with questionnaires at school. Because a sizable proportion of the students had completed their three-year track at the junior or senior high school they attended at T1, participants no longer at their original school at T2 received the questionnaire by mail. The response rate of those still attending the same school at T2 was 92%. Only students who completed the questionnaire at school at T2 (n = 3,844) were followed up at T3 because of the lower response rate among those receiving the questionnaire by mail. Because a two-wave study was originally planned, informed consent had to be obtained again at T2. Those then consenting (n = 3,507; 91%) received questionnaires by mail at T3 and T4, with data received from 2,924 participants (84%) and 2,890 (82%) participants, respectively. At T4, the respondents were asked to consent to linkage of data to several registers. In all, 2,606 respondents (90%) agreed to this, setting the overall response rate to 60%. For a more detailed description of the *Young in Norway* study, see Pedersen [34] and Wichstrøm [35].

Multiple logistic regression analysis was conducted to examine potential selective attrition from T2 to T4. Being female (OR = 1.32, $p < .001$) and having higher socioeconomic background (OR = 1.10, $p < .001$) increased the probability of participation at T4, whereas greater age (OR = .74, $p < .001$) decreased the probability. Because this paper focuses on sickness absence, respondents who reported not working at T4 were not included in the sample. Hence, 672 respondents not working at T4 were excluded, leaving 1,934 persons reporting full- (1,638) or part-time (296) work at T4. Furthermore, because answers were missing on one or several items either at T2 or T4, an additional 382 respondents were excluded. Thus, data from 1,552 persons were included in the analyses, 727 (47%) males and 825 (53%) females.

Measures

Sickness absence. Register data from Statistic Norway's FD-trygd databases were used to obtain time series data on sickness absence. The FD-Trygd database contains all sickness absence compensated by the National Insurance Scheme. Since the first 16 days in a sickness episode are not compensated by the Scheme, sickness absence shorter than 17 days was not included in the database. In this study, sickness absence was the number of days the respondents were reported to be absent from work in the time frame of one year after completing the T4 survey.

Occupational aspirations. At T2, respondents were asked to respond to the following open-ended question about their future occupation: "Which job or occupation do you think you are most likely to have when you are 40? If you are not sure, write what you believe or take a guess." The answers were categorized into a four-digit code according to the International Standard Classification of Occupations (ISCO-88) [36], and then assigned to one of five groups according to the effort required to achieve the aspiration, ranging from "1 – workers" to "5 – higher administrative occupations". This approach is common when measuring aspirations [19,37-39]. Assessing expected future occupation, as was done in the *Young in Norway* study, leads to more realistic considerations and lower aspirations than assessing a preferred future occupation [37,40,41]. The measurement of aspirations from T2 was chosen over measurements at other points in time to ensure that the aspirations were relatively realistic, and, at the same time, expressed goals rather than positions already achieved. At T2, the respondents were in the last two years of junior high school or in the last two years of senior high school.

Aspiration achievement. At T4, the respondents were asked to state their current occupation. The open-ended answers were, as for occupational aspirations, transformed into a four-digit ISCO and then assigned to one of five different occupational groups as described above. Aspiration achievement was calculated by subtracting the score for occupational aspirations from that for current occupation. The variable thus ranges from –4 to +4, where –4 indicates an occupational status four levels lower than that for the corresponding aspirations at T2, 0 indicates a match between occupational status and aspirations, and +4 indicates an occupational status that is four levels higher than aspirations at T2. Aspiration achievement was constructed as a continuous variable because the distance between the aspirations and the actual status, not simply the achievement of the aspirations, may be relevant [42].

The item regarding aspirations at T2 assesses expectations of occupational achievement at age 40. However, data for these individuals at higher ages do not exist, so occupational expectations for the age of 40 were compared with actual achievement before the age of 30. Using this "pre-mature" measure of what the respondents have accomplished occupationally could produce a result showing a lower average level of aspiration achievement than is actually the case.

Socioeconomic status. Achieved education in 2005 was used as an indicator of socioeconomic status. Based on data from Statistics Norway's FD-Trygd databases, a variable ranging from 1 (no education beyond junior high school) to 6 (completed PhD) were constructed.

Covariates. Questionnaire data on gender, age and

whether the respondents had children at T4 were used in all analyses as covariates. Finally, at T4, women were asked to indicate whether they were pregnant and a dummy variable was constructed to indicate pregnancy.

Analyses

Mediation testing is a common way to examine whether a variable is a mechanism for the relationship between two other variables. The analyses in this paper follows a procedure for mediation testing described by Baron and Kenny [43]. According to them, a variable mediates the relationship between an independent variable and an dependent variable when the following criteria are fulfilled: (1) there has to be a significant relationship between the independent and the dependent variable; (2) the independent variable must be significantly related to the mediator; (3) the presumed mediator must be significantly related to the dependent variable; and (4) the relationship between the independent and dependent variables is reduced or no longer significant when the presumed mediator is added as predictor in a multiple regression analysis.

Still, if a variable fulfills these criteria, it cannot automatically be concluded that the variable is a mediator, in the sense that it is caused by the independent variable and causes the dependent variable. Other directions of causality are possible within the mediation testing framework of Baron and Kenny. The presumed mediator could, instead of linking the independent and dependent variable, result from these variables, thereby creating a collider bias [44]. Moreover, the presumed mediation effect could result from confounding variables, i.e. variables not included in the mediation model that are related both to the presumed mediator and the dependent variable [45]. This means that the findings must be interpreted with caution, and that conceptual considerations also must be involved when examining variables as mediators [46].

For all regression analyses, Poisson regressions were applied, because Poisson regression models are an estimation method suggested for count outcomes [47]. Robust standard errors were used to correct for possible violations of the assumptions in Poisson regression models.

RESULTS

Descriptive statistics for variables included in the analyses are presented in Table 1. The table shows that the average number of days with sickness absence was more than four times higher for women than men, whereas there were only minor gender differences in socioeconomic status and aspiration achievement. Examining the aspiration achievement variable in more detail reveals that 31% of the sample reported not having achieved their aspirations (values –4 through –1), 419% reported having achieved their aspirations (value 0), whereas 28% reported achieving an occupation with higher status than they expected at T2 (values 1 through 4). Furthermore, 31% (N = 495) of the sample had one or more children at T4, whereas 9% (N = 79) of the women were pregnant at T4.

Further examination revealed that men who had achieved their aspirations on average were absent for 1.93 days (SD = 9.81 days) due to sickness in the year following the T4 survey, whereas the average absence for men who had not achieved their aspirations was 7.60 days (SD = 37.73 days). The average number of absent days for women who had or had not achieved their aspirations was 15.96 (SD = 43.47) and 21.84 (SD = 51.60), respectively.

Mediation testing

As a first step in testing for mediation, Poisson regression analyses were conducted to examine the relationship between socioeconomic status and sickness absence, while controlling for covariates. The results of the analyses are presented in Table 2. The highly significant negative regression coefficient for socioeconomic status indicates that high socioeconomic status was related to fewer days with sickness leave compared to respondents with lower socioeconomic status, even when controlling for covariates. Moreover, women had a significantly higher risk of being absent than men. Likewise, being pregnant increased the risk for sickness absence.

As a next step, the relationship between socioeconomic status and aspiration achievement was examined by a simple correlation analysis. The results showed a correlation of $r = .20$ ($p < .001$) between the two variables. As a third step, aspiration achievement was included as an independent variable in Poisson regression analyses in addition to the variables presented in Table 2. The results of these analyses are displayed in Table 3. The table shows that aspiration achievement was significantly related to sickness absence: Those who achieved their aspirations had fewer days with sickness absence compared with people who did not achieve their aspirations to the same degree. Even though socioeconomic status remained a significant predictor of sickness absence, the regression coefficient was reduced from -.36 to -.33. Moreover, since no well-established methods are available to test whether Poisson regression coefficients are significantly reduced when including covariates, as an approximation, such tests were conducted by using linear regression analyses. The analyses showed a significant reduction of the coefficient ($t=2.44$, $p<.05$), thereby indicating a mediation effect. The results thus indicate that aspiration achievement partially mediates the relationship between socioeconomic status and sickness absence.

Further analyses of the Poisson coefficient revealed that one unit positive change in the variable aspiration achievement decreases the expected number of sickness absence days with 14%, holding other variables

Table 1. Mean and standard deviations (SD) for sickness absence, socioeconomic status, age, occupational aspirations and achievement for women and men.

	Men		Women		Total	
	Mean	SD	Mean	SD	Mean	SD
Sickness absence, days	3.64	22.39	17.80	46.22	11.02	37.45
Socioeconomic status	3.45	0.94	3.61	0.88	3.53	0.91
Aspiration achievement	–0.04	1.20	–0.09	1.26	–0.07	1.23
Aspirations T2	2.86	1.10	2.88	1.13	2.87	1.12
Age T2	16.65	1.81	16.69	2.05	16.67	1.94

Table 2. Poisson regression results with number of sickness absence days as dependent variable and socioeconomic status and covariates as independent variables

	Poisson coefficient	Robust SE	95% CI		P
			Lower	Upper	
Socioeconomic status	–0.36	0.08	–0.52	–0.20	<0.01
Gender	1.53	0.24	1.05	2.00	<0.01
Age	0.00	0.04	–0.08	0.09	0.96
Children T4	0.32	0.18	–0.04	0.67	0.08
Pregnant T4	0.63	0.22	0.20	1.06	<0.01

Table 3. Poisson regression with number of sickness absence days as dependent variable and socioeconomic status, aspiration achievement and covariates as independent variables

	Poisson coefficient	Robust SE	95% CI		P
			Lower	Upper	
Socioeconomic status	–0.33	0.08	–0.49	–0.16	<0.01
Aspiration achievement	–0.15	0.06	–0.28	–0.03	0.01
Gender	1.50	0.24	1.03	1.98	<0.01
Age	0.01	0.04	–0.08	0.09	0.90
Children T4	0.31	0.18	–0.04	0.66	0.09
Pregnant T4	0.68	0.22	0.25	1.11	<0.01

constant. Interaction effects between gender and aspiration achievement were not found (p>.05), indicating that the relationship between aspiration achievement and sickness absence is similar for men and women.

DISCUSSION

The empirical findings suggest that some of the connection between socioeconomic status and sickness absence may be explained by the relation of the achieved occupational position to previous aspirations. This has implications both for the understanding of how socioeconomic status relates to sickness absence and for how occupational aspirations should be viewed.

Socioeconomic status, sickness absence and aspiration achievement

The relationship found between aspiration achievement and sickness absence is in accordance with Siegrist's [8,10] proposal regarding effort-reward imbalance and sickness absence. The findings suggest that not having achieved occupational aspirations reduces the perceived rewards from work, which in turn influences sickness absence. Not having achieved occupational aspiration resembles what Siegrist refers to as low status control, a factor that he sees as particularly fundamental for perceived rewards from work, and therefore as important for effort-reward imbalance.

Because the analyses in this paper were conducted without information about respondents' perceptions of efforts at work, this study can not be seen as directly testing Siegrist's theory. However, this study supports his suggestions regarding status control, and its relationship to sickness absence. Furthermore, the findings in this study are in accordance with findings by Peter and Siegrist [8] of status incongruence as a particularly important predictor of sickness absence.

Current research on socioeconomic status and sickness absence has focused on health behavior and the physical and psychosocial environment at work as mediators in this relationship [2,4-6]. Aspiration achievement has not previously been tested as a mediator, and

distinguishes itself from the previously examined mediators by involving comparisons of the current situation with previous expectations. However, aspiration achievement explained only a part of the relationship between socioeconomic status and sickness absence, thereby indicating that also other factors, like health behavior and psychosocial environment at work, are important for explaining the relationship between socioeconomic status and sickness absence.

Not surprisingly, aspiration achievement was found to be related to socioeconomic status; high socioeconomic status at T4 increased the probability of having achieved aspirations. Siegrist sees effort-reward imbalance as related to socioeconomic status, with higher levels of imbalance in the lower strata. Empirical research on this is, however, inconclusive. This study shows that aspiration achievement, a variable probably important for perceived rewards from work, is related to socioeconomic status. Still, this finding can not contribute to understand the relationship between socioeconomic status and effort-reward imbalance in general, as information about efforts at work was not included in the analyses in this paper.

Implications for occupational aspirations

When aspiration achievement is connected to sickness absence, this could imply that occupational aspirations express expectations towards future occupation that it is vital to fulfill. Siegrist [10] suggests that occupational positions are important social roles connected to self and identity, and that involuntarily changes in these positions has negative consequences for the individual. Also occupational aspirations could be related to self and identity, with negative consequences if they are not achieved.

In spite of having quite diverging views on how youths decide on which education and occupation to aim for, both Bourdieu [29] and Goldthorpe [30] sees this process as guided by the socioeconomic level of the parents. Several empirical studies have shown that socioeconomic background predicts occupational aspirations [21,26-28]. Hence, occupational aspirations could be connected to identity, in the sense that, based on socioeconomic background, aspirations reflects youth's views on what it is natural for them to achieve. Failure to fulfill occupational aspirations could therefore mean not achieving the appropriate or natural occupational level, thereby threatening feelings of identity and belonging.

Also attitudes on a societal level could influence occupational aspirations. According to Furlong and Cartmel [31], occupational aspirations are influenced by societal beliefs about both the occupational status level that should be achieved, and the efforts required to achieve this level. They consider these beliefs to be unrealistic in Western contemporary societies, something that can lead to an unfortunate combination of to high expectations to own achievement among youths, and feelings of failure if they do not meet these expectations. Apart from supporting that occupational aspirations are important to achieve, this study can not determine whether Furlong and Cartmels proposals are correct or not. Little empirical research have been conducted on this subject, but some studies have found that today's youths have higher and more unrealistic aspirations than those 20 to 25 years earlier [32,33], supporting Furlong and Cartmel's suggestions.

Mead's [18] theoretical suggestions regarding human behavior, which Siegrist draws on to account for why occupational positions are important social roles, can also contribute to explain the formation of occupational aspirations and why they could be important to achieve. For Mead, individual's behavior is strongly influenced by the opinion of and stimulus from significant others, like parents, and from generalized others, which is the organized attitudes of larger groups of people. However, Mead does not consider the surroundings as directly influencing the behavior of individuals. The stimulus from significant and generalized others is actively interpreted and organized by the individual. Mead's views on human conduct and opinion imply that the individual plays an active role in interpreting and acting on input from the surroundings when deciding on occupational aspirations. Through this process, the aspirations become related to the self, which could make them important to achieve.

Limitations of the study

This study has several limitations. First, even though the response rates at all time points were fairly high, a relatively large number of respondents were not included in the data analyses. Examination of the data showed selective attrition in some areas, which may affect the representativeness of the results.

Second, due to the lack of established procedures for testing whether Poisson regression coefficients are significantly reduced when including covariates, such a test had to be approximated by using linear regression models. However, occupational aspirations were related both to socioeconomic status and to sickness absence, thereby – combined with the results from the linear regression models – indicating partial mediation.

Third, although aspiration achievement is conceptually plausible as a mediator, other explanations for the found connection exist. Health problems could be a confounding variable, explaining socioeconomic status, aspiration achievement and sickness absence. Unfortunately, the available data do not include measures of health problems. Furthermore, even though sickness absence was measured after the assessment of aspiration achievement and socioeconomic status, it is possible that sickness absence before T4 is related to aspiration achievement and later sickness absence. In this scenario, aspiration achievement is a collider, not a mediator. The causal direction between aspiration achievement, socioeconomic status and aspiration achievement could, therefore, not be completely delineated in the study.

Fourth, the data regarding sickness absence included neither self-reported sickness absence nor sickness absence with medical certificate shorter than 16 days. Information about this would have increased the accuracy of the analyses.

Fifth, the respondents' occupational aspirations were based on and measured in terms of their expectations for the age of 40, whereas their actual occupational achievements were measured when they were in their late 20s. Contrasting occupational achievement from the late 20s with aspirations for the age for 40 might inflate the number of people that have not achieved their aspirations. Ideally, the information about occupational achievement should have been collected at 40.

CONCLUSION

Drawing on longitudinal survey data linked to register data, the findings in this study suggest that aspiration achievement mediates the relationship between socioeconomic status and sickness absence. Aspiration achievement has not previously been examined in research on the relationship between socioeconomic status and sickness absence. The study's strengths are the introduction of this variable as a possible mediator, and the testing of the variable on longitudinal data.

However, further research is needed to confirm the relationship between aspiration achievement and sickness absence. Studies controlling for health problems would be particularly useful, because this could aid in determining the role that health plays in aspiration achievement.

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