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**The Socioeconomic Determinants of
Mental Stress in Ireland**

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The Socioeconomic Determinants of Mental Stress in Ireland

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Abstract: This paper reviews Irish evidence on the link between socioeconomic factors and various measures of mental stress and well-being. The paper reviews both cross-section and time-series studies and finds that of all socioeconomic determinants, the most consistent role is found for unemployment. In general, stronger results are found for males than for females, but the time series evidence suggests that the relationship between suicide and unemployment appears to be weakening.

Keywords: socioeconomic determinants, mental stress, suicide, subjective well-being.

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The Socioeconomic Determinants of Mental Stress¹

David Madden

1. Introduction

This chapter reviews the socioeconomic determinants of mental stress in Ireland. As the title suggests, the focus of the chapter will principally be on those socioeconomic factors which are most closely associated with mental stress, and so the papers reviewed will mainly be from the economics literature. It is also the case that we will take a broad interpretation of mental stress, including in our analysis not just studies of stress, but also of other conditions such as mental illness and suicide. We will also cover socioeconomic determinants of what could be regarded as the complement of mental stress i.e. subjective well-being.

What evidence exists for Ireland indicates that a link between mental illness and socioeconomic factors has been observed since the 18th and 19th centuries (see Walsh and Daly, 2004). The phenomenon of “pauper lunacy” was well established in the 19th century and the development of the asylum system was seen in conjunction with the development of indoor poor relief. Walsh and Daly point out that for much of the 19th century the asylum system was essentially viewed as an element of poor relief and it was not until the end of the century that lay managers were replaced by physicians. This link between poverty and mental illness was echoed by the situation with respect to Irish

¹ This paper is a draft chapter for a forthcoming publication *The Economics of Disability in Ireland*. I am grateful to Brendan Walsh for helpful comments and suggestions. The usual disclaimer applies.

emigrants in Massachusetts in the mid 19th century where the links between poverty, intemperance and lunacy were noted. The poverty-mental illness relationship is also reflected in the fact that as the Irish immigrant population in the US assimilated and gained in prosperity, their rates of hospitalization for mental illness diminished and they were replaced by newer immigrant groups. To a certain extent this phenomenon was also mirrored in the UK.

In subsequent sections, we will look at the relationship between social and economic conditions and mental stress (broadly defined) for the modern era. We can distinguish between two types of study: cross-section and time-series. Cross section studies are based on individual level data and examine, for any given point in time, the degree to which we observe an association between the incidence of mental stress and individual level socio-economic factors, such as age, gender, labour force status, education and income.

Time-series studies on the other hand, look at aggregate historical data for factors such as suicide or hospital admissions and examine the degree to which we observe over time an association between these measures and macroeconomic aggregates such as GDP growth, unemployment, inflation etc.

It is crucial to note that for both types of data, it is often the case that the best we can hope for is to observe a degree of association, rather than a direct causal effect. There may be issues with simultaneity or reverse causation (e.g. not having a job contributes to

mental stress, but being stressed may also reduce your chances of finding work) and/or unobserved factors. Unobserved factors may simultaneously affect both mental stress and various observed socio-economic factors thus producing a correlation but without there actually being a causal effect. However, it is also important not to be too pessimistic in this regard. In some cases causality is much more plausible in one direction than in another, while in other cases panel data (a combination of time-series and cross-section data) may be available.

2. Cross-Section Studies

We start off by reviewing cross-section studies. As mentioned in the introduction and as is typical in much of the economics based literature in this area, we adopt a fairly broad definition of mental stress. We also review studies which examine the cross-section determinants of subjective well-being, as we can regard this as being in some sense the complement of mental stress.

As outlined above, cross-section studies rely upon the availability of nationally representative individual level data sets, which include information on whatever measure of mental stress (or well-being) is in question and also on a variety of individual characteristics such as age, gender, education, income, principal economic status etc. In general such datasets in Ireland were few and far between before the late 1980s, so this to some degree limits our review. One of the earliest of such studies was that of Whelan (1992) who examined the role of income and life-style deprivation as mediating factors in

terms of the impact of unemployment upon psychological stress. Thus unemployment can affect psychological stress both directly and indirectly, via its impact upon poverty and deprivation. Whelan used the 1987 Survey of Poverty, Income Distribution and Usage of State Services carried out by the Economic and Social Research Institute (ESRI). This was a nationally representative sample of 6764 individuals. The measure of psychological distress employed was the 12-item version of the General Health Questionnaire (GHQ) developed by Goldberg (1972). As we will encounter this measure a number of times in this review it is worth providing some background.

The GHQ is one of the most commonly employed measures of mental health. The original development of the measure involved a 60 item version (GHQ-60) with the “best” 30, 20 and 12 of these items being identified for use when the respondent’s time was at a premium (giving rise to the GHQ-30, GHQ-20 and GHQ-12 measures respectively). Items in the GHQ consist of questions asking whether the respondent has recently experienced a particular symptom or item of behaviour rated on a four-point scale. For example a respondent might be asked the question: have you recently been feeling reasonably happy, all things considered? The respondent then answers from one of the following four categories: more so than usual, same as usual, less than usual, or much less than usual. The responses are all aggregated together to provide the GHQ “score” and this score can be used as a predictor of an individual being a psychiatric case as it is highly correlated with standardised clinical interviews.

The Whelan paper concentrates on the impact of unemployment on GHQ score, but crucially also allows for mediating effects via income, financial strain and deprivation (where deprivation is defined via the absence of a number of key goods and lifestyle factors). His paper shows that the inclusion of these measures reduces the point estimate of the effect of unemployment (on GHQ) by about a third, with no independent effect for income. An interesting feature of the paper is that he also examines the effect of husband's unemployment on GHQ of married women. In this case the effect operates solely via deprivation and financial strain with no independent effect of its own. The contribution of Whelan's paper is to show that unemployment affects mental stress via a number of channels, including deprivation, financial strain and self-esteem.

Hannan et al (1997) also looked at the relationship between unemployment and psychological distress in particular concentrating on young people. They used two nationally representative samples, the School Leaver Survey of 1987 (which interviewed people who left school in 1982) and the 1987 ESRI survey referred to above. Once again, their measure of stress was the GHQ-12. Their cross-tabulations showed that greater stress scores were associated with unemployment amongst young people, but also that, for the young, there did not seem to be a clear relationship between their social class and stress (although there did appear to be some link between stress and their *parents'* social class). However, when their sample was partitioned into employed and unemployed a class difference was observed with higher stress levels amongst those whose father was listed as manual as opposed to non-manual class. Overall, the results

here confirm the link between unemployment and stress for young people, but suggest that the relationships are not as strong or clear-cut as for older people.

One factor which is worth noting is that the Whelan and Hannan et al papers were both analyzing data from the 1980s, a time when macroeconomic conditions in Ireland were poor. While we will specifically review evidence concerning the impact of macroeconomic conditions on various indicators of stress in the next section, it is possible that at an individual level the impact of factors such as employment might differ according to the overall macroeconomic background. The remaining individual level papers we review all deal with Irish data from the latter part of the 1990s and the first years of the 21st century, a time when macroeconomic conditions were very different.

Continuing with those papers which use the GHQ as a measure of mental stress we review a trio of papers by Madden (2009, 2010, 2011). These papers employed data from the Living in Ireland Survey (LII), a survey which in many ways could be seen as the successor to the 1987 ESRI survey. One of the attractive features of the LII data is that it follows people over time and so permits an addressing, to some degree at least, of both individual level and time-series issues (although the Madden papers do not specifically exploit the panel nature of the data). Data for this survey was collected on an annual basis from 1994 to 2001 and for two of these papers Madden chose to concentrate on 1994 and 2000. This was partly motivated by the fact that a booster sample was added to the sample in 2000, so these two years were arguably the two years of the survey which suffered least from attrition. Since many accounts of Ireland's period of very high

growth (often referred to as the “Celtic Tiger” period) date the start of this period as 1995, the choice of years in this paper effectively captures a “before” and “during” picture of mental stress in Ireland during an era of economic boom.

The first paper (Madden, 2009) addresses two issues: first of all, what happened to mental stress (as measured by the GHQ) over the 1994-2000 period and secondly, what factors were associated with this change. The first of these questions is answered via stochastic dominance whereby the cumulative distribution functions (CDFs) of GHQ scores for the two years in question are compared. If the CDF for year A always lies *below* that of another year B for every possible threshold value of GHQ, then first order stochastic dominance applies in the sense that no matter what critical GHQ threshold is chosen, the fraction of the population with GHQ at or below that critical level is *less* for year A than year B. Then, assuming higher GHQ indicates less stress, we can state that the incidence of stress is lower in year A, no matter what critical threshold is adopted.

Madden’s results show that 1994 is stochastically dominated by 2000 and so for any comparison between 1994 and 2000, on the basis of an objective function whereby less stress is better than more stress, then 2000 dominates. Mental stress fell over the period, regardless of which GHQ score is regarded as the threshold for stress. The second question is addressed via a decomposition technique. Whether or not any individual falls below a critical GHQ threshold which indicates psychological stress is modeled via a probit relationship with various individual characteristics as explanatory variables. It is then possible to account for part of the change in stress via changes in these

characteristics over the 1994-2000 period, without necessarily assigning causality. The results show that about one quarter of the fall in stress can be accounted for by changes in the individual characteristics, with the greatest contribution coming from changes in labour force status, both the fall in unemployment and the rise in employment (not necessarily the same phenomenon at a time of economic boom when many “secondary” workers entered the labour force and the labour force participation rate rose).

In the second paper, Madden (2010) examined the phenomenon whereby women tend to report higher levels of mental stress than men. Using the same years of data and the same measure of mental stress, once again decomposition techniques were applied, this time to the difference in GHQ by gender. The decomposition was carried out for both years and the qualitative results were remarkably similar. Differences in characteristics can explain about 65 per cent of the difference in GHQ by gender and the principal contribution once again comes from labour force status. Being at work is associated with lower mental stress and a higher proportion of men are at work than women. Note however, as explained above, that it is important to be aware of possible simultaneity, especially during a period of near full employment. Thus being at work is associated with less mental stress, but it may also be the case that adverse selection applies whereby those with mental stress find it hardest to obtain a job.

The final paper in this sequence (Madden, 2011) differed from the first two in two respects: firstly it looked at a variety of measures of well-being apart from just the GHQ, and secondly it looked at the distribution of well-being as well as the level. Once again,

data from the LII survey was used, as were relatively newly developed techniques specifically designed to deal with ordinal data (Allison and Foster, 2004 and Abul-Naga and Yalcin, 2008). This paper looked at well-being in a number of different areas (work, leisure, finance and housing) as well as self-assessed health and the GHQ. The results showed that the level of well-being improved in a number of areas (particularly finance and also, to a lesser extent self-assessed health and mental stress) over the 1994-2001 period. It also showed that inequality in virtually all domains of life satisfaction fell over the period. Unlike the two papers cited above however, this paper primarily was aimed at characterizing the level and distribution of measures of well-being and stress over the period and it did not attempt to find any association with individual level factors.

The measure of stress we have primarily concentrated upon so far has been the GHQ. It is also possible to analyse mental stress indirectly by looking at what we could loosely regard as the complement of stress i.e. well-being. There has been a marked increase in the number of papers in economics which look at measures of subjective well-being (SWB) and their determinants (for reviews see Wolfers and Stevenson, 2008 and Clark et al, 2008). Typically the measure of SWB is based upon answers to a question along the lines of: taking all aspects of your life into consideration, which of these responses best describes your life as a whole? Respondents are then given an ordinal categorical scale, where the lowest score counts as the worst possible outcome and the highest point as the best possible outcome. The responses thus obtained can then be used cardinally or ordinally (treating the data as cardinal does not seem to make much difference to the qualitative results). Examples of this in the Irish context are the papers by Brereton et al

(2008) and Moro et al (2008). The Brereton et al paper continued the theme of looking at the impact of labour force status upon SWB but the innovation of their paper was their use of a greater range of categories of labour force status, including such categories as part-time work etc. They used data from a nationally representative 2001 survey carried out by the Urban Institute of Ireland, with a sample size of about 1500. The results confirm again the negative impact of unemployment on SWB and also show that part-time work can lower SWB, with this effect most prominent for males. Perhaps affected by the macroeconomic conditions in effect at the time of the survey they find that the negative impact of unemployment on SWB did not apply to first-time job seekers.

The Moro et al paper uses the same dataset as that employed by Brereton et al and concentrates on how SWB measures can be used to construct “quality of life” indices which take account of variables such as climatic and environmental factors. The paper contains results showing the impact of such variables on SWB and statistically significant effects are found for housing and weather (as well as the expected effects of labour force status).

We conclude our review of cross-section studies by looking at a paper which once again does not analyse mental stress *per se* but rather a manifestation of that stress: suicide. Corcoran and Arensman (2010) examined suicide and undetermined death rates for different age, gender and employment groups using mortality data supplied by the Irish Central Statistics Office for the 1996-2006 period. Their focus was not on determining suicide *per se*, but instead on trying to calculate different risk ratios in terms of suicide

rates for different demographic groups. Their results once again showed an effect of unemployment, with a higher risk ratio for females than males. Their results also showed that for males the effect was greater at times of *low* unemployment (2001-2006), rather than a period when unemployment was falling (1996-2001). Although not suggested by the authors, this is consistent with a situation whereby the time full employment is reached, the remaining male unemployed consist of those highest at risk of stress and suicide. They conclude their study by warning that the effect of the economic downturn which began around 2007-2008 may have an impact on suicide via increased unemployment. However, as we shall see in the next section, time series studies which take account of the start of the most recent study do not completely bear this out.

We now attempt to summarise the results of the cross-section literature on the socioeconomic determinants of mental stress, bearing in mind that we have used a broad set of possible indicators of mental stress. It is also important to reiterate our earlier warnings that with respect to individual level studies, there are many unobserved variables which may impact upon stress, and also that what correlations *are* observed do not necessarily imply causation. Bearing that in mind, probably the most consistent theme arising from the papers cited above is the importance of labour market status, and particularly of being unemployed, on stress. The effect is noticeable both at times of high and low unemployment, and it is also important to note that unemployment can affect stress via a number of channels, such as poverty and deprivation and also self-esteem. Thus the cross-section studies we have reviewed demonstrate the importance of unemployment *at a given point in time*. But what about trends over time in overall levels

of stress and their relationship to macroeconomic conditions such as unemployment and inflation? To examine this we turn to time-series studies, which are the subject of the next section.

3. Time-Series Studies

There are relatively fewer time-series studies on the links between socioeconomic factors and mental stress. This reflects the fact that in order to have sufficient observations to provide some statistical significance to findings, it is necessary to wait some time, particularly as data in this area is typically annual rather than quarterly or monthly. Related to this is the fact that each additional year only brings one new observation and so papers in this area may be quite sparsely scattered through time as we wait for sufficient new observations to emerge.

Consequently, the first paper we review in this area is that of Lucey et al (2005) dating from 2005. They examined time-series data from 1968 to 2000 and looked at the link between male and female suicide rates and seven macro factors: GDP, the unemployment rate, the female labour force participation rate, expenditure on alcohol, the marriage rate, the percentage of births outside of marriage and the indictable crime rate. The data was differenced to account for common trending and the only variable which showed any statistically significant link was indictable crime (for female suicide). However, given that there are twenty-one coefficients being examined (three dependent variables and seven independent variables) then on purely statistical grounds alone it is not altogether surprising that one significant variable was found. The authors note however that it is

possible that age-specific effects might exist, but their data did not permit them to analyse this.

This lack of a link between suicide and macroeconomic variables is also echoed to some degree in the study by Walsh and Walsh (2011). Their study covers the 1968-2009 period and they only include alcohol and the unemployment rate as explanatory variables. Unlike Lucey et al, they were able to examine age-specific suicide rates. From 1988 onwards they were also able to include age specific unemployment rates. Rather than differencing the data they include a linear time trend to take account of common trending. They find that their model, in common with much work in this area, works better for males than for females and also for young people rather than older people. They also find evidence of a structural shift in the relationship between suicide and unemployment after around 1988, with a much stronger relationship to be found, especially for young males. It is also interesting to note that for this demographic group, they find a much stronger effect for alcohol than for unemployment. For females there appears to be little effect of unemployment but some evidence of an alcohol effect, for younger women at least. The results of Walsh and Walsh, in conjunction with those of Lucey et al, indicate that, where possible, it is vital to analyse age and demographic-specific suicide rates (and by extension other indicators of mental stress). Their results also suggest that an economic recession could have a broadly neutral impact upon suicide with the effect of rising unemployment offset by decreased alcohol consumption.

The final paper we review is by Walsh (2011) and returns to the use of SWB data, this time in a time-series context. The link between SWB and macroeconomic factors in time-series studies has been an area of controversy for a number of years. Perhaps the most famous finding in this area is the so-called “Easterlin paradox” (Easterlin, 1974) which claimed that SWB is not higher in richer than in poorer countries at any given point in time, nor does it rise with increasing income over time. Subsequent studies by Wolfers and Stevenson (2008) have challenged this and to some extent the jury is still out on this question. Nevertheless it is certainly fair to say that conclusive evidence at an aggregate time-series level of a link between GDP and SWB has not been found.

Walsh (2011) revisits this issue for Ireland, using SWB data from the Eurobarometer Survey over the 1975-2010 period, critically including some years observations from the most recent recession. Respondents aged 18 and over are asked the question: ‘On the whole are you very satisfied, fairly satisfied, not very satisfied, or not at all satisfied with the life you lead?’ These responses are scored 3, 2, 1, and 0, respectively. He also analysed other measures of stress/well-being such as the rate of admissions to psychiatric hospitals and the birth rate. Walsh finds that unemployment affects SWB in the first part of this period (1975-1993) but with no effect for the 1994-2010 period. It is interesting to note that this is quite a different pattern from that observed in the Walsh and Walsh (2011) study on suicide, indicating that while we have regarded measures such as suicide and SWB as broad correlates of stress, it is dangerous to automatically assume that such measures will always be in concordance. It is also worth noting that the year 2010 showed a sharp drop in the suicide rate, despite unemployment reaching a 20 year high.

While suicide picked up again in 2011, it was still below the rates observed at the beginning of the century.

Walsh finds no effect for inflation and a marginal effect for Gross National Income for the 1975-1993 period (interestingly before the Celtic Tiger boom years), but no effect in subsequent years. There appears to be no relationship between admissions to psychiatric hospitals and macroeconomic conditions. With respect to the birth rate (which could be interpreted as proxying for people's optimism about the future), the most recent recession has had only a marginal downward effect, in contrast to the much sharper reduction observed during the 1980s recession.

To summarise the results from the time-series studies, we have little evidence concerning direct measures of mental stress such as the GHQ and consequently have looked at studies which have concentrated upon suicide rates and SWB. In this regard, there is still evidence of a link between unemployment and suicide but the relationship is not clear-cut. It appears to be mostly found amongst young males and also appeared to strengthen in the post 1993 period. However, the most recent observations (and it is surely too early to say that this represents another structural shift) seem to indicate a weakening of the relationship. In particular, the suicide rate has not responded to the post-2008 rise in unemployment to the degree which would have been predicted by the Corcoran and Arensburg study. Other macroeconomic factors appear to exert little influence upon suicide or SWB, with the exception of a link between alcohol consumption and suicide.

4. Conclusion

This chapter has reviewed evidence concerning the link between socioeconomic factors and mental stress. A number of possible indicators of mental stress were covered such as the GHQ and also suicide and SWB. A clear distinction between individual based cross-section studies and more aggregate time-series studies was drawn. Probably the clearest message to emerge was the link between unemployment and stress. This was clearly evident in both the cross section and the time series studies, although with respect to the latter studies, the relationship does appear to shift over time. Consistent with the Easterlin paradox, the impact of other macroeconomic factors appear to be marginal, but the link between alcohol consumption and suicide does appear to be quite robust.

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