# Genetic Attribution for Schizophrenia, Depression, and Skin Cancer: Impact on Social Distance

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Genetic explanations for mental and physical illness are increasingly common in both scientific research and in media reports generated from such research, however, the social impact of these explanations are less well understood. In this study it was predicted that both genetic attribution for illness and type of illness would be related to a desire for social distance. Participants were provided with a description of Jamie, who suffered from skin cancer, major depression, or schizophrenia. This illness was described as either having a strongly genetic basis, no genetic basis, or no causal explanation was provided. Participants then indicated their willingness to interact with Jamie using the Social Distance Scale. Type of illness described did significantly influence social distance score, with participants more willing to interact with Jamie when he was described as having skin cancer than schizophrenia or major depression. There was a significant interaction between illness type and genetic attribution for illness, with an increase in willingness to interact when schizophrenia was described as genetically caused and a decrease in willingness to interact when major depression was described as genetically caused. Genetic explanations may be suggested to reduce the stigma associated with mental illnesses, however, these explanations work in complex ways and may not uniformly reduce illness related stigma.

The role of genetics in determining health and wellbeing is increasingly discussed in scientific research (de Jong, 2000) and in media reports of such research (Conrad, 2001). The genetic component of complex traits is often investigated (de Jong, 2000), including the contribution of genetics to criminality (see Lowenstein, 2003; Martens, 2002; Retz, Retz-Junginger, Supprian, Thome & Rosler, 2004), and mental illness (see Thompson, Watson, Steinhauer, Goldstein & Pogue-Geile, 2005). Media representations contribute to lay explanations, and genetic factors are commonly identified as causing mental illness. Around two thirds of an Australian community sample attributed schizophrenia and depression to genetic causes (Jorm, Christensen & Griffiths, 2005). However, the impact of a claim of a genetic basis for complex psychological traits has received relatively little attention (Lemke, 2004), and may be a useful framework for understanding public attitudes towards those with mental illnesses (Zissi, 2006).

### *Genetic Attribution*

Genetic explanations may influence understandings of human behaviour and the stigma associated with these behaviours (Phelan, 2005). Reframing mental illness as a brain disease with a genetic component has been suggested to reduce the stigma associated with mental illness; however, conversely, this may exacerbate experience of stigma (Bag, Yilmaz, Kirpinar, 2006; Corrigan & Watson, 2004). In support of this, Dietrich, Matschinger and Angermeyer (2006) found that biological or genetic causes of schizophrenia were associated with greater fear and reduced willingness to interact with people with schizophrenia. Phelan (2005) also found that genetic causes were associated with greater seriousness, persistence, and transmissibility of deviance. Research has found less blame attributed to those with genetically caused schizophrenia (Phelan, 2002), and less stigma associated with causes beyond the patients control, including genetic transmission (Martin, Pescosolido & Tuch, 2000; van't Veer , Kraan, Drosseart, & Modde, 2006). Phelan (2005) found some participants reported both reduced blame and increased associative stigma for genetically caused mental illnesses. Genetic causes for mental illness may have complex effects, ameliorating the blame associated with mental illness, but increasing stigma.

### *Social Distance*

Stigma is an attribute that discredits an individual, reducing them from a whole person to a discounted person in the eyes of others (Major & O'Brien, 2005). The evaluations of stigmatised others are widely shared, and are used as the basis for excluding or avoiding members of the discredited category (Major & O'Brien, 2005). Social distance is a way to assess attitudes towards those with a stigmatised identity, and is defined as the relative willingness to participate in

relationships of varying intimacy with those who have a devalued social identity (Lauber, Nordt, Falcato & Rossler, 2004). Measures of social distance are widely used to assess attitudes to mental illness (Reinke, Corrigan, Leonhard, Lundin & Kubiak, 2004), by measuring participants' reported willingness to engage in relationships with a person described as having a particular illness (Lauber et al., 2004).

### *Type of Illness*

Mental illnesses have been found to be more stigmatised than physical illnesses (Corrigan et al., 2000) and identifying a collection of symptoms as a mental illness is associated with a greater preference for social distance (Bag et al., 2006). For example, less social distance was desired from those described as having a ruptured disk than either depression or schizophrenia (Phelan, 2005). There are also differences in social distance associated with different mental illnesses. People with schizophrenia are more frequently viewed as dangerous than those with anxiety disorders (Angermeyer & Matschinger, 2003), and those with psychotic disorders are judged more harshly than those with mood disorders such as depression (Corrigan, 2004). Consequently, reported willingness to interact is related to type of illness, with participants typically reporting most willingness to interact with those with a physical illness, followed by mood disorders, and least willingness to interact with those with psychotic disorders.

The present study investigated the impact of genetic attribution on participants' desire for social distance from a target described as having one of three illnesses, and is based on a study by Phelan (2005). The present study attempted to clarify the impact of genetic attribution for illness by removing the 'partly genetic' attribution and investigating three clearly separate attributions: strongly genetic, definitely not genetic, and no mention of causation. In addition, Phelan included physical illness to determine a base line to compare levels of preferred social distance, but did not vary the causal attribution for physical illness. In the present study, all three levels of attribution were varied across all three illnesses to investigate whether genetic attributions influence physical illnesses, and to investigate the interaction of genetic attribution and illness type. It was predicted that attributing illnesses to a genetic cause would result in greater preferred social distance from the vignette target. It was also predicted that type of illness would influence social distance, with greatest social distance from the vignette target described as having schizophrenia, then major depression and least social distance from the vignette target described as having skin cancer.

## Method

### *Participants*

Two hundred and thirty two participants returned questionnaires from three hundred and ten distributed (74.84% response rate). Participants were required to be at least 18 years of age and to be proficient in written English. Fifty eight percent of the sample was female. The median age of this sample was 22 years, and 81.7% of those who responded had post-secondary qualifications. Consequently, this sample was young and highly educated compared to a general population sample, in which one third of adults have post secondary education and the median age is 35 years (Statistics New Zealand, 2006).

### *Design*

This study used an experimental vignette between subjects design. Each participant received one of nine different vignettes where the male target, Jamie, was described as having either skin cancer, schizophrenia, or major depression which was then attributed to either strongly genetic factors, was described as definitely not genetic, or no explanation of causation was given. All possible combinations of the questionnaire were used. The following vignettes of schizophrenia and major depression are a shortened version of those used by Phelan (2005). The first describes schizophrenia with no explanation of genetics.

> Imagine a person named Jamie. Usually Jamie gets along well with his family and coworkers. He enjoys reading and going out with friends. *About a year ago, Jamie started thinking that people were spying on him and trying to hurt him. Jamie became convinced that people could hear what he was thinking. He also heard voices when no one else was around. Sometimes he even thought people on TV were sending messages especially to him. After living this way for about six months, Jamie was admitted to a psychiatric hospital and was told that he had an illness called "schizophrenia".* He was treated in the hospital for two weeks and was then released. Jamie has been out of the hospital for six months now and is doing okay.

The italicised section was replaced with the following description for major depression:

> *About a year ago, Jamie started feeling very down and unhappy. Jamie found it very hard to get out of bed, get dressed, go to work, or do anything. Jamie just didn't get any pleasure out of anything the way he normally would. He often didn't feel like eating and he had trouble sleeping. Jamie also felt completely worthless and even had thoughts about killing himself. After having these problems off and on for about six months, Jamie was admitted to a psychiatric hospital and was told that he had an illness called "major depressive disorder".*

Skin cancer was chosen as the physical illness for this study, rather than a ruptured disk as in the Phelan (2005) study. This was altered as it was felt that back pain may be associated with malingering rather than viewed as a genuine physical illness. In addition, cancer is typically viewed sympathetically by participants (Corrigan et al, 2000). The following description of skin cancer was developed for use in this study:

> *About a year ago, Jamie started noticing unusual spots on his skin. Initially the spots did not trouble Jamie, but after a while he noticed that they had changed colour and the skin had begun to itch. He also noticed that the spots were growing larger. After having these problems for about six months, Jamie was admitted to a hospital and was told that he had an illness called "skin cancer".*

Genetic and non genetic attributions for each illness were the same as those used by Phelan (2005). The genetic attribution stated that:

> *When Jamie was in the hospital, an expert in genetics said that Jamie's illness was due to genetic factors. In other words, Jamie's problem had a very strong genetic or hereditary component.*

The non-genetic attribution read:

> *When Jamie was in the hospital, an expert in genetics said that Jamie's illness was not due to genetic or hereditary factors. In other words, Jamie's problem was definitely not genetic.*

### Measures

**Social Distance Scale**. Following the vignette, participants were asked to indicate their willingness to interact with Jamie in a variety of settings of increasing intimacy from meeting him, to marriage and having a baby, as indicated in Table 1. Participants responded on a five-point scale from definitely unwilling to definitely willing. Scores on each of the ten items were reversed and summed to provided a social distance score from 10-50, with higher scores indicating a preference for greater social distance from the vignette target. Items for this measure were based on the Social Distance Scale of Lauber, et al. (2004) (Cronbach's α: 0.86), and Phelan (2005), (Cronbach's α: 0.94 for intimate social distance and Cronbach's α: 0.69 for casual social distance). In the present study the items were worded to consistently indicate participants' willingness to interact with the vignette target, rather than their "liking" of the interaction. The Social Distance Scale in the present study had a Cronbach's α of 0.94, indicating very good internal consistency.

**Demographics**. Participants also indicated their gender, age, and highest educational qualification.

### Procedure

This experiment was carried out as a class project for third year psychology research methods students at Massey University in Palmerston North. Twenty five students enrolled in the class distributed at least 10 questionnaires each. The student researchers were asked to approach approximately equal numbers of men and women, but no other sampling criteria was required. The researchers were instructed to provide an information sheet to anyone interested in participating and to verbally describe the study in the terms described in the information sheet. Those interested in participating were given a questionnaire and a freepost envelope to return the completed questionnaire directly to the lead investigator. Participants interested in receiving a summary of the study results provided contact details on the final page of the questionnaire, which was separated from the questionnaire prior to data entry. This study complied with ethical principles of the Massey University Human Ethics Committee.

## Results

Mean social distance score increased as the relationship involved greater intimacy with the vignette target, indicating less willingness to interact with Jamie as the intimacy of the relationship increased, across all illness types (see Table 1).

### Genetic Attribution and Social Distance

It was predicted that the attribution of an illness to genetic factors would increase participants' desire for social distance, however ANOVA yielded no significant main effect of genetic attribution on social distance scores, $F(2,223) = .78$, $p = .46$.

### Type of Illness and Social Distance

It was predicted that the type of illness described would influence participants'

Table 1. Mean social distance score for each of the illness types

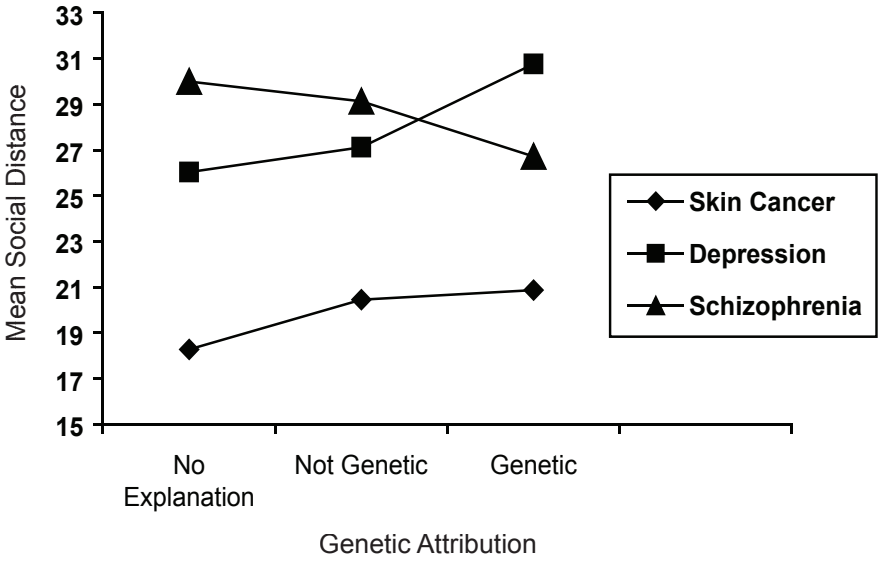
| Would you be willing to … | Skin cancer N=87 | Major Depression N=68 | Schizophrenia N=77 | Overall Mean N= 232 |
|---|---|---|---|---|
| Meet a person like Jamie? | 1.60 (.66) | 1.90 (.74) | 1.96 (.70) | 1.81 (.71) |
| Work with a person like Jamie? | 1.61 (.64) | 2.29 (.98) | 2.30 (.87) | 2.04 (.89) |
| Move next door to a person like Jamie? | 1.55 (.59) | 2.16 (.89) | 2.32 (.91) | 1.99 (.87) |
| Make friends with a person like Jamie? | 1.62 (.58) | 2.19 (.89) | 2.25 (.65) | 2.00 (.76) |
| Rent a room to a person like Jamie? | 1.78 (.84) | 2.79 (.97) | 3.00 (.93) | 2.48 (1.06) |
| Recommend a person like Jamie for a job? | 1.84 (.86) | 2.99 (.95) | 2.75 (.80) | 2.48 (1.00) |
| Trust a person like Jamie to take care of your child? | 2.10 (1.03) | 3.50 (1.00) | 3.78 (.79) | 3.07 (1.21) |
| Go on a date with a man or woman like Jamie? | 2.33 (1.02) | 3.13 (1.05) | 3.10 (.94) | 2.82 (1.07) |
| Marry a man or woman like Jamie? | 2.62 (1.14) | 3.53 (1.09) | 3.39 (.93) | 3.14 (1.13) |
| Have a baby with a man or woman like Jamie? | 2.82 (1.18) | 3.62 (1.04) | 3.60 (.88) | 3.31 (1.11) |
| Total Social Distance Score | 19.87 (6.78) | 28.10 (7.75) | 28.45 (6.08) | 25.13 (7.96) |

desire for social distance. There was a significant difference in social distance score depending on the type of illness, $F(2,223) = 41.97$, $p<.001$. Participants who responded to the skin cancer vignette had significantly lower social distance scores than those who responded to the major depression vignette, $t(153) = 7.04$, $p<.001$, and the schizophrenia vignette, $t(162) = 8.49$, $p<.001$. There was no statistically significant difference in social distance score between the schizophrenia vignette and the major depression vignette, $t(143) = .30$, $p = .76$. This indicates that participants were more willing to interact with Jamie with skin cancer, than either major depression or schizophrenia.

### *Interaction between Genetic Attribution and Type of Illness*

A 3 x 3 ANOVA was conducted to examine the interaction between the three levels of genetic attribution and the three levels of illness type on social distance score, followed by pairwise comparisons to identify significant differences. There was a significant interaction between type of illness and genetic attribution on social distance, $F(4, 223) = 2.59$, $p = .04$. Causal attribution had no impact on social distance score for skin cancer (see Figure 1). There was also no significant difference in social distance score between schizophrenia and depression when they were both described as not genetic (Ms 29.14, 27.13, $t(42) = .90$, $p = .34$). However, participants did differ significantly on social distance score when depression and schizophrenia were paired with either a genetic cause or when no cause is mentioned. Participants had significantly lower social distance scores when the vignette described genetic schizophrenia (M=26.72) than when the vignette described genetic depression (M=30.77) $t(53) = 2.34$, $p = .03$). Inversely, participants had significantly higher social distance scores when they responded to the schizophrenia vignette with no mention of cause (M=30.00) than when they responded to the depression vignette with no mention of cause (M=26.04) $t(44) = 1.96$, $p = .05$). Consequently, participants' response to a genetic attribution for illness varied depending upon the type of illness described, with a preference to interact with Jamie with genetic schizophrenia rather than genetic depression, and a preference to interact with Jamie with unexplained depression over unexplained schizophrenia.

Figure 1. Causal Attribution and Illness on Social Distance




## Discussion

### *Genetic Attribution*

It was predicted that a genetic attribution for illness would increase the stigma associated with the illness and so increase participants' desire for social distance. The present study found no main effect of genetic attribution for illness on participants' willingness to interact with the target of the vignette. Phelan (2005) similarly found that genetic attribution did not influence social distance from the person with the illness. The presentation of genetic attribution as strongly genetic, not genetic, or no mention of causation did not produce main effects of genetic attribution on illness stigma.

### *Type of Illness*

Participants in this study reported a greater willingness to interact with Jamie when he was described as having skin cancer than when he was described as having either major depression or schizophrenia. This indicates that participants assume that there will be negative consequences of interacting with those diagnosed with mental illnesses, and exhibit greater reluctance to interact as the relationships represent greater intimacy. Participants anticipate that there will be costs to interacting with those diagnosed as having schizophrenia or major depression. This does not reflect the reality of these interactions, but the assumptions of the participants based upon the description and diagnosis provided in the vignette. These results are consistent with previous research that found greater stigma associated with mental than physical illness (Corrigan et al., 2000; Phelan, 2005). The difference in stigma between mental and physical illnesses may depend upon the illnesses described, as a stigmatised physical illness such as AIDS (Herek, Widaman, & Capitanio, 2005) may have produced higher levels of social distance. In addition, the physical illness used in the present study for comparison was chosen as it not highly stigmatised (Corrigan et al., 2000). This study provides further evidence, however, that mental illnesses are more stigmatised than physical illnesses across all levels of genetic attribution.

### *Interaction between Genetic Attribution and Type of Illness*

The attribution for illness had a different effect on different illnesses. Changing the attribution for skin cancer had no effect on willingness to interact with this vignette target. This illness produced equally low levels of social distance across all three attribution levels. There was also no difference in willingness to interact between schizophrenia and depression when the illness was described as not genetic. However, participants reported greater willingness to interact with Jamie with unexplained depression over unexplained schizophrenia. The pattern changed for the addition of a genetic cause, where the participants now preferred to interact with the vignette target with genetic schizophrenia rather than the vignette target with genetic depression.

The addition of a potentially stigmatising genetic attribution for schizophrenia does not increase the stigma of the illness, but rather reduces this stigma. This finding was unexpected; however it may be explained by participants' understandings of the cause of mental illnesses. Illness causation reflects one aspect of the stigma associated with illness, and may interact with other aspects to influence participants' willingness to enter into relationships with illness sufferers (Phelan, 2005). For example schizophrenia is widely understood to have a biological or genetic basis. Research has found that the public more frequently attribute schizophrenia to biological or genetic factors than depression (Angermeyer & Matschinger, 1999; Jorm, et al., 2005; Link, Phelan, Bresnahan, Stueve & Pescosolido, 1999; Martin et al., 2000). Consequently, information in the vignette that refers to the genetic causation may not provide additional information about schizophrenia, but merely activate beliefs regarding the sufferers' lack of blame and increase participants' willingness to respond positively to someone who is not to blame for their illness. This empathy for sufferers of schizophrenia may not activated without mentioning this genetic basis.

Conversely, a genetic attribution for depression increases the stigma associated with this illness. Depression is not as widely believed to have a genetic basis, as it more frequently understood as a result of relationship problems, financial worries or personality weakness (Zissi, 2006). As genetic causes are associated with greater seriousness, persistence and transmissibility of deviance (Phelan, 2005), the information in the vignette attributing depression to strongly genetic factors may have increased the perceived seriousness and persistence of this illness and caused participants to prefer greater social distance. Consequently, rather than activating empathy associated with lack of responsibility for mental illness, the genetic basis activates beliefs surrounding the seriousness of genetic illness.

Alternatively, as depression is not generally understood to be a biological illness, attributing depression to a genetic cause may have been viewed as contradicting current beliefs. Participants may have responded to this unexpected attribution by reporting less willingness to enter social relationships with the vignette target. Teachman, Gapinski, Brownell, Rawlins and Jeyaram (2003) similarly found that providing genetic attributions for obesity was not associated with more positive attitudes to obesity. They also suggested that causal attributions may contradict prior strongly held beliefs, and consequently be resistant to experimental manipulation. These strongly held beliefs are also likely to be resistant to change from other sources. These explanations highlight the importance of taking into account existing beliefs and attitudes in investigating the influence of genetic attribution on illness stigma.

Interestingly, the mental illness vignettes were influenced differently as a result of all levels of the genetic attribution, whereas the response to the skin cancer vignettes was immune to changes in genetic attribution. This may be due to the variety of conflicting understandings available to make sense of mental illness in New Zealand, particularly in the media. These include depictions of the dangerousness of those with mental illnesses, their vulnerability, and attention to issues of human rights for those with mental illnesses (Coverdale, Nairn, & Claasen, 2002). These may interact in unexpected ways with genetic attribution to influence the stigma associated with mental illnesses which do not impact on physical illnesses. In addition, it would be useful to investigate the complexity of genetic attributions with regard to conditions, such as obesity, that potentially blur the boundaries between biological and behavioural causes (Teachman et al., 2003).

As Lauber et al. (2004) note, reported willingness to interact should not be mistaken for actual interpersonal behaviour. The Social Distance Scale is not a behavioural measure of social stigma, but a measure of reported behavioural intentions, and may be subject to social desirability bias. However, given that a difference in social distance was found between the physical and mental illnesses included in this study, it is likely that the difference in behaviour is at least this great, particularly as media campaigns have highlighted mental illness stigma as a problem (Like Minds, Like Mine, 2006). This campaign has increased levels of social acceptability for those with mental illnesses (Mental Health Commission, 2004) and could be expected to reduce the difference in preferred social distance between physical and mental illnesses. Consequently, participants can be expected to report more inclusive behaviour as a result of this campaign.

This study involved a convenience sample of predominantly young and highly educated participants. Previous research suggests greater willingness to interact with those with mental illness among young people (Lauber et al., 2004), and that prejudicial attitudes in general are reducing as older less tolerant people are replaced by younger, more highly educated, and more tolerant individuals (Martin et al., 2000). Older, less educated respondents have been found to be more rejecting, fearful, and suspicious in their attitudes towards those with a mental illness (Zissi, 2006). Consequently, using

a comparatively young and highly educated sample is likely to have underrepresented individuals with negative views of those with a mental illness. Therefore, we would expect greater levels of social distance to be endorsed by a more representative community sample.

Stigma can have profound effects on those with mental illnesses. However, it is not possible to predict whether genetic explanations will have advantages or disadvantages for those with mental illnesses (Bag et al., 2006; Condit, 2004). Genetic explanations may lessen the blame associated with these illnesses, but may also increase stigma through less willingness to engage in relationships (Corrigan, Watson, Byrne, & Davis, 2005; Phelan, 2005). The stigma of mental illness and the stigma of possessing a genetic disorder may interact in unexpected ways. It is imperative that researchers attend to the possible social consequences of the increasing popularity of genetic explanations for illness, including the role of research in contributing to the potency of genetic explanations. Research is not a neutral scientific activity; it is also a social act and may have unintended social consequences. The attribution of mental and physical illnesses to genetic causes, or the representation of possible clear genetic causes for illness may contribute to the overall belief that genetics is more predictive of disease than is the case (de Melo-Martin, 2005).

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