

Personality and health – So what?

Gareth E. Hagger-Johnson and Martha C. Pollard Whiteman with five potential applications of research linking personality traits and health outcomes

Evidence that personality traits are related to health behaviours and health outcomes is emerging. This is interesting, but is it important? How can psychologists and healthcare professionals apply this knowledge? Can personality-health research offer anything practical that would improve health of the population?

This article proposes a new typology, the Five T's, which are potential 'next steps' for personality-health research: targeting, tailoring, training, treatment and transformation. It is pertinent to ask what the ultimate aims of establishing a causal link between personality and health might be, and how the Five T's might be evaluated in future research. Getting psychologists 'on board' is an important part of that future.

question

Does personality-health research have applied implications?

resources

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Our traits, those characteristics 'that account for consistent patterns of thinking, feeling and behaving' (Pervin et al., 2004), affect us in important and surprising ways. For example, people who consistently report lack of self-discipline and organisation are at a higher risk of death than those who are more conscientious (Weiss & Costa, 2005). But is this kind of knowledge useful when it comes to medical treatment, health education or health promotion?

Many clinicians would say no. Even trait researchers themselves have tended not to discuss applications of personality-health research: the 'groundwork' of personality-health research is to demonstrate true (rather than spurious) causal links, and this is where trait researchers focus their efforts.

However, we argue that not making any reference to potential applications can weaken the potential for trait research 'pioneers' to 'sell' their work to its 'consumers', to use Hogan's (2005) terms. Consumers of personality-health research include not only colleagues in other health sciences (such as public health, epidemiology, sociology and health promotion) who are able to implement interventions guided by knowledge of personality traits (Krueger et al., 2000), but also health psychologists, clinical psychologists and neuropsychologists who use empirical findings to support their work with an evidence base.

In this article, we introduce a typology showing five applications of personality-health research. The Five T's (targeting,

tailoring, training, treatment, transformation) categorise the different 'species' of personality-health applications and show that personality-health associations have applied utility. Our central claim is that personality researchers do not have to wait until associations with health are fully understood, before thinking about possible applications.

Groundwork

There are several plausible models of how personality and health could be related. Matthews et al. (2003) summarised these using four potential pathways:

- | A direct personality-to-illness link, whereby traits represent biologically based differences that cause different illness outcomes.
- | A correlational rather than a causal link connecting biological processes with both personality traits and illness. For example, shared genetic variance might cause an illness and a personality trait.
- | A causal chain linking personality traits, health behaviours and outcomes.
- | Illness leading to personality change. The popular notion of a major personality overhaul after diagnosis of a serious illness would fit into this model, but so would a biologically based change, such as lowered Extraversion due to reduced energy levels.

In exploring these pathways, causality is assessed using the 'criteria for judgement' (Bhopal, 2002). To be a truly causal link, an association between personality and health would need to be: (1) strong; (2) specific; (3) consistent; (4) sequential through time; (5) biologically plausible; and (6) shown in experimental evidence or randomised controlled trials. Not all of these criteria need to be met in any one study. Published studies form a 'network' of evidence consistent with a causal association, a 'signature' which would slowly disappear from journals if it were not reliable (Abelson, 1995).

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Understanding of such associations is hampered when personality measures are incomparable across studies, but thankfully the pace of research has increased since the Big Five model of personality traits (Neuroticism, Extraversion, Openness to Experience, Agreeableness, Conscientiousness) has allowed researchers to be consistent in their measures of traits.

Neuroticism is the most researched of the five in relation to illness, and has emerged as a predictor of mortality and morbidity. However, the findings are not consistent, perhaps due to the use of different populations. In some studies, Neuroticism is a risk factor for mortality (e.g. Wilson et al., 2005), in others there is no association (e.g. Maier & Smith, 1999), and in some it is a protective factor (e.g. Weiss & Costa, 2005). Many studies report correlations between subjective measures of health and Neuroticism, but Neuroticism is known to increase the likelihood of symptom reporting (Costa & McCrae, 1987). Stronger studies link Neuroticism with many objective illnesses, including asthma (Huovinen et al., 2001) and immune system functioning (O'Cleirigh et al., 2007).

Other traits have also been studied in relation to health and illness. Conscientiousness was shown in a recent meta-analysis to be a strong predictor of many health behaviours, with higher scorers less likely to engage in risky practices such as smoking, alcohol misuse and inactivity (Bogg & Roberts, 2004).

However, consumers have met this groundwork with scepticism. Some see the effect size (the strength of the association)

as 'so low it has as yet no practical meaning for prevention and prediction purposes' in medical settings (Myrtek, 2001, p.245). However, it is worth noting that trait–health effect sizes are comparable to other risk factors in size (Bogg and others argue that trait–health associations have 'too much face validity' (Stansfeld,

2002), meaning that researchers are too quick to accept personality as a predictor of health outcomes, without the supporting evidence base. Finally, some say that trait measures 'were not designed with specific knowledge of brain/behavior relationships in mind, and thus have had little direct applicability' (Nelson et al., 1998, p.550).

In the face of such scepticism, we would like to show the

consumers of trait research why they should think about personality. The Five Ts, discussed below, are all ways in which trait measures could be used to improve health education and promotion.

Targeting

The personality traits mostly strongly related to health behaviours (e.g. Conscientiousness) could be targeted in health promotion campaigns.

We know that 'different types of individuals may attend to, comprehend, accept, and retain different types of messages' (Caspi et al., 1997, p.1061). Traits influence all four of these steps in the processing of health promotion messages. Sensation seeking (corresponding approximately to high

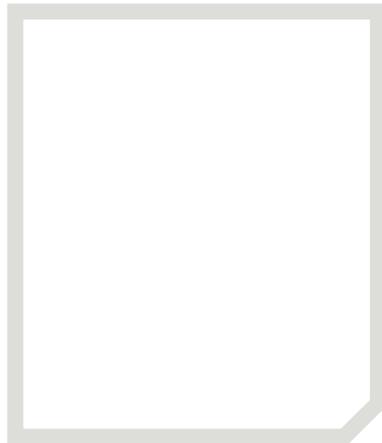
Extraversion with low Conscientiousness in the Big Five) is particularly important, because it is known to influence risky health behaviours and interact with communication media. High sensation seekers (HSS) require novelty, intensity, sound, drama, stimulation, suspense, fast pace, emotionality, complexity, ambiguity, unconventionality and movement. If a televised health promotion campaign lacks these features, HSS will consider it boring and ignore it. Conversely, low sensation seekers (LSS) prefer familiar and less sensational delivery of information.

Does this work in practice? The targeting campaign 'SENTAR' (Palmgreen et al., 2001) suggests that it might. It showed that HSS adolescents reduced their cannabis use after watching targeted, televised advertisements. Furthermore, 72 per cent of calls to the supporting telephone hotline were from HSS not LSS. The principles developed by the researchers might fruitfully be used with other traits: (1) pick a trait to target; (2) conduct focus group research with high and low scorers; (3) design messages appropriate to high and low scorers; (4) place messages in contexts appropriate for high and low scorers.

A weakness of targeting personality traits is that any group watching or reading the message will contain a full range of individual differences on the trait of interest. We might define a 'group' of HSS, but without individual assessments it is difficult to find them. It is often impractical to create more than two or three different versions of a campaign, so studies to date have dichotomised traits into 'high' and 'low'. However, recent developments in computer technology have allowed researchers to take more variables into account, including continuous ones, which could allow messages to be 'tailored' to the individual, rather than targeting groups.

Tailoring

Tailored and targeted interventions are not the same thing, although these terms



Sensation seeking influences risky health behaviours and interacts with communication media

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have been used interchangeably by some health promoters (Kreuter & Skinner, 2000). Tailoring interventions are modified based on the assessment of an individual rather than an entire segment of the population. Tailored messages therefore require individualised assessments of members of the population to develop such communications (Noar et al., 2007). So perhaps a letter from a clinic could be modified for someone who scores low on Conscientiousness (e.g. 'You might want to set yourself a reminder about your appointment next week').

There are many psychological measures which can be used in tailored health promotion. These include personality, mental ability, reading ability and cognitive style. Tailored interventions could take many forms: printed materials (leaflets, booklets, letters), video or audio tapes, websites, kiosks, CD-ROMs or other multimedia programs (Kreuter, 2000).

There is evidence that tailored messages are more successful than non-tailored or targeted messages at changing health behaviours. For example, Skinner et al. (1994) used computer technology to assemble individualised letters tailored according to where women were in the 'stage of readiness' for mammography: pre-contemplators, contemplators, actors or maintainers. And a recent systematic review and meta-analysis showed that printed tailored interventions were more effective than targeted ones (Noar et al., 2007). This was particularly true for studies that tailored the intervention to health behaviour, demographic variables, and used a health behaviour change theory (e.g. stage of change).

Perhaps surprisingly, Noar and colleagues did not find any studies that tailored according to personality traits, highlighting the need for tailoring research in relation to personality. However several studies in the review included constructs that overlap considerably (e.g. self-efficacy, which is a facet of Conscientiousness).

Tailoring is the least researched application of personality-health research

but it is potentially the most fruitful. If health promotion can tailor to personality traits more effectively than targeting personality traits, then this is a strong incentive to study the utility of tailoring to traits for 'prevention and prediction' purposes.

Training

Although personality traits are largely stable, there is some preliminary evidence that basic (Big Five) traits might be modifiable by psychological therapies such as psychotherapy or cognitive behavioural therapy. For example, a six-week programme of psychotherapy, totalling 180 hours of 'training', was designed to treat drug addiction. The aim was to intervene on basic traits, improving vocational skills (Conscientiousness), coping ability (Neuroticism), spiritual development (Openness to Experience), and social skills (Extraversion and Agreeableness). Surprisingly, changes were observed on all the traits, particularly Neuroticism, which was lowered by one half a standard deviation – a large effect size (Piedmont, 2001). Traits, then, may not be stable if there is input from clinicians aimed at changing them (although the investigators did note that these changes might have occurred due to reductions in psychological distress).

Another recent trial used training to modify personality traits. The Penn Resiliency Program (e.g. Gillham et al., 2006) was designed to cultivate optimistic traits in children. Optimism corresponds to Cheerfulness/Positive Emotions in the Big Five. The programme used cognitive behavioural therapy to discourage children from interpreting events as internal, stable and global (e.g. my fault, always my fault, in every situation). This explanatory style is a risk factor for depression and anxiety,

particularly when coupled with catastrophic beliefs about the future and the belief that small problems are insurmountable. Children were encouraged to identify these styles of thinking and were taught techniques such as 'putting it into perspective' and 'one step at a time'.

The programme provided encouraging results. Two years after it ended, children who participated showed fewer depressive symptoms than controls not in the programme. Those in the programme were half as likely to report symptoms in the moderate to severe range, with the prevention effect growing stronger over time. A recent follow-up showed the training reduced depression, anxiety, and adjustment disorders (when combined) among high-symptom participants.

Both of these studies show that it is possible to cultivate traits that may protect against illness. However, the possibility that traits can be changed raises ethical questions about autonomy and authority – who should decide?

Treatment

Many people temporarily 'treat' or modify their states using drugs such as caffeine and alcohol. However, the 'new neurotechnologies' have the potential to make longer-term changes to personality traits. Widely prescribed psychotropic medications such as Ritalin and selective serotonin reuptake inhibitors (SSRIs, e.g. Prozac and Seroxat) change molecular events that underlie cognition, emotions, identity – and perhaps personality. Farah et al. (2004) noted that changing brains actually changes people.

Several studies have demonstrated changes in Neuroticism or Extraversion in response to SSRIs. For example, Prozac has been shown to alter scores on Neuroticism (Du et al., 2002). This is only a preliminary finding, and we should note that a baseline measure of personality is

"Treatment is clearly the most controversial aspect of personality-health research"

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often not available, and that lowered Neuroticism scores could reflect removal of depressive symptomology (the observed score might represent a return to normal). The effect size is about one half a standard deviation.

Interestingly, this effect size is about the same effect as that observed during psychotherapy training (see above). But not all commentators approve of the shortcut, arguing that cognitive enhancements undermine the value and dignity of hard work and learned self-insight. Brock (1998, p.58) argued that 'altering a fundamental character trait or psychological feature by a "quick fix" of "popping a pill" seems to some people too easy and less admirable than changing that same trait or feature through hard-earned insight psychotherapy'.

Many aspects of psychological functioning are potential targets for enhancement: memory, mental ability, mood, appetite, libido, sleep and personality traits (Farah, 2005). The Human Rights Act poses new legal and ethical questions about the rights of children to refuse treatments (Hagger, 2003) – and by extension, enhancements (including those not yet brought to market). Treatment is clearly the most controversial application of personality-health research. As the use of 'cosmetic psychopharmacology' increases, dialogue between trait researchers and bioethicists will be required.

Transformation

Personality change (transformation) is a symptom of many illnesses, such as multiple sclerosis, dementia, Alzheimer's, Parkinson's or stroke. Personality trait transformation is different from the other four T's in that it is something observed, rather than something applied.

Trait change has important implications for patients and their families, and is a key clinical problem. Changes can cause distress, and in some cases it is more distress for caregivers than for patients. Patients may lack insight into their personality change, which may result from what Stone et al. (2004) called 'emotional agnosia'. Yet personality change has received far less attention for neuropsychologists than emotional disorders and cognitive impairment.

A key challenge for this application of personality research is to obtain a premorbid measure of personality traits, since these are not usually measured in medical settings. As a result, we know very little about how illnesses can change basic traits. The instruments that are used in clinical and medical settings tend to be those

designed as measures of psychopathology (e.g. anxiety and depression) or as measures of neurological disorders or brain injury (Nelson et al., 1998). For example, the Neuropsychology Behaviour and Affect Profile (Nelson et al., 1989) provides a premorbid and current description of personality. It has been used successfully with stroke, dementia and closed head injury patients. The scales include Indifference (to one's injury), Inappropriateness, Depression, Mania, Pragmatics (social/pragmatic communication style). It would be fascinating to see trait researchers collaborate with specialists observing personality change after illness, designing personality measures that are both descriptive of basic traits and are informed by illness aetiology. Measures that assess adjustment or coping after illness will also be of high value. Neuro-specialists may be reluctant to measure the Big Five, since it was not designed with brain structures in mind, but this is certainly an area ripe for exploration.

Get on board the train

Personality-health researchers often have trouble persuading their colleagues in psychology (in health-, clinical- and neuro-psychology) to 'get on board the train', let alone those working in other disciplines. We argue that this is at least partly because the applied utility of personality for health improvement initiatives has not been made clear. The emphasis on showing that personality is related to health, the groundwork of personality-health research, has distracted from a discussion about the possible applied end-points or



I Gareth Hagger-Johnson is Lecturer in Public Health at the Institute of Health Sciences, University of Leeds
G.Hagger-Johnson@leeds.ac.uk



I Martha C. Pollard Whiteman is Senior Lecturer in Psychology at the University of Edinburgh
M.Whiteman@ed.ac.uk

Applying the 'Five T's'

Targeting: Target the traits most strongly associated with risky health behaviours (Sensation Seeking, Conscientiousness). For example, design 'SENTAR' health communications that appeal to sensation seekers' preferences for novelty and excitement (Palmgreen et al., 2001).

Tailoring: Use personality scores to design personalised printed materials for individual clients (see Kreuter, 2000).

Training: Focus cognitive behavioural therapy programmes on the cognitive precursors to risk-taking that are most likely, based on personality traits (e.g. increasing self-efficacy, a facet of Conscientiousness) (Gillham et al., 2006).

Treatment: Make patients aware that psychotropic medication may change fundamental aspects of self-identify, such as personality traits. Raise awareness among colleagues that not enough research has been conducted into personality change as an adverse effect (Farah et al., 2004).

Transformation: Measure personality before, at the onset, and throughout the progression of a disease. Where it is not possible to obtain trait measures before illness, obtain ratings from friends and family (Nelson et al., 1998).

'destinations' of this work.

Like the Circle Line on the London Underground, basic empirical work is always ongoing and does not necessarily have a final destination. There are at least five possible destinations (targeting, tailoring, training, treatment, transformation). By pointing out possible end points for this research, it more likely that 'increased collaboration between personality psychologists and researchers in fields such as public health, epidemiology, and sociology' (Krueger et al., 2000, p.968) will actually happen.

This dialogue will not only encourage others to 'get on board the train', but will improve the groundwork. Personality researchers need to engage with passengers from other disciplines, to move beyond the groundwork that traits influence health, to what can or should be done about it.