On the Measurement of Virtue using National-scale Panel Data

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## Introduction

Religious traditions span the total bandwidth of human diversity. Despite their differences, nearly all religious traditions agree that life’s most significant goods come from virtuous living. Moreover, religious traditions hold that the practice of religion is itself a virtue. For example, in classical Christian thought, religion is the virtue of gratitude to God (Aquinas 1702). Might the causes and consequences of virtuous living form the object of scientific inquiry? And if so, for whom might such a science prove interesting?

Here, I consider three credible objections to the proposal that the causes and consequences of virtuous living can form the objects of scientific study. I argue for a pragmatic position that (1) accepts the credible objections against a scientific study of virtue ; (2) remains open to the possibility that the scientific study of virtue may prove interesting and even edifying. I then consider an example of a longitudinal psychological study of religion in the aftermath of a natural disaster, which I use to consider reflect on how the scientific study of virtue might prove exciting or even informative to scientific and theological audiences. I restrict my interest to longitudinal psychology because it is the science I know.

## Credible objections to virtue science

If the cultivation of virtue, including the virtue of religion, indeed makes life good, and if the good in life is apparent, then the causes and consequences of virtue should be observable and amenable to scientific study. However, there are at least three credible objections against the psychological science of virtue.

The first credible objection is conceptual. Psychological scientists study how people think and behave. Yet, philosophers and theologians conceive of virtue as a skill. Aristotle held that deficiency in the virtue of courage is cowardice and the excess in the virtue of courage is rashness . Aristotle also argued that deficiency in the virtue of temperance is an indulgence, and its excess is insensibility (Aristotle and others 1984). If virtue were a skill, to perceive virtue might require, at least in some cases, possession of virtue. Consider an analogy to music. Assessing a jazz musician’s quality requires competence in the genre of jazz. Although we may study jazz from a behavioural or cognitive perspective, such a study would not carry us to an appreciation of excellence in the genre. Similarly, it has yet to be determined how the scientific study of human thought and behaviour would carry us to an appreciation of moral excellence. A rash scientist might judge impulsive behaviour as courageous. If religion were indeed a virtue that is prone to excesses and deficiencies, then the qualities that distinguish the virtue of religion from, say, the vices of idolatry or indifference might not be available to scientific inquiry.

A second credible challenge to the psychological science of virtue is practical. Suppose that virtue is not hidden to science. Nevertheless, it is conceivable that scientists might not be able to describe virtue in a language of scientific measurement. William James writes, “Philosophy lives in words, but truth and fact well up into our lives in ways that exceed verbal formulation. There is in the living act of perception always something that glimmers and twinkles and will not be caught, and for which reflection comes too late” (James 1902, 456–57). A similar observation applies to the scientific study of virtue. If virtue pertains to experiences that are poorly represented in human language, science will inevitably misconceive the experiential qualities of virtue.

A third credible challenge to the psychological science of virtue relates to the scope of psychological science. The gold standard for research design in psychological science is an idealised “random experiment.” Assignment to a treatment condition or a control condition is by chance. An average response is taken within groups. If the average response differs by condition, we say the treatment has a causal effect. As mentioned, the inference from a randomised experiment pertains to the average response. Unless the population is homogenous in its response, there will be those individuals who respond higher and those who respond lower than average (Bulbulia 2022; Hernan and Robins 2023). Although the average response is the Holy Grail of psychological science, teachers and students of virtue typically want to know what works for specific individuals. The psychological science of virtue, it would seem, holds limited practical interest.

Notice that I did not consider the objection that science assumes that virtue is unreal. I will return to this consideration below. Credible objections about the limits of virtue science should be accepted, however, virtue science may remain interesting and informative I describe the initial objections to a psychological science of virtue as “credible” because they are persuasive, and we should believe them. A psychological science of virtue must begin with a sober appreciation of what the science cannot deliver.

First, a psychological science of virtue cannot substitute for cultivating virtue. Just as a medical doctor need not be physically fit to heal, psychological scientists need not be virtuous to study virtue. Longitudinal psychology measures people over time. It systematically investigates how beliefs and habits affect people. However, a researcher can no more lay claim to asserting virtue than a tap recorder can lay claim to musical virtuosity. However, it might be possible for musical experts to spot virtuosity in a recording, thereby extending their understanding.

Second, we must appreciate that the psychological science of virtue is limited in the scope of knowledge that it can afford. However, knowledge may grow without reaching its limit. We would set too high an expectation of science if we were to require that it captures more than a small fraction of what makes virtue worthwhile.

Third, we must recognise that longitudinal psychological science investigates average population effects. There is no psychological science of individual-level causes and effects (Bulbulia 2022). Teachers and students of virtues should be weary of thoughtlessly applying the results of any scientific study of virtue to some practical task. However, the average response might nevertheless prove interesting and afford some guidance. For example, on average, medically approved vaccines help more people than they harm. Some unlucky people will suffer worse harm from taking the vaccine than if they abstained. Nevertheless, most of us hedge our bets because a far greater proportion experience harm from abstaining. We roll the dice in taking the vaccine, but the dice are loaded in our favour.

I believe that the psychological science of virtue might be interesting and indeed edifying, both scientifically and theologically. To make this argument, it is useful to describe concretely how a psychological science of virtue might work.

## Findings from The New Zealand Attitudes and Values Christchurch

Earthquake Study On February 22, 2011, a M 6.2 earthquake struck Christchurch New Zealand, at a shallow depth of only four kilometres. The energy released from the earthquake, combined with the unstable soil conditions in the region, resulted in extreme shaking, widespread damage, and the loss of nearly 200 lives.

The earthquake and aftershock sequence occurred between the first and second waves of the New Zealand Attitudes and Values Study (NZAVS). The NZAVS is a national-scale panel study that Professor Chris G. Sibley started at the end of 2009 (NZAVS). A panel study differs from a census, which samples the population over time without tracking individuals. The NZAVS follows the same people annually, measuring health, personality, relationships, employment, behaviours, values, beliefs, and community-making. Because the study obtains information at the level of individuals over time as they age, NZAVS longitudinal data afford researchers insight into how social, cultural, and psychological attributes, together with life events, dynamically affect each other over time.

The Christchurch earthquake illustrates the power of longitudinal data to clarify questions about religion’s functions. Specifically, because the participant pool consisted of a national probability sample, it was possible to compare changes in Christchurch with changes in the rest of New Zealand, thus isolating earthquake-specific effects from general trends affecting the entire country. To place this study in its broader historical context, New Zealand has experienced a steady rate of proportional decline in religious affiliates since 1966 of about one per cent of the general population per year (Hoverd et al. 2015).

Philosophers conjecture that people turn to religion in crisis for consolation (Freud 2012). The crisis-consolation theory of religion would predict that the Christchurch earthquakes, which destroyed over thirty per cent of New Zealand’s second-largest city and dozens of churches, would cause religious conversions in this region but not others. By contrast, the earthquakes initially destroyed over thirty regional churches, including the Catholic Basilica and the city’s iconic Anglican Cathedral. Did faith fall with these cathedrals? Because the NZAVS had measured people across the country, longitudinal data enabled NZAVS researchers to test the theory of a crisis-consolation model for religion’s functions (Sibley and Bulbulia 2012).

NZAVS researchers observed the following:

1. There was an annual decline in religious affiliation outside the Christchurch region of .09%. This decline replicated census estimates of a 1% yearly decline in religion.
2. During this same period, there was a net increase of 3.4% in religious affiliates in the Christchurch region. Thus, there was a considerable religious conversion in Christchurch. This finding accords with the prediction of a crisis-consolation model for religion’s functions, which predicts that greater demand for faith will lead to a higher conversion rate.
3. In Christchurch and elsewhere, those who maintained their religious affiliation before did not experience a decline in subjective well-being.
4. People who were already secular in 2009 were similarly buffered in their subjective well-being when assessed in 2011. This finding implies that there were material resources for psychological consolation that was at least strong, on average, as were religious resources for psychological buffering.
5. In Christchurch, but not outside of Christchurch, those who lost religious faith experienced a decline in subjective well-being. However, outside of Christchurch, there were no declines in the subjective health of those who disaffiliated.

Overall, the NZAVS findings implied that the loss of faith combined with experiences of the earthquakes causing poorer subjective well-being. Unfortunately the data do not clarify whether excessive hardship caused a loss of faith or whether the loss of faith without secular support exposed religious disaffiliates to poorer subjective health.

## Interest of the Christchurch Earthquake study for human scientists

New information may affect prior beliefs. Remarkably, a mathematical theorem, “Bayes Theorem”, enables us to quantify the degree to which further information should rationally revise prior convictions. Elsewhere I have described the relevance of Bayes Theorem to the philosophy of religion (, J. 2013). Here, it is sufficient to note that there Bayes Theorem shows that one ought to change one’s beliefs in proportion to one’s surprise at new evidence.

When reasoning about any implication of the Christchurch Earth – whether this implication is scientific, theological, or practical – it is helpful to consider Bayes theorem. In plain terms, the theorem states that our revised belief in the hypothesis after observing the new evidence is a function of the prior likelihood of observing the evidence conditional on the hypothesis multiplied by the prior probability one holds the hypothesis to be true

First, consider the consolation-conversion hypothesis, which predicts that natural disasters will draw people to faith. We observe greater religious conversion in Christchurch, as we would expect where the crisis conversion hypothesis true . Notably, other scientific theories predict religious conversion during times of crisis but do not claim that religion functions to provide consolation. For example, moral-functional theories argue that religion functions to increase cooperation, and that following crisis, religion is more attractive because the demands of cooperation are higher (Botero et al. 2014). Both the conversion-consolation theory and the moral-functional theory predict conversion following a natural disaster. We might not expect beliefs in other theory to change much. However, the crisis-conversion hypothesis also predicts greater buffering from religious affiliation, which was not observed. Moreover, a moral-functional theorist of religion might interpret the distress observed among those who lost religion to be an inducement for returning to the religious faith.

The key message is this. Bayes theorem describes how much people should shift in their beliefs conditional on their prior beliefs. If our prior beliefs accord reasonably well with the observed evidence there is unlikely to be much revision demanded of us. However where our expectations differ from observations we should revise our beliefs in proportion to our surprise.

This much is clear: the observed increase in conversion in the earthquake affected regions is inconsistent with the predicted downward trend that is observed elsewhere. Why was religion more psychologically attractive to those who experienced the earthquakes? The science here remains inconclusive. Part of the interest of this science is that it motivates future inquiry into the psychological mechanisms that underpin conversion.

## Interest of the Christchurch Earthquake study for theologians

Earlier, I mentioned that one may object to a science of virtue as irrelevant to understanding virtue because science assumes that virtue is unreal. I furthermore claimed that this is not a credible objection. We are now in a better position to know why. First, as I mentioned at the outset, most religious traditions consider religion to be a virtue. If we accept this position, then the study of religious change may help to clarify the causes and consequences of the virtue of religion. If we were not to accept the proposition that religion is a virtue, then the study of religious change might appear out of place in a discussion about the causes and consequences of virtue. If we were not to believe in virtue, then religious change would simply be the study of change in certain beliefs, habits, and affiliations. The science of virtue itself does not tell us which position to accept. Our interpretations of the evidence are inevitably inflected here by our prior commitments. How scientific understanding affects our understanding of virtue is in part, a function of our prior commitments. This a not a bug in reasoning it is a feature of human rationality.

Consider once more Aquinas’s conceptions of religion as virtue of gratitude. We were to accept Aquinas’s propostion that religion is a virtue we would not expect that any expression of religion would necessarily lead to greater subjective well-being. For Aquinas, the virtue of religion is meant to orient us to God; we are called to express the virtue of religion because doing so is good. Put differently, for Aquinas, the benefits of religion are not extrinsic goods such as greater self-reports of well-being. Instead our pursuit of religion is motivated as an intrinsic good. However, someone who accepted Acquinas conception of the virtue of religion might nevertheless learn from the Christchurch earthquake study. Just as scientists may update their prior beliefs about a theory in light of new scientific discoveries, so to may philosophers and theologians update their prior philosophies in light of new scientific discoveries.

How might one who proposes that religion is a virtue think about religious the religious conversion that followed this natural disaster? Did the destruction of churches give rise to new forms of religious gratitude to God. Did the expression of religion improve people’s character in other domains, such as charity, courage, or justice? Although theological reasoning relies on prior assumptions, it may also be subject to growth in light of new facts. It is essential to consider that although what we learn from science depends on prior expectations and assumptions, novel facts may enrich and extend theological understanding.

## Conclusions

The science of virtue, including the virtue of religion, is limited. However, I hope I have convinced you productive conversations about religion and spirituality can benefit from evidence-based science. Lacking such a science, questions about which spiritual habits make life good, and why, are limited by the scope of our individual experiences. By summing over the experiences of many individuals we may broaden our scope of understanding. Longitudinal psychology is particularly helpful because change in people happens we age, through a combination of personal experiences and life circumstances. Yet where religion and spirituality fits into this mix is difficult to ascertain. People vary in their beliefs and habits, as well as in their character, resolve, hope, and resilience. Such differences are not independent of each other, nor of our life experiences and circumstances. How we are now affects what we will eventually become. Like the curvature of the earth or the orbits of planets, the principles at underpin human flourishing await a systematic science. Such a systematic science of religion and spirituality has proved elusive because the relevant datasets have only recently been constructed. For a systematic science of human flourishing, many lives must be measured over many years, and researchers must ask the right questions. A longitudinal science of spirituality and human flourishing takes a bold yet patient approach, seeking to collect such spirituality and flourishing data by repeatedly measuring the same individuals over many years.

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