

Dedication

To Micky Mulugeta, Anteneh Moges, Memeheru Melkamu and Meaza Beyene

that North Americans alone spend 30 billion dollars per year on alternative medicine (Fox, 2016), and the global market for alternative medicine is expected to reach USD 404 billion by 2028, according to a new report by Grand View Research (GVR, 2021). These reports testify to the large degree of credibility afforded to these remedies and therapies in global society.

2. Problem statement

It is important to understand how people can afford to become loyal users of remedies that are unproven, disproven, impossible to prove, or excessively harmful in relation to their effects. According to lay theories of medicine, people hold lay beliefs about illnesses and health remedies (Wang et al., 2010). For example, consumers attempt to identify the nature of an illness during diagnosis by relating their symptoms to the origins of the illness and by selecting the health remedy most appropriate to the illness identified during diagnosis. In addition, consumers rely on lay beliefs when assessing treatment effectiveness. For example, consumers perceive that fast-acting remedies, i.e., remedies whose effects quickly manifest upon administration, are more effective than slow-acting treatments. But in reality, some drugs are deliberately designed to be either slow acting or fast acting (e.g., slow-acting insulin versus long-acting insulin). Consumers also perceive that remedies that focus on treating an underlying illness are more effective than those that focus on alleviating symptoms. However, such a treatment focus does not technically demonstrate effectiveness so much as what the drug is designed to target. Such reliance on lay theories of medicine has the capacity to drive erroneous consumer decisions about health remedies, which, in turn, could have negative downstream consequences.

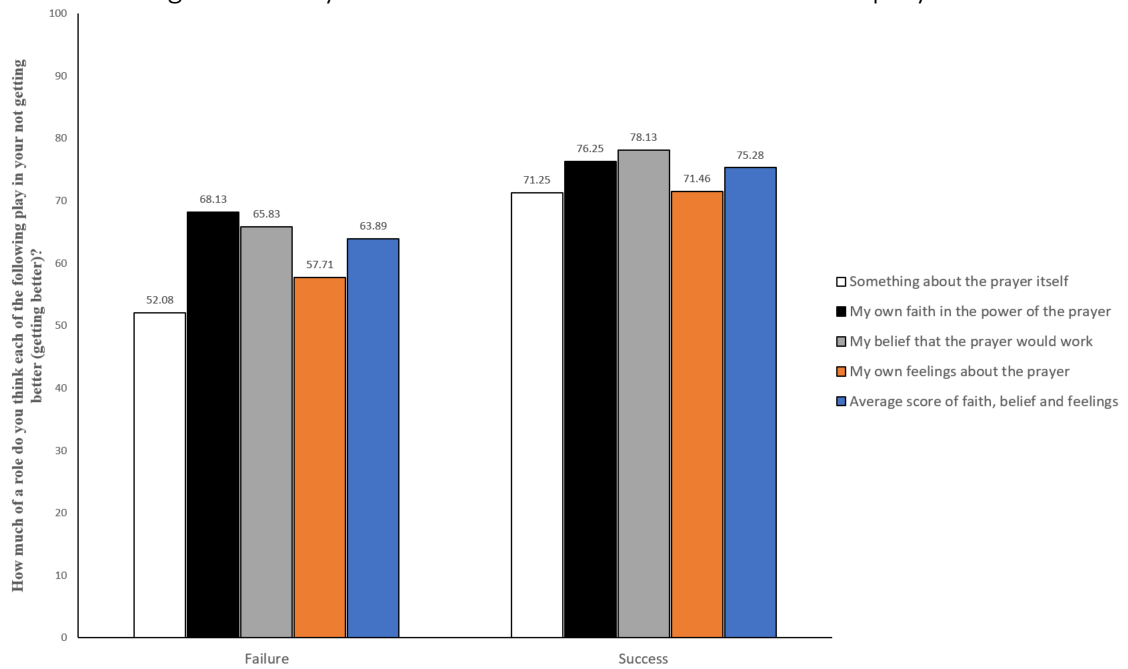
Another supposedly lay theory of medicine comes from patients' assessment of their treatment outcomes. In Simonton et al. (1992) report about cancer patients' dialogue with their practitioners and families, it was shown that patients spend much of their time assessing their treatment outcomes and assigning causes to their condition. In the event of their non-recovery from illness, some patients were found to attribute responsibility for the failure of the treatment to themselves rather than to the product or the practitioner. This trend is compelling because it contradicts theoretical perspectives on how consumers assign cause to events, namely that

that you are not devout at all," and who responded 3 or above on the seven-point Likert scale for *"How much do you believe in Prayer? 1 - Not at all; 7 - far too much"* were included in this study.

Respondents who fulfilled the inclusion criteria were randomly assigned to one of the two (failure vs. success) experimental conditions in a between-participants experiment. First, participants in all conditions were asked to imagine having a physical ailment or illness of some kind and, to get better, either having the minister at their church or someone else pray for them or praying for themselves. Participants in the failure condition were told to imagine that the illness or ailment did not get better or was not overcome. Participants in the success condition were told to imagine that the illness or ailment got better or was overcome. As a measure of attribution, participants were asked to rate four choices concerning how much of a role they thought each of four possible causes played in their getting better (for the success scenario) or not getting better (for the failure scenario). The choices *"Something about the prayer itself," "My own faith in the power of the prayer," "My belief that the prayer would work,"* and *"My own feelings about the prayer"* appeared in a randomized order. The scale ranged from 0 to 100. In the success scenario (vs. failure scenario), 100 meant that they thought the choice selected was responsible for their improvement (vs. for the failure to see an improvement), while 0 meant that the choice played no role in their improvement (vs. played no role in the failure to see an improvement). The four attributions did not add up to 100%; therefore, the attribution ratings referred to the independent importance of each choice rather than to the relative importance of the choices. To control for the type of illness, respondents were asked to write a brief description of the ailment or illness they imagined.

Result. Controlling for the type of illness respondents imagined, I performed a one-way analysis of covariance. Simple main effect analysis showed that respondents cited themselves ($M_{\text{faith}} = 68.13$, $M_{\text{belief}} = 65.83$, $M_{\text{average}} = 63.8$,) more than prayer ($M_{\text{prayer}} = 52.08$) when it came to failure ($p = 0.008$; $p = 0.023$; $p = 0.05$) but not when it came to success ($p = 0.32$; $p = 0.17$; $p = 0.42$; see Figure 5). Moreover, respondents assigned more weight to prayer being more responsible for success ($M = 71.25$, $SD = 3.59$) than for failure ($M = 52.08$, $SD = 4.24$; $p = 0.001$).

Figure 5. Study 2: Attribution of blame to the self versus prayer.



Note. Respondents attributed more responsibility to their own faith and feelings than to the prayer itself for the failure to see an improvement. However, both the self and the prayer were believed to be equally responsible for improvement.

Discussion

Prayer is considered to be an important medical therapy. According to a 2007 study that outlined patterns of complementary and alternative medicine (CAM) with data utilized from the 2002 National Health Interview Survey (NHIS), prayer was the most common CAM therapy, used by more than 60% of survey respondents (Brown et al., 2007). In that same survey, it was indicated that 45% of Americans incorporated prayer practices in addressing health concerns. As of 2016, 68% of Americans believed that a person could be physically healed by God and reported that they had prayed for someone else to be healed by God, a belief mainly held among Protestants and Catholics. From a sample of 31,000 people in the US, it was also shown that almost half of the respondents used prayer for their health (43%), some sought the prayer of others (24%), and a smaller number participated in prayer groups that focused specifically on personal health issues (10%) (Barnes et al., 2004).

In a widely cited article on unconventional therapies, Eisenberg and colleagues noted that 25% of all respondents reported using prayer as a medical therapy (Eisenberg et al., 1993). King

and Bushwick reported that 48% of hospital inpatients wanted their physicians to pray with them (King & Bushwick, 1994). Of 296 physicians surveyed during the October 1996 meeting of the American Academy of Family Physicians—which is the national association of family doctors in the US, with 133,500 members (AAFP, 2021)—99% were convinced that religious beliefs could heal, and 75% believed that the prayers of others could promote a patient’s recovery (Sloan et al., 1999). Some scholars also want to advance the use of prayer, arguing for spiritual and religious interventions in medical practice and hoping that the “wall of separation” between medicine and religion will be torn down, with some asserting that “the medicine of the future is going to be prayer and Prozac”(Sloan et al., 2000, p. 1).

While prayer as a medical therapy is widely prevalent, it is also evident that the extent to which prayer is perceived as a serious medical therapy varies based on ones religiosity and the kind of illnesses for which it is used. For example, in one study, some individuals who reported greater religious activity perceived prayer to be more effective than conventional medicine (Ly et al., 2020). Participants were asked how effective they believed prayer to be in addressing 18 medical conditions that were categorized as acute, such as broken bones, fever, infection, the common cold, inflammation, and allergic reaction; and chronic, such as arthritis, diabetes, heart disease, high blood pressure, hepatitis, allergies, and nerve problems. The results showed that the participants were most certain about the efficacy of prayer for chronic conditions compared to acute conditions. However, it is reasonable to expect that many (even very devout) Christians who practice prayer as part of their religious commitment still do not expect prayer to work as a healing device.

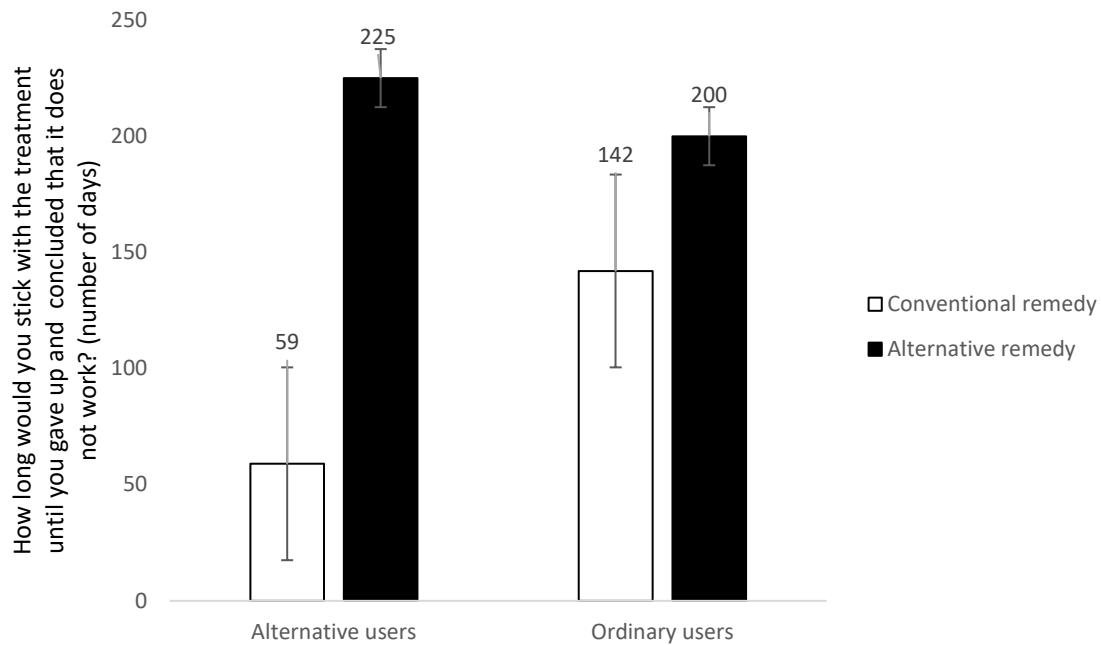
It was under the framework of prayer as a medical therapy that Study 2 was conducted. That the pattern of self-attribution was more pronounced in Study 2 than in Study 1 has important implications. It suggests that self-attribution behavior is not equally strong in every type of unconventional remedy. More specifically, it indicates that the strength of self-attribution may vary depending on the degree to which each remedy emphasizes mind–body integration and the extent to which the users of each remedy embrace this ideology. One of the primary consequences of blaming oneself (instead of the treatment) is the tendency to persevere with the treatment (i.e., Hypothesis 2). Thus, in Study 3, I assessed the evidence for Hypothesis 2.

Study 3: Remedy failure and perseverance

Procedure. Two groups of survey respondents were recruited from the online participant recruitment platform Mechanical Turk in exchange for modest compensation (\$7.25/hour). The first group of respondents included those who were occasional or frequent users of holistic or unconventional treatments. I recruited respondents who replied “*I am an occasional user*” or “*I am a frequent user*” to the first question, “*Which one choice describes you the most concerning use of a holistic or other unconventional treatment (for example, an herbal remedy not recognized by the American Medical Association, a homeopathic remedy, etc.)?*” I excluded those who answered “*I am not a user at all*” or “*I use some*” from this group. Ultimately, 68 participants (29% women; $M_{\text{age}} = 35$) were recruited to this group. In the second group, 134 regular MTurkers (54% women; $M_{\text{age}} = 38$) were recruited without any inclusion criteria. This is because most were assumed to be conventional medicine users. Respondents in each group were randomly assigned to one of the two experimental conditions (alternative remedy vs. conventional remedy) in a between-participants experiment. In the alternative (vs. conventional) condition, respondents were asked to imagine that they had a problem with diabetes and that they had been told by someone they respected to try an alternative (vs. conventional) remedy. They were further told that the illness was not initially overcome. As a measure of perseverance, participants were asked an open question about how long they would stick with the treatment until they gave up and concluded that the treatment did not work.

Result. I coded the open replies to perseverance into a number of days. Then, I ran a one-way ANOVA. Alternative users tended to persevere for more (vs. less) days on alternative (vs. conventional) remedies until they gave up and concluded that it did not work even after knowing that the illness was not initially overcome: $F(1,67) = 5.18$; $p = 0.029$. However, regular (supposedly conventional) users persevered for the same duration of time with the alternative and conventional remedies: $F(1,133) = 2.09$; $p = 0.15$.

Figure 6. Study 3: The tendency to persevere with a conventional or unconventional remedy by alternative or regular users.



Note. Alternative users tended to persevere for a greater (vs. fewer) number of days on alternative (vs. conventional) remedies after learning about their failure, whereas regular users persevered equally long regardless of the type of the remedy.

7. Exploration of situational predictors

Contrary to elementary consumer behavior, I have shown that individuals tend to causally attribute blame more to themselves and less to the product or treatment after its failure. It was also indicated that this phenomenon occurred mainly for those health remedies for which mind–body integration was more salient. These findings shed more light on case reports that described events associated with self-blaming patients (Simonton et al., 1992). Based on the framework of causal attribution theory, which predicts that the causal assignment of factors to an event determines an individual’s decision-making, I suspected that perseverance with an unsuccessful therapy was likely attributable to a differential manner of causal attribution. Although I tested the link between causal attribution and product perseverance, I have demonstrated, as discussed in the previous section, the tendency for alternative users to persist with alternative products for longer than conventional products, which is a pattern not reported for conventional users.

As behavior is always a function of both the situation and the person (Lewin, 1931), my main task, as conveyed in this and the next section, was to explore factors that predispose individuals to causal attribution bias or to identify situations that do the same and thus lead to product perseverance. Particularly in this section, three main objectives are discussed. First, with Study 4, I explored a situational factor that is salient in alternative medicine, namely the low evaluability of product claims. I hypothesized that the existence of such a situational factor or the formation of products as such creates causal attribution bias. Second, I tested the link between causal attribution and product perseverance. With Study 5, I explored whether situational factors like the low evaluability of product claims are generally more dominant in alternative remedies than in conventional remedies. This determination was used to enrich the discussion of why susceptibility to persistence with a failed product is more prevalent with alternative remedies than with conventional remedies.

Study 4: Difficulty of evaluability and perseverance

Credence (difficulty of evaluability). One feature of alternative or holistic remedies is that they have many attributes of credence products. Credence attributes are difficult for the average consumer to verify due to ambiguous and/or complex causal-effect mechanisms (Darby & Karni, 1973). The magnitude of a product's credence character is based on its claims. For example, products that make claims like “boosts *attention* and *focus*” are high in credence (Mitra et al., 1999). This means that measuring the extent of improvement in attention or focus is difficult during or after product use. Girard and Dion (2010) described herbal supplements and anti-wrinkle and hair-growth creams as examples of products with high credence attributes. In these cases, the consumer is unlikely to know with absolute certainty whether the product delivers what it is meant to and is unlikely to have the technical expertise to assess its efficacy. Such a verification gap makes product evaluations ambiguous among users, and it becomes challenging to identify product success or failure or the reason for a lack of improvement.

In the literature, evaluability has been defined as the degree of difficulty associated with evaluating a product based solely on the level of the attribute alone, independent of any contextual information (Yeung & Soman, 2005). I adopted the exact definition of evaluability of product claims

concerning the attribute on which the evaluation is solely based. The nature of credence products and their claims makes product evaluability difficult (Gottschalk, 2018). And this difficulty of evaluability would seem to play a significant role in sustaining motivated cognition. It is easy for people to think they are above average drivers because being a “good driver” can mean many things—being careful, having a good feel for handling the car, having quick reflexes, etc. But it is not so easy for people to think that they are above average when it comes to being “punctual” because that term means only one thing: showing up on time. So, the less clear-cut “improvement” is, or the more ways one might consider oneself “improved,” the easier it will be for people to continue to believe in a failed remedy.

Hypothesis 3: *There is a higher (vs. lower) tendency to persevere with a low-evaluability (vs. high-evaluability) product after failure to see an improvement from an illness.*

Contingencies of attribution. What typically distinguishes credence products is that product evaluations are ambiguous, as the verification of product qualities or claims is challenging (Srinivasan & Till, 2002). Therefore, the consumer will not be confident enough to determine product failures. For example, it is essentially difficult for a consumer to ever determine whether an anti-wrinkle cream has succeeded or failed (Girard & Dion, 2010). In contrast, search and experience products *do* afford at least some knowledge from information and experience. A product that claims to heal a headache or relieve a fever can easily be evaluated since the claims are more easily experienced or verified. The experience of headache or fever relief is more diagnostic such that assessing whether the product has actually relieved symptoms is easy to determine (Hocutt et al., 1997; Su & Tippins, 1998). However, in a product that claims to boost immunity, determining whether the product has actually delivered on its claims is ambiguous. Even when lack of progress (failure of the medical case) is recognized, the nature of the product as credence limits further evaluations, therefore making attribution of blame ambivalent.

Hypothesis 4: *There is a lesser (vs. higher) tendency of attributing blame to a low-evaluability (vs. high-evaluability) product after failure to see an improvement from an illness.*

According to the failure response literature, attribution assignment has consequences for future decision-making (Folkes, 1984). This literature dictates that attributions influence how consumers respond to product failure. A sequence is implied in which consumers first ask "Why did the product go wrong?" and, from the answer to this question, consider "What should be done about it?" The particular value of this attributional approach is that a scientifically determined structure is imposed on the myriad types of causes for product failure—a structure that then permits predictions concerning specific consumer reactions. For example, consumers tend not to complain about a product ordered online but arriving late if they attribute the failure to factors other than the retailer (Hocutt et al., 1997). Such attributions are also less likely to dissuade future purchase intentions by a particular user regarding a particular retailer. Similarly, when consumers' causal assignment concerning failure is biased because the determination of improvement is less clear-cut and less blame is placed on the product, there is a higher tendency for perseverance.

Hypothesis 5: *There is a tendency to persevere more (vs. less) with a low-evaluability (vs. high-evaluability) product after failure to see an improvement from an illness. This is because of users' higher (vs. lesser) tendency of assigning blame to the product in the low-evaluability (vs. high-evaluability) condition.*

Procedure. In this study, instead of asking people to imagine an event in which they receive treatment for an illness, they were asked to recall their personal treatment use experience and how they previously responded to low-evaluability or high-evaluability products. This is because the judgment of claim evaluability comes after product use. Therefore, I designed a study with a memory paradigm. I came up with a list of high-evaluability/low-evaluability pairs of claims, all with an eye toward whether they would work in a recall study. For example, from categories of common cold-treating products, claims like "treats a headache" and "boosts the immune system" were paired as a high-evaluability and low-evaluability claim. From the list, I picked one pair to incorporate in the study. A total of 126 survey respondents (41% women; $M_{\text{age}} = 34$) were recruited from the online participant recruitment platform Mechanical Turk in exchange for modest compensation (\$6/hour). Participants were randomly assigned to one of the two experimental conditions (low evaluability vs. high evaluability) in a between-participants experiment. In the high-evaluability condition, participants were

asked to think about a time when they did something to treat a headache or case of heartburn (for example, a supplement, a home-made remedy, a dietary change, or a conventional or unconventional treatment). In the low-evaluability condition, participants were asked to think about a time when they did something to boost their immune system and/or their vitamin-D levels (for example, a supplement, a homemade remedy, a dietary change, or a conventional or unconventional treatment). As a manipulation check, participants in the high-evaluability condition were asked how easy it was to evaluate whether or not their headache/heartburn was alleviated after taking the treatment. Participants in the low-evaluability condition were asked how easy it was for them to evaluate whether or not their immune system/vitamin-D levels were boosted after taking the treatment. The participants replied on seven-point Likert scale, where 1 referred to “extremely easy” and 7 referred to “extremely difficult.”

As a measure of product perseverance, participants were asked *“If you thought that your vitamin-D level/immune system was not boosted (vs. headache/heartburn was not treated), how long did you stick with the treatment until you gave up and concluded that it did not work? (1 = immediately; 7 = very long)”*⁴. Then, I measured attribution by asking the participants how much of a role they thought each of the four choices played for their failure to see an improvement. The choices were *“The treatment itself,” “My body's reparative systems,” “My belief that the treatment would work,” “My ability to maintain a positive attitude and avoid stressful emotions,”* or *“Other factors.”* They rated the scores from 0 to 100%, with 100% meaning that they thought the choice was responsible for the failure to see an improvement and 0% meaning that they thought the choice played no role in the failure to see an improvement. The attribution questionnaire required the participants to rate the relative importance of the five attributions by allocating percentage values to each of them such that they totaled 100% (Crombie, 1983). I also controlled for the type of treatment the participants recalled, the duration for which they stayed on the treatment, and how they knew whether or not their headache/heartburn was healed/alleviated by asking open questions and coding their replies for later analysis.

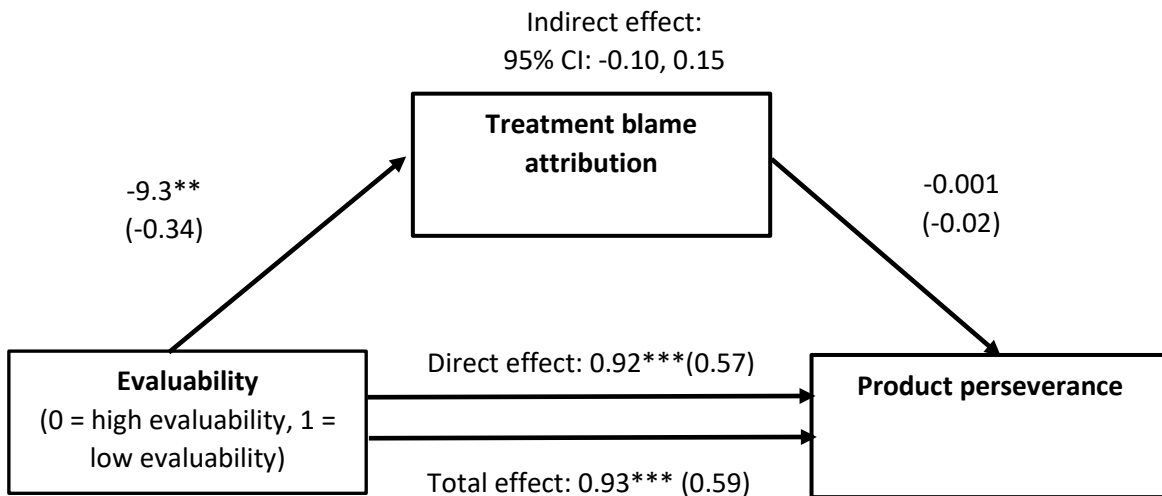
⁴ 1= I **immediately** gave up and concluded that the treatment did not work, 7 = I stuck **very long** with the treatment until I gave up and concluded that it did not work

Results. The covariate open-ended replies were coded and integrated into the analysis of covariance. Survey respondents found it more difficult to evaluate whether their immune system/vitamin-D levels were boosted in the low-evaluability condition than whether their headache/heartburn was alleviated in the high-evaluability condition ($F(1,125) = 22.05; p < 0.001$), giving validation to the manipulation ($M_{\text{low-evaluability}} = 3.28; M_{\text{high-evaluability}} = 2$). When respondents thought that their illness was not improved, they persevered more with the high-evaluability product than they did with the low-evaluability product ($M_{\text{non-evaluable}} = 5.06; M_{\text{evaluatable}} = 4.12$) before they concluded that the product did not work ($F(1,125) = 11.70; p = 0.001$), giving support to Hypothesis 3. With regard to attribution, survey respondents in the low-evaluability condition considered the treatment to have played a higher role in the failure to see an improvement ($M_{\text{non-evaluatable}} = 23.2; M_{\text{evaluatable}} = 32.49$) than those in the high-evaluability condition ($F(1,125) = 3.66; p = 0.05$). Thus, Hypothesis 4 was supported. To test Hypothesis 5, the effect of evaluability (0 = high evaluability, 1 = low evaluability) on causal attribution of blame to the product and, consequently, on product perseverance, I used the PROCESS macro model 4 ((Hayes, 2017); 95% confidence level; 5,000 bootstrap samples). The results confirmed the significant effect of evaluability on the attribution of blame to the product ($b = -0.33, p = 0.05$) but not on the attribution of blame to the product concerning product perseverance ($p = 0.77$). The direct effect of evaluability on product perseverance was significant ($b = 0.58, p < 0.01$), as was the total effect ($p < 0.01$). However, the indirect effect of evaluability on product perseverance was not significant concerning causal attribution of blame ($b = 0.01, 95\% \text{ CI: } -0.10, 0.15$).

I suspected that perseverance with an unsuccessful therapy might also require users, besides attributing less blame to the product, to be financially fit. And since this study was a recall study in which participants were asked to recall their particular experiences, their income levels might have also affected their tendency toward product repurchases in addition to causal attribution. Therefore, I tested a moderated mediation effect with an income variable moderating the relationship between causal attribution of blame to the product and product perseverance. I used an income variable participants responded as part of demographic measures. The income variable was rated from 1 to 4, where 1 referred to participants earning 10,000USD/year or less, while 4 referred to participants earning 50,000USD/year or more. To test the indirect effect based

on individuals' income difference, I used Hayes' model 14 (Hayes, 2017) with evaluability as a factor, treatment blame attribution as a mediator, product perseverance as a dependent variable, and income as a moderator of the path between treatment blame attribution and product perseverance. The PROCESS macro provided an estimate of the mediation effect at Johnson-Neyman (P. O. Johnson & Neyman, 1936) low and high significance regions of the moderator⁵. The findings showed that the magnitude of the mediation effect of evaluability on product perseverance through treatment blame attribution differed based on respondents' income levels (90% CI: 0.00, 0.21). The results illustrated that the conditional indirect effect for evaluability via treatment blame attribution on product perseverance was not significant (90% CI:-0.05, 0.13) when participants' income level was low (income levels of 2.85 and below) but significant (90% CI; 0.002, 0.32) when participants' income level was high (income levels of 3.9 and above).

Figure 7. Study 4: Relative indirect effect of low evaluability (vs. high evaluability) on product perseverance through treatment blame attribution.



Note. Standardized estimates are in parentheses. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$. **Condition** (0 = high evaluability, 1 = low evaluability). **Treatment blame attribution** (100 = the treatment itself was fully responsible for the failure to see an improvement, 0 = the treatment itself played no role in the failure to see an improvement).

⁵ Johnson–Neyman technique in Process Macro identifies regions in the range of a moderator variable in which the effect of an independent variable on a dependent variable is low (or not significant) and is high (or significant)(Hayes & Matthes, 2009; P. O. Johnson & Neyman, 1936).

Product perseverance (*1 = I immediately gave up and concluded that the treatment did not work, 7 = I stuck very long with the treatment until I gave up and concluded that it did not work*).

Discussion

Study 4 provides initial evidence that low evaluability leads to greater product perseverance after unsuccessful treatment. Moreover, low evaluability also caused causal attribution bias, making product blame assignment minimal. Thus, H3 and H4 were supported. This finding is consistent with previous research on causal attribution theory that emphasized that when consumers engage in an attributional search, it may be biased toward certain categories of causes (Folkes, 1984).

Moreover, the initial prediction of the mediation effect was not supported because it is not often true that individuals persevere with a product only because they blame the product less for failure but also when individuals can afford several repurchases. As previously researched, the predictive power of causal assignment on consumption consequences might depend on moderating factors (Nikbin et al., 2016). In Study 4, I showed that an individual's income level moderates the link between causal attribution and consumption decisions, thus describing conditions supporting H4. Study 5 explored whether alternative remedies, in general, have low-evaluability properties.

Study 5: General claim evaluability across unconventional (vs. conventional) remedies

In Study 3, it was shown that alternative remedy users persevere for longer than conventional remedy users after unsuccessful treatment. In Study 4, it was documented that low evaluability of products leads to product perseverance. Accordingly, can it be concluded that alternative remedy users persevere for longer with alternative remedies than do conventional remedy users because of the low- (vs. high-) evaluability feature? Making such a conclusion would be premature since the evaluability manipulation in Study 4 was based on a single pair of low-evaluability/high-evaluability claims. Study 5 served as a bridge between Studies 3 and 4, as it explored whether alternative remedies in general are less evaluable than their conventional counterparts. Accounts indicate that holistic medicine practitioners want the claims about their remedies to be more general so that there are several ways to justify treatment failure (Gilovich,

2008). However, these accounts comprise simple observations and as such require systematic study.

Hypothesis 6: *The claims of alternative (vs. conventional) remedies are generally less (vs. more) evaluable.*

Procedure. I used stratified random sampling to select 100 claims each from conventional and alternative products. Five up to 10 ads/claims were randomly picked from 10 up to 20 commonly used physiological strata. These strata refer to the physiological groups to which the drugs are pharmacologically assigned. Examples of such strata are anticancer, antibacterial, antiviral, antidiabetic, and antihypertensive. Amazon Marketplace was used as a data source for alternative remedies since it is considered a hub for most types of complementary and alternative remedies. As the online pharmacy shop list netmeds.com makes more than 25,000 prescription and non-prescription medication ads/claims visible to the public, it was used as a data source for the conventional remedies. In total, 200 product claims were collected from both categories.

A total of 21 respondents (62% women; $M_{\text{age}} = 40$) were recruited as judges from the online participant recruitment platform MTurk in exchange for a “master MTurker” compensation of \$2 per task. The judges rated the claims made about how easy it would be to tell whether the remedy was effective if they suffered from each condition in question and they took the remedy. The 200 claims were presented in random order for each judge, and one judge was randomly assigned to rate 50 claims that were randomly picked from the total mixed claims. Before presenting the 50 random ads/claims to the judges, I gave them a description of how to proceed with the scoring: “You will see 50 ads for medical remedies. Please read each one carefully. For each one, we’d like you to rate how easy it would be to evaluate whether or not the remedy was effective if you suffered from the condition in question and you took the remedy. For example, the claim ‘boosts immune function’ is difficult to evaluate because it is hard to know whether one’s immune system is functioning well at any one moment—a person can’t ‘look inside’ and see or feel it working well or poorly. Alternatively, the claim ‘treats heartburn’ is easy to evaluate because one can tell if one is still experiencing heartburn or not.” After the description, the judges were asked to rate the ads/claims: “Please rate how easy it would be to tell whether the remedy was effective on the scale

- Craig, A. R., Franklin, J. A., & Andrews, G. (1984). A scale to measure locus of control of behaviour. *British Journal of Medical Psychology*, 57(2), 173-180.
- Crombie, G. (1983). Women's attribution patterns and their relation to achievement: An examination of within-sex differences. *Sex Roles*, 9(12), 1171-1182.
- Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological Bulletin*, 52(4), 281.
- Dag, I. (1999). The relationships among paranormal beliefs, locus of control and psychopathology in a Turkish college sample. *Personality and Individual Differences*, 26(4), 723-737.
- Dagnall, N., Parker, A., & Munley, G. (2009). Assessing superstitious belief. *Psychological Reports*, 104(2), 447-454.
- Darby, M. R., & Karni, E. (1973). Free competition and the optimal amount of fraud. *The Journal of Law and Economics*, 16(1), 67-88.
- Darke, P. R., & Freedman, J. L. (1997). The belief in good luck scale. *Journal of Research in Personality*, 31(4), 486-511.
- Deuter, C. E., Best, D., Kuehl, L. K., Neumann, R., & Schächinger, H. (2014). Effects of approach-avoidance related motor behaviour on the startle response during emotional picture processing. *Biological psychology*, 103, 292-296.
- Deutsch, M., & Gerard, H. B. (1955). A study of normative and informational social influences upon individual judgment. *The Journal of Abnormal and Social Psychology*, 51(3), 629.
- Dick, A. S., & Basu, K. (1994). Customer loyalty: toward an integrated conceptual framework. *Journal of the Academy of Marketing Science*, 22(2), 99-113.
- Dunn, L., & Dahl, D. W. (2012). Self-threat and product failure: How internal attributions of blame affect consumer complaining behavior. *Journal of Marketing Research*, 49(5), 670-681.
- Dweck, C. S. (2000). *Self-theories: Their role in motivation, personality, and development*: Psychology press.
- Eccles, R. (2006). Mechanisms of the placebo effect of sweet cough syrups. *Respiratory Physiology & Neurobiology*, 152(3), 340-348.
- Edvardsson, B., Johnson, M. D., Gustafsson, A., & Strandvik, T. (2000). The effects of satisfaction and loyalty on profits and growth: products versus services. *Total quality management*, 11(7), 917-927.
- Eisenberg, D. M., Kessler, R. C., Foster, C., Norlock, F. E., Calkins, D. R., & Delbanco, T. L. (1993). Unconventional medicine in the United States--prevalence, costs, and patterns of use. *New England Journal of Medicine*, 328(4), 246-252.
- Ernst, E. (2011). Fatalities after CAM: an overview. *British Journal of General Practice*, 61(587), 404-405.
- Everett, J. A. (2013). The 12 item social and economic conservatism scale (SECS). *Plos One*, 8(12).
- Figueiras, M. J., Alves, N. C., Marcelino, D., Cortes, M. A., Weinman, J., & Horne, R. (2009). Assessing lay beliefs about generic medicines: Development of the generic medicines scale. *Psychology, Health & Medicine*, 14(3), 311-321.
- Floyd, F. J., & Widaman, K. F. (1995). Factor analysis in the development and refinement of clinical assessment instruments. *Journal of Psychological Assessment*, 7(3), 286-299.
- Folkes, V. S. (1984). Consumer reactions to product failure: An attributional approach. *Journal of Consumer Research*, 10(4), 398-409.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50.
- Fox, M. (2016). Americans Spend \$30 Billion a Year on Alternative Medicine. *National Broadcasting Company News*. Retrieved from <https://www.nbcnews.com/health/health-news/americans-spend-30-billion-year-alternative-medicine-n596976>

- Frosch, D. L., Kimmel, S., & Volpp, K. (2008). What role do lay beliefs about hypertension etiology play in perceptions of medication effectiveness? *Health Psychology, 27*(3), 320.
- Furnham, A., & Forey, J. (1994). The attitudes, behaviors and beliefs of patients of conventional vs. complementary (alternative) medicine. *Journal of Clinical Psychology, 50*(3), 458-469.
- Garbarino, E., & Johnson, M. S. (1999). The different roles of satisfaction, trust, and commitment in customer relationships. *Journal of Marketing, 63*(2), 70-87.
- Gaskin, J. (2012). Gaskination's StatWiki Retrieved from http://statwiki.kolobkreations.com/index.php?title=Main_Page
- Gauchat, G. (2012). Politicization of science in the public sphere: A study of public trust in the United States, 1974 to 2010. *American Sociological Review, 77*(2), 167-187.
- Gilovich, T. (2008). *How we know what isn't so: The fallibility of human reason in everyday life* New York: The free press.
- Girard, T., & Dion, P. (2010). Validating the search, experience, and credence product classification framework. *Journal of Business Research, 63*(9-10), 1079-1087.
- Gollust, S. E., & Lynch, J. (2011). Who deserves health care? The effects of causal attributions and group cues on public attitudes about responsibility for health care costs. *Journal of Health Politics, Policy and Law, 36*(6), 1061-1095.
- Gordon, J. S. (1996). Alternative medicine and the family physician. *American Family Physician, 54*(7), 2205-2212, 2218.
- Gottschalk, F. C. (2018). What characterizes Credence Goods? A critical look at the literature. *Social Science Research Network*.
- Gregory, R. J. (2004). *Psychological testing: History, principles, and applications*: Allyn & Bacon.
- GVR. (2021). Complementary And Alternative Medicine Market Worth \$404.66 Billion By 2028. Retrieved from <https://www.grandviewresearch.com/press-release/global-alternative-complementary-medicine-therapies-market>
- Hair, J. F. (2009). *Multivariate data analysis*.
- Hair Jr, J. F., Babin, B. J., & Krey, N. (2017). Covariance-based structural equation modeling in the Journal of Advertising: Review and recommendations. *Journal of Advertising, 46*(1), 163-177.
- Hay, L. (1995). *Heal your body: The mental causes for physical illness and the metaphysical way to overcome them*: Hay House, Inc.
- Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*: Guilford publications.
- Hayes, A. F., & Matthes, J. (2009). Computational procedures for probing interactions in OLS and logistic regression: SPSS and SAS implementations. *Behavior Research Methods, 41*(3), 924-936.
- Haynes, S. N., Richard, D., & Kubany, E. S. (1995). Content validity in psychological assessment: A functional approach to concepts and methods. *Psychological Assessment, 7*(3), 238.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science, 43*(1), 115-135.
- Hill, P., Pargament, K., Swyers, J., Gorsuch, R., McCullough, M., Hood, R., & Baumeister, R. (1998). Definitions of religion and spirituality. *Scientific Research on Spirituality and Health: A Consensus Report, 14*-30.
- Hilton, D. J., & Slugoski, B. R. (1986). Knowledge-based causal attribution: The abnormal conditions focus model. *Psychological Review, 93*(1), 75.
- Hilton, D. J., Smith, R. H., & Kin, S. H. (1995). Processes of causal explanation and dispositional attribution. *Journal of Personality and Social Psychology, 68*(3), 377.
- Ho, M. H.-W., & Chung, H. F. (2020). Customer engagement, customer equity and repurchase intention in mobile apps. *Journal of Business Research, 121*, 13-21.

- Hocutt, M. A., Chakraborty, G., & Mowen, J. C. (1997). The impact of perceived justice on customer satisfaction and intention to complain in a service recovery. *Advances in Consumer Research*, 24(1), 457-463.
- Homburg, C., Koschate, N., & Hoyer, W. D. (2005). Do satisfied customers really pay more? A study of the relationship between customer satisfaction and willingness to pay. *Journal of Marketing*, 69(2), 84-96.
- Hróbjartsson, A., & Gøtzsche, P. C. (2001). Is the placebo powerless? An analysis of clinical trials comparing placebo with no treatment. *New England Journal of Medicine*, 344(21), 1594-1602.
- Hui, M. K., & Toffoli, R. (2002). Perceived control and consumer attribution for the service encounter. *Journal of Applied Social Psychology*, 32(9), 1825-1844.
- Jaccard, J. J., Knox, R., & Brinberg, D. (1979). Prediction of behavior from beliefs: An extension and test of a subjective probability model. *Journal of Personality and Social Psychology*, 37(7), 1239.
- John, D. R., & Park, J. K. (2016). Mindsets matter: Implications for branding research and practice. *Journal of Consumer Psychology*, 26(1), 153-160.
- Johnson, M. D., Herrmann, A., & Huber, F. (2006). The evolution of loyalty intentions. *Journal of Marketing*, 70(2), 122-132.
- Johnson, P. O., & Neyman, J. (1936). Tests of certain linear hypotheses and their application to some educational problems. *Statistical Research Memoirs*.
- Jones, E. E., & Davis, K. E. (1965). From acts to dispositions the attribution process in person perception. In *Advances in Experimental Social Psychology* (Vol. 2, pp. 219-266): Elsevier.
- Jost, J. T., Glaser, J., Kruglanski, A. W., & Sulloway, F. J. (2003). Political conservatism as motivated social cognition. *Psychological Bulletin*, 129(3), 339.
- Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, 39(1), 31-36.
- Kelley, H. H. (1973). The processes of causal attribution. *American Psychologist*, 28(2), 107.
- Kelley, H. H., & Michela, J. L. (1980). Attribution theory and research. *Annual Review of Psychology*, 31(1), 457-501.
- Kempthorne, J. C., & Terrizzi Jr, J. A. (2021). The behavioral immune system and conservatism as predictors of disease-avoidant attitudes during the COVID-19 pandemic. *Personality and Individual Differences*, 178, 110857.
- Kenny, A. (2003). *Action, emotion and will*: Routledge.
- Kessler, R. C., Davis, R. B., Foster, D. F., Van Rompay, M. I., Walters, E. E., Wilkey, S. A., . . . Eisenberg, D. M. (2001). Long-term trends in the use of complementary and alternative medical therapies in the United States. *Annals of Internal Medicine*, 135(4), 262-268.
- King, D. E., & Bushwick, B. (1994). Beliefs and attitudes of hospital inpatients about faith healing and prayer. *Journal of Family Practice*, 39(4), 349-352.
- Kramer, T., & Block, L. (2008). Conscious and nonconscious components of superstitious beliefs in judgment and decision making. *Journal of Consumer Research*, 34(6), 783-793.
- Kraus, M. W., & Keltner, D. (2013). Social class rank, essentialism, and punitive judgment. *Journal of Personality and Social Psychology*, 105(2), 247.
- Kraus, M. W., Piff, P. K., & Keltner, D. (2009). Social class, sense of control, and social explanation. *Journal of Personality and Social Psychology*, 97(6), 992.
- Krause, N. (1995). Religiosity and self-esteem among older adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 50(5), P236-P246.
- Kung, F. Y., Kwok, N., & Brown, D. J. (2018). Are attention check questions a threat to scale validity? *Applied Psychology*, 67(2), 264-283.
- Lei, J., Dawar, N., & Gürhan-Canli, Z. (2012). Base-rate information in consumer attributions of product-harm crises. *Journal of Marketing Research*, 49(3), 336-348.

- Lewin, K. (1931). The conflict between Aristotelian and Galileian modes of thought in contemporary psychology. *The Journal of General Psychology*, 5(2), 141-177.
- Li, Y. J., Johnson, K. A., Cohen, A. B., Williams, M. J., Knowles, E. D., & Chen, Z. (2012). Fundamental (ist) attribution error: Protestants are dispositionally focused. *Journal of Personality and Social Psychology*, 102(2), 281.
- Lindeman, M. (2011). Biases in intuitive reasoning and belief in complementary and alternative medicine. *Psychology and Health*, 26(3), 371-382.
- Lowenberg, J. S., & Davis, F. (1994). Beyond medicalisation-demmedicalisation: the case of holistic health. *Sociology of Health & Illness*, 16(5), 579-599.
- Ly, A. L., Saide, A. R., & Richert, R. A. (2020). Perceptions of the efficacy of prayer and conventional medicine for health concerns. *Journal of religion and health*, 59(1), 1-18.
- MacCallum, R. C., Widaman, K. F., Zhang, S., & Hong, S. (1999). Sample size in factor analysis. *Psychological Methods*, 4(1), 84.
- Macdougall, C. D. (1983). *Superstition and the Press*. New York: Prometheus Books.
- MacKenzie, S. B., & Podsakoff, P. M. (2012). Common method bias in marketing: Causes, mechanisms, and procedural remedies. *Journal of Retailing*, 88(4), 542-555.
- Madsen, J. K. (2019). From Belief to Behaviour. In J. K. Madsen (Ed.), *The Psychology of Micro-Targeted Election Campaigns* (pp. 135-160). Cham: Springer International Publishing.
- Maier, S. F., Watkins, L. R., & Fleshner, M. (1994). Psychoneuroimmunology: The interface between behavior, brain, and immunity. *American Psychologist*, 49(12), 1004.
- Malka, A., Soto, C. J., Cohen, A. B., & Miller, D. T. (2011). Religiosity and social welfare: Competing influences of cultural conservatism and prosocial value orientation. *Journal of Personality*, 79(4), 763-792.
- Mansfield, E. R., & Helms, B. P. (1982). Detecting multicollinearity. *The American Statistician*, 36(3a), 158-160.
- Marbeau, Y. (1987). What value pricing research today. *Journal of the Market Research Society*, 29(2), 153-182.
- Marlow, L. A., Waller, J., & Wardle, J. (2007). Trust and experience as predictors of HPV vaccine acceptance. *Human vaccines*, 3(5), 171-175.
- Martin, B. A., Veer, E., & Pervan, S. J. (2007). Self-referencing and consumer evaluations of larger-sized female models: A weight locus of control perspective. *Marketing Letters*, 18(3), 197-209.
- McKee, J. (1988). Holistic health and the critique of Western medicine. *Social Science & Medicine*, 26(8), 775-784.
- Meissner, K., Bingel, U., Colloca, L., Wager, T. D., Watson, A., & Flaten, M. A. (2011). The placebo effect: advances from different methodological approaches. *Journal of Neuroscience*, 31(45), 16117-16124.
- Menon, G., & Raghurir, P. (2003). Ease-of-retrieval as an automatic input in judgments: a mere-accessibility framework? *Journal of Consumer Research*, 30(2), 230-243.
- Michaela, J., & Wood, J. V. (1986). Causal attributions in health and illness. *Advances in Cognitive-Behavior Research and Therapy*, 5, 179-235.
- Mick, D. G. (2017). Buddhist psychology: Selected insights, benefits, and research agenda for consumer psychology. *Journal of Consumer Psychology*, 27(1), 117-132. doi:10.1016/j.jcps.2016.04.003
- Mitchell, A. F., & Krzanowski, W. J. (1985). The Mahalanobis distance and elliptic distributions. *Biometrika*, 72(2), 464-467.
- Mitra, K., Reiss, M. C., & Capella, L. M. (1999). An examination of perceived risk, information search and behavioral intentions in search, experience and credence services. *Journal of Services Marketing*, 13(3), 208-228.

- Moeller, F. G., Barratt, E. S., Dougherty, D. M., Schmitz, J. M., & Swann, A. C. (2001). Psychiatric aspects of impulsivity. *American Journal of Psychiatry*, *158*(11), 1783-1793.
- Moerman, D. E. (2002). *Meaning, Medicine, and the "placebo Effect"* (Vol. 28): Cambridge University Press Cambridge.
- Molden, D. C., & Dweck, C. S. (2006). Finding "meaning" in psychology: a lay theories approach to self-regulation, social perception, and social development. *American Psychologist*, *61*(3), 192.
- Monga, A. B., & John, D. R. (2008). When does negative brand publicity hurt? The moderating influence of analytic versus holistic thinking. *Journal of Consumer Psychology*, *18*(4), 320-332.
- Nabi, R. L., Prestin, A., & So, J. (2016). Could watching TV be good for you? Examining how media consumption patterns relate to salivary cortisol. *Health Communication*, *31*(11), 1345-1355.
- Niggemann, B., & Grüber, C. (2003). Side-effects of complementary and alternative medicine. *Allergy*, *58*(8), 707-716.
- Nikbin, D., Hyun, S. S., Iranmanesh, M., Maghsoudi, A., & Jeong, C. (2016). Airline travelers' causal attribution of service failure and its impact on trust and loyalty formation: the moderating role of corporate social responsibility. *Asia Pacific Journal of Tourism Research*, *21*(4), 355-374.
- Nolen, W. A. (1975). *Healing: A doctor in search of a miracle*: Random House New York.
- O'Brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality & quantity*, *41*(5), 673-690.
- Odou, P., & Schill, M. (2020). How anticipated emotions shape behavioral intentions to fight climate change. *Journal of Business Research*, *121*, 243-253.
- Oliver, E., Mayor Jr, F., & D'Ocon, P. (2019). Beta-blockers: historical perspective and mechanisms of action. *Revista Española de Cardiología (English Edition)*, *72*(10), 853-862.
- Oliver, R. L. (1999). Whence consumer loyalty? *Journal of Marketing*, *63*(4_suppl1), 33-44.
- Ornstein, R. E., & Sobel, D. (1999). *The healing brain: Breakthrough discoveries about how the brain keeps us healthy*: ISHK.
- Pacheco, N. A., Becker, L. C. B., & Brei, V. A. (2017). A light in the dark: The benefits of co-production in service failures. *Journal of Retailing and Consumer Services*, *34*, 95-101.
- Park, J. K., & John, D. R. (2010). Got to get you into my life: Do brand personalities rub off on consumers? *Journal of Consumer Research*, *37*(4), 655-669.
- Patton, J. H., Stanford, M. S., & Barratt, E. S. (1995). Factor structure of the Barratt impulsiveness scale. *Journal of Clinical Psychology*, *51*(6), 768-774.
- Peciña, M., & Zubieta, J. K. (2015). Molecular mechanisms of placebo responses in humans. *Molecular Psychiatry*, *20*(4), 416-423.
- Pennycook, G., Cheyne, J. A., Koehler, D. J., & Fugelsang, J. A. (2020). On the belief that beliefs should change according to evidence: Implications for conspiratorial, moral, paranormal, political, religious, and science beliefs. *Judgment and Decision making*, *15*(4), 476.
- Pérez-Aranda, A., Hofmann, J., Feliu-Soler, A., Ramírez-Maestre, C., Andrés-Rodríguez, L., Ruch, W., & Luciano, J. V. (2019). Laughing away the pain: A narrative review of humour, sense of humour and pain. *European Journal of Pain*, *23*(2), 220-233.
- Plaks, J. E., Stroessner, S. J., Dweck, C. S., & Sherman, J. W. (2001). Person theories and attention allocation: Preferences for stereotypic versus counterstereotypic information. *Journal of Personality and Social Psychology*, *80*(6), 876.
- Plutchik, R. (1982). A psychoevolutionary theory of emotions. *Social science information*, *21*(4-5), 529-553. doi:10.1177/053901882021004003
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879-903.

- Posner, J., Russell, J. A., & Peterson, B. S. (2005). The circumplex model of affect: An integrative approach to affective neuroscience, cognitive development, and psychopathology. *Development and Psychopathology*, 17(3), 715.
- Puzakova, M., Kwak, H., & Rocereto, J. F. (2013). When humanizing brands goes wrong: the detrimental effect of brand anthropomorphization amid product wrongdoings. *Journal of Marketing*, 77(3), 81-100.
- Richins, M. L. (1983). Negative word-of-mouth by dissatisfied consumers: A pilot study. *Journal of Marketing*, 47(1), 68-78.
- Ripley, T. L., & Saseen, J. J. (2014). β -blockers: a review of their pharmacological and physiological diversity in hypertension. *Annals of Pharmacotherapy*, 48(6), 723-733.
- Rizeq, J., Flora, D. B., & Toplak, M. E. (2020). An examination of the underlying dimensional structure of three domains of contaminated mindware: paranormal beliefs, conspiracy beliefs, and anti-science attitudes. *Thinking & Reasoning*, 1-25.
- Roberts, I., West, R., Ogilvie, D., & Dillon, M. (1979). Malnutrition in infants receiving cult diets: a form of child abuse. *British Medical Journal*, 1(6159), 296-298.
- Rossiter, J. R. (2002). The C-OAR-SE procedure for scale development in marketing. *International Journal of Research in Marketing*, 19(4), 305-335.
- Rouse, S. V. (2015). A reliability analysis of Mechanical Turk data. *Computers in Human Behavior*, 43, 304-307.
- Sahabeh, E. (2019). *Valuation and Allocation of Bought Time*. (Doctoral thesis), University of South-Eastern Norway Norway. Retrieved from <http://hdl.handle.net/11250/2630546>
- Saher, M., & Lindeman, M. (2005). Alternative medicine: A psychological perspective. *Personality and Individual Differences*, 39(6), 1169-1178.
- Schwarz, N. (2004). Metacognitive experiences in consumer judgment and decision making. *Journal of Consumer Psychology*, 14(4), 332-348.
- Schwarz, N., Bless, H., & Bohner, G. (1991). Mood and persuasion: Affective states influence the processing of persuasive communications. In *Advances in Experimental Social Psychology* (Vol. 24, pp. 161-199): Elsevier.
- Schwarz, N., Bless, H., Strack, F., Klumpp, G., Rittenauer-Schatka, H., & Simons, A. (1991). Ease of retrieval as information: another look at the availability heuristic. *Journal of Personality and Social Psychology*, 61(2), 195.
- Seiders, K., & Berry, L. L. (1998). Service fairness: What it is and why it matters. *Academy of Management Perspectives*, 12(2), 8-20.
- Selberg, T. (1995). Faith healing and miracles: Narratives about folk medicine. *Journal of Folklore Research*, 35-47.
- Shahid, S., Bleam, R., Bessarab, D., & Thompson, S. C. (2010). "If you don't believe it, it won't help you": use of bush medicine in treating cancer among Aboriginal people in Western Australia. *Journal of Ethnobiology and Ethnomedicine*, 6(1), 1-9.
- Siahpush, M. (1999). Why do people favour alternative medicine? *Australian and New Zealand Journal of Public Health*, 23(3), 266-271.
- Simonton, O. C., Simonton, S. M., & Creighton, J. L. (1992). *Getting well again: A step-by-step, self-help guide to overcoming cancer for patients and their families*. New York: Bantam.
- Singh-Manoux, A., Adler, N. E., & Marmot, M. G. (2003). Subjective social status: its determinants and its association with measures of ill-health in the Whitehall II study. *Social Science & Medicine*, 56(6), 1321-1333.
- Siu, N. Y.-M., Zhang, T. J.-F., & Kwan, H.-Y. (2014). Effect of corporate social responsibility, customer attribution and prior expectation on post-recovery satisfaction. *International journal of hospitality management*, 43, 87-97.

- Sloan, R. P., Bagiella, E., & Powell, T. (1999). Religion, spirituality, and medicine. *The Lancet*, 353(9153), 664-667.
- Sloan, R. P., Bagiella, E., VandeCreek, L., Hover, M., Casalone, C., Hirsch, T. J., . . . Poulos, P. (2000). Should physicians prescribe religious activities? *New England Journal of Medicine*, 342(25), 1913-1916.
- Solomon, G. F. (1987). Psychoneuroimmunology: interactions between central nervous system and immune system. *Journal of Neuroscience Research*, 18(1), 1-9.
- Spilka, B., & Ladd, K. L. (2012). *The psychology of prayer: A scientific approach*: Guilford Press.
- Srinivasan, S. S., & Till, B. D. (2002). Evaluation of search, experience and credence attributes: role of brand name and product trial. *Journal of Product & Brand Management*.
- Stanovich, K. E. (2016). The comprehensive assessment of rational thinking. *Educational Psychologist*, 51(1), 23-34.
- Stewart-Williams, S., & Podd, J. (2004). The placebo effect: dissolving the expectancy versus conditioning debate. *Psychological Bulletin*, 130(2), 324.
- Storbeck, J., & Clore, G. L. (2007). On the interdependence of cognition and emotion. *Cognition and Emotion*, 21(6), 1212-1237.
- Su, W., & Tippins, M. J. (1998). Consumer attributions of product failure to channel members and self: the impacts of situational cues. *Advances in Consumer Research*, 25(1), 139-145.
- Tabachnick, B., & Fidell, L. (2001). Chapter 4. Cleaning up your act. *Using Multivariate Statistics*. 4th ed. Needham Heights, MA: Allyn and Bacon.
- Tabachnick, B. G., Fidell, L. S., & Ullman, J. B. (2007). *Using multivariate statistics* (Vol. 5): Pearson Boston, MA.
- Tabish, S. A. (2008). Complementary and alternative healthcare: is it evidence-based? *International Journal of Health Sciences*, 2(1), V.
- Taherdoost, H. (2016). Validity and Reliability of the Research Instrument; How to Test the Validation of a Questionnaire/Survey in a Research. *International Journal of Academic Research in Management*.
- Thoits, P. A. (1990). *Research agendas in the sociology of emotions: Emotional deviance-Research agendas*. New York: State university of new york press.
- Thomas, K. A., & Clifford, S. (2017). Validity and Mechanical Turk: An assessment of exclusion methods and interactive experiments. *Computers in Human Behavior*, 77, 184-197.
- Thoresen, C. E. (1999). Spirituality and health: Is there a relationship? *Journal of Health Psychology*, 4(3), 291-300.
- Thórisdóttir, H., & Jost, J. T. (2011). Motivated closed-mindedness mediates the effect of threat on political conservatism. *Political Psychology*, 32(5), 785-811.
- Tobacyk, J. J., Nagot, E., & Miller, M. (1988). Paranormal beliefs and locus of control: A multidimensional examination. *Journal of Personality Assessment*, 52(2), 241-246.
- Tobias, S., & Carlson, J. E. (1969). Brief report: Bartlett's test of sphericity and chance findings in factor analysis. *Multivariate Behavioral Research*, 4(3), 375-377.
- Valerie A., V., & Krishnan, S. (1979). Dissatisfaction attributions and consumer complaint behavior. *Advances in Consumer Research*, 6(1), 445-449.
- Valle, V. A., & Shanker, K. (1979). Dissatisfaction attributions and consumer complaint behavior. *Advances in Consumer Research*, 6(1), 445-449.
- Vapiwala, N., Mick, R., Hampshire, M. K., Metz, J. M., & DeNittis, A. S. J. T. C. J. (2006). Patient initiation of complementary and alternative medical therapies (CAM) following cancer diagnosis. *The Cancer Journal*, 12(6), 467-474.
- Velicer, W. F., & Jackson, D. N. (1990). Component analysis versus common factor analysis: Some issues in selecting an appropriate procedure. *Multivariate Behavioral Research*, 25(1), 1-28.

- Ventola, C. L. (2010a). Current issues regarding complementary and alternative medicine (CAM) in the United States: part 1: the widespread use of CAM and the need for better-informed health care professionals to provide patient counseling. *Pharmacy and Therapeutics*, 35(8), 461.
- Ventola, C. L. (2010b). Current issues regarding complementary and alternative medicine (CAM) in the United States: part 2: regulatory and safety concerns and proposed governmental policy changes with respect to dietary supplements. *Pharmacy and Therapeutics*, 35(9), 514.
- Vyse, S. A. (2013). *Believing in magic: The psychology of superstition-updated edition*: Oxford University Press.
- Waldman, S. A., & Terzic, A. (2009). *Pharmacology and therapeutics: principles to practice/[edited by] Scott A. Waldman, Andre Terzic*: Philadelphia, PA: Saunders/Elsevier.
- Wallston, K. A., Strudler Wallston, B., & DeVellis, R. (1978). Development of the multidimensional health locus of control (MHLC) scales. *Health Education and Behavior*, 6(1), 160-170.
- Wang, W., Keh, H. T., & Bolton, L. E. (2010). Lay theories of medicine and a healthy lifestyle. *Journal of Consumer Research*, 37(1), 80-97.
- Whelan, J., & Dawar, N. (2016). Attributions of blame following a product-harm crisis depend on consumers' attachment styles. *Marketing Letters*, 27(2), 285-294.
- Wieselmann, G. (2012). *Current Update in Psychoimmunology*: Springer Science & Business Media.
- Wilson, A. E., & Darke, P. R. (2012). The optimistic trust effect: Use of belief in a just world to cope with decision-generated threat. *Journal of Consumer Research*, 39(3), 615-628.
- Worthington, E., & Sandage, S. (2002). Psychotherapy relationships that work. *Religions and Spirituality*, 371-387.
- Worthington Jr, E. L., Wade, N. G., Hight, T. L., Ripley, J. S., McCullough, M. E., Berry, J. W., . . . O'Connor, L. (2003). The Religious Commitment Inventory--10: Development, refinement, and validation of a brief scale for research and counseling. *Journal of Counseling Psychology*, 50(1), 84.
- Yelderman, L. A., & Miller, M. K. (2016). Religious fundamentalism and attitudes toward the insanity defense: The mediating roles of criminal attributions and attitudes toward the mentally ill. *Psychiatry, Psychology and Law*, 23(6), 872-884.
- Yeung, C. W., & Soman, D. (2005). Attribute evaluability and the range effect. *Journal of Consumer Research*, 32(3), 363-369.
- Yocum, R. R., Rasmussen, J. R., & Strominger, J. L. (1980). The mechanism of action of penicillin. Penicillin acylates the active site of *Bacillus stearothermophilus* D-alanine carboxypeptidase. *Journal of Biological Chemistry*, 255(9), 3977-3986.
- Yong, A. G., & Pearce, S. (2013). A beginner's guide to factor analysis: Focusing on exploratory factor analysis. *Tutorials in Quantitative Methods for Psychology*, 9(2), 79-94.

14. APPENDIX

Appendix A. Data preparation

Study	Participants recruited	Source of data	Data cleaning techniques	Observations considered for analysis
Study1	250	Mturk	<ul style="list-style-type: none"> Failed attention check questions ** 	222 participants giving reply on both the self and the treatment , total observations 222x2 = 444
Pretest1	57	Mturk	<ul style="list-style-type: none"> Consent (Yes, <u>No</u>) Missing data 	50
Study2	100	Mturk	<ul style="list-style-type: none"> Consent (Yes, <u>No</u>) Missing data 	96 participants reply on 3 'self' measures and 1 'prayer' measure and 1 average reply of the 3 self-measures compared. 96x5=480 data observations for comparison
Study3_alt	68	Mturk	<ul style="list-style-type: none"> Failed attention check questions ** Incomplete/random entry to DV 	42
Study3_conv	151	Mturk	<ul style="list-style-type: none"> Failed attention check questions ** Incomplete/random entry to DV 	134
Study4	130	Mturk	<ul style="list-style-type: none"> Failed attention check questions ** 	126
Study5	21	Master Mturk	<ul style="list-style-type: none"> Master mturkers recruited as judges, they were all attentive 	21
Initial pretest	115	Mturk	<ul style="list-style-type: none"> Failed attention check questions ** 	109
Study 6	5 faculty members	<ul style="list-style-type: none"> Office Qualitrics 		
Study7	480	Mturk	<ul style="list-style-type: none"> Failed attention check questions ** (127) Outliers (48) Missing values (2) 	303
Study8A	422	Mturk	<ul style="list-style-type: none"> Failed attention check questions ** (115) Outliers (57) 	250
Study 8B	700	Mturk	<ul style="list-style-type: none"> Failed attention check questions ** (112) Outliers (90) 	498
Study9A	486	Mturk	<ul style="list-style-type: none"> Failed attention check questions ** (142) Outliers (49) 	288
Study9B				
Study10A				
Study10B	137	Mturk	<ul style="list-style-type: none"> Failed attention check questions ** (18) Missing data (25) 	94

Menebo: Causal attribution and consumer perseverance on health remedies

Study10C	111	Mturk	<ul style="list-style-type: none"> How attentively participants followed EMDR treatment instructions were inserted as a covariate. 	111
Study10D	21	Prolific	<ul style="list-style-type: none"> Missing value (2) 	19
Study10E	82	Mturk	<ul style="list-style-type: none"> Failed attention check questions ** (40) 	42
Study11	300	Mturk	<ul style="list-style-type: none"> Failed attention check questions ** (61) 	239
Study12	1000	Mturk	<ul style="list-style-type: none"> Failed attention check questions ** 	699
Study13	139	Mturk	<ul style="list-style-type: none"> Failed attention check questions ** Lower bound -Upper bound < 0 (18) 	102
Study14	200	Mturk	<ul style="list-style-type: none"> Failed attention check questions ** 	151
Study15	255	Mturk	<ul style="list-style-type: none"> Failed attention check questions ** 	219
Total	5230			

**Attention checkers

Attention check 1; *'To what extent do you agree with the following statements? - This item is testing how attentive you are. Click on 'I will recover considerably slower from an illness'*

Attention check 2; *'To what extent do you agree with the following statements? - For this item do not give an opinion but click on 'I will recover somewhat slower from an illness'*

Attention check 3; *Please select the option "lavender note"; Sports car, Cosmetic box, Sofa, Lavender note*

Attention check 4; *What is the third word in this question: "How many stars are in the American flag?"*

Attention check 5; *Participants wrote a text completely unrelated to the context, copy-pasted from somewhere*

Attention check C; *Participants own conviction about the quality of the data ('Realistically, I know some online survey respondents do not pay close attention to the questions they are answering. This affects the quality of our data.*

Please select one of the following honestly. Your answer is confidential. Did you pay attention and answer honestly? Yes, No')

Note; In most of my studies, not removing the inattentive observations does not change the main findings. But only to stick with standard procedures of data analysis and for the sake of data quality, the above procedures were followed.

Data is openly accessible from https://osf.io/gcpma/?view_only=2e2fcb303c344b608b8ace61e1a9872d

Appendix B. Overview of measures used in experiments

Studies	Causal attribution bias <i>'the tendency of attributing blame less to the treatment or the tendency of attributing blame more to the self after unsuccessful therapy'</i>	Product perseverance <i>'the tendency of willingness to repurchase or retake or persist on a treatment after unsuccessful therapy'</i> <i>'Unsuccessful therapy is conceptualized as when illness has not been overcome after use of a particular treatment'</i>
Study-1	<p style="text-align: right;">SUCCESS</p> <p style="text-align: center;">0 - played no role in the improvement 100 -fully responsible for the improvement</p> <p style="text-align: right;">FAILURE</p> <p style="text-align: center;">0 - played no role in the failure to see an improvement; 100 -fully responsible for the failure to see an improvement</p> <p>1) The treatment itself 0-100 2) My body's reparative systems 0-100 3) My belief that the treatment would work 0-100 4) My ability to maintain a positive attitude and avoid stressful emotions' 0-100</p> <p>Causal attribution bias Self-blame ; Composite score of 2-4</p>	
Study-3	<p style="text-align: right;">SUCCESS</p> <p style="text-align: center;">0 - played no role in the improvement 100 -fully responsible for the improvement</p> <p style="text-align: right;">FAILURE</p> <p style="text-align: center;">0 - played no role in the failure to see an improvement; 100 -fully responsible for the failure to see an improvement</p> <p>1) Something about the prayer itself 0-100 2) My own faith in the power of the prayer 0-100 3) My belief that the prayer would work 0-100 4) My own feelings about the prayer 0-100</p> <p>Causal attribution bias Self-blame ; Composite score of 2-4</p>	<p>How long would you stick with the treatment until you would give up and conclude that the treatment does not work?</p> <p style="text-align: right;"># days</p>
Study-4	<p style="text-align: right;">FAILURE</p> <p style="text-align: center;">0 - played no role in the failure to see an improvement; 100 -fully responsible for the failure to see an improvement</p> <p>1) The treatment itself <input type="text"/> 2) My body's reparative systems <input type="text"/> 3) My belief that the treatment would work <input type="text"/> 4) My ability to maintain a positive attitude and avoid stressful emotions <input type="text"/> 5) Other factors <input type="text"/> <i>Totaled to 100</i> <i>100%</i></p> <p>Causal attribution bias Product-blame ; Score on choice 1, 'the treatment itself'</p>	<p>If you thought that your Vitamin-D levels/immune system was not boosted (vs headache/heartburn was not treated), How long did you stick with the treatment until you gave up and concluded that it did not work? (1= Immediately; 7= Very long)</p> <p style="text-align: right;"># days</p>
Initial-pretest	<p style="text-align: center;">0-extremely unlikely ; 100 - highly likely</p> <p>1) The doctor 0-100 2) The product 0-100</p>	

Menebo: Causal attribution and consumer perseverance on health remedies

	3) The hospital 4) My mental disbelief 5) My thoughts and imaginations 6) My emotion 7) The illness Causal attribution bias Self-blame ; Composite score of 4-6	0-100 0-100 0-100 0-100 0-100	
Study-10E			How long would you stick with the treatment until you would give up and conclude that the treatment does not work? # days
Study-12	1) Mistake by practitioner 2) Ineffective product 3) My fault 4) Other factors <i>Totaled to 100</i> Causal attribution bias Self-blame ; Score on choice 3, 'My fault'	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 100%	Retaking Coryzalia Switching Coryzalia Substituting a practitioner Something else <i>Totaled to 100</i> <i>100%</i>
Study-14	1) The treatment itself 2) My body's reparative systems 3) My belief that the treatment would work 4) My ability to maintain a positive attitude and avoid stressful emotions 5) My own effort <i>Totaled to 100</i> Causal attribution bias Self-blame ; Composite score of 2-5	0-100 0-100 0-100 0-100 0-100 100 %	How long would you stick with the treatment until you would give up and conclude that the treatment does not work? # days
Study-15	1) Something about the prayer itself 2) My own faith in the power of the prayer 3) My belief that the prayer would work 4) My own feelings about the prayer' Causal attribution bias Self-blame ; Composite score of 2-4	0-100 0-100 0-100 0-100	

For study 1, 3, 15 and the initial pretest, a composite score was estimated for causal attribution bias (self-attribution of blame) by taking an average of indicators that were supposed to uniquely contribute to the conceptual domain of the self-attribution of blame. The meaning of the composite variable (self-attribution) is derived from its constituent parts (e.g., my own faith, my belief, my own feelings, my body's reparative,..). The constituent parts formed the composite variable, thus theoretically are treated as formative.

Appendix C. An extended list of 200 ads/claims rated by judges

Code	Ad/Claim
Conv_1	Used in the treatment of the involuntary movements of (chorea) Huntington's disease
Conv_2	Used in the treatment of severe bacterial infections
Conv_3	Used to reduce fine wrinkles
Conv_4	Used to treat mild to moderate acne (spots)
Conv_5	Used to treat blackheads, white heads and pimples (acne vulgaris).
Conv_6	Treat symptoms associated with allergic conditions, such as hay fever, year round allergies such as dust or pet allergies, chronic nettle rash. Improve symptoms of asthma and helps to control asthma
Conv_7	Used in adults and adolescents of 12 years and older to relieve the symptoms that occur with long term allergic skin reactions such as itching, swelling, rashes and hay fever marked by sneezing , runny or blocked nose and itchy, red and watery eyes
Conv_8	Used for Alzheimer's disease and other types of dementia, head trauma, cerebrovascular disease such as stroke, age related memory loss, Parkinson's disease, attention deficit hyperactive disorder and glaucoma
Conv_9	Used to treat mild, moderate, and severe Alzheimer's disease
Conv_10	Used for the treatment of adult patients with mild to moderately severe Alzheimer's dementia, which is a progressive brain disorder that gradually affects memory, intellectual ability and behavior
Conv_11	Used to treat acute and chronic intestinal amoebiasis
Conv_12	Indicated for the treatment of diarrhea
Conv_13	Indicated for hepatic amoebiasis, urethritis and vaginitis due to trichomonas vaginalis, giardiasis
Conv_14	Used in the prevention and treatment of the chest pain associated with angina
Conv_15	Used to prevent angina pectoris, angina usually feels like a tight pain in the chest, neck or arm area. The pain comes from the heart muscle and is a sign that part of it is not getting enough oxygen for work it is doing
Conv_16	Used to relieve severe allergic reactions to drugs or other substances causing allergy
Conv_17	Used to treat chronic angina (chest pain)
Conv_18	Used to relieve the pain and frequency of angina attacks, control certain types of heart failure.
Conv_19	Used to prevent or reduce painful signs of a heart disease
Conv_20	Used to treat angina pectoris
Conv_21	Used in the treatment of inflammation and pain caused by osteoarthritis and rheumatoid arthritis and acute painful musculoskeletal condition
Conv_22	Used for treating osteoarthritis, degenerative joint disorders, inflammation of connective tissues
Conv_23	Used to treat rheumatoid arthritis and psoriatic arthritis
Conv_24	Used to treat advanced breast cancer in postmenopausal women and advanced kidney cancer
Conv_25	Used to prevent your body rejecting a transplanted organ (kidney, heart or liver)
Conv_26	Used to treat moderate to severe atopic dermatitis (eczema)
Conv_27	Used to treat severe psoriasis (a skin disease with thickened patches of inflamed red skin, often covered by silvery scales) , severe arthritis due to psoriasis, rheumatoid arthritis

Conv_28	Used for the treatment of primary dysmenorrhea and in the relief of mild to moderate pain associated with menorrhagia in women
Conv_29	Used to treat male pattern hair loss , benign prostatic hyperplasia
Conv_30	Used to treat men with an enlarged prostate (benign prostatic hyperplasia)-a non-cancerous growth of the prostate gland, caused by producing too much of a hormone called dihydrotestosterone
Conv_31	Used in the treatment and control of benign non-cancerous enlargement of the prostate
Conv_32	Used in adult men to treat the urinary symptoms associated with benign enlargement of the prostate (prostatic hyperplasia)
Conv_33	Treat muscle spasms of the urinary tract, which may be a result of inflammation of the bladder, prostate gland or urethra. Treat symptoms which may occur as a result of surgery, cystoscopy or catheterization such as painful urination, excessive urination at night and the inability to control urine flow
Conv_34	Used for short term use and to treats symptoms of pain, burning, urgency , frequency and other discomforts resulting caused by lower urinary tract infection
Conv_35	Used to treat or prevent osteoporosis in women after menopause
Conv_36	Used to prevent serious complications caused by bone cancer (e.g. fracture, pressure on the spinal cord or the need to receive radiation therapy)
Conv_37	Used to treat and prevent blood clots blocking the blood vessels e.g. deep vein thrombosis (DVT)
Conv_38	Used to reduce the risk of stroke in people who have had blood clots or mini-stroke
Conv_39	Used to treat nocturnal polyuria
Conv_40	Used as an anti-inflammatory analgesic which can relieve pain and swelling, used to bring down high body temperatures and to prevent recurrence of heart attacks or strokes
Conv_41	Used to prevent atherosclerosis, peripheral arterial disease, atrial fibrillation, high cholesterol level
Conv_42	Used for peri and postmenopausal women during the menopause to treat symptoms such as hot face neck and chest (hot flush)
Conv_43	Used in preventing pregnancy
Conv_44	Used to treat skin conditions such as acne, oily skin and excessive hair growth in women of reproductive age
Conv_45	Used to treat constipation ; help maintain normal bowel function in people with hemorrhoids
Conv_46	Used to treat infrequent bowel movements, hard and dry stools
Conv_47	Used for relief of nasal and sinus congestion; relief of allergic symptoms of the nose or throat due to upper respiratory tract allergies; relief of sinus pain and headache
Conv_48	Indicated for dry cough, allergic cough, post-operative cough, smokers cough, night-time cough
Conv_49	Breaks down and loosens thick mucus making it runny and easy to cough up
Conv_50	Used to treat common cold, cough, nasal congestion, allergic rhinitis, pain and fever
Conv_51	Used to control seborrheic dermatitis(common skin condition that mainly affects your scalp which causes scaly patches, red skin and severe dandruff)
Conv_52	Used to treat dandruff ;used to treat the inflammation associated with dandruff, relieving scalp redness and itching
Conv_53	Used to treat type 2 diabetes mellitus when diet , physical exercise and weight reduction alone have not been able to control your blood sugar levels

Menebo: Causal attribution and consumer perseverance on health remedies

Conv_54	Used to control blood sugar levels in type 2 diabetes mellitus
Conv_55	Used to control high blood sugar in adults with diabetes mellitus
Conv_56	Used for the treatment of sudden, short lived diarrhea
Conv_57	Treats food indigestion
Conv_58	Used to relieve colic pain and intestinal gas
Conv_59	Used for the relief of mild to moderate pain and feverish conditions such as headache, toothache, colds, influenza, joint pain and period pains
Conv_60	Used in the treatment of diabetic foot ulcers that occur as a complication of diabetes
Conv_61	Used for treating chronic infection with hepatitis B virus and active liver disease
Conv_62	Used to protect against infection by the hepatitis B virus
Conv_63	Used to correct the levels of fatty substances in the blood called lipids, the most common of which is cholesterol
Conv_64	Used to lower levels of bad type of cholesterol called LDL or triglycerides in the blood ; used
Conv_65	Used to lower lipids known as cholesterol and triglycerides in the blood when a low fat diet and life style changes on their own have failed
Conv_66	Used to treat mild to moderate essential hypertension
Conv_67	Used to treat high blood pressure and a type of chest pain called angina
Conv_68	Used to treat heart failure, reduce the risk of cardiac events such as heart attack, in patients with stable coronary artery disease
Conv_69	Used for the emergency restoration of blood pressure in cases of acute hypotension
Conv_70	Used to reduce the pain and swelling(inflammation) in the joints and muscles with osteoarthritis, rheumatoid arthritis, and gout
Conv_71	Used to treat arthritis (pain and inflammation)
Conv_72	Used to treat a number of painful conditions including flare ups of joint or back pain: attacks of gout: pain caused by kidney stones and injuries
Conv_73	Used to treat acute low back pain
Conv_74	Used to treat nasal congestion (blocked nose, including colds): perennial and allergic rhinitis (recurring inflammation of the nasal mucous membranes, including hay fever);sinusitis
Conv_75	Used to reduce the symptoms of seasonal allergic rhinitis (inflammation of the lining of the nose), such as stuffy nose, itching and sneezing
Conv_76	Used as maintenance treatment for the prevention and control of asthma symptoms
Conv_77	Used to treat dryness inside the nose; nasal allergies ,nasal irritation; upper airway cough syndrome
Conv_78	Used to decrease inflammation in the lungs which can lead to breathing problems: prevent symptoms such as wheezing, cough, chest tightness, and shortness of breath
Conv_79	Used in the treatment of dizziness, vertigo and prevention of migraine
Conv_80	Used for the symptomatic treatment of migraine; to treat any medical condition with concomitant nausea or vomiting and fever or pain
Conv_81	Used to prevent and treat malaria
Conv_82	Used in the treatment of uncomplicated falciparum malaria
Conv_83	Used for the treatment of severe falciparum malaria
Conv_84	Used to treat chronic hepatitis C virus infection
Conv_85	Used to treat bacterial infection of the brain, lungs, blood and heart; middle ear; abdomen;

Menebo: Causal attribution and consumer perseverance on health remedies

Conv_86	Used to treat pimples and red bumps in severe acne vulgaris
Conv_87	Used to treat respiratory and urinary tract infections
Conv_88	Used to treat tonsillitis , sinusitis, Acute chest infection, Pneumonia
Conv_89	Used to treat common worm, pinworm, hookworm, dwarf tapeworm roundworm infection
Conv_90	Used for urinary tract infections and typhoid fever
Conv_91	Used to prevent and treat throat , sinus, eye, ear , mouth and dental infections
Conv_92	Used to treat myocardial infarctions (heart attacks)within 6 hours after the onset of symptoms
Conv_93	Used to treat inflammation of esophagus; stomach and duodenal ulcers
Conv_94	Used to treat heartburn and ulcer: gastro esophageal reflux disease
Conv_95	Used to treat nausea and vomiting
Conv_96	Used in the treatment of hemorrhoids
Conv_97	Used to treat erectile dysfunction
Conv_98	Used to treat shingles ; cold sores; herpes simplex virus
Alt_1	For Stress Relief, Immune Support, Balanced Energy Levels and Mood Support,
Alt_2	Muscle discomfort relief, helps reduce stiff joints, supports energy levels, restful sleep support
Alt_3	Digestive health support, immune support, promotes regularity, boost nutrient absorption, reduce bloating and gas
Alt_4	Aid weight loss, enhance energy, improve digestion, strengthen muscles, promote hair and skin health
Alt_5	Supports brain function, fast absorption, helps provide headache relief,
Alt_6	Promote healthy aging all the way down to the cellular level , support your cells as they age, regulates your metabolism and increases cellular energy production
Alt_7	Sustained focus and energy, Promotes mental clarity and focus,
Alt_8	Supports blood glucose metabolism, supports healthy cholesterol levels
Alt_9	Natural energy, Stress relief, memory and liver support,
Alt_10	Brain health, mood, learning
Alt_11	Vitamin-C immune boost, helps immune system, gives body a natural immune, gives body a natural immune while producing important antibodies to speed up your healing process
Alt_12	Support your immune function and reproductive health
Alt_13	Help maintain a healthy immune system, assist with muscle repair for those with active lifestyles, supports collagen production for healthier firmer skin
Alt_14	Nerve Renew Advanced Nerve Support - Alternative Nerve Pain Treatment
Alt_15	Help to Increase Energy, Performance and Mood
Alt_16	Boosts energy, immune system and libido, regulates erectile dysfunction, and balances male hormones
Alt_17	Boosts hair and nails growth, skin enhancement and joint support
Alt_18	Helps support joint health and flexibility , helps support and maintain the body's joints, helps support overall health for hair skin and nails
Alt_19	Supports prostate and urinary health, helps you to sleep without urges to urinate, supports healthy inflammatory response
Alt_20	Supports immune function, supports glucose metabolism, supports cardiovascular and gastrointestinal function

Menebo: Causal attribution and consumer perseverance on health remedies

Alt_21	Supports weight management, helps with digestion, supports metabolism, increase energy levels,
Alt_22	Helps you lose more weight than dieting alone (weight loss aid)- ***
Alt_23	Supports healthy energy levels, promotes heart and brain health
Alt_24	Supports immune system and digestive health
Alt_25	Strengthen body's stress response, Support healthy energy levels
Alt_26	Supports healthy blood sugar levels, supports cardiovascular health, supports healthy cholesterol levels, supports digestion and immune functions
Alt_27	Supports memory, focus, clarity and overall cognitive performance, provide immune support, reduce inflammation and provide potent antioxidant benefits.
Alt_28	Help improve memory, focus, mental clarity and alertness.
Alt_29	Supports shock absorbing capacity and lubrication of joints , promotes healthy joints and skin
Alt_30	Supports Healthy Blood Circulation, Promotes Optimal Bone Health and Proper Calcium Storage, Supports Cardiovascular Health and Arterial Elasticity & Boosts Immune Function.
Alt_31	Increases libido, sizzling sex drive and superhero satisfaction, stimulates circulation for peak performance and confidence,
Alt_32	Energy Booster, Cell Regenerator, That Supports Cognitive Decline, Anti-Aging and Helps Breaks Down Carbs & Fats
Alt_33	Reduce fat mass, Improve resting metabolic rate, Helps to increase serotonin levels in your brain helping to reduce food cravings,
Alt_34	Support healthy response to stress. Perfect for busy professionals and anyone dealing with ongoing stress, supports a healthy immune and stress response that helps you cope with stress in a healthy way, nourish and restore optimal nervous and immune system health to support a balanced mood and energy levels.
Alt_35	Supports natural stress relief, helps nervous and immune system, assists energy and mood levels, supports cortisol levels, adrenal fatigue, natural anti-anxiety, stress and mood aid
Alt_36	Promote natural weight management and acts as antioxidant support for a healthy immune system boost, help your body break down body fat and stubborn brown-adipose tissue.
Alt_37	Promotes joint comfort and flexibility
Alt_38	Support reduction in joint and muscle discomfort, faster muscle recovery, healthy immune response and circulation
Alt_39	Boosts the fatty acids in your brain's cerebral cortex, the part of your brain responsible for memory, language, creativity, emotion, and attention.
Alt_40	For immune support, liver detoxification and digestion
Alt_41	Supports brain function, help support mental performance, promote a positive mood, and boost energy
Alt_42	Supports the body's neurological function and energy production, Supports energy production, resistance to stress, neurological function, and red blood cell formation
Alt_43	support healthy cholesterol levels already in the normal range,
Alt_44	Helps healthy circulation, inflammation response, and anti-oxidant action, helps neutralize free radicals to protect against oxidative stress and cell deterioration, which can contribute to premature aging

Alt_45	Support for heart, brain, and bone health by promoting a healthy methylation process , Promotes homocysteine metabolism,
Alt_46	Supports thyroid function
Alt_47	Supports heart, brain, blood, and liver health. Supports a strong immune system and glutathione status (the body's master antioxidant), Support vital high-energy bulk demands for an active liquid lifestyle.
Alt_48	Supports immune function, supports glucose metabolism, supports cardiovascular and gastrointestinal function
Alt_49	Supports a positive mood, help to increase the production of GABA, a key neurotransmitter that works to reduce restlessness and promote an overall calming effect.
Alt_50	Supports energy and immune function
Alt_51	Used as a natural digestion aid and as an antioxidant
Alt_52	Free radical scavenger, immune system support,
Alt_53	Supports cleansing of the bladder, supports healthy liver function, promotes healthy urinary tract
Alt_54	Reduce anxiety , enhance energy , anti-depression and anxiety support, as well as cortisol calm support
Alt_55	Delivers a High Concentration of Omega-3s, Supports Joint Health – Knees, hips and shoulders not feeling like they used to, Helps Maintain Brain Health & Working Memory, Provides Protection Against Free-Radical Damage,
Alt_56	Decrease anxiety, promote relaxation, improve blood flow, boost sexual function,
Alt_57	Supports anti-inflammation and detoxification
Alt_58	Maintain prostate function
Alt_59	Safely helps reduce occasional urgency, promotes healthy metabolism to improve weight management, supports a good nights sleep, supports bladder strength and helps reduce the urge to go, day and night; supports serotonin balance and helps promote metabolic health to support healthy weight management.
Alt_60	Helps support urinary health, Boost Testosterone
Alt_61	Supports energy production, critical for enzyme function
Alt_62	Supports healthy immune response, supports normal GI Tract health
Alt_63	Ease stress and anxiety, keeps calm and alert
Alt_64	Help cope with stress in a healthy way, daily stress support, promotes balanced mood, nourish and restore optimal nervous and immune system health to support a balanced mood and energy levels
Alt_65	Supports healthy blood sugar levels, Promotes heart/circulatory health, Helps support fat metabolism,
Alt_66	Helps fight depression, assist in calming stress and anxiety, supports a relaxed positive mood
Alt_67	Supports healthy digestion, helps reduce occasional gas ,bloating and irregularity; Aids your ability to break down carbohydrates, fats, fiber and proteins to help improve nutrient absorption and energy;
Alt_68	Stimulate good gut bacteria
Alt_69	Release stress and boosts energy, rejuvenates adrenal function
Alt_70	Supports thyroid function
Alt_71	Helps support mitochondria to enhance cellular energy production ,

Menebo: Causal attribution and consumer perseverance on health remedies

Alt_72	Support your brain power
Alt_73	Promote regular, healthy, and comfortable bowel movements
Alt_74	Supports optimal heart, eye, immune and brain health
Alt_75	Helps protect against occasional bloating, constipation, digestive discomfort
Alt_76	Helps stabilize mast cells that store and release histamine
Alt_77	Supports relaxed mood, stress relief and positive vibes, calming effect, promotes serotonin increase
Alt_78	Increases mobility and flexibility, reduces joint stiffness and soreness, joint relief in as few as 7 days
Alt_79	Healthy inflammation response, supporting whole body wellness including joint support
Alt_80	Promote the maintenance of a clean waste stream
Alt_81	Relieve the symptoms associated with everyday headaches
Alt_82	support your eye health,
Alt_83	support blood pressure health & promote overall heart health, immune system support, digestion support, inflammation & detoxification
Alt_84	Helps reduce occasional inflammation due to normal daily wear and tear , support whole-body vitality & a healthy inflammatory response,
Alt_85	Support healthy eye pressure, circulation, and retinal health, Help lower intraocular pressure and support the health of your retinas
Alt_86	helps to promote overall health, and Helps Support Your Immune System
Alt_87	Improve hair care, density, thickness, and fullness while also nourishing the skin and strengthening your nails.
Alt_88	Combat numbness in fingers and toes by improving microcirculation Provides complete neurovascular support
Alt_89	helps to generate and regulate nerve impulses and aids in the maintenance of fluid balance; it is also used by the body in visual pathways, as well as in the brain and nervous system, where it works together with glycine and GABA as a neurotransmitter.
Alt_90	Stimulates Phase I and Phase II detoxifying enzyme systems
Alt_91	Cardiovascular health support
Alt_92	Provides nutrients that protect liver cells from damage from a variety of toxins
Alt_93	Improve memory and clarity, mind enhancement, enhance focus, boost concentration
Alt_94	Maintains kidney cleansing function
Alt_95	Supports Healthy Digestion of Proteins, Fats, and Carbohydrates
Alt_96	Elite gaming performance and blue light protection
Alt_97	fight back against iron deficiency by promoting the formation of healthy red blood cells
Alt_98	Help Support Heart Health and Cholesterol Already Within Normal Range
Alt_99	Supports menopausal health, helps with hot flashes
Alt_100	Treats iron deficiency
Alt_101	Antioxidant protection for the brain

Menebo: Causal attribution and consumer perseverance on health remedies

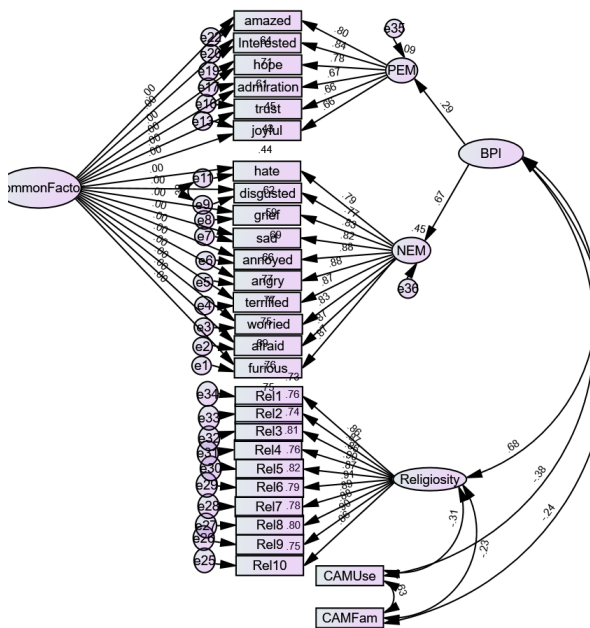
Appendix D. Full list of belief in psycho-immunology (BPI) scale items (the original 24-item scale).

	I will recover extremely slower from an illness (-3)	I will recover considerably slower from an illness (-2)	I will recover somewhat slower from an illness (-1)	I will neither be slower nor faster to recover from an illness (0)	I will recover somewhat faster from an illness (1)	I will recover considerably faster from an illness (2)	I will recover extremely faster from an illness (3)
When I become annoyed or displeased	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am disgusted with something	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am worried that something bad or unpleasant might happen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I feel hate for somebody	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I feel angry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am emotionally terrified or scared	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I feel furious	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I feel afraid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I feel sad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am bored	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I get emotionally distracted	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I feel grief	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I feel Interested in something	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I feel admiration for somebody	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I trust somebody	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I pay careful attention to something	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am amazed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I hope for something	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am surprised	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I accept the situation as it is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am joyful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am in delight	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I feel peace of mind	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix E. Common method bias adjustment with common latent factor

Standardized Regression Weights: (No Common Latent Factor)			Estimate1	Standardized Regression Weights: (With Common Latent Factor)			Estimate2	Difference
Terrified	<---	NEM	0.852	Terrified	<---	NEM	0.723	0.129
Angry	<---	NEM	0.868	Angry	<---	NEM	0.758	0.11
Annoyed	<---	NEM	0.867	Annoyed	<---	NEM	0.757	0.11
Sad	<---	NEM	0.795	Sad	<---	NEM	0.65	0.145
Grieving	<---	NEM	0.806	Grieving	<---	NEM	0.661	0.145
Disgusted	<---	NEM	0.749	Disgusted	<---	NEM	0.604	0.145
Trust	<---	PEM	0.655	Trust	<---	PEM	0.384	0.271
Admirable	<---	PEM	0.666	Admirable	<---	PEM	0.294	0.372
Hope	<---	PEM	0.783	Hope	<---	PEM	0.583	0.2
Interested	<---	PEM	0.843	Interested	<---	PEM	0.564	0.279
Amazed	<---	PEM	0.798	Amazed	<---	PEM	0.566	0.232
Joyful	<---	PEM	0.666	Joyful	<---	PEM	0.505	0.161
Worried	<---	NEM	0.808	Worried	<---	NEM	0.672	0.136
Hateful	<---	NEM	0.767	Hateful	<---	NEM	0.641	0.126
Afraid	<---	NEM	0.86	Afraid	<---	NEM	0.741	0.119
Furious	<---	NEM	0.845	Furious	<---	NEM	0.732	0.113

Appendix E. BPI as a second-order construct correlated with religiosity on SEM



Appendix F. List of measures used in construct validity

Need for cognition scale (Cacioppo et al., 1984)

- 1 I would prefer complex to simple problems.
- 2 I like to have the responsibility of handling a situation that requires a lot of thinking.
- 3 Thinking is not my idea of fun. (R)
- 4 I would rather do something that requires little thought than something that is sure to challenge my thinking abilities. (R)
- 5 I try to anticipate and avoid situations where there is likely a chance I will have to think in depth about something. (R)
- 6 I find satisfaction in deliberating hard and for long hours.
- 7 I only think as hard as I have to. (R)
- 8 I prefer to think about small, daily projects to long-term ones. (R)
- 9 I like tasks that require little thought once I've learned them. (R)
- 10 The idea of relying on thought to make my way to the top appeals to me.
- 11 I really enjoy a task that involves coming up with new solutions to problems.
- 12 Learning new ways to think doesn't excite me very much. (R)
- 13 I prefer my life to be filled with puzzles that I must solve.
- 14 The notion of thinking abstractly is appealing to me.
- 15 I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.
- 16 I feel relief rather than satisfaction after completing a task that required a lot of mental effort. (R)
- 17 It's enough for me that something gets the job done; I don't care how or why it works. (R)
- 18 I usually end up deliberating about issues even when they do not affect me personally.

Impulsivity scale (Patton et al., 1995)

- 1 I plan tasks carefully. (R)
- 2 I do things without thinking.
- 3 I make up my mind quickly.
- 4 I am happy-go-lucky.
- 5 I don't "pay attention."
- 6 I have "racing" thoughts.
- 7 I plan trips well ahead of time. (R)
- 8 I am self-controlled. (R)
- 9 I concentrate easily. (R)
- 10 I save regularly. (R)
- 11 I "squirm" at plays or lectures.

- 12 I am a careful thinker. (R)
 - 13 I plan for job security. (R)
 - 14 I say things without thinking.
 - 15 I like to think about complex problems. (R)
 - 16 I change jobs.
 - 17 I act "on impulse."
 - 18 I get easily bored when solving thought problems.
 - 19 I act on the spur of the moment.
 - 20 I am a steady thinker. (R)
 - 21 I change residences.
 - 22 I buy things on impulse.
 - 23 I can only think about one thing at a time.
 - 24 I change hobbies.
 - 25 I spend or charge more than I earn.
 - 26 I often have extraneous thoughts when thinking.
 - 27 I am more interested in the present than the future.
 - 28 I am restless at the theater or lectures.
 - 29 I like puzzles. (R)
 - 30 I am future-oriented. (R)
-

Multidimensional health locus of control scale (Wallston et al., 1978)

- 1 If I get sick, it is my own behavior that determines how soon I get well again.
- 2 I am in control of my health.
- 3 When I get sick I am to blame.
- 4 The main thing that affects my health is what I myself do.
- 5 If I take care of myself, I can avoid illness.
- 6 If I take the right actions, I can stay healthy.
- 1 Having regular contact with my physician is the best way for me to avoid illness.
- 2 Whenever I don't feel well, I should consult a medically trained professional.
- 3 My family has a lot to do with my becoming sick or staying healthy.
- 4 Health professionals control my health.
- 5 When I recover from an illness, it's usually because other people (for example, doctors, nurses, family, friends) have been taking good care of me.
- 6 Regarding my health, I can only do what my doctor tells me to do.
- 1 Most things that affect my health happen to me by accident.

- 2 Luck plays a big part in determining how soon I will recover from an illness.
- 3 My good health is largely a matter of good fortune.
- 4 No matter what I do, I'm likely to get sick.
- 5 No matter what I do, if I am going to get sick, I will get sick.
- 6 If it's meant to be, I will stay healthy.

Superstitious beliefs scale (Dagnall et al., 2009)

- 1 Have you avoided walking under a ladder because it is associated with bad luck?
- 2 Would you be anxious about breaking a mirror because it is thought to cause bad luck?
- 3 Are you superstitious about the number 13?
- 4 Do you say "fingers crossed" or actually cross your fingers?
- 5 Do you say 'touch wood' or actually touch or knock on wood?
- 6 Do you sometimes carry a lucky charm or object?

Political orientation scale (Everett, 2013)

- 1 Abortion rights
- 2 Limited government
- 3 Military and national security
- 4 Religion
- 5 Welfare benefits
- 6 Gun control
- 7 Modern marriage
- 8 Modern values
- 9 Fiscal responsibility
- 10 Business
- 11 The family unit
- 12 Patriotism

Religiosity scale (Worthington Jr et al., 2003)

- 1 I often read books and magazines about my faith.
- 2 I make financial contributions to my religious organization.
- 3 I spend time trying to grow in understanding of my faith.
- 4 Religion is especially important to me because it answers many questions about the meaning of life.
- 5 My religious beliefs lie behind my whole approach to life.
- 6 I enjoy spending time with others of my religious affiliation.
- 7 Religious beliefs influence all my dealings in life.
- 8 It is important to me to spend periods of time in private religious thought and reflection.

- 9 I enjoy working in the activities of my religious organization.
- 10 I keep well informed about my local religious group and have some influence in its decisions.

General vaccine attitudes (Marlow et al., 2007)

Importance of vaccinations (Cronbach's alpha = 0.93)

-
- 1 Vaccination is one way that parents can make a positive contribution to their children's health.
- 2 More kids should be vaccinated against diseases so that outbreaks do not occur.
- 3 I have a responsibility to have my children vaccinated for the protection of all children.
- 4 It is very important that my children receive all their vaccinations.

General vaccine concerns (Cronbach's alpha = 0.81)

- 5 I am afraid of vaccinations for my children. (R)
- 6 I am concerned about vaccination side effects. (R)
- 7 There are too many vaccinations already included in the childhood vaccination schedule. (R)
-

Doctoral dissertation no. 110

2022

**Causal attribution and consumer perseverance on
health remedies**

Dissertation for the degree of PhD

Mesay Moges Menebo

ISBN: 978-82-7860-485-1 (print)

ISBN: 978-82-7860-484-3 (online)

usn.no

