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How Perceiving Vaccines as ‘Natural’ Shapes Vaccination Attitudes: A Worldview Perspective

Abstract

People may perceive vaccines as more or less natural, and it may influence their support for vaccinations. This paper points out that certain people’s worldviews (i.e., the beliefs about the world’s orderliness, anthropocentrism, and love and care for nature) may play a role in this naturalness-based mechanism of vaccination support. Research questions are formulated to suggest the directions for future research.

Introduction

The current COVID-19 pandemic is considered to mark the ‘pandemic era’ characterized by the presence of various globally-spreading outbreaks [Cutler, 2020; Shin, Kang, 2020], and one may assume that vaccines effectively respond to those challenges. Hence, attitudes toward vaccination become a key issue for policymakers and societies – even if some vaccinations are mandatory. As vaccines and vaccination may be treated as products, especially when they are paid for, public support for them can be viewed from the consumer behavior perspective. In this paper, favorable consumer attitudes toward vaccinations are referred to as vaccination support. It may take various forms like perceiving vaccines as effective and safe [Abbas *et al.*, 2018; Hwang, 2020], vaccination intent [Hopfer, 2011], willingness to pay for vaccination [Cerdeira, Garcia, 2021], and vaccination advocacy [Lacey *et al.*, 2015].

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Perceived vaccine naturalness [Meier *et al.*, 2021] is a factor of vaccination intent, strongly visible in anti-vaccine arguments [Kata, 2012]. However, the role of perceived vaccine naturalness is surprisingly understudied from the consumer behavior perspective [e.g. Meier *et al.*, 2021; Bearth *et al.*, 2022], despite a large amount of research on the role of perceived naturalness for other products [e.g. Li, Chapman, 2012; Machado *et al.*, 2015; Meier *et al.*, 2019]. It may be suggested that when considering arguments in favor or against vaccines, like those pertaining to vaccine (un) naturalness, consumer worldviews may shape the degree to which those arguments resonate among consumers. Few studies [Cao, Li, 2021; Li, Cao, 2020] pertain to the role of the consumer worldview constructs in the naturalness-related mechanism of attitudes toward drugs (but not vaccinations). This gap represents the practical problem in developing vaccination advertising strategies: how to counter the ‘vaccines-are-unnatural’ arguments or provide ‘vaccines-are-natural’ ones across consumer groups with different worldviews or referring to different worldviews? Therefore, this paper aims to formulate research questions related to the naturalness-related mechanism of vaccine attitudes and selected worldviews, i.e., consumer beliefs about the world’s orderliness [Zięba *et al.*, 2018], love and care for nature [Perkins, 2010], and anthropocentrism [Coren, 2015]. Those questions suggest the possible directions for future research on vaccine attitudes.

1. Perceived vaccine naturalness as a factor of vaccination support

While the concept of the naturalness of an object may seem intuitive, it is not easy to establish a precise formal definition [Siipi, 2008]. Namely, ‘naturalness’ may pertain to the object’s properties (like being or acting as a part of a natural world or life) or history (like being free of human origination or intervention). Although consumers may be suspicious about naturalness claims in advertising [Kahraman, Kazançoğlu, 2019], they generally tend to prefer more ‘natural’ products and brands [Machado *et al.*, 2015], including more ‘natural’ drugs [e.g. Di Bonaventura *et al.*, 2008; Li, Chapman, 2012]. This effect is referred to as naturalness bias [Meier *et al.*, 2019]. It may result from people’s belief that naturalness is a positive property and is instrumental to specific goals. Specifically, Meier *et al.* [2019] distinguished between the ‘natural-is-better’ default belief and perceived safety as a mechanism of the naturalness bias.

Ditlevsen *et al.* [2020] demonstrated that non-experts perceived synthetic livestock vaccines as less natural and riskier than other vaccines. Bearth *et al.* [2022] and Meier *et al.* [2021] suggest the naturalness bias as a factor of COVID-19 vaccination intent.

The issue of vaccine naturalness involves aspects of the intervention in the world's order and nature. This paper considers selected consumer worldview constructs that may relate to those aspects. Namely, the consumer beliefs about the world's orderliness may be related to the intervention in the world's order. On the other hand, environmental constructs (anthropocentrism and love and care for nature) may represent the intervention in nature.

2. World's orderliness beliefs and the naturalness-related mechanism of vaccination support

The issue of vaccine naturalness may be related to the degree people view the world as an ordered entity. Namely, if the entire world is perceived as firmly ordered, vaccines may be viewed more as part of this order, which may imply a higher perceived vaccine naturalness. On the other hand, vaccine unnaturalness may be viewed as a threat to or incongruity versus the world's order. Trzebiński *et al.* [2021, 2022] explored the relationships between vaccination intent and the general beliefs about the world's orderliness and positivity. Those beliefs are considered to support life satisfaction, positive mood, and self-efficacy [Zięba *et al.*, 2018]. Consumer behavior studies involve consumer hope [Fazal-e-Hasan *et al.*, 2018; MacInnis, Chun, 2006] and consumer belief in a just world [Wilson, Darke, 2012]. However, to the best of the author's knowledge, no study investigates the role of consumer orderliness beliefs in the naturalness-related mechanism of vaccination support. This gap is meaningful for developing vaccination advertising strategies. That is because ad messages (including those related to vaccine naturalness) can refer to the world's orderliness beliefs and can be aligned to different levels of those beliefs. Therefore, the following research question may be posed:

RQ1. What is the role of consumer beliefs on the world's orderliness in the naturalness-related mechanism of vaccination support?

3. Environmental constructs and the naturalness-related mechanism of vaccination support

Vaccines, especially emerging ones, responding to novel illnesses (like COVID-19), may be primarily viewed by consumers as a human response to a natural threat. Thus, consumer environmental worldviews, that is, their beliefs and attitudes

regarding nature and human-nature relationships, may play a prominent role in the vaccination support mechanism based on perceived vaccine naturalness. Specifically, the environmental worldviews may make people more critical in terms of vaccine naturalness and may make the vaccine (un) naturalness more important for people. For drugs, Li and Cao [2020] demonstrated that consumer connectedness with nature is positively related to the preference for natural (vs. synthetic) drugs. However, connectedness with nature is an umbrella construct that may embrace various beliefs on and attitudes toward nature.

First, people may differ in their beliefs on the position of humans versus nature. Anthropocentrism is a worldview in which humans are considered a superior part of nature [Coren, 2015] and the perfect link in natural evolution [Fortuna *et al.*, 2021]. In consumer behavior literature, anthropocentrism is mainly studied in contrast to ecocentrism as a factor of sustainable consumption [Nordlund, Garvil, 2002; Rahman, Reynolds, 2019].

Second, people may differ in the valence ascribed to nature (positive vs. negative). Love and care for nature [Perkins, 2010] is defined as recognizing nature's intrinsic value and encompasses feelings of awe, emotional closeness, and responsibility for nature. Love/care for nature was demonstrated to be positively related to consumers' green behavior [Wu, Zhu, 2021].

However, the existing literature lacks investigation of the role of environmental worldview constructs (i.e. anthropocentrism and love/care for nature) in the naturalness-related mechanism of vaccination support. Moreover, it remains unknown how ad messages related to the nature and human-nature relationship may shape vaccination support depending on perceived vaccine naturalness. This gap is of high practical importance. Namely, understanding the role of environmental constructs may guide vaccine marketers and policymakers who develop vaccine advertising strategies. Specifically, they may be advised on how to make environmental references in vaccination ads (including those related to vaccine naturalness) and align them to consumer attitudes toward and beliefs about the environment. Therefore, the following research questions may be posed:

RQ2. What is the role of consumer anthropocentrism in the naturalness-related mechanism of vaccination support?

RQ3. What is the role of love and care for nature in the naturalness-related mechanism of vaccination support?

Conclusion

Perceiving vaccines as natural may make vaccine attitudes more favorable [cf. Bearth *et al.*, 2022; Meier *et al.*, 2021]. Thus, identifying the factors playing a role in this mechanism may help build public support for vaccinations. This paper suggests that several kinds of people's worldviews (i.e., consumer beliefs about the world's orderliness, anthropocentrism, and love and care for nature) may be such factors. Pro-vaccination campaigns may refer to those worldviews or target people based on those worldviews. Therefore, answering the above research questions is a promising path for future research on vaccine attitudes.

The moderating role of people's worldviews may be investigated at least twofold. First, further studies may take the form of a survey, measuring people's world, perceived vaccine naturalness, and vaccine attitudes. This way, such studies can assess the role of actual views and vaccine perceptions held by people. Second, the studies may be experimental, involving the manipulation of worldview activation. For example, stimuli vaccination ads may refer to nature's beauty or dangers, which may, respectively, activate or deactivate the idea of love and care for nature. Perceived vaccine naturalness may also be manipulated, as stimuli vaccination ads may refer to the vaccine's naturalness or artificiality. This way, such studies can assess the proposed relationships based on worldviews and perceptions activated by vaccine-promotion messages, which may have valuable practical applications.

References

- Abbas, K.M., Kang, G.J., Chen, D., Werre, S.R., Marathe, A. (2018). Demographics, Perceptions, and Socioeconomic Factors Affecting Influenza Vaccination among Adults in the United States, *PeerJ*, vol. 6, p. e5171.
- Bearth, A., Berthold, A., Siegrist, M. (2022). People's Perceptions of, Willingness-to-Take Preventive Remedies and their Willingness-to-Vaccinate During Times of Heightened Health Threats, *Plos One*, vol. 17(2), p. e0263351.
- Cao, Y., Li, H., (2021). Harmony Between Humanity and Nature: Natural vs. Synthetic Drug Preference in Chinese Atheists and Taoists, *Journal of Religion and Health*. DOI: 10.1007/s10943-021-01314-6.
- Cerda, A.A., García, L.Y. (2021). Willingness to Pay for a COVID-19 Vaccine, *Applied Health Economics and Health Policy*, vol.19(3), pp. 343–351.
- Coren, D. (2015). Anthropocentric Biocentrism in a Hybrid, *Ethics and the Environment*, vol. 20(2), pp. 48–60.

- Cutler, D. (2020). New Rules for the Pandemic Era. In *JAMA, Health Forum*, vol 1(7), p. e200945–e200945.
- Di Bonaventura, M.D., Chapman, G.B. (2008). Do Decision Biases Predict Bad Decisions? Omission Bias, Naturalness Bias, and Influenza Vaccination, *Medical Decision Making*, vol. 28(4), pp. 532–539.
- Ditlevsen, K., Glerup, C., Sandøe, P., Lassen, J. (2020). Synthetic Livestock Vaccines as Risky Interference with Nature? Lay and Expert Arguments and Understandings of ‘Naturalness’, *Public Understanding of Science*, vol. 29(3), pp. 289–305.
- Fazal-e-Hasan, S.M., Ahmadi, H., Kelly, L., Lings, I.N. (2019). The Role of Brand Innovativeness and Customer Hope in Developing Online Repurchase Intentions, *Journal of Brand Management*, vol. 26(2), pp. 85–98.
- Fortuna, P., Wróblewski, Z., Gorbaniuk, O. (2021). The Structure and Correlates of Anthropocentrism as a Psychological Construct, *Current Psychology*, May 11th, pp. 1–13. DOI: 10.1007/s12144-021-01835-z.
- Hopfer, S. (2012). Effects of a Narrative HPV Vaccination Intervention Aimed at Reaching College Women: A Randomized Controlled Trial, *Prevention Science*, vol. 13(2), pp. 173–182.
- Hwang, J. (2020). Health Information Sources and the Influenza Vaccination: the Mediating Roles of Perceived Vaccine Efficacy and Safety, *Journal of Health Communication*, vol. 25(9), pp. 727–735.
- Kahraman, A., Kazançoğlu, İ. (2019). Understanding Consumers’ Purchase Intentions Toward Natural-Claimed Products: A Qualitative Research in Personal Care Products, *Business Strategy and the Environment*, vol. 28(6), pp. 1218–1233.
- Kata, A. (2012). Anti-Vaccine Activists, Web 2.0, and the Postmodern Paradigm – An Overview of Tactics and Tropes Used Online by the Anti-Vaccination Movement, *Vaccine*, vol. 30(25), pp. 3778–3789.
- Lacey, R., Kennett-Hensel, P.A., Manolis, C. (2015). Is Corporate Social Responsibility a Motivator or Hygiene Factor? Insights into its Bivalent Nature, *Journal of the Academy of Marketing Science*, vol. 43(3), pp. 315–332.
- Li, H., Cao, Y. (2020). For the Love of Nature: People Who Prefer Natural Versus Synthetic Drugs are Higher in Nature Connectedness, *Journal of Environmental Psychology*, vol. 71, p. 101496.
- Li, M., Chapman, G.B. (2012). Why do People Like Natural? Instrumental and Ideational Bases for the Naturalness Preference, *Journal of Applied Social Psychology*, vol. 42(12), pp. 2859–2878.
- Machado, J.C., de Carvalho, L.V., Torres, A., Costa, P. (2015). Brand Logo Design: Examining Consumer Response to Naturalness, *Journal of Product & Brand Management*, vol. 24(1), pp. 78–87.
- MacInnis, D.J., Chun, H.E. (2006). Understanding Hope and its Implications for Consumer Behavior: I Hope, Therefore I Consume, *Foundations and Trends® in Marketing*, vol. 1(2), pp. 97–188.
- Meier, B.P., Dillard, A.J., Lappas, C.M. (2019). Naturally Better? A Review of the Natural-is-Better Bias, *Social and Personality Psychology Compass*, vol. 13(8), p. 12494.

- Meier, B.P., Dillard, A.J., Lappas, C.M. (2021). Predictors of the Intention to Receive a SARS-CoV-2 Vaccine, *Journal of Public Health*, Oxford University Press, England, fdab013. DOI: 10.1093/pubmed/fdab013.
- Nordlund, A.M., Garvill, J. (2002). Value Structures Behind Proenvironmental Behavior, *Environment and Behavior*, vol. 34(6), pp. 740–756.
- Perkins, H.E. (2010). Measuring Love and Care for Nature, *Journal of Environmental Psychology*, vol. 30(4), pp. 455–463.
- Rahman, I., Reynolds, D. (2019). The Influence of Values and Attitudes on Green Consumer Behavior: A Conceptual Model of Green Hotel Patronage, *International Journal of Hospitality & Tourism Administration*, vol. 20(1), pp. 47–74.
- Shin, H., Kang, J. (2020). Reducing Perceived Health Risk to Attract Hotel Customers in the COVID-19 Pandemic Era: Focused on Technology Innovation for Social Distancing and Cleanliness, *International Journal of Hospitality Management*, vol. 91, p. 102664. DOI: 10.1016/j.ijhm.2020.102664.
- Siipi, H. (2008). Dimensions of Naturalness, *Ethics and the Environment*, vol. 13(1), pp. 71–103.
- Trzebiński, J., Potocka, A., Trzebiński, W., Krzysztoń, M. (2021). Willingness to Vaccinate Against COVID-19: The Role of Assumptions on the World's Orderliness and Positivity, *Journal of Loss and Trauma* 2021, vol. 26(8), pp. 1–16.
- Trzebiński, W., Trzebiński, J. (2022). Do Optimists Like Vaccines? The Effect of Perceived Vaccine Novelty and Beliefs in the World's Positivity and Orderliness on the Attitudes Toward COVID-19 Vaccinations – the Case of European Young Adults, *Vaccines*, vol. 10(3), p. 379.
- 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*, vol. 39(3), pp. 615–628.
- Wu, L., Zhu, Y. (2021). How Love of Nature Promotes Green Consumer Behaviors: The Mediating Role of Biospheric Values, Ecological Worldview, and Personal Norms, *PsyCh Journal*, vol. 10(3), pp. 402–414.
- Zięba, M., Surawska, M., Zalewska, A.M. (2018). Relationships Between Personality Traits, General Self-Efficacy, Self-Esteem, Subjective Well-Being, and Entrepreneurial Activity, *Polish Psychological Bulletin*, vol. 49(2), pp. 131–140.