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A brief analysis of response-cost factors and of the use of safety equipment in preventing COVID-19 spread

Uma breve análise de fatores de custo da resposta e do uso de equipamentos de segurança para prevenir a transmissão do COVID-19

André Luiz[1,3,4]
Myenne Mieko Ayres Tsutsumi[1,2,3,4]
Carlos Eduardo Costa[3]

[1]Universidade Positivo – Faculdade Londrina, Londrina-PR, Brasil
[2]Pontifícia Universidade Católica do Paraná, Londrina-PR, Brasil
[3]Universidade Estadual de Londrina, Londrina-PR, Brasil
[4] Núcleo Evoluir, Londrina-PR, Brasil

Resumo

Recentemente, o mundo está lidando com uma pandemia de COVID-19, algo que mudou as nossas rotinas e nos exige medidas de segurança e mais cuidados, tais como o uso de equipamentos de segurança. Entretanto, o uso de equipamentos de segurança não é um comportamento comum e tanto o acesso quanto o uso correto desses equipamentos pode ser uma tarefa trabalhosa para a população em geral. O presente artigo explora alguns fatores do custo da resposta relacionados ao uso de equipamentos de segurança para prevenir a transmissão da COVID-19. Nós propomos que a manipulação de fatores de custo da resposta pode alterar a probabilidade do uso de equipamentos, como máscaras e luvas. Não obstante, os fatores de custo da resposta são apenas um dentre vários aspectos envolvidos no uso de equipamentos de segurança (e.g., aspectos culturais). Pesquisas futuras podem ampliar e testar as sugestões feitas no presente artigo assim como propor outros aspectos que podem ser analisados. Nós esperamos que o entendimento dos fatores de custo da resposta envolvidos na ocorrência de comportamentos de prevenção possa contribuir para o planejamento de políticas públicas para aumentar o uso de equipamentos de segurança e diminuir a probabilidade de transmissão durante contextos de pandemia, como a pandemia de COVID-19.

Palavras-chave: COVID-19; custo da resposta; saúde pública; pandemia.

Abstract

Recently, the world is dealing with the COVID-19 pandemic, something that has changed daily routines and requires us to take more careful security measures, such as using safety equipment. However, using safety equipment is not an everyday behavior, and both access and correct use can be an effortful task for the general public. This paper briefly explores some of the response-cost factors regarding the use of safety equipment in preventing COVID-19 spread. We propose that the manipulation of response-cost factors can affect the probability of the use of safety equipment. Nevertheless, response-cost is only one of several aspects (e.g., cultural aspects) involved in the use of safety equipment. Further research could extend and test the suggestions we make and propose other aspects that should be analyzed. We hope that understanding the response-costs factors involved in preventive behavior can contribute to public-policy planning and increase the daily use of safety equipment, and decrease the probability of transmission during health hazards such as the COVID-19 pandemic.

Keywords: COVID-19; response cost; public health; pandemic

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✉ andreluizbmt@gmail.com
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The world is going through a Coronavirus Disease 2019 (COVID-19) pandemic threat, which increases the need for the use of safety equipment and to prevent transmission and contagion. As psychologists, we know that the large-scale production of such equipment is not the only variable involved in increasing the probability that people engage in preventive measures. The use of safety equipment is not an everyday behavior, and both access and its correct use can be an effortful task for the general public (see Feng et al., 2020, for recommendations on the use of masks in the general public), which decreases its probability of occurrence. As proposed by Carvalho, Moreira, de Oliveira, Landim, and Neto (2020), every effort should be made to understand and control the COVID-19 pandemic. Despite the need for more empirical evidence, Li et al. (2020) suggested that as people gain more knowledge about the COVID-19 disease, the prognosis of who is infected is becoming relatively promising. As Skinner (1953) once said: "When we have discovered the laws which govern a part of the world about us, and when we have organized these laws into a system, we are then ready to deal effectively with that part of the world." Thereby, scientific knowledge about behavioral aspects is highly necessary for effectively implementing such preventive measures as the use of masks and gloves.

Behavior Analysis (Skinner, 1953) offers an evidence-based background to understand the effects of multiple variables on human behavior. One of those variables is called *response-cost* (cf. Soares, Costa, Aló, Luiz, & Cunha, 2017 for a review) and has been studied by investigating how much effort an organism needs to expend to behave appropriately (Friman & Poling, 1995; Soares et al., 2017). The common finding is that the higher the effort required to behave (i.e., the greater the response-cost), the lower the probability to get involved (Alling & Poling, 1995; Chung, 1965; Costa, De Souza, Bianchini, Porto, & De Freitas, 2013; Venditti & Wine, 2017). Based on this negative relation between response-cost and responding, we propose that the probability of using safety equipment such as masks and gloves to prevent COVID-19 spread can be altered by manipulating response-cost factors. Hence, the higher the response-cost required to apply preventive measures, the lower the probability of doing it.

Understanding response-cost factors can be added to the guiding principles used to treat the population infected by the virus, such as those elaborated by Jiang et al. (2020). On this basis, we may offer evidence-based strategies to government policymakers and health professionals to improve efficiency and optimal use of preventive resources (e.g., Edgerton & Wine, 2019). We may also reduce the risk of negative emotional by-products of the COVID-19 pandemic, such as anxiety (Lima et al., 2020), fear (Carvalho et al., 2020), and acute and post-traumatic stress (Borloti, Haydu, Kienen, & Zacarin, 2020).

Exemplifying the relation between response-cost and health care behaviors

People may require considerable effort to remember the day and time of a health care appointment. Once they remember it, several other response-cost factors will be involved in attending the appointment: for example, the price of the parking lot and the relative distance between the parking lot and the hospital or clinic, the need to call a taxi, the existence of child-play areas to take care of children, etc. Each of these situations will represent a different response-cost to behave appropriately, but some of them can be modified to increase the probability of attending the health care appointment. For instance, the hospital or clinic administration can increase this probability by simply scheduling e-mails or messages reminding of the day and time of the appointment, offering a parking pass or showing the location of the nearest parking lots, and arranging child-play areas (e.g., Friman, Finney, Rapoff, & Christophersen, 1985; Friman, Glasscock, Finney, & Christophersen, 1987).

Response-cost factors and the use of safety equipment to prevent COVID-19 spread

Multiple response-cost factors are involved in the use of safety equipment. These include a lack of historical background in using such items daily, financial costs mostly when equipment becomes scarce, and "how to buy" costs for older adults who are especially affected by the COVID-19 pandemic (Solomon, 2020), and should not go out to buy these products, and yet may have no easy access to online shopping.

In the case of financial costs, it is known that in some conditions, as the price increases, the use of a service or the purchase of products decreases (e.g., McCarty, House, Harman, & Richards, 2006). Thus, governments and policymakers should prevent price increases of safety equipment, favoring their acquisition and use. The homeless population may face even more difficulties because the price can be a significant response-cost factor to be considered. In this regard, the risk of contamination of this population can be decreased, as Neto et al. (2020) suggested, by spreading information and providing easier access to washing facilities. The interventions suggested by Neto et al. could function as interventions carried out by the hospital and clinical administration. Thus, when an institution – the government or the hospital – reminds the population about health behaviors and offers environments with lower response-costs to behave appropriately, the probability of getting involved may increase. Nevertheless, the "reminders" in question should include well-formulated instructions on how to behave.

Instructions or rules can function as environmental events (Glenn, 1987) that allow people to set and achieve goals and predict what people have to do before they are exposed to contingencies (Kissi et al., 2017).

During pandemic situations, such as the COVID-19 pandemic, we cannot afford to expose people to contingencies (at the cost of their life!) and wait until they learn to use safety equipment properly and prevent the spread of the virus. Thus, governments could produce instructional materials to help people learn (1) what are preventive measures and how important it is to preserve ourselves and the people around us; (2) how and where to use the safety equipment; (3) what are the short-term and long-term consequences for the correct use of safety equipment; (4) if buying specialized equipment is too difficult, what materials can be used to make homemade equipment (e.g., face masks) and what materials should be avoided. The use of pictures and videos might improve the learning process, making it simpler and more descriptive (Arguel & Jamet, 2009; Carney & Levin, 2002; Pinsky & Wipf, 2000).

Also, relevant instructions should be made in a non-technical language to reach people with different socio-cultural levels aiming to decrease the associated response-costs. The message should be communicated by text, audio, and video formats displayed in social media (the most common sources of information nowadays - Goodyear, Armour, & Wood, 2019). Social media, as well as TV networks, are readily available, and the technology that promotes the accessibility of services and information does it at high speed, especially among young people (who could use it to help themselves, help elderly people, and seek for psychological help; e.g., Jiang et al., 2020). Safety equipment should preferably be sold (or donated) in different kinds of establishments, such as drugstores and supermarkets. Because proximity affects consumption in a negative relation – the greater the distance, the lower the probability of behaving appropriately – (cf. Wansink, Painter, & Lee, 2006), we expect a decrease in response-cost by multiplying points of access to safety equipment, especially in the case of the homeless population (Neto et al., 2020).

Many of these points have been published on the World Health Organization's website and can be used to produce instructional materials. However, as Zettle and Hayes (1982) assert, instruction-following is most likely to occur when social consequences are applied. Thus, despite the use of well-formulated instructions, consequences are necessary. For instance, in the COVID-19 pandemic, the use of corrective feedback for the inadequate use of safety equipment could be a fast way to increase the probability of instruction-following (cf. Donadeli & Strapasson, 2015).

Some perspectives on the long-term effects of response-cost interventions

Understanding the response-costs aspects involved in preventive behaviors could contribute to public-policy planning and increase the daily use of safety equipment and decrease the probability of transmission and contagion during the COVID-19 pandemic. Response-cost strategies could also be used more generally to improve health care systems by decreasing the probability of unneeded or off-target health care appointments (which should decrease future expenditures paid by the patients themselves or by the public health system). Overall, response-cost factors are only one of several aspects involved in the use of safety equipment as well as other preventive measures (see Amorim, Guimarães, de Almeida, Valderlon, & Abdala, 2020 for an analysis of cultural aspects during COVID-19 pandemic). Further research could test our suggestions in pandemic contexts (whenever possible) as well as propose other aspects for analysis.

Disclosure statement

No potential conflict of interest was reported by the authors.

Authors' contributions

All authors participated equally in this manuscript.

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