



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



Brief report - “Every little thing gonna be all right” (at least for me): Dispositional optimists display higher optimistic bias for infection during the Italian COVID-19 outbreak



Dario Monzani^{a,b,*}, Alessandra Gorini^{a,b}, Davide Mazzoni^a, Gabriella Pravettoni^{a,b}

^a Department of Oncology and Hemato-Oncology, University of Milan, Via Santa Sofia 9/1, 20122 Milan, Italy

^b Applied Research Division for Cognitive and Psychological Science, IEO, European Institute of Oncology IRCCS, Via Ripamonti 435, 20141 Milan, Italy

ARTICLE INFO

Keywords:

Dispositional optimism
Optimistic bias
Comparative optimism
COVID-19
Risk perception

ABSTRACT

Dispositional optimism (DO) and optimistic bias (OB) in risk perception are two distinct phenomena and previous studies about their reciprocal relationship report contrasting results. In the present study, we focused on the relationship between DO and OB when reporting the personal and the other persons' risk about COVID-19. We hypothesized that, when facing a largely uncontrollable risky situation (like the recent pandemic), dispositional optimists would defensively increase their OB about the current risks. A convenience sample of 414 Italian participants aged 18 or older were recruited. They completed a questionnaire investigating past protective behaviors, DO, perceived personal and other persons' COVID-19-related risk. Results of the mixed regression model showed that more optimistic people were more likely to underestimate their COVID-19 personal risk over the other's person risk. These results shed light on the relationship between different forms of optimism and provide useful insight about the potential implications of risk communication approaches to face the current pandemic.

1. Introduction

Some people are more optimistic than others. Dispositional optimism (DO) is a personality construct that refers to generalized outcome expectancies that good things will happen even in the face of obstacles (Carver et al., 2010). DO is linked to decision behavior, motivation and self-regulation (Armor & Taylor, 1998); dispositional optimists usually perceive lower risks than pessimists do (e.g., Scheier et al., 1994; Monzani et al., 2015).

When people evaluate the risk that negative events will happen, they might differ in estimating the risk for themselves vs the risk for other individuals. In this regard, optimistic bias (OB) can be defined as a mistaken belief that makes us think that our chances of experiencing a negative event are lower than those of our peers (Weinstein, 1980). OB is often associated with increase controllability (Ruthig et al., 2007) and is stronger for negative events (Shepperd et al., 2002) than for the positive ones, leading to more risky behaviors (Shepperd et al., 2002; Masiero et al., 2015; Masiero et al., 2018). In this sense, even if they are related, DO and OB are considered distinct phenomena, with different impact on cognition, well-being and behaviors (Radcliffe & Klein, 2002).

Regarding the relationship between DO and OB, previous studies report contrasting results. Overall, DO generally leads to lower risk perception but not always to more OB (Radcliffe & Klein, 2002). For example, DO showed a positive effect on OB in people facing hurricanes Katrina and Rita (Trumbo et al., 2011), while in other conditions like HIV/AIDS, their relationship appeared quite weak (e.g., Radcliffe & Klein, 2002).

In the context of the COVID-19 pandemic, OB has been investigated by two recent studies (Kuper-Smith et al., 2020; Raude et al., 2020) showing that people estimated the probability of getting infected lower for themselves than for someone similar to them. However, no studies have investigated the relationship between DO and OB in the context of the recent pandemic.

In the present work, we suggest that the two phenomena are not completely independent. Indeed, we argue that, under severe circumstances, DO may be a fertile ground for OB. Specifically, we hypothesize that, when facing largely ineliminable and uncontrollable risks (like the COVID-19 pandemic), dispositional optimists, rather than admitting the existence of a generalized risk of negative events, would judge their risk lower than the others' risk. In other words, when thinking about the risks related to COVID-19, optimists would show a stronger OB

* Corresponding author at: Via S. Sofia, 9/1, 20122 Milan, Italy.

E-mail address: dario.monzani@unimi.it (D. Monzani).

<https://doi.org/10.1016/j.paid.2020.110388>

Received 1 July 2020; Received in revised form 2 September 2020; Accepted 5 September 2020

Available online 07 September 2020

0191-8869/ © 2020 Elsevier Ltd. All rights reserved.

preserving at least their control over the situation and part of the original optimistic perspective.

2. Method

2.1. Participants and procedure

A convenience sample of 446 participants was recruited in Italy from 12th March to 3rd April 2020. Data collection started almost three weeks after Italian Patient One being tested positive for COVID-19 (i.e., 21st February) and two days after the national quarantine (i.e., 10th March). The study and the link to participate were advertised on social networks (e.g., Facebook); the survey was administered online through Qualtrics. Thirty-two participants were excluded from analysis due to incomplete data. The remaining 414 participants were mainly women (70.3% female) with a mean age of 39.03 years ($SD = 16.00$, range = 18–99).

The study was conducted in compliance with the Declaration of Helsinki ethical standards. Informed consent was obtained from all participants.

Self-report measures are reported in Supplemental material A. DO was computed as the mean of the responses to the six items of the Italian version of the Life Orientation Test Revised (Scheier et al., 1994; Italian version: Steca et al., 2015). Participants indicated the extent to which they agreed with each of the items on a 5-point Likert-type scale ranging from strongly disagree to strongly agree ($\alpha = 0.83$).

Individual perceived risk (IPR) was assessed with four items asking participants to indicate their short- (i.e., in the following two weeks) and long-term risk (i.e., in the following six months) of getting infected by the new coronavirus, as well as their own likelihood of having severe health consequences, such as pneumonia and being hospitalized due to COVID-19. For each statement, participants were asked to indicate their own likelihood on a 0–100 slider scales ranging from “It is very unlikely” to “It is very likely”. IPR was computed as the mean of the four ratings ($\alpha = 0.72$).

Other person's risk (OPR) was measured by asking participants to think about an average person of their age and sex and then estimate this person's risk by considering the same four statements used for measuring IPR. OPR was computed as the mean of the four ratings ($\alpha = 0.76$). The order of the assessment of IPR and OPR was randomized across participants.

Finally, control variables were assessed as well. First, official data (i.e., number of confirmed COVID-19 cases updated to the day of survey completion) from the Italian Prime Minister¹ were retrieved. Second, past preventive behaviors (PPB) towards COVID-19 infection were assessed by asking people to rate their adherence to COVID-19 guidelines (e.g., the Italian Ministry of Health, 2020). Participants were asked to rate the frequency of 11 precautionary measures in the previous 2 weeks on a 5-point Likert-type scale ranging from never to always. PPB was computed as the mean of the responses to the 11 statements ($\alpha = 0.73$). Participants' age and gender were also measured.

3. Results

Preliminary correlational analyses highlighted a strong and positive association between IPR and OPR ($r = 0.74$, $p < .001$). The remaining correlations were all weak or not significant (correlational analyses are presented in Supplemental material B).

We performed a multilevel regression model with Jamovi 1.1.9 (Gallucci, 2019; The Jamovi Project, 2019). In this model, risk estimation (IPR and OPR) was considered as the dependent variable, the target of the risk estimation (e.g., the participant or the average person)

as a within-subject factor, and dispositional optimism as a between-subject predictor. We also included a random intercept and a second-order interaction term between DO and the target of the risk estimation allowing to test whether any differences between IPR and OPR (i.e., OB) would be conditional to the level of DO. Participant's age, gender and PPB, and the number of confirmed COVID-19 cases were entered in the model to control for any differences in risk estimation. All continuous independent variables (age, number of COVID-19 cases, and DO) were grand-mean centered.

The interaction between DO and the target of the risk estimation was related to levels of estimated COVID-19 risk ($b = 1.83$, $SE = 0.87$, $t = 2.11$, $p = .036$) (the overall multilevel regression model is reported in Supplemental material C). A simple slope analysis was performed to test the effect of the target of the risk estimation at different levels of DO. As reported in Fig. 1, people with low ($b = -0.24$, $SE = 0.86$, $p = .778$) or average DO ($b = 1.04$, $SE = 0.61$, $p = .088$) did not make different estimation of COVID-19 risk for themselves or the average person. On the contrary, more optimistic people ($b = 2.32$, $SE = 0.86$, $p = .007$) underestimate their COVID-19 IPR ($M = 29.7$, $SD = 1.22$) over the OPR ($M = 32.0$, $SD = 1.22$).

4. Discussion

In this brief report, we investigated the relationship between DO and OB for the risks connected with the COVID-19 outbreak. Results demonstrated that people with more DO report OB about COVID-19, meaning that they would consider the risk lower for themselves than for other persons. On the contrary people with low or average DO do not show OB by displaying similar IPR and OPR. Our interpretation is that dispositional optimists, rather than admitting the pervasive risk of negative events, tend to defensively keep low their personal risk (if compared to the others). In other words, when thinking about the risks of COVID-19, dispositional optimists would use OB to preserve at least part of the control over the events. This phenomenon would be consistent with the adaptive controllability which accompanies OB (Ruthig et al., 2007).

Some limits should be recognized. First, as the study design was correlational, it is not possible to assess causal relationships between variables. However, our interpretation of the relationship between DO and OB is consistent with the general relationship between personality and situational constructs. Second, further studies are needed because the existing literature on OB demonstrated that findings may vary as a function of the specific health risks being examined (Nezlek & Zebrowski, 2001). Our study regards a specific context of low perceived controllability. We suggest that the interaction that we found between DO and OB could be present also in situations characterized by low controllability, but it is not generalizable to every context.

Despite such limitations, our contribution has some interesting implications particularly relevant during this pandemic: it shed light on some discussed aspects of the relationship between these two constructs, suggesting that under certain conditions DO may reinforce OB. From a practical point of view, it is important to implement effective communication and debiasing strategies to modify people's misconceptions about the risk of COVID-19. This should be especially relevant for more optimistic people.

Specifically, such results may have a practical implication on the development of future messages provided to the population. For example, in Italy, in March 2020 a bottom-up campaign adopted the optimistic hashtag “everything will be alright” (#andrattutobene), to give hope to people. However, it is necessary to remember that an excess of optimism, especially when it suggests that someone is less at risk than others, could prevent individuals from taking precautions against the infection spread, with severe consequences especially on vulnerable people around (Van Bavel et al., 2020).

Similarly, also the message that “COVID-19 may concern specific at-risk group” (like the elderly; see: Utych & Fowler, 2020), even if

¹ Available data are constantly updated at the following link: <https://github.com/pcm-dpc/COVID-19>.

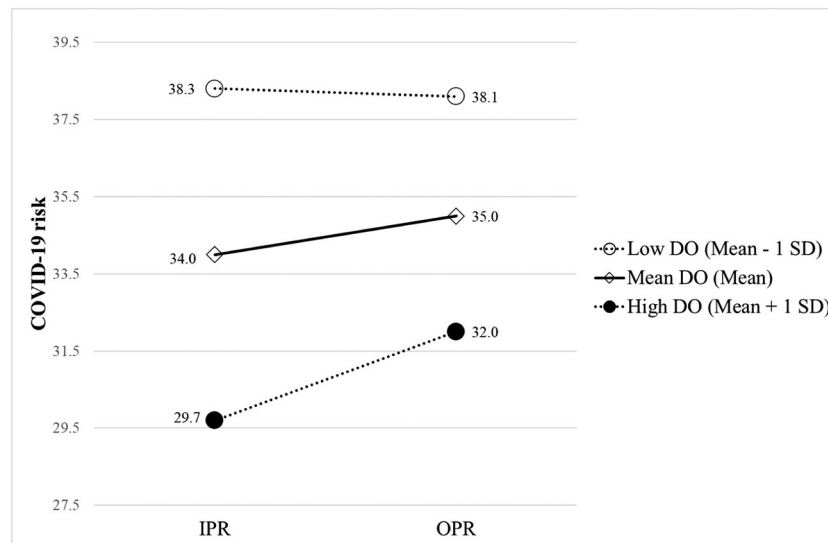


Fig. 1. Illustration of the simple-slope analyses for COVID-19 risk for the target of the risk estimation-by-DO interaction.

communicated with the goal of limiting panic, may strengthen the younger people's OB, with negative consequences on preventive behaviors and, consequently, on the pandemic spread. Three decades of HIV prevention teach us that promoting safe behaviors in the entire population should be preferred to the creation of "at-risk groups" (Mazzoni et al., 2017; Schiller et al., 1994) and our hope is that we have learned something from this lesson.

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.paid.2020.110388>.

CRedit authorship contribution statement

Dario Monzani: Conceptualization, Methodology, Investigation, Formal analysis, Data curation, Writing - original draft, Writing - review & editing. **Alessandra Gorini:** Conceptualization, Methodology, Investigation, Writing - original draft, Writing - review & editing. **Davide Mazzoni:** Conceptualization, Methodology, Investigation, Writing - original draft, Writing - review & editing. **Gabriella Pravettoni:** Conceptualization, Methodology, Supervision, Writing - review & editing.

Acknowledgments

The authors would like to thank Ilaria Durosini and Stefano Triberti for helpful suggestions and comments which have contributed to this publication.

This work was partially supported by the Italian Ministry of Health with Ricerca Corrente and 5x1000 funds for IEO European Institute of Oncology IRCCS.

Availability of data

The data that support the findings of this study are available from the corresponding author upon reasonable request.

References

- Armor, D. A., & Taylor, S. E. (1998). Situated optimism: Specific outcome expectancies and self-regulation. *Advances in Experimental Social Psychology*, 30, 309–379. [https://doi.org/10.1016/S0065-2601\(08\)60386-X](https://doi.org/10.1016/S0065-2601(08)60386-X).
- Carver, C. S., Scheier, M. F., & Segerstrom, S. C. (2010). Optimism. *Clinical Psychology Review*, 30, 879–889. <https://doi.org/10.1016/j.cpr.2010.01.006>.
- Gallucci, M. (2019). GAMLj: General analyses for linear models. [Jamovi module]. Retrieved from <https://gamlj.github.io/>.
- Italian Ministry of Health (2020). Nuovo Coronavirus: 10 comportamenti da seguire [The new

- Coronavirus: 10 behaviors to follow]. Retrieved from: http://www.salute.gov.it/imgs/C_17_opuscoliPoster_433_allegato.pdf.
- Kuper-Smith, B. J., Doppelhofer, L. M., Oganian, Y., Rosenblau, G., & Korn, C. (2020, March 19). *Optimistic beliefs about the personal impact of COVID-19*. *PsyArXiv*. <https://doi.org/10.31234/osf.io/epcyb>.
- Masiero, M., Lucchiari, C., & Pravettoni, G. (2015). Personal fable: Optimistic bias in cigarette smokers. *International Journal of High Risk Behaviors & Addiction*, 4(1), Article e20939. <https://doi.org/10.5812/ijhrba.20939>.
- Masiero, M., Riva, S., Oliveri, S., Fioretti, C., & Pravettoni, G. (2018). Optimistic bias in young adults for cancer, cardiovascular and respiratory diseases: A pilot study on smokers and drinkers. *Journal of Health Psychology*, 23(5), 645–656. <https://doi.org/10.1177/1359105316667796>.
- Mazzoni, D., Prati, G., Cicognani, E., Albanesi, C., & Zani, B. (2017). "Is it your concern?" perceived similarity and identification with the characters of the 2012–2013 Italian media campaign against AIDS. *Journal of HIV/AIDS & Social Services*, 16(4), 303–316. <https://doi.org/10.1080/15381501.2016.1204578>.
- Monzani, D., Steca, P., Greco, A., D'Addario, M., Pancani, L., & Cappelletti, E. (2015). Effective pursuit of personal goals: The fostering effect of dispositional optimism on goal commitment and goal progress. *Personality and Individual Differences*, 82, 203–214. <https://doi.org/10.1016/j.paid.2015.03.019>.
- Nezlek, J. B., & Zebrowski, B. D. (2001). Implications of the dimensionality of unrealistic optimism for the study of perceived health risks. *Journal of Social and Clinical Psychology*, 20(4), 521–537. <https://doi.org/10.1521/jscp.20.4.521.22399>.
- Radeliffe, N. M., & Klein, W. M. P. (2002). Dispositional, unrealistic, and comparative optimism: Differential relations with the knowledge and processing of risk information and beliefs about personal risk. *Personality and Social Psychology Bulletin*, 28(6), 836–846. <https://doi.org/10.1177/0146167202289012>.
- Raude, J., Debin, M., Souty, C., Guerrisi, C., Turbelin, C., Falchi, A., ... Colizza, V. (2020). *Are people excessively pessimistic about the risk of coronavirus infection?* *PsyArXiv*. <https://doi.org/10.31234/osf.io/364qj>.
- Ruthig, J. C., Haynes, T. L., Perry, R. P., & Chipperfield, J. G. (2007). Academic optimistic bias: Implications for college student performance and well-being. *Social Psychology of Education: An International Journal*, 10(1), 115–137. <https://doi.org/10.1007/s11218-006-9002-y>.
- Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the Life Orientation Test. *Journal of Personality and Social Psychology*, 67, 1063–1078. <https://doi.org/10.1037/0022-3514.67.6.1063>.
- Schiller, N. G., Crystal, S., & Lewellen, D. (1994). Risky business: The cultural construction of AIDS risk groups. *Social Science & Medicine*, 38(10), 1337–1346. [https://doi.org/10.1016/0277-9536\(94\)90272-0](https://doi.org/10.1016/0277-9536(94)90272-0).
- Shepperd, J. A., Carroll, P., Grace, J., & Terry, M. (2002). Exploring the causes of comparative optimism. *Psychologica Belgica*, 42(1–2), 65–98.
- Steca, P., Monzani, D., Greco, A., Chiesi, F., & Primi, C. (2015). Item response theory analysis of the Life Orientation Test-Revised: Age and gender differential item functioning analyses. *Assessment*, 22(3), 341–350. <https://doi.org/10.1177/1073191114544471>.
- The Jamovi Project. *Jamovi*. (Version 1.1). (2019). Retrieved from <https://www.jamovi.org> (computer software).
- Trumbo, C., Lueck, M., Marlatt, H., & Peek, L. (2011). The effect of proximity to hurricanes Katrina and Rita on subsequent hurricane outlook and optimistic bias. *Risk Analysis*, 31(12), 1907–1918. <https://doi.org/10.1111/j.1539-6924.2011.01633.x>.
- Utych, S. M., & Fowler, L. (2020). Age-based messaging strategies for communication about COVID-19. *Journal of Behavioral Public Administration*, 3(1), <https://doi.org/10.30636/jbpa.31.151>.
- Van Bavel, J. J., Baicker, K., Boggio, P., Capraro, V., Cichocka, A., Crockett, M., ... Willer, R. (2020). Using social and behavioural science to support COVID-19 pandemic response. *Nature*. <https://doi.org/10.31234/osf.io/y38m9>.
- Weinstein, N. D. (1980). Unrealistic optimism about future life events. *Journal of Personality and Social Psychology*, 39(5), 806–820. <https://doi.org/10.1037/0022-3514.39.5.806>.