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Perception of Risk, Self-efficacy and Social Trust during the diffusion of Covid-19 in Italy

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Abstract: This contribution proposes a study on the change in risk perception and behavioral responses of a convenience sample of 707 university students (M_{age} = 23.4; SD = 5.4) in Lazio Region during the spread of the Covid-19 epidemic in Italy. Three time intervals defined by the progressive containment measures implemented by the Italian Government were considered. Main outcome measures were the Generalized Self-Efficacy Scale (GSES), Risk Perception Index (RPI), Index of Self-restraint Behaviours (ISRB), Institutional and Interpersonal Trust Measures (IIT). Results confirmed that significant changes in the time progression have occurred in the perception of risk, in the perception of individual self-efficacy, in the value attributed to social responsibility, in interpersonal trust and in trust in health authorities.

Keywords: Risk perception; Self-efficacy; Self-restraint Behavior; Social Distancing; Institutional Trust; Interpersonal Trust; Covid-19

1. Introduction

The Coronavirus epidemic is now present in the lives of people all over the world. The perception of risk and the consequent behaviours of people during a pandemic are very complex and they are affected by multiple factors as cultural and psychological [1,2]. Personality factors can also play a key role in predicting the psychological health of those who will be more or less resilient during a crisis. For example, regardless of socio-economic level, people assessed as having an internal "locus of control" better cope with all crises and disasters because they consider themselves masters of their own lives and destiny [3]. On the contrary, those who have an external locus of control consider themselves victims of fate and with little perceived self-efficacy in influencing many events and outcomes of life [4]. Furthermore, studies on pro-social vs. selfish behaviour have shown that when there is no certainty that a selfish action can lead to a potentially negative result for others, individuals are much more likely to act selfishly than when there is certainty [5]. Such reductions in prosociality may occur because uncertainty allows people to adopt selfish narratives that allow them to act selfishly while maintaining a positive self-image [6,7].

This contribution proposes a study on the change in risk perception and behavioural responses of 707 university students in Lazio during the spread of the Covid-19 epidemic in Italy. It should be pointed out that the devastating effects of the epidemic were mainly

concentrated in Northern Italy and that as far as Italy and Europe in general were concerned, this type of health emergency was a completely new experience, Three time intervals defined by the progressive containment measures implemented by the Italian Government were considered, which can be summed up briefly as total containment measures in Northern Italy, initially as local measures in some municipalities and, subsequently, at regional level; only in the third period did the containment measures cover the whole of Italy, although the prevalence rate of the epidemic varied considerably throughout the country.

The first period runs from 25 February to 3 March 2020, coinciding with the start date of data collection, in which the Covid-19 contagion had spread mainly in Northern Italy (Lombardy, Veneto, Piedmont and Emilia Romagna).

The second period runs from 4 March to 8 March 2020 and applies measures valid for the entire national territory, such as the suspension of teaching activities in all schools and universities for 15 days. In northern Italy there is a ban on crowded events and an observance of safety distances, as well as restrictions on access to health facilities and prisons by relatives and visitors.

The third and final period taken into consideration in the study begins on 9 March 2020, the date of the implementation of the strongest restrictions in Northern Italy (total closure of Lombardy and fourteen provinces), and the extension to the rest of Italy of the measures to close pubs, cinemas, discos, events and sports competitions. Starting 13 March, any travel not considered essential (except for the purchase of food and medicine, health and work reasons, and if the activity is considered essential and authorized) is prohibited throughout the country. The date of 25 March marks the closure of the data collection for this study.

It was hypothesized that significant changes in the time progression would emerge in the perception of risk, in the perception of individual self-efficacy, in the value attributed to social responsibility, in interpersonal trust and in trust in health authorities. Further changes in self-restraint behaviour were also expected to prevent contagion.

2. Methods and Procedure

2.1. Tools

1) socio-demographic information; 2) *Risk Perception Index* (RPI): seven Likert 1-5 scale items (Cronbach's alpha = 0.71); 3) *Institutional and Interpersonal Trust Measures* (IIT): six Likert 1-5 scale items (Cronbach's alpha = 0.72); *Index of Self-restraint Behaviours* (ISRB): seven Likert 1-5 scale items (Cronbach's alpha = 0.92); the *Generalized Self-Efficacy Scale* (GSES)[8]; ten Likert 1-4 scale items (Cronbach's alpha = 0.87).

2.3. Participants and Questionnaire Administration Procedures

There were a total of 707 participants (58.3 % females) aged between 18 and 36 years (M = 23.37; SD = 5.36). Participants randomly received an email inviting them to freely join the research by answering an online questionnaire. Data collection began on 25 February and ended on 25 March 2020.

3. Statistical Analysis

Anova one-way with Post-hoc Tukey HSD and $p < .05$ to explore significant differences within the three time intervals considered, and Cohen's *f* as measure of effect size (0.1: small; 0.25: medium; 0.40: large). The considered indexes were all subjected to an EFA and PCA exploratory verification.

4. Results

Change in risk perception

The risk perception indicator showed significant increasing variations in the three intervals, with a particular increase in the average for the third interval, coinciding with

the restrictive measure of quarantine at home for the entire population. A one-way Anova was computed comparing the scores of subjects who were tested under the three different conditions: $F(2,706) = 132.54$ $p = .000$ $M_1 = 2.67$ $M_2 = 2.92$ $M3 = 3.47$. Tukey's HSD post-hoc analysis showed that all three averages show significant differences (Subset for alpha = 0.05). Overal effect size was large: $f = 0.61$

Variation in perceived self-efficacy

The measure of perceived self-efficacy showed a significant decrease corresponding to the third interval, coinciding with the restrictive quarantine measure. Anova one-way: $F(2,76) = 22.605$ $p = .000$ $M_1 = 3.82$ $M_2 = 3.85$ $M_3 = 3.50$. Tukey's HSD showed that the average of the third range was significantly lower than the other two (Subset for alpha = 0.05). Overall effect size was medium: $f = 0.26$

Change in the attribution of value to social responsibility

The assessment of the importance of individual protection measures as a duty to the community has shown a significant increase in the progression of the ranges considered. Anova one-way: $F(2,715) = 42.842$ $p = .000$ $M_1 = 3.95$ $M_2 = 4.26$ $M_3 = 4.63$. Tukey's HSD showed that all three averages show significant differences (Subset for alpha = 0.05). Overall effect size was medium: $f = 0.34$

Change in perceived trust in the behaviour of others

The comparison between the measures of confidence in the social responsibility of others showed a significant drop in the second interval, coinciding with the first measures of school and university closures and the spread of cases of contagion in the Lombardy and Veneto regions. In the first interval, coinciding with the increase in the level of risk with the communication of the initial cases in Northern Italy, confidence in the sense of collective responsibility was instead sufficient. Anova one-way: $F(2,706) = 22.027$ $p = .000$ $M_1 = 2.35$ $M_2 = 1.87$ $M_3 = 2.39$. Tukey's HSD showed that the average of the second range was significantly lower than the other two (Subset for alpha = 0.05). Overall effect size was medium: $f = 0.25$

Change in perceived confidence in health authority decisions

The comparison between the measures of confidence in the efficiency of health authorities in the management of the emergency showed a significant decrease in the second interval, coinciding with the first measures of school and university closures and the spread of cases of contagion in the Lombardy and Veneto regions, and a significant increase in the third interval. Anova one-way: $F(2,706) = 30.849$ $p = .000$ $M_1 = 2.94$ $M_2 = 2.62$ $M_3 = 3.33$. Tukey's HSD showed that the mean in the second interval was significantly lower than the other two, while it was significantly higher in the third interval (Subset for alpha = 0.05). Overall effect size was medium ($f = 0.30$).

Change in perceived confidence in government provisions

The comparison of the measures of confidence in the Government's provisions in the management of the emergency showed a significant increase in the third interval, coinciding with the stricter provisions of containment and social isolation. Anova one-way: $F(2,706) = 13.008$ $p = .000$ $M_1 = 2.89$ $M_2 = 2.98$ $M_3 = 3.22$. Tukey's HSD showed that the average of the third interval was significantly higher than the other two, which were substantially homogeneous (Subset for alpha = 0.05). Overall effect size was small ($f = 0.19$). *Table 2* below shows an overview of the significant variations in the scores of the variables in the three periods.

Table 1. Variations in average scores in the three intervals.

Table 1	Range	F	M1	M2	M3	p	ES (*f*)	ES level
Risk Perception	1- 5	132.538	2.67 *	2.92 *	3.47*	.000	.61	large
Perceived Self-Efficacy	1- 5	22.605	3.82	3.85	**3.50***	.000	.26	medium
Value to social responsibility	1- 5	41.842	3.95 *	4.26 *	4.63*	.000	.34	medium
Confidence in other people's behaviour	1- 5	22.027	2.35	**1.87** *	2.39	.000	.25	medium
Trust in health authorities	1- 5	30.849	2.94	**2.62***	3.33	.000	.30	medium
Confidence in government regulations	1- 5	13.008	2.89	2.98	**3.22***	.000	.19	small

Legend: M_1 = Interval 25 March to 3 February; M_2 = Interval 4 March to 8 March; M_3 = Interval 9 March to 25 March; N = 707; N_1 = 193; N_2 = 225; N_3 = 289; $p < 0.05$; EF = Effect Size; *f* = Cohen's f

Variation of Self-restraint Behaviours

Table 2 below illustrates how the intentions to limit the use of public transport, attendance at entertainment venues, purchasing essential goods, limiting attendance at work/university, attendance at medical practices have shown a significantly increasing trend in the three intervals. As regards visiting friends and relatives, the need to stay at home as much as possible, there was no significant difference between the first and second periods. Therefore, as long as there was no requirement to stay in isolation at home, it was apparent that the participants intended to continue hanging out with friends even in open spaces.

Table 2. Variation of Self-restraint Behaviours in the three intervals.

Table 2	Precaution Actions	Range	F	M1	M2	M3	p	ES (f)	ES level
Avoid Public Transport		1- 5	130.967	3.51*	3.81*	4.77*	.000	.55	large
Avoid Public Venues		1- 5	188.258	3.26*	3.46*	4.78*	.000	.66	large
Limit Purchases		1- 5	178.160	2.56*	2.88*	4.29*	.000	.67	large
Abstention from Work/University		1- 5	122.273	1.93*	2.22*	3.52*	.000	.59	large
Avoid Direct Contacts		1- 5	288,782	**2.18**	**2.32**	4.21*	.000	.88	large
Avoid Medical Practices		1- 5	115,782	2.67*	3.97*	4.12*	.000	.54	large
Stay Home		1- 5	213.202	**2.68**	**2.76**	4.46*	.000	.74	large

Legend: M_1 = Interval 25 March to 3 February; M_2 = Interval 4 March to 8 March; M_3 = Interval 9 March to 25 March; N = 707; N_1 = 193; N_2 = 225; N_3 = 289; $p < 0.05$; EF = Effect Size; *f* = Cohen's f

5. Discussion

Perception of risk, in relation to our sample residing in the central-southern Italian area, showed a progressive increase with a significant increase in the period coinciding with the quarantine imposed on the entire population. The measure of self-efficacy showed a significant decrease in the period of confinement at home (lockdown). In the first and second interval of time the measure of self-efficacy remained substantially at medium-high levels and higher than those shown by the trend of risk perception. There was probably a low perception of the actual risk of contagion, in favour of a significant confidence in one's ability to manage and cope with the situation, as well as to escape contagion since the spread of the virus was still mainly limited to areas in northern Italy. Starting from 9 March, the two trends presented an important variation that almost leads the average values of the two variables to coincide, i.e. a strong increase in risk perception corresponded to a sharp decrease in self-efficacy perceived by the subjects. This result agrees with the findings of a study on avian influenza that showed that self-efficacy was inversely associated with risk perception [9].

Another important aspect is the observation of the confidence variable in the provisions indicated by the authorities. In our study, the attribution of trust showed a significantly marked drop in the interval between 4 and 8 March, when the first measures were issued, which closed schools and universities, blocked participation in public and sports events, and restricted access to visiting health and prison facilities. The reaction to these

first measures tended to be critical, perhaps because of the subjects' difficulty in accepting the first behavioural limitations, considering them inadequate and slightly confusing.

Following the enactment of a more drastic set of measures, which also involved the productive and commercial sectors of the country, there was a rise in general confidence, as if a greater awareness of commitment and collective involvement in the challenge of facing the danger had emerged. Worthy of particular attention is the polarized trend between the expectations of social responsibility (for individuals called upon to implement individual protection and precautionary measures as an ethical duty towards the community) and the trust placed in the real behaviour of others. While on the one hand, ethical expectations were very high, on the other, trust in the behaviour of others was very low. Throughout all three periods considered, this gap remained almost constant.

With regard to the intention to implement precautionary behaviour by the study subjects, it is significant to note that before the restrictive home confinement measure of 8 March, there was no change in the intention to limit contact with friends and relatives or to stay at home as much as possible during the two previous periods. Although there was a massive and continuous communication campaign by the authorities on the importance of preventing the spread of the virus through the practice of social distancing and greater attention and care of hand hygiene, cases of contagion and spread caused by meetings, attendance and gatherings, especially among young people, continued to be recorded. Only after the decree of 8 March and thereafter was there a significant increase in intentions of precautionary limitation in behaviour.

7. Conclusion

Results confirmed that significant changes in the time progression have occurred in the perception of risk, in the perception of individual self-efficacy, in the value attributed to social responsibility, in interpersonal trust and in trust in health authorities. In the first phase, especially, youths' measures of social distancing were significantly mild, showing a reluctance to forgo personal contact with friends and relatives. Therefore, the concluding results of the study suggest stimulating in young people more trust in institutions, a higher sense of social cohesion and responsibility, in order to increase collective reactivity in the timely development of a unified and proactive attitude in the management of serious risk situations such as pandemic risk.

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