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Parents' risk perception in the predictive association between personal fable and sensation seeking with adolescents' pandemic related preventive behaviors during covid 19: A moderated mediation approach

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ABSTRACT

Objective: Amid the barriers created by Covid-19 and the enforced strict governments' containments measures, adolescents were negatively impacted more than any other age group. Adolescents are known to display a pivotal role in spreading the virus because of their low conformity. To find the contributing and mediating factors associated with teens' extensive non-compliance, this study focuses on the mechanisms of adopting preventive behaviors. **Method:** This cross-sectional study was administered online using convenience sampling over four weeks during severe lockdown 4th peak outbreak period. Data were gathered online from 422 adolescents with an average age of 15.48 years (SD=2.74) and their parents. Analysis of data was done by PROCESS macro for SPSS version 25. **Results:** Personal fable and sensation seeking were predictive of rule-disrespecting in adolescents of both genders. Mediation modeling demonstrated that parents' risk perception partially mediated the predictive relationship between personal fable and sensation seeking with pandemic preventive behaviors in girls (personal fable: [B = -0.034, 95% CI = (-0.076, -0.005)]; sensation seeking [B = -0.047, 95% CI = (-0.102, -0.008)]). **Conclusion:** These findings highlight the importance of some peculiar characteristics of this developmental stage in explaining adherence to pandemic-related preventative behaviors. It seems that teen boys are more vulnerable in pandemic time frames regarding their inattention to parents' recommendations.

Keywords: Covid-19; Personal Fable; Sensation Seeking; risk perception; Pandemic-Related Preventative Behaviors; Adolescent.

1. INTRODUCTION

Coronavirus disease is still an ongoing worldwide crisis (Restubog et al., 2020). The apparent physical, the economic toll it exerted on human lives is undoubted (Choi et al., 2021). In addition to such pernicious effects, Covid 19 led to emotional and psychological sufferings (Pedrosa et al., 2021). As a tool to struggle Covid-19, prevention is still done through the channel of physical distancing, notwithstanding the initiation of vaccination, until full effective vaccination would be accessible for whole age groups, among which adolescents are of paramount importance (Maldonado et al., 2021). Adolescents' lifestyles have been drastically altered because of many imposed freedom restrictions (Von Soest et al., 2021). The almost total cessation of full face-to-face interactions and social distancing policies led adolescents to be house-bound and now they are expected to avoid holding social gatherings or peer contact (Guzek et al., 2020). Since Covid-19 is highly contagious, controlling the infection is behavior-related, and limiting physical contact, wearing a mask, washing hands, and complying with numerous guidelines are prerequisites for decreasing the virus (Afifi et al., 2022). Whereas, the inherent characteristic of the teenage years like achieving independence, distancing from home, enthusiasm toward peer relationships, and social proximity (Shifflett et al., 2016), make it challenging for an adolescent to comply with the pandemic guidelines.

Accordingly, high prevalence of low adherence to Covid-19 protocols among teens (Guzek et al., 2020) has been reported by studies. In trying to understand the underlying mechanisms to such non-adherence in adolescence, several factors have been suggested including social trust, social responsibility, and personal responsibility (Oosterhoff & Palmer, 2020; Nivette et al., 2020). However, there is a literature gap considering peculiarities of teen years in adhesion to hygienic protocols (Aalsma et al., 2006). PF is known as developmental ideation, the essence of which is an inner belief of invulnerability (*i.e., impossibility to be wounded, injured, or harmed*), omnipotence (*i.e., attitude of having unlimited authority, influence, or power*), and personal uniqueness (*i.e., a belief that no other person understands me*) (Arnett, 1996).

The literature review shows that this developmental distortion gives rise to underestimation of the likelihood of disastrous occurrences and their related consequences (Zuckermann, 2012), thus is remarkably involved in reckless actions and risky behaviors (Alberts et al., 2007) such as drunk driving, unprotected sexual intercourse, alcohol consumptions or substances use (Arnett, 1996; Aalsma et al., 2006). In efforts to see contributing factors to such risk-taking behaviors in teens, researchers have attempted to pay attention to the role of another factor: *Sensation Seeking* [SS] (Arnett, 1990). The concept denotes a person's sheer tendency for complex novel experiences and risk taking for the sake of the experience itself (Zucherman, 1979). Virtually all of the research pertaining to SS has shown its importance in adolescence and its contribution to risky behaviors including impulsive decision making (Donohew et al., 2000), or risky driving (Arnett, 1996; Jonah et al., 2001). This is evident to the extent that even pandemic-oriented findings revealed the association of SS to non-adherence to social distancing (Atchison et al., 2020). For example, evidence suggests that boredom proneness underlies the tendency to disregard pandemic social distancing (Boylan et al., 2021).

Another introduced factor related to the implementation of health-related behaviors that have been attended to in a series of studies is the concept of risk perception [RP] (Cori et al., 2020; Gerhold, 2020; Wise et al., 2020). RP is defined as a subjective appraisal of the probability of threat and accident and worry of its consequences (Sjöberg et al., 2004). In the outbreak period, this concept focuses on the individual's perceived likelihood of being infected by the coronavirus (Barrios & Hochberg, 2020). It has been shown that RP is linked to engagement in precautionary behaviors (Wise et al., 2020), physical distancing (Genç & Arslan, 2021) and frequent hand-washing in pandemic research (Leppin & Aaro, 2009).

Ample studies have investigated RP in upholding hygienic protective behaviors, however, these studies have relied heavily on the individuals' RP and the role of parents' risk perception [PRP] is neglected. Whereas the significant role parents play in adolescent's life and actions are repeatedly marked in the literature (Donker et al., 2021; Crede et al., 2015). For example, a recent study indicated that the family socialization process and parent-adolescent coronavirus conversation shape the teen's behavior in a constructive manner and the adolescent's empathic concern and adherence (Tang et al., 2021). In another study, results proposed that positive youth-parent relationships mediate the negative impact of Covid-19 (Arslan & Yıldırım, 2021). Taken together, based on what has been said in pandemic and non-pandemic research, it is well demonstrated that developmental aspects of the adolescent period like PF or SS underlie many health-related behaviors and avoidance or engagement in risky responses (Atchison et al., 2020). Therefore, the crucial role this population group plays in the spread of COVID-19 should not be ignored. Several studies have shown that conforming to health policies is challenging for this age group (Guzek et al., 2020; Wise et al., 2020).

On the other hand, adolescents' motivation to engage in protective behaviors may be influenced by their parents' attitudes (Shin & Ismail, 2014; Nelson et al., 1999). Compelling evidence exists about the role of parents in risk-avoiding decisions in adolescents (Ikramullah et al., 2009). However, no previous research has investigated the role of parents' RP (PRP) in adolescents' protective

behaviors during the pandemic. Based on what has been described, our research questions center on the potential linkages between adolescents' PF and SS with PRPB, with the mediating role of PRP in either gender (Figure 1).

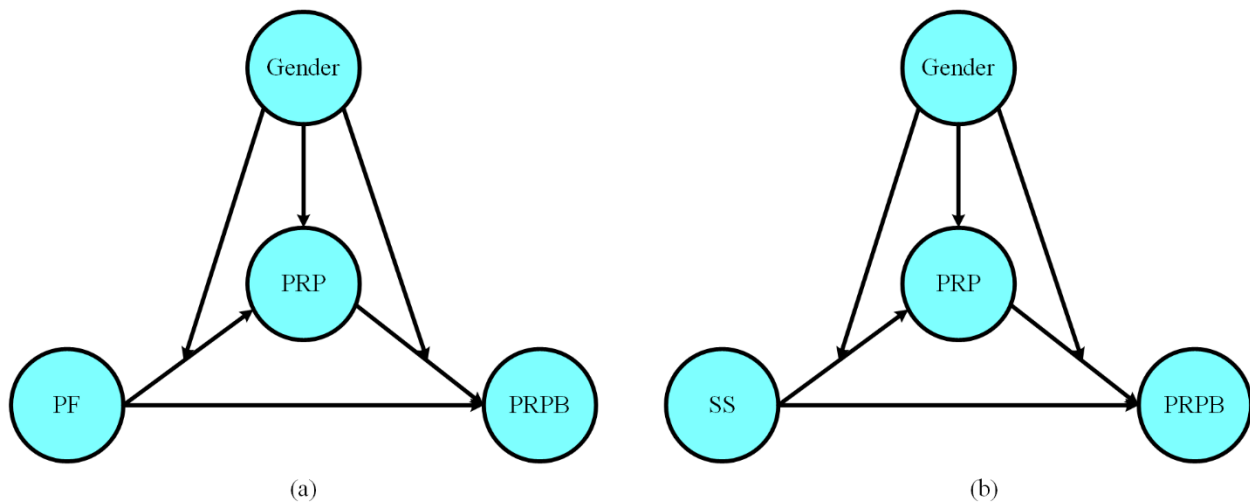


Figure 1 Conceptual model of moderated mediation for the effects of PF and SS and PRP on PRPB

2. MATERIALS AND METHOD

Participants and procedure

This cross-sectional survey was announced online through ads posted on social media platforms (Whatsapp and telegram channels, Facebook, email, Instagram, Twitter). Adolescents with the following inclusion criteria were invited to participate in study 1) Age between 13 to 18; 2) ability to read and write 3) having access to the internet and, and 4) residing in Iran. The announcement was done a couple of days after the exertion of strict constrictions during the 4th peak of the disease. A total of 422 Iranian teenagers aged 13 to 18 and their parents participated in the study that is one of the parents were requested to answer a part focusing on PRP after the completion of the questionnaire by their child. A series of self-report questionnaires were distributed from 8 A.M on 14th August 2021 for four weeks of strict country lockdown measures and social distancing. The recruitment window was open the whole period. Recruitment ceased quickly as the decline of the 4th peak was announced on the valid social media.

Ethical approval

This study was approved by the ethical standards of Vice-Chancellor in Research Affairs – Shahid Beheshti University of Medical Sciences (Ethics approval number: IR.SBMU.RETECH.REC.1399.1043). All individual participants involved in the study, afforded informed online consent through bullet clicking representing that they had read and understood the conditions upon the completion measures. The study aim, its condition, and its procedure were thoroughly explained in a paragraph to the participants. Meanwhile, they were informed of the nature of the study and the anonymity of their responses.

Measurements

Participant Information Form

The form included questions regarding age, sex, and educational status

New Personal Fable Scale (NPFS)

NPFS is a New Look instrument and is composed of 46 items and three subscales that incorporate 1) sense of invulnerability (14 items), 2) omnipotence (19 items) and, 3) sense of uniqueness (13 items). All items are graded on a 5-point Likert scale (1 =completely disagree, 5= completely agree) and summed responses across the respective items to yield the three sub-scale scores (Lapsley et al., 1989). Studies have shown good validity and test-retest reliability (Cronbach's alpha 0.78 for full scale, 0.65 for uniqueness, 0.74 for omnipotence, and 0.64 for invulnerability) (Goossens et al., 2002). The calculated Cronbach's alpha of the total scale was 0.79 in the present study.

Brief Sensation Seeking Scale (BSSS)

BSSS developed by Hoyle, is a four-subscale scale (*experience-seeking, Boredom Susceptibility, Thrill and Adventure-seeking, and disinhibition*) that measures individual's thirst to experience intense emotions. Each subscale includes two items (total eight items) that are designed in a five-point Likert format ("0" strongly agree) to ("5" strongly disagree). The total score is obtained by summing the items' scores. Reliability and internal consistency of the new scale are statistically acceptable ($\alpha=.76$) (Hoyle et al., 2002). The psychometric properties of this scale yielded reasonably strong alpha 0.83 in this study.

Covid-19 Perceived Risk Scale (CPRS)

To assess the Covid-19 related extent of risk a person perceives, the Covid-19 Perceived Risk Scale was used. The scale was mainly designed by Brug with the name of SARS Risk Perception Scale (Brug et al., 2004) however, with changing the wording of the original scale items, like replacing SARS with Covid, Yildirim and Güler designed the new CPRS to be adapted for Covid-19 risks. The scale constitutes 8 five Likert-type items from 1 to 5 (*negligible*) to (*very large*) respectively. Higher scores are indicative of greater risk perceptions associated with the virus. Research has suggested a satisfactory internal consistency and reliability (0.72 to 0.87) for the scale (Yildirim & Güler, 2020).

Pandemic-related preventative behavior scale (PRPBS)

To capture the adolescents' adherence to official Covid-19 precautionary measurements and exhibiting health-protective behaviors, we designed a list of eleven items, each describing one of the covid related preventative behaviors following guidelines. Items were created to assess behaviors related to disinfecting (e.g., "I wash my hands with soap for at least 20 minutes after touching objects"), social distancing (e.g., I avoid visiting my friends), thwarting infection transmission (e.g., "I cover my mouth with masks or arms when coughing or sneezing" and so on. Adolescents answered the questions according to the degree of their enactment of preventative behaviors during the outbreak. Each statement ranged from 0 to 4 (strongly disagree to strongly agree). The higher scores indicated a higher endorsement of PRPB and higher compliance. The scale has demonstrated acceptable reliability ($\alpha=0.84$) in the present study.

Data Analysis

The data were analyzed using SPSS version 25.0 software. For socio-demographic features, descriptive statistics including frequencies, percentages, means, and standard deviations were calculated for the variables. To find the relationship between the major variables of interest and the demographic variables, Pearson's correlation was conducted. The model 58 of Hayes PROCESS macro for SPSS (Hayes, 2018) was carried out to establish the mediation and the moderated mediation effects and bootstrapping for the confidence intervals (CI) PF and SS as the independent (X) and PRPB (Y) as an outcome and PRP as a mediator variable (M) were included while gender's influence was included as a moderator to test its influence on the mediated relationship between PF and SS with PRPB. P-value of < 0.05 was considered statistically significant.

3. RESULTS

Demographic characteristics

In total 422 Iranian teenagers participated in the study among which 19 were removed and regarded as missing data due to none or partial completion (above 30% of unanswered questions) 6 were excluded for not meeting inclusion criteria and 7 regarded as invalid data (random responses). At final step a total of 390 questionnaires were left for analysis. Participants' age range was 13 to 18 ($M=15.48$, $SD= 2.74$). Regarding sex, sample composition was 53.1% for female and 46.9% for males. Regarding educational status, the highest frequency was related to ninth grade (26.1%) and the lowest was related to the seventh grade (11.2%). Demographic characteristics are depicted in table 1.

Table 1 demographic characteristics

		Mean	SD
Age		15.48	2.74
		Frequency	Percent
Sex	Male	183	46.9

	Female	207	53.1
	Total	390	100
Educational level	7 th grade	44	11.2
	8 th grade	71	18.2
	9 th grade	102	26.1
	10 th grade	45	11.5
	11 th grade	81	20.7
	12 th grade	47	12.3

Descriptive analysis

Table 2 depicts mean, standard deviations, and correlations among the variables which were computed separately for males and females.

Table 2 Means, standard deviations, and intercorrelations of study variables separated by gender (n = 390).

Variables	1	2	3	4
PF	-	0.562**	-0.174**	-0.412**
SS	0.481**	-	-0.178**	-0.433**
PRP	-0.141	-0.081	-	0.326**
PRPB	-0.271**	-.195*	.470**	-
Females				
Mean	147.56	25.76	25.60	31.01
SD	15.28	5.40	6.96	5.36
Males				
Mean	153.33	27	23.63	28.1
SD	17.85	5.14	7.04	6.24
*p < 0.05				
**p < 0.01				
Correlations for females are above the diagonal while correlations for males are below the diagonal				

As it is shown in table 2, in female group, PF was positively related to SS ($r = 0.56$, $p < 0.01$) and negatively related to PRP ($r = -0.17$, $p < 0.01$) and PRPB ($r = -0.41$, $p < 0.01$). SS was related to PRP ($r = -0.18$, $p < 0.01$) and PRPB ($r = -0.43$, $p < 0.01$) negatively. In addition, PRP was positively related to PRPB ($r = 0.32$, $p < 0.01$). In male group, PF was positively related to SS ($r = 0.48$, $p < 0.01$) and negatively to PRPB ($r = -0.27$, $p < 0.01$) but not PRP ($r = -0.14$, $p > 0.05$). SS was related to PRPB ($r = -0.19$, $p < 0.05$) negatively but not PRP ($r = -0.08$, $p > 0.05$) like female group, PRP was positively related to PRPB ($r = 0.47$, $p < 0.01$).

Mediation Moderation analysis

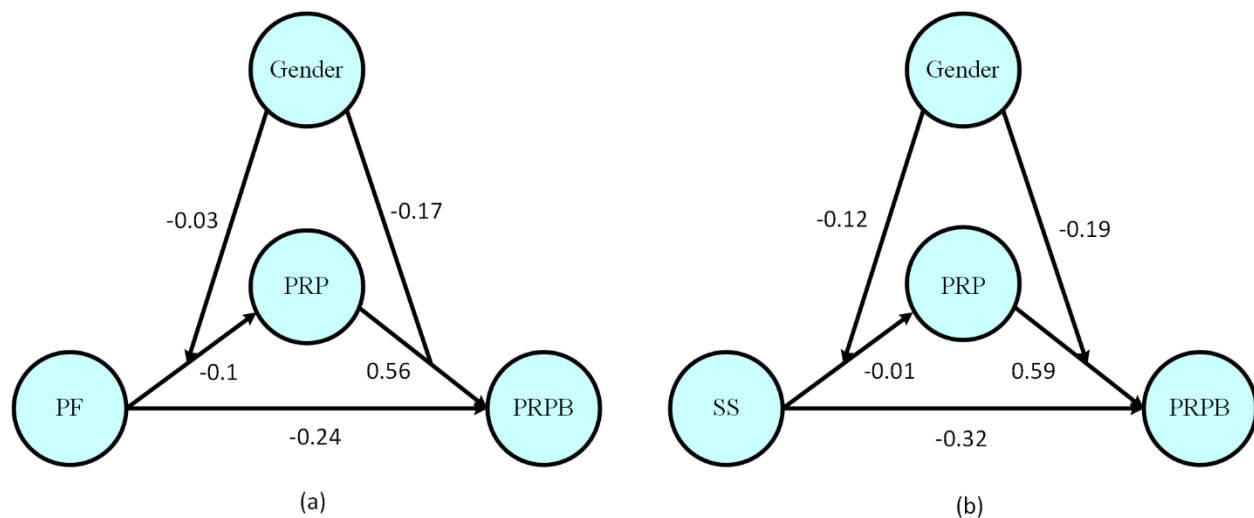
In Table 3, It was found that Gender and PF predicted 5% of the variance in PRP [$R^2 = 0.05$, $F(386) = 5.4$, $p = 0.001$]. Also, Gender predicted PRPB. Greater PF predicted lower levels of PRPB. Higher levels of PRP predicted higher levels of PRPB. Gender moderated the association of PRP and PRPB, given that the interaction term was significant. Our hypothesis is evidenced by a significant indirect effect of PF on PRPB through PRP among females [$B = -0.034$, 95% CI = (-0.076, -0.005)], but not males ($B = -0.05$, 95% CI = -0.134, 0.011). It is worth noting that the moderated mediation is significant when the 95% CI did not encompass zero (as shown in the case for females). The predictors accounted for 29% of the variance in PRPB [$R^2 = 0.29$, $F(385) = 35.44$, $p = 0.00$]. The moderated mediation model is presented in Figure 2(a).

Table 3 Moderated mediation results for the link between personal fable and pandemic-related preventive behaviors

Predictors	B	SE	t	p	95% CI
Outcome: PRP					
Gender	2.93	4.57	.64	.52	(-6.06, 11.93)
PF	-.101	.176	-.573	.566	(-.45, .25)
PF*Gender	-.03	.11	-.32	.75	(-.024, .17)
Outcome: PRPB					
Gender	5.88	1.99	2.95	.003	(1.96, 9.79)
PF	-.24	.04	-6.41	.000	(-.31, -.16)
PRP	.56	.13	4.16	.000	(.29, .82)
PRP*Gender	-.17	.08	-2.21	.02	(-.33, -.02)
Conditional Indirect effect					
Female	-.03	.02			(-.08, -.01)
Male	-.05	.04			(-.13, .01)

Table 4 Moderated mediation results for the link between sensation seeking and pandemic-related preventive behaviors

Predictors	b	SE	t	p	95% CI
Outcome: PRP					
Gender	4.89	3.97	1.23	.22	(-2.91, 12.07)
SS	.01	.25	.03	.97	(-.49, .50)
SS*Gender	-.12	.15	-.81	.42	(-.41, .17)
Outcome: PRPB					
Gender	6.62	1.99	3.32	.001	(2.70, 10.54)
SS	-.32	.05	-6.28	.000	(-.42, -.22)
PRP	.59	.13	4.41	.000	(.33, .85)
PRP*Gender	-.19	.08	-2.42	.010	(-.35, -.04)
Conditional Indirect effect					
Female	-.05	.02			(-.10, -.01)
Male	-.04	.04			(-.13, .05)


Figure 2 Moderated mediation model representing standardized coefficients

In Table 4, it was found that Gender and SS accounted 4% of the variance in PRP [$R^2 = 0.04$, $F(386) = 4.89$, $p = 0.002$]. Also, Gender predicted PRPB. Greater SS predicted lower levels of PRPB. Higher levels of PRP predicted higher levels of PRPB. Gender

moderated the association of PRP and PRPB, given that the interaction term was significant. Our hypothesis of a moderated mediation effect was supported as evidenced by a significant indirect effect of SS on PRPB through PRP among females [$B = -0.047$, 95% CI = $(-0.102, -0.008)$], but not males ($B = -0.044$, 95% CI = $(-0.139, 0.045)$). Note that the moderated mediation is significant when the 95% CI did not encompass zero. The predictors accounted for 29% of the variance in PRPB [$R^2 = 0.29$, $F(385) = 35.44$, $p = 0.00$] figure 2(b) illustrates the moderated mediation model with standardized coefficients.

4. DISCUSSION

It has long been recognized that some unique characteristics of adolescence are responsible for many health-protective behaviors or otherwise destructive actions. In the present research, we expanded our look at this issue regarding outbreak-related behaviors by examining the relationship of PF and SS to PRPB. We advanced the scope of the study by illustrating the mediating role of PRP in this relationship with attention to gender differences.

Direct effects (PF and SS)

Taken collectively, data shows that adolescents' egocentrism and sense of invulnerability as core characteristics of PF accompanied with a thirst for sensation may decrease commitment to protective rules. This means that adolescents differ in the level of respect toward following guidelines against the covid-19 spread and it could be partly explained by PF and SS. Individuals with high SS tend to search for intense experiences and avoid routines. Thus, pandemic restrictions could be a poisonous risk factor, and the high SS individual may compensate for the tedious lifestyle with high spirited activities to release excitement in his/her life. Second, the unpredictable nature of the novel disease and its various symptom profiles brings about such intensity that leads a high SS adolescent to explore and adopt an indifferent attitude toward Covid-19 dangers. Incorporating disinhibition and thrill-seeking, the SS concept will undoubtedly tempt an adolescent to do erratic actions and search social stimulation through parties, variety of relationships, and activities with ignoring social constraints (Lin & Tsai, 2002). Thus, the governmental restraints and preventive behaviors like wearing masks do not seem logical enough for this teen. Additionally, adherence to hygienic rituals entails exertion of effortful responses and inhibition of impulsive acts, and regulation of urge. This may be difficult for a disinhibited teen to repress the need for pleasure-seeking propensities and comply with strict rules. This is in line with Arnett's notion that "the disinhibited adolescent is not privileged of enabling potential to direct his energy toward constructive ends (Arnett, 1996).

In general, total characteristics of SS entice the teenager to adopt in risky actions. For example, thrill-seekers are famous for their strong predisposition to risky activities overloaded by unusual sensations and extreme rewards (Arnett, 1992), or boredom-sensitive ones become fed up with the limitation of their liberties. This monotonous home-bound time is so tormenting for the adolescent that he tries to replace his tedious lifestyle with intense recreations (for example, high-risk sports or social gatherings), all of which reject any consideration of precautionary guidelines. This is in keeping with the findings of previous studies on the relationship between thrill and adventure-seeking and positive risk behaviors (Breivik, 1995).

The study finding was also a replication of the link with PF and risky actions (Arnette, 1996; Greene et al., 2000). The belief of being privileged of disaster immunity leads to judgment error and makes teens blind to upcoming Covid-19 dangers, hence not adopting reasonable behaviors to avoid the threats. Furthermore, sense of invulnerability or omnipotence inherent in PF leads to underscoring the likelihood of being infected to the extent that the person reaches a conviction that "Other people may get infected, but not me"; "other could die from covid-19 but not me" "other are weak, thus need to obey the restrictions due to their weakness, but not me", therefore sees no point in preserving PRPBs. The obtained findings have consistency with earlier research revealing a strong relationship between PF and risky behaviors (Arnette, 1996; Greene et al., 2000).

Indirect effects (PRP and Gender)

In addition to investigating the direct effects, we postulated that PRP would act as a pathway through which PF and SS will influence PRPB. Meanwhile, we tested the direct influence of PRP on PRPBs. We intended to know whether this mediation differs among genders. Findings showed that the influence of PF and SS on PRPBs with the mediation of PRP is more pronounced for females than males. Agreeing with our hypothesis, PRP could significantly predict PRPBs in the female group. This means that promoting precautionary behaviors and managing a healthier response, largely relies on levels of PRP, and notwithstanding high levels of PF and SS and this is true for female adolescents compared to their male counterparts.

In another word, female adolescents who reported high levels of PF and SS could initiate more sensible responses and promote precautionary behaviors, if their parents perceive higher covid19- risk. That is PRP as a buffer, could enhance the tendency of the teen girl to take the health messages more seriously and make use of her judgments, persuade her to assess the consequences, and

weigh the risks of not engaging in the hygienic actions, hesitate to act, and plan. Nowadays, due to home-schooling phenomena, teens are more under the surveillance of parents, such that their ignorance and inattention to health-bearing messages could be simply prohibited by parents' sense of risk presenting themselves in the shape of repetitive anxiety-inducing moral messages and anxiety-provoking warnings.

The adolescent anticipating parents' criticism in the case of being infected or the first-hand transmitter of infection due to her non-compliance is sufficiently scared that tries to direct her responses more sensibly. This corroborates prior work showing the important role parents play in shaping their children's disaster outcome responses of through modeling coping responses (Kliwer et al., 1996; Shipman et al., 2007). This finding is also consistent with studies suggesting that the person's ability to initiate precautionary behaviors highly depends on the perceiving risk of catching a disease that RP on precautionary behaviors (Brug et al., 2004; Zhang et al., 2020). This also duly reflects the health belief model (HBM) which posits that implementing healthier protective responses heavily depends upon RP (Becker, 1974). The result of gender differences in implementing PRPBs goes parallel with previous studies revealing that females show more commitment to protocol laid down by governments (Becker, 1974). This could be explained by more emotional connectedness of girls to parents than boys that are girls' sense more emotional proximity to parents due to different developmental issues and child-rearing styles which conversely encourage detachments in boys (Geuzaine et al., 2000). Yet another perspective lies in cultural considerations. Stereotypic attitudes, gender role beliefs, and family's more strict rules imposed on girls throughout socialization cause females to adopt more permissive roles.

Despite more prevalent attitudes to egalitarianisms in Iran in recent years, girls are already more exposed to restrictions by parents, fear more, and are more homebound and this is irrespective of Covid-19 constraints. Thus, engaging in social proximity or outdoor activities is faced with more sensitivity and prejudice, and disrespecting the rules is more condemned in girls. These together could duly explain why PRP could be related to more PRPBs in girls but not in boys.

Limitation and direction for future research

Although his study shed light on the potential determinations and moderators of PRPB, possesses a few potential limitations that deserve attention to be attended to in future research. First, the nature of the study which was cross-sectional type led to a periodic synopsis, as such, future studies should undertake longitudinal research. Second, the main source of data collection was cyberspace which leaves those with limited or no access to the internet unaddressed. Future research would usefully recruit a larger generalized sample representing all participants with or without internet access. Third, we could only investigate some factors involved in PRPB while the extension of other possible and potential factors will be fruitful if addressed in future studies. Fourth, regarding the initiation of random vaccination and regarding vaccine hesitancy in some population groups, it is worth considering the role of such and other variables in vaccine non-acceptance or hesitancy. Fifth, considering the separate roles of mother and father in PRPBs might be addressed in future studies.

5. CONCLUSION

In conclusion, this study highlights determinant of anti-health-related behaviors among adolescents during the pandemic. Taken together, the findings indicate distinctly more self-absorbed adolescents may disregard or act contrary to public-health appeals. Despite this, much more effort is needed to understand the other contributing factors in the pandemic time frame in adolescents particularly in boys. Our findings may be helpful in such efforts. We recommend enlightenment collaboration of groups including teachers, parents, peers, and media and so on directing activities aimed at informing the adolescents on the distorting effects of some teen year's characteristics and their consequences. In addition, regarding the influential role of parents, we encourage campaigns and media to pinpoint parents and inform them about the bold roles they play in the mitigation of pandemic as their adolescents are not only victims of a pandemic but also important vectors of disease transmission.

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design; data collection, analysis, and interpretation of data; in the writing of the report; and in the decision to submit the paper for publication

Authors' contribution

Conceptualization, Parastoo Naeimijoo; Methodology and Formal analysis, Ahmad Yousefi; Investigation, Resources, Parastoo Naeimijoo, Ahmad Yousefi; Data collection, Ahmad Yousefi; Writing and original draft preparation, Parastoo Naeimijoo; review and editing, Mahdi Jafari; Supervision, Maryam Bakhtiyari; Project administration, Abbas Masjedi Arani. All authors have read and agreed to the published version of the manuscript.

Conflicts of interest

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

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