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# Analysis of Social Distancing Behaviour during the Covid-19 Pandemic in Sri Lanka

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**A B S T R A C T**

Drawing on the Protection-Motivation Theory (PMT), this study aims to analyze the influence of perceived health risk on social distancing behaviour and the mediating role of attitude towards social distancing among the residents of Colombo and Gampaha districts of the western province of Sri Lanka. A questionnaire was designed and distributed using online means to collect data. A total of 312 complete responses were received and used for analysis. Our findings show that there is a significant and positive relationship between perceived health risk and social distancing behaviour, and attitude towards social distancing mediates the relationship between perceived health risk and social distancing behaviour. Moreover, our findings also reveal that females are more likely to demonstrate social distancing behaviour than males. Also, females are likely to show a strong relationship between perceived health risk and social distancing behaviour compared to males. A shortfall in response rate is a limitation of the study. This study is among the first few studies to emerge from Sri Lanka to examine the predictors of social distancing behaviour amidst the Covid-19 pandemic. The findings of this study have several implications for public health communication in Sri Lanka.

***Keywords:*** attitude towards social distancing, generalized structured component analysis, perceived health risk, protective behaviour, protection-motivation theory

## 1. Introduction

The ongoing coronavirus disease 2019 (COVID-19) is a novel deadly pandemic that originated in Wuhan, China, in late 2019 and spread faster across the world than no one expected (Ko et al., 2020; Zhong et al., 2020). WHO, therefore, declared the COVID-19 outbreak as a public health emergency of global attention that needs immediate intervention (World Health Organization, 2020). As many experts point out, this is the most crucial pandemic ever happened in this century. It has caused social and economic disruption, including a higher

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mortality rate that affected many countries worldwide (Jose et al., 2020). Sri Lanka is also not exempted from being a critical victim of COVID-19 since the second wave happened despite how well the country could control the damages caused during the first wave and its geographical advantage. As of 13th May 2021, 132,527 confirmed cases and 868 deaths had been reported (World Health Organization, 2020), and though the numbers are significantly lower compared to other countries, both rates show a steady increase since the end of April 2021. The situation is very much critical in the western province, particularly in the metropolitan cities. As mentioned in the situational report published on 28th July 2021 by the Epidemiology Unit of Ministry of Health, Colombo, Gampaha and Kalutara districts have reported more than 51 per cent of positive cases. Colombo district has recorded the highest, accounting for 23.04 per cent, while Gampaha and Kalutara districts have reported the second and third highest positive cases of 17.86 per cent and 10.82 per cent, respectively.

The health outcomes of an outbreak of infectious disease are affected by individual behaviour (Ibuka et al., 2010). As they further emphasize, people who vaccinate, work from home and take antiviral medications reduce not only their own but other peoples' risk of infection as well. As this pandemic began to spread rapidly across the world, all governments, consistent with the WHO recommendations, had to impose and implement strict and varying levels of preventive public health measures, including curfews, lockdowns, travel bans, border/place closures, movement and gathering restrictions to control the outbreak (Jose et al., 2020), because there are no approved medical treatments, drugs, immune theories, and prolonged effective vaccines yet. Studies have found a significant impact of changing human behaviour on effectively controlling an epidemic outbreak (Kleczkowski et al., 2015). Social distancing is the most effective habitual health tool to control the outbreak of a virulent disease and reduce the overall spread of transmission (Caley et al., 2008; Kleczkowski et al., 2015; Maharaj & Kleczkowski, 2012; Mohler et al., 2020). Thus, it is of paramount importance to understand how epidemics like COVID-19 occur and how they can be effectively controlled. Understanding individual social distancing behaviour and its relation to perceived risk are crucial in effectively managing an infectious disease outbreak like the COVID-19 pandemic (Dionne et al., 2018). Such investigations are particularly important in middle-income countries like Bangladesh, Sri Lanka, and India, characterized by the usual mass crowd gathering that could have impacted the fast spread of COVID-19 (Aslam, 2020). Thus, the main aim of this study was to analyze the social distancing behaviour during the COVID-19 pandemic and in particular, it investigated the impact of perceived health risk on social distancing behaviour with the mediating effect of attitude towards social distancing with reference to residents of Colombo and Gampaha districts of the Western province of Sri Lanka.

The paper is constructed as follows. The immediately following section is about the theoretical background and the study's conceptualization. This section is followed by the literature review section, in which we will discuss how we developed the conceptual framework and the study hypotheses. The section after the literature review will briefly explain the methodology adopted, followed by the data analysis and results section. In the final section, we will conclude the study by providing a discussion and limitations and suggestions for future studies.

## 2. Theoretical background

Several theories have been used in the literature to predict health-protective behaviour. Among these theories, protection-motivation theory (PMT) proposed by Rogers (1975) has been applied and validated in previous global health crises, i.e., H1N1 Influenza (see Prati et

al., 2011; Sharifirad et al., 2014; Bish & Michie 2010). Similarly, several studies applying the PMT to predict health-protective behaviour amidst Covid-19 have emerged (see Bashiran et al., 2020; Kowalski & Black, 2020). Health protective behaviour is a behavioural response to a health threat. PMT literature recognizes that protective behaviour depends on an individual's motivation for self-protection (Ezati Rad et al., 2021). Moreover, among its advice for the public to reduce the spread of the virus, the WHO recommends physical distancing. The study by Cassidy-Bushrow et al. (2021) claims that health policies related to social distancing helped improve social distancing behaviour and slow the Covid-19 infection rate early in the pandemic among Michigan residents in the USA. Thus, social distancing can be considered a critical health-protective behaviour amidst the Covid-19 pandemic. This study is conceptualized based on the PMT, although the comprehensive PMT framework is not applied.

## 3. Literature review: conceptualization and hypotheses development

Since the dawn of history, humans have faced different waves of pandemics like influenza, SARS, Ebola and the Swine flu that caused millions of deaths (Brug et al., 2009; Gagnon et al., 2015). During an epidemic, following the health guidelines provided by the government and other responsible authorities, most individuals adhere to protective practices and take precautions, such as maintaining social distancing, to avoid getting contracted with the disease (Brug et al., 2009; Ibuka et al., 2010). However, some individuals do not adhere to such behaviour seriously, endangering everyone's lives. Experience from the previous pandemics has highlighted that people's health risk perception and attitudes affect their response to the crisis and social distancing behaviour (Abir et al., 2020). Thus, this study proposes the following conceptual model in which Social Distancing Behaviour (SDB) is the dependent variable, Perceived Health Risk (PHR) is the independent variable and Attitude towards Social Distancing (ASD) represents the mediating variable.

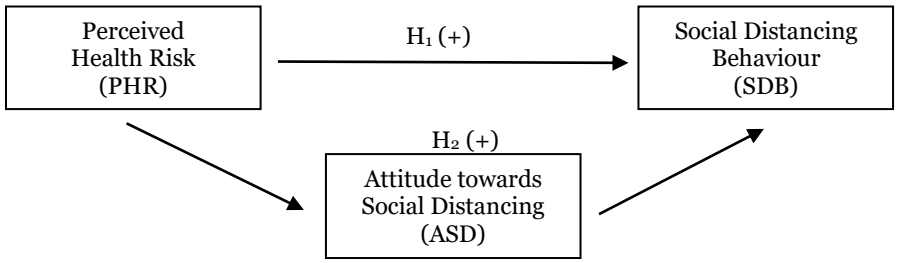


**Figure 1 Conceptual Model**

### 3.1. Perceived health risk and social distancing behaviour – the direct effect

Social Distancing behaviour plays a significant role in an epidemic where effective pharmaceutical interventions, such as antiviral drugs and vaccinations, might not yet be readily available. Social distancing behaviour includes maintaining a distance with people when communicating in public, imposing lockdowns, avoiding social gatherings, restricting business operations, prohibiting public events, and stimulating work from home (De Vos, 2020; Mohler et al., 2020). However, there seems to be a greater resistance in following social distancing orders and regulations (Mohler et al., 2020) in many countries where the

COVID-19 situation had worsened, because individual costs of social distancing in terms of economy and society are higher than their individual benefits, despite its benefits to the community at large (Mohler et al., 2020). Many studies have found that adapting into new normalcy through human behavioural changes, like anti-socializing or social distancing, can contribute significantly to control such outbreaks (Caley et al., 2008; Ibuka et al., 2010; Kim et al., 2020; Kleczkowski et al., 2015; Maharaj & Kleczkowski, 2012; Xie et al., 2020).

Perceived risk is subjective beliefs or judgments regarding the severity and the uncertain circumstances that arise from a particular risk. Dillard et al. (2012) define risk perception as a "belief about personal susceptibility of a negative health event" (p. 1). Many researchers have, therefore, investigated the concept of risk perception instead of analyzing real risk because the perception of risk by individuals is the primary determinant of human behaviour (Dillard et al., 2012). Theories about health behaviour agree that people are encouraged by a high risk of harm to take actions to lower their risk. Many empirical studies on behaviour associated with health emphasize that people are encouraged to reduce their risk as they perceived the danger (Brewer et al., 2004). Thus, the higher the risk of a pandemic situation, the higher the risk perception of people towards their social distancing behaviour.

According to psychological health models, risk perception has been identified as the most influential factor in one's health behaviour. Furthermore, an individual's sensitivity to adopt protective measures is significantly influenced by high perceived risk levels (Brewer et al., 2004; Ibuka et al., 2010). A large number of efforts have focused on understanding the factors determining beliefs about perceived risk and understanding the link between perceived risk and social distancing behaviour (Brug et al., 2009; Choi et al., 2013; Lau et al., 2010; Seale et al., 2010). As Brewer et al. (2004) emphasize, higher risk assessments encourage people to adopt social distancing behaviour. However, the risk of infection and caution perceived can be dynamic over time and differ depending on demographic and geo-population characteristics (Ibuka et al., 2010).

The perceived health risk is often found to be positively related to social distancing behaviour in many studies, for example, Ibuka et al. (2010); Lau et al. (2010); Masters et al. (2020); Pligt (1998); Rubin et al. (2009); Shabu et al. (2021); Tooher et al. (2013). However, some research also shows that the relationship between perceived risk and social distancing behaviour can be contrary to the predicted positive direction, or it is negative (Brewer et al., 2004; Shabu et al., 2021; Xu & Peng, 2015); and thus, the relationship between the two is complex. Though many empirical studies have identified a positive relationship between perceived risk and subsequent protective behaviour, particularly social distancing, the strength of the association is weaker than expected in addition to the mixed and inconclusive findings (Brewer et al., 2004; Ibuka et al., 2010). More empirical studies are thus encouraged from different study settings to investigate further the impact of perceived health risk on social distancing behaviour to fill the existing gaps in the literature. In this vein, the study proposes the following hypothesis.

*$H_1$:* Perceived health risk is positively related to social distancing behaviour.

### 3.2. Attitude towards social distancing – the mediating effect

Theories of behaviour emphasize that attitudes, a psychological process, are a core component that acts as a mediator between observed factors and behaviour (Fishbein &

Ajzen, 1975; Fishbein & Ajzen, 2010). According to them, attitudes are a group of behavioural beliefs expressed in association with the object's attributes. People have beliefs related to social distancing, which also includes the perception of the advantages associated with their behaviour. Thus, the higher the degree of agreement with the behavioural beliefs is, the higher the person's intention or attitude to adhere to the practice of social distancing, and studies have found a greater correlation between the two; for example, Hagger et al., 2021; Iwaya et al., 2020; Yanti et al., 2020). However, Chan et al. (2020) have found a significant difference between attitude and practice towards social distancing in their study.

Individuals with responsive attitudes are most likely to enact social distancing behaviour (Rimal & Real, 2003), and studies have found attitude towards social distancing during public health crises over time is significantly higher (See for example; Callow et al., 2020; Hagger et al., 2021; Shen et al., 2021; Wang et al., 2018). Despite the direct effect of attitude towards social distancing, few studies have found a mediating impact on the relationship between risk perception and social distancing behaviour or intention to behave (Choi et al., 2013; Lee et al., 2019). Thus, the study proposes the below hypothesis,

> *$H_2$:* Attitude towards social distancing mediates the relationship between perceived health risk and social distancing behaviour.

# 4. Methodology

## 4.1. Study design, sample, and data collection

The study was designed as quantitative survey research, and it uses cross-sectional and primary data to test the proposed hypotheses. The unit of analysis of the study is at the individual level. The study population is the residents in the Colombo and Gampaha districts in the western province of Sri Lanka. Data collection was restricted to these two districts because these districts have reported the highest number of Covid-19 patients in Sri Lanka and have been categorized as high risk by the Ministry of Health Epidemiology Unit in Sri Lanka. Pursuing a random sample of respondents as participants of the study was found to be a daunting task. Subsequently, we were compelled to adopt convenience sampling to reach potential respondents. Andrade (2021) claims that drawing a random sample from the population is rarely possible. Moreover, Elfil and Negida (2017) state that convenience sampling is widely adopted in clinical research, although this study does not fall into the category of clinical research. It has been asserted that research using convenience sampling can be generalized to the conveniently accessible population and may have internal validity if the methodology and analysis are sound (Andrade, 2021). Given the above evidence supporting convenient sampling and the prevailing pandemic, a convenient sample was deemed apt for this study.

A questionnaire was developed from the prior literature to collect data. Due to the spread of the COVID-19 pandemic and the lockdown enforced in the country, distributing a paper-based questionnaire was not feasible. Hence, the questionnaire was distributed using emails and social media platforms, such as WhatsApp and Facebook messenger. An online survey portal – Google form – was utilized, and respondents were requested to complete and submit the online form. The questionnaire consisted of four sections in which section 1 included questions on socio-demographic information of the respondents and sections 2, 3, and 4 included questions on the variables of the research model. The questionnaire was developed in the English language, and it was not translated to any other language.

### 4.2. Measurements of variables

Perceived health risk (PHR) is the independent variable of the study. The variable was measured using 7-items from Xie et al. (2020) on a 5-point Likert scale (1 - strongly disagree, 5 - strongly agree). Attitude towards social distancing (ASD) is the mediating variable in the conceptual model. It was measured using 4-items on a 7-point Likert scale (1 – strongly disagree, 7 – strongly agree) based on the work of Iwaya et al., (2020). The outcome variable of the study is social distancing behaviour (SDB). The items to measure the outcome variable were extracted from Xie et al. (2020). Accordingly, 5-items were used to measure the latent construct on a 5-point response scale (1 – never, 5 – always). All the latent constructs were operationalized as first-order reflective constructs.

### 4.3. Data analysis method

We calculated descriptive statistics and correlation to assess the data and the association between the variables. We used Generalized Structured Component Analysis (GSCA) (Hwang & Takane, 2004) to test the paths in the hypothesized research model. GSCA is a component-based structural equation modelling (Component-based SEM) technique that applies the Alternating Least Squares (ALS) estimation method. One of the advantages of GSCA compared to other component-based SEM (i.e., PLS-SEM) is its ability to generate an overall measure of model fit (Hwang & Takane, 2004). Like PLS-SEM, GSCA is also a non-parametric method free of distributional assumptions (Hwang et al. forthcoming). GSCA-SEM was performed using a bootstrapping procedure of 1000 samples. The above analyses were performed using SPSS version 21 and GSCA Pro 1.0 (ver 1.0.02) (Hwang et al., 2021).

## 5. Data analysis and results

### 5.1. Respondent characteristics

A total of 312 residents responded to the survey. Out of the 312 respondents, 61.1% are female, and 38.9% are male. The marital status of the respondents revealed that 55.1% of the respondents are single, and 43.9% are married. An age analysis of the respondents indicated that 3.2% are adolescents (below 20), 49.4% are young adults (between 20 – 30), 43.9% are middle-aged adults (between 30 – 50), and 3.5% are older adults (above 50). The respondents' employment status suggests that 77.9% are in full-time employment, 5.4% are in part-time employment, 3.2% are self-employed, and the rest (13.5%) are unemployed or are stay-at-home-mums. As for the average monthly income of respondents, 36.2% earn an average monthly income of less than Rs. 50,000, while 30.1% earn an average monthly income between Rs. 50,001 and Rs. 100,000. 33.7% earned an average monthly income above Rs. 100,001.

### 5.2. Factor analysis

A principal component analysis (PCA) was performed using the Varimax rotation technique to identify whether questionnaire items measure the intended latent variables. For this purpose, a sub-sample of 75 respondents was randomly selected from the 312 respondents using a random number generator. We found that several question items had communalities lower than 0.5 after carrying out the PCA. Among them, PHR2 had the lowest communality (0.398); hence, we decided to remove the item. Further, PCA results showed four dimensions with eigenvalues above 1, extracting 62 per cent of the total variance. The question items representing social distancing behaviour and attitude towards social distancing all loaded on their respective constructs. However, the perceived health risk construct showed that there are 2 dimensions. Moreover, the reliability of the 2 dimensions of perceived health risk was below 0.7. Hence, it was decided to operationalize the perceived health risk as a higher-order

construct comprising two dimensions in further analysis. The rotated component matrix is shown in Table 1.

**Table 1: Rotated Factor Matrix**

| | 1 | 2 | 3 | 4 | Reliability |
|---|---|---|---|---|---|
| SDB5 | .851 | | | | |
| SDB3 | .843 | | | | |
| SDB1 | .767 | | | | 0.81 |
| SDB4 | .715 | | | | |
| SDB2 | .548 | | | | |
| ASD4 | | .886 | | | |
| ASD3 | | .874 | | | 0.86 |
| ASD2 | | .859 | | | |
| ASD1 | | .679 | | | |
| PHR5 | | | .829 | | |
| PHR7 | | | .725 | | 0.63 |
| PHR6 | | | .700 | | |
| PHR1 | | | | .858 | |
| PHR3 | | | | .644 | 0.55 |
| PHR4 | | | | .501 | |
| Eigenvalues | 3.8 | 2.4 | 1.7 | 1.3 | |
| Variance % | 25.6% | 16.1% | 11.5% | 8.9% | |
| KMO test 0.736, Bartlett's test 1271.29 ($df$ = 105, $p$< .01) | | | | | |

## 5.3. Descriptive statistics

Descriptive statistics and correlation between the variables are presented in Table 2 below. The highest mean value is reported for the attitude towards the social distancing variable. This may be due to awareness and enforcement of social distancing to mitigate the spread of the disease by health officials and authorities. The highest correlation coefficient is 32.9%, which minimizes the threat of collinearity.

**Table 2: Descriptive Statistics and Correlation**

| | 1 | 2 | 3 | 4 | Mean | SD |
|---|---|---|---|---|---|---|
| PHRF | 1 | | | | 4.40 | 0.64 |
| PHRS | .118* | 1 | | | 3.58 | 0.94 |
| ASD | .329** | .030 | 1 | | 6.52 | 0.69 |
| SDB | .184** | .131* | .177** | 1 | 3.99 | 0.84 |

*Notes:* * $p$ < 0.05, ** $p$ < 0.01

## 5.4. Measurement model assessment

Results of the measurement model are given in Table 2. There are two items (SDB2 and PHR4) with factor loading below 0.7. All the items representing the constructs are significant at 0.05 level, which is observable from the lower and upper limits of the 95% confidence interval. The reliability coefficient of SDB and ASD are above 0.7 level. A Cronbach's alpha value of 0.7 has been accepted as a satisfactory level of reliability (Nunnally & Bernstein 1994). However, the alpha value of PHR dimensions is below the threshold level of 0.7, and

the factor analysis identified that PHR comprises two factors. Although Xie et al. (2020) had included 7-items to measure the PHR construct in their study, only 4-items were carried forward for analysis with a reliability coefficient above 0.7. As our factor analysis reveals contrasting results to Xie et al. (2020), we decided to operationalize PHR as a second-order construct with two dimensions. The two dimensions were named PHRF and PHRS. The items in the PHRF mainly deals with the health risk of Covid-19 on an individual, and PHRS deals with the trustworthiness of the government effort and information to prevent Covid-19. The differences in the scale validity of PHR may be because PHR about Covid-19 is a relatively new construct that requires further empirical investigation.

Moreover, the reliability coefficient of latent variables in the measurement model is identical to the reliability coefficient after the PCA with a sub-sample. The Dillon-Goldstein's rho (composite reliability) value and AVE of all the constructs are above the minimum recommended levels of 0.7 and 0.5. Evidence on discriminant validity is presented in Table 3 below. Fornell-Lacker criterion and HTMT criterion values illustrate that each construct is different from the other, and these constructs are not highly correlated. The highest HTMT value in Table 3 is 0.474, which is below the threshold level of 0.85 proposed for conceptually distinct constructs (see Benitez et al., 2020). Hence, it can be concluded that the measurement model meets the reliability, convergent validity, and discriminant validity criteria.

**Table 3: Measurement Model Results**

| | | | Estimate | SE | 95% CI | Alpha | rho | AVE |
|---|---|---|---|---|---|---|---|---|
| PHR | PHRF | PHR1 | 0.708 | 0.060 | 0.576 - 0.803 | 0.55 | 0.77 | 0.53 |
| | | PHR3 | 0.821 | 0.030 | 0.759 - 0.878 | | | |
| | | PHR4 | 0.641 | 0.064 | 0.506 - 0.749 | | | |
| | | PHR5 | 0.793 | 0.031 | 0.728 - 0.849 | | | |
| | PHRS | PHR6 | 0.767 | 0.036 | 0.687 - 0.828 | 0.63 | 0.80 | 0.58 |
| | | PHR7 | 0.715 | 0.042 | 0.623 - 0.789 | | | |
| ASD | | ASD1 | 0.733 | 0.083 | 0.527 - 0.860 | 0.87 | 0.91 | 0.72 |
| | | ASD2 | 0.875 | 0.032 | 0.800 - 0.924 | | | |
| | | ASD3 | 0.877 | 0.032 | 0.801 - 0.929 | | | |
| | | ASD4 | 0.888 | 0.038 | 0.801 - 0.946 | | | |
| SDB | | SDB1 | 0.750 | 0.039 | 0.663 - 0.818 | 0.81 | 0.87 | 0.58 |
| | | SDB2 | 0.582 | 0.055 | 0.471 - 0.680 | | | |
| | | SDB3 | 0.845 | 0.025 | 0.788 - 0.888 | | | |
| | | SDB4 | 0.744 | 0.038 | 0.659 - 0.808 | | | |
| | | SDB5 | 0.849 | 0.023 | 0.794 - 0.890 | | | |

$FIT_m$ = 0.605, $OPE_m$ = 0.402

**Table 4: Discriminant Validity**

| **Fornell-Larcker Criterion** | | | | |
|---|---|---|---|---|
| | PHRF | PHRS | ASD | SDB |
| PHRF | 0.727 | | | |
| PHRS | 0.126 | 0.759 | | |
| ASD | 0.333 | 0.027 | 0.846 | |
| SDB | 0.205 | 0.113 | 0.202 | 0.760 |
| **HTMT Criterion** | | | | |
| PHRF | | 0.196 | 0.474 | 0.273 |
| PHRS | | | 0.032 | 0.151 |
| ASD | | | | 0.249 |
| SDB | | | | - |

## 5.5. Structural model assessment

Structural model results are presented in Table 4. Here, we have operationalized PHR as a higher-order construct comprising two dimensions based on the PCA. Results reveal that all the paths in the model are significant at 0.05 level. This is evident from the fact that the lower level of confidence intervals is above zero. It is also apparent that PHR has a positive influence on ASD and SDB. Similarly, ASD also has a positive influence on SDB. However, the $R^2$ value suggests that only 13 per cent of the criterion variable is explained by the model. Fit indexes of the structural model meet the model fit cut-off values (GFI > .93, SRMR < .08) proposed by Cho et al. (2020) for samples above 100 ($N$ > 100). Moreover, Cho et al. (2020) mentioned that either GFI or SRMR fit index may be used independently to assess model fit when the sample size is above 100. Based on the above recommendations on model fit indexes, it can be concluded that there is an acceptable model fit to claim that the structural model is valid. The structural model derived from the GSCA pro software is shown in Figure 2.

**Table 5: Structural Model (Original model) Results**

| | **Estimate** | **SE** | **95% CI** | $f^2$ | $R^2$ | **Model Fit** |
|---|---|---|---|---|---|---|
| Direct model | | | | | | |
| PHR → SDB | 0.213 | 0.07 | 0.085 – 0.359 | 0.048 | 0.045 | GFI = 0.956<br>SRMR = 0.079 |
| Mediating model | | | | | | |
| PHR → SDB | 0.179 | 0.076 | 0.021 - 0.326 | 0.033 | 0.071 | GFI = 0.963<br>SRMR = 0.067 |
| PHR → ASD | 0.280 | 0.088 | 0.150 - 0.478 | 0.085 | | |
| ASD →SDB | 0.152 | 0.088 | -0.009 - 0.338 | 0.024 | | |

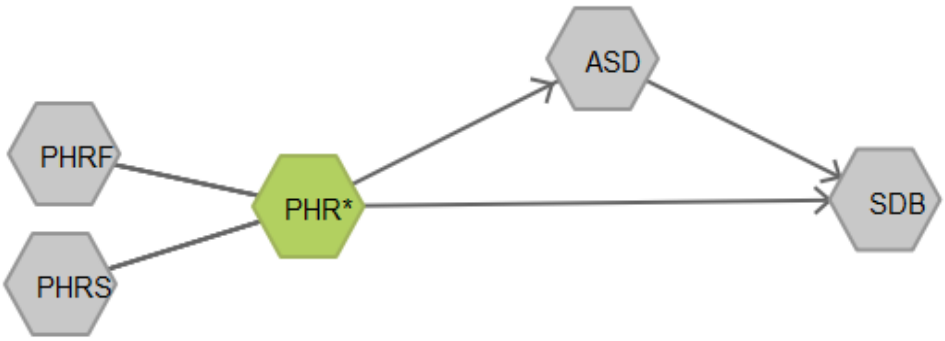


**Figure 2: Structural Model (Model 1)**

## 5.6. Post-hoc analysis

*5.6.1. Alternative structural model assessment*

We decided to undertake additional analysis by developing an alternative structural model (see Figure 3). We attempted to understand whether an alternative structural model can improve the predictive accuracy ($R^2$) as it was low in the hypothesized structural model. Results of the path analysis of the alternative structural model are given in Table 6. Path analysis shows that the path from PHR to ASD and the path from ASD to SDB are significant (at 0.05 level) and positive. The GFI and SRMR values of the alternative structural model are identical to the model fit statistics of the original model. However, the $R^2$ value of the proposed alternative model is 0.111, which is below the $R^2$ value of the original model. This indicates that the original model is better at predicting social distancing behaviour emanating from the Covid-19 pandemic. As an additional step, we compared the model fit statistics of both the models (see Table 7). Model comparison statistics suggest that the FIT statistic of the original model is significantly different from the FIT statistic of the alternative model. FIT value explains the total variance of all variables in a specified model and ranges between 0 to 1 (Hwang et al., 2017). Moreover, the original model's Out-off bag Prediction Error (OPE) is lower than model 2, and the difference is significant. Cho et al. (2019) propose to choose the structural model with the smallest OPE because of the highest predictive generalizability. Therefore, we can state that the original model presented in this paper is better than the alternative structural model to predict social distancing behaviour, although predictive accuracy can be classified as small.


**Figure 3: Alternative Structural Model**

**Table 6: Alternative Structural Model Results**

| | Estimate | SE | 95%CI | $f^2$ | $R^2$ | Model Fit |
|---|---|---|---|---|---|---|
| PHR → ASD | 0.278 | 0.089 | 0.141 - 0.477 | 0.084 | 0.078 | GFI = 0.962 |
| ASD → SDB | 0.202 | 0.084 | 0.050 - 0.381 | 0.043 | 0.041 | SRMR = 0.067 |

**Table 7: Model Comparison Results**

| | FIT | | | OPE | | |
|---|---|---|---|---|---|---|
| | Estimate | S.E. | 95% C.I. | Estimate | S.E. | 95% C.I. |
| Model 1 | 0.517 | 0.014 | 0.491 - 0.543 | 0.492 | | |
| Model 2 | 0.515 | 0.014 | 0.489 - 0.542 | 0.493 | | |
| Difference | 0.002 | 0.001 | 0.000 - 0.005 | - 0.001 | 0.002 | -0.004 - 0.004 |

### *5.6.2. Multi-group analysis (MGA)*

Our subsequent post hoc analysis focused on whether gender moderates the paths proposed in the research model. Accordingly, it was decided to conduct a multi-group analysis (MGA). Table 8 compares the mean values for males and females for each variable, and Table 9 shows MGA results. The mean comparison indicates that the mean values of females are marginally higher compared to males. However, a significant difference only exists for social distancing behaviour. It is evident from multi-group path analysis that the path from ASD to SDB is significant ($p < .05$) for males (group 1), whereas the same path was non-significant for females. However, the paths from PHR to SDB and PHR to ASD are significant ($p < .05$) for females, whereas the same paths are non-significant for males. In sum, it can be derived that gender is more likely to moderate the influence of PHR on SDB positively.

**Table 8: Mean Comparison Test**

| | **PHRF** | **PHRS** | **ASD** | **SDB** |
|---|---|---|---|---|
| Male (87) | 4.333 | 3.613 | 6.468 | 3.782 |
| Female (150) | 4.384 | 3.620 | 6.507 | 4.127 |
| Difference | -0.051 | -0.007 | -0.038 | -0.345 |
| *t*-value | -0.574 | -0.055 | -0.388 | -3.013 |

**Table 9: Group Comparison Results**

| | Group 1 (Male) | | | Group 2 (Female) | | |
|---|---|---|---|---|---|---|
| | Estimate | SE | 95% CI | Estimate | SE | 95% CI |
| PHR → SDB | 0.125 | 0.148 | -0.19 – 0.377 | 0.257 | 0.094 | 0.075 – 0.449 |
| PHR → ASD | 0.189 | 0.15 | -0.067 – 0.535 | 0.410 | 0.088 | 0.265 – 0.608 |
| ASD → SDB | 0.282 | 0.177 | 0.02 – 0.674 | 0.006 | 0.086 | -0.187 – 0.16 |

## 6. Discussion and conclusion

This study aimed to examine the influence of perceived health risk on social distancing behaviour and whether attitude towards social distancing mediates the relationship between perceived health risk and social distancing behaviour. Our analysis shows that females record higher mean values for each of the variables compared to males. Furthermore, females are more likely to demonstrate significantly different social distancing behaviour compared to males. Path analysis results show a significant and positive relationship between perceived

health risk and social distancing behaviour, and attitude towards social distancing mediates the relationship between perceived health risk and social distancing behaviour. Our findings support previous studies examining the impact of risk perception on social distancing behaviour (see Ibuka et al., 2010; Lau et al., 2010; Masters et al., 2020; Pligt, 1998; Rubin et al., 2009; Shabu et al., 2021; Tooher et al., 2013; Xie et al., 2020) and findings are consistent with other country contexts. Additional analysis reveals that females show a stronger relationship between perceived health risk and social distancing behaviour than males. Wise et al. (2020) also indicate that females are less likely to socialize compared to males. This supports our findings that females are more likely to demonstrate stronger social distancing behaviour compared to males. Jang et al. (2019) also reported that females show higher levels of risk avoidance behaviour.

Based on our findings, it can be stated that key health agencies dealing with the prevention of Covid-19 should continue to pay attention to create awareness about the potential health risk of Covid-19, and this may prompt the public to adhere to social distancing behaviour increasingly. Despite the availability of a vaccine, it is imperative to promote social distancing to minimize the spread of the virus and avoid unnecessary lockdown. Further, the stark differences in the relationship between perceived health risk and social distancing behaviour between the gender groups should be considered by health authorities, community health service providers, and other agencies when introducing public health campaigns to the public. The study's main limitation is the lower response rate and regional confinement of the study population to two districts in the western province of Sri Lanka. Prior literature has discussed the role of socioeconomic variables in determining health-related behaviour. Hence, we call for more studies with large samples which examine how socio-economic factors affect residents' attitudes and behaviour amidst the pandemic. Future research may also investigate other behavioural responses like wearing masks and sanitization habits. Also, further studies can focus on how social distancing behaviour impacts post-COVID human relations, early childhood education and development, and people's frustration.

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