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Reinforcing Risk Perception to Induce Exercise Intention: Role of Systematic Interaction from Social Marketing Perspectives

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Abstract *The study examined the relationship between systematic interaction, fear appeals, and exercise intention using group-centered and participatory approaches. The longitudinal experimental design was used to understand the phenomenon of fear appeals (risk perception) for adopting sustained physical activities. The sample comprised two treatment conditions i.e. experimental group and control group to measure the impact of interventions for verification of the proposed conceptual model. The findings indicate that risk perception mediated the relationship between systematic interaction and exercise intention. Moreover, systematic interaction has a positive effect on risk perception and exercise intention. The findings conceptually advance the fear appeal theory with a new lens using a participatory paradigm to augment sustained behavior change. We advocate that use of systematic interaction adds value in expanding the scope of a theoretical base for marketing.*

Key Words: Fear Appeals, Risk Perception, Systematic Interaction, Behavior Change

Introduction

It is alarming that every year around 4 million death in the world occurred due to Non-communicable diseases (NCDs). As far as Pakistan is concerned, due to NCDs 50 percent out of total death, out of total death. It is also alarming that in Pakistan about 21% of deaths are premature deaths which are also happening due to NCDs. Pakistan is a signatory of sustainable development goals (SDGs) in pursuit of health and wellbeing goals as a top priority. As per its commitment for SDGs, Pakistan must by 2030, reduce

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by one-third premature mortality from non-communicable diseases. Social issues in various developing economies are the majors' obstacles to achieve many sustainable development goals. Many social scientists have questioned the existing methodologies and interventions which barely helped to bring sustained behavior change in the field of marketing particularly social marketing (Khan, 2014). The main purpose of this study was to seek how social marketing using group-centered approaches help to augment behaviour change. The study used systematic interaction as a strategic tool to give incremental value to fear appeal with to induce behaviour modification. This study pointed out that attitudinal reconstruction can get brought when people having a free and fair discussion and dialogue. Free and fair discussion helps to form attitudinal changes to augment desired behaviour changes. This interaction process is very important to reinforce the value of fear appeals in social marketing. When messages are not getting through psychosocial paradigm then they won't be able to bring desired behaviour changes on a long term basis. Most of the scholarly work in the domain of marketing, particularly social marketing has ignored this aspect and they used one way communication to augment behaviour changes (Khan, 2005, 2014). They past tools were focusing on individual centric and group approaches have not been employed.

Social marketing has acquired and employed these techniques without realizing that social problems are not individual problems rather they are group and community concerns. Obesity is on the rise in the world. As per the report released by Lancet in 2014, Pakistan was at number nine out of 188 countries (Lancet 2014). One of the core purposes of social marketing is to bring about pro-social behavior amongst the target audience. For this purpose, a good number of social marketing programs have borrowed conventional approaches based on individual-centered approaches (Khan, 2005). These approaches considered individuals as a unit of analysis. Conventional marketing employed one-way communication and intra-individual processes and techniques to persuade the target audience. Whereas, in social marketing efficacy of these approaches has not been realized. One of the problems is that social problems are group/community problems. These problems badly affecting the quality of the lives of community members. To address these problems and predicament, group-centered approaches, primarily, group dynamics as an effective instrument to bring about desired behavior change.

The process of group dynamics help in analyzing how an interaction process streamlines the positive social forces and off-load inner resistances, which are determinants of undesired social habits quite prevalent among the community members. In brief, the study considers that one of the challenges that impede the progress and incremental value of social marketing very much lies in the breadth of the theoretical bases of the techniques. This is one of the strategic concerns that several social marketing programs need to address an array of social issues and problems that have hardly been successful. Moreover, one of the major reasons was that these initiatives have failed to recognize that social problems are group problems and could hardly be addressed through individual-centered approaches, which have conventionally been used in commercial oriented marketing and latter employed in many social marketing programs. As already highlighted that social marketing having

a group-centered approach provides better options to plan and address social issues and problems keeping in view the breadth and depth of the theoretical base (Khan, 2005, 2014). It is, however, being quite an under-researched area but emerging due to its efficacy of the methods. As one of the salient features is that its mechanism truly been filtered through the psycho-social reality of the community where the desired behavior change is required. It is a major and growing concern to explore a better approach in social marketing, particularly in Pakistan to address hard pressing social issues and problems, particularly in public health and hygiene.

NCDs are one of the important concerns. These are the result of the unhealthy lifestyle of the people around the globe and as well as in Pakistan. In this context role of social marketing using conventional approaches, individual-centered have barely been successful to promote health-seeking behavior using fear appeals.

This objective of this study is to find out how group centered approaches helps to reinforce fear appeals to augment sustained behaviour changes. Group centre approaches helps to give real meaning to fear appeals and will convert fear into threat. A recent study highlights that fear appeals using interactive paradigm helps to change behaviour on long term basis (Ahmad, Khan, & Hassan, 2018).

Conceptual Background

To address these problems and predicament, group-centered approaches, primarily, using activity theory, a progeny, of group dynamics used as an overarching framework to bring about desired behavior change. In this regard, Burns and Bargal (2017) have very convincingly argued why group-centered approaches which were propounded by Lewin (1947) provides an effective proposition for social marketing programs to achieve its core objectives. The current study considers a group-centered approach to encompassing the social and psychological world propounded by Kurt Lewin in group dynamics. Given the above rationale, a research model has been designed.

Systematic Interaction

To address social issues free and fair interaction, enhance the quality of interaction create conditions of equal opportunities to participate and contribute, prerequisites to advance the good of the community, and resolving social issues. If the interaction is conducted based on principles of fairness, meaningful and purposeful then these biases are more likely to be reduced and off-loaded. It is assumed that if the proper interaction continues then it is, more likely that it may be transformed into systematic interaction. The most notable work that tested the interaction as a viable technique to advance this field is by Schein (1996, 1999, 2009). The participatory Paradigm has shown better results towards sustained behavior change as compared to other approaches in the field of marketing and social sciences like planned behavior change and reasoned action theory, etc. The evidence shows that the micro clients who had interactions on weekly basis have shown better results and commitments to repay their installment to microfinance banks as compared to those who were met on monthly basis (Feigenberg, Field, & Pande 2013). Due to societal interaction, individual behavior is influenced by other group members (Tomasello, 2014). A recent report published by the World Bank (2015) entitled "Society mind and behavior" pointed out that people act as agents to

improve the health and wellbeing status of their societies. They also strongly believe in the value system of their society and support other members to achieve common goals. More social interaction and relationship among community members is argued towards more sustained behavior change. Social ties and social relationships also focus on health research which has empirically tested how social ties help to augment behavior change (Mansuri & Rao, 2012). However, it is very challenging for the policymakers to transform civic culture with the help of improved social ties. A program in Sudan cannot achieve desired results which aimed to increase civic participation in the wake of civil war nor did it increase social network density (Avdeenko & Gilligan, 2014).

Many researchers have explored that different programs run by the Centre for Disease Control (CDC) were unable to achieve results. These programs used social mobilizers to disseminate information. However, these programs were failed as they were unable to establish a proper social interaction mechanism. Both theory and empirical findings of the various study suggest if CDC want to achieve desired results then they must invest in strategies to engage citizens with one another to achieve sustained behavior change program (Mansuri & Rao, 2013).

The research shows that Functional health literacy is not helping to bring sustained behaviour change due to complex factors that are linked with behaviour changes (Hsu, Chiang & Young, 2014). A study in the health domain found that a positive attitude did not support behavior change because there was no motivation to transform knowledge into action. The study further highlighted that the conventional approaches were the main reason for this knowing-doing gap. This study highlighted the need for improving the health education program using innovative techniques (Gautam, Bhatta, & Aryal, 2015).

Systematic interaction can help towards attitudinal reconstruction and to reduce this knowing-doing gap in the health education program. Social issues or problems can be solved, if society intends to promote socio-economic development based on the social interaction of the community members. This kind of incentive structure Douglas and North (1995.) research is quite important for the effective functioning of the community to build its capacity and resolve socio-economic issues as well as building requisite social norms to sustain such activities. Before this Lewin, who propounded the idea of group dynamics that everyday problems can be solved by the community members when they interact with each other based on equity and equality Lewin (1947). In this way, everyone is beneficiary of the process without any prejudices, and social development occurs both on a social and individual level (French, 2007).

Social marketing needs to integrate such kind of social mechanism. This, in turn, develops requisite knowledge and dynamism to augment the process of socio-economic development as a function of interaction which likely to generate some new insights and knowledge that induce sustained behavior change (Khan, 2014). Based on these assumptions the study has engaged participants, who are subjected to free and fair discussion on the issues that they are likely to encounter and consider them hard pressing. The assumptions have been derived from the synthesis of the literature and help postulate the following hypotheses.

Risk Perception

Risk perception measures people's perception of their susceptibility to getting disease. It is measured on perception of participants for having consequence of risks. Normally,

it is measured by participant's judgments about the possibility of facing negative consequences. Research show risk perception helps to change behaviour (Popova et al., 2018). Many theories support that risk perception influence behaviour changes among them mostly cited are health belief model (Rosenstock, 1974), protection motivation theory (Rogers, 1983), parallel process model (Leventhal, 1970). The past consumer research highlights that there is an association between risk perception and behavioural intention and behaviour change. (Brewer, Chapman, Gibbons, et al., 2007; Floyd, Prentice-Dunn, & Rogers, 2000).

Exercise Intention

Different theories support that intention helps to reinforce behaviour changes (Rogers, 1975, 1983). Protection Motivation Theory supports that intention creates motivation towards taking certain actions. An individual perceiving the threat to be high will be more likely to be motivated to adopt the recommended protective behavior. Notwithstanding the fact, some of the positive outcomes of PMT and other theories that have been used in social marketing to bring about behavior change do not seem to be promising and productive. Given the above discussion the study assumes following model and hypotheses:
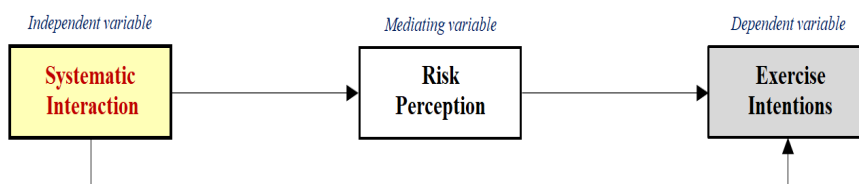

Figure 1. Research Model of the Study

Hypothesis

Following hypotheses were tested in this study

Hypothesis 1:Systematic interaction positively reinforces risk perception.
Hypothesis 2:Risk perception positively reinforces exercise intention.
Hypothesis 3:Systematic interaction positively reinforces exercise intention.
Hypothesis 4:Risk perception mediates the relationship between systematic interaction and exercise intention.

Research Methodology

Population and Sample

The population in the research is defined as "the entire set of people or observations in which you are interested or which are being studied" (Malcolm, & Blerkom, 2009; p. 212). The infinite sized population for this study consists of all adults who are currently physically inactive and therefore prone to disease and other negatives outcomes associated with such an inactive behavior.

For this longitudinal, mixed-method, and experimental study a public-sector university located at Islamabad was selected as an experimental site. An experimental sample of 95 physically inactive adults (employees and higher education students in different departments) was derived using a pre-test; all active participants of the pre-

test were rejected for further participation. Only one experimental site was considered keeping in view the time and cost constraints and scope of this longitudinal study. The researcher randomly approached the employees in different departments of university and students coming out of classes, studying in lawns, sitting at cafeterias, and in the classroom with permission of respective heads of department. They were given a pre-test for the screening of physically inactive students. Thereafter, an experimental sample of inactive participants was selected based on their volunteer consent.

In this study, systematic interaction served as an independent variable, risk perception as a mediator, and exercise intention as the dependent variable. Systematic interaction served as a two-pronged strategy to achieve behavioral and capacity building goals for the study participants.

Experimental Group

The experimental group was selected randomly comprising of people who were given treatment based on fear appeal of risk perception.

Control Group

The control group comprising of people who did not receive treatment of fear appeals at any stage of the study.

Phase I of Study

Time 1: Baseline

At time 1, in the baseline, the study participants were given a questionnaire to record their demographic profile and measure their current level of physical activity. This step was carried out with the help of an instrument called LSI. Based on this exercise the sample of inactive participants was shortlisted for further study intervention. In this stage, the model developed by Prochaska & DiClemente (1992) was used as a tool to check participants' current level of exercise status and those who were its first two stages i.e. pre-contemplation and contemplation were included in experiment group to conduct the study. It was pointless to consider those who are already active for the study, therefore, the people who were at stage 4 and 5 i.e. action and maintenance stages were not considered for further study because they were already physically active people.

Time 2: Intervention (Experiment)

After one week 1, those who were found physically inactive called experimental group, i.e. people at first, the second and third stage of Trans-Theoretical Model of Prochaska (1992) were given a treatment of risk perception and participants were engaged in the systematic interaction process, based on activity theory, to discuss given fear appeal (risk perception) to indicate their exercise intention. The overall study design is depicted in figure 3.3.

Instrumentation

In this experimental research existing scientifically appropriate instrument having psychometric properties was used. Therefore, in this study, we adopted those instruments which were used in past researches.

Development of Communication Material

A quarter-page print advertisement was developed employing fear appeals element i.e. Risk perceptions (RP), Print media was chosen due to its flexibility to adapt to various treatments (Arthur & Quester, 2004). A highly trustworthy and credible doctor from a reputed private hospital located in Islamabad was requested to speak about the intervention. He endorsed how physical inactivity is badly affecting the health of people and linked with a disease like colon cancer.

Stage of Exercise Readiness Questionnaire

For stages of exercise readiness, a scale by Marcus, Rakowski, and Rossi (1992) was used to gauge the current level of physical activity behaviour.

Risk Perception

A scale developed by Courneya and Hellsten (2001) was used to measure the risk perception of the study participants.

Exercise Intention

A seven-point Likert scale was used which was developed by Courneya and Hellsten (2001) to measure exercise intention of the study participants,

Systematic Interaction

A scale developed by Khan (2005) was adopted in this study to measure the systematic interaction of study participants

Results

The finding of the study is described to examine proposed relationships. Data were entered SPSS file then from the SPSS file. In descriptive statics, this study explored the percentages, means values, minimum and maximum values, and standard deviation for each demographic and study variables. The validity and reliability of all the study variables and descriptive analyses were done using SPSS and smart pls. PLS was used for evaluating discriminant validity and cross-loadings. Andrew F. Hayes Process models used for mediation testing are the most popular and widely used in research for reliable findings.

Convergent Validity

Table 1 indicates that all the outer loading is more than 0.5. table 4-1 also presents the results for the construct reliability and validity; the average variance extracted (AVE) for all variables is more than .50. This has achieved the criteria proposed by Fornell and Larcker (1981) for AVE. At the same time, composite reliability (CR) and Cronbach's Alpha are also above 0.7. As per Table 1 result of factor analysis for each independent variable was reliable as per the criteria proposed by Kaiser-Meyer-Olkin for measuring the adequacy of the sample ($.631 \leq KMO \geq .945$).

Table 1. AVE, CR, Cronbach's Alpha Coefficients

Variables	Items	Mean (SD)	Cronbach's Alpha Coefficient	AVE	CR

			Min	Max	α (R)		
Systematic interaction	8	5.91 (0.68)	0.74	0.79	0.84	0.5	0.87
Risk perception	4	4.68 (.69)	0.59	0.68	0.73	0.53	0.82
Exercise intention	3	6.11 (.80)	0.59	0.80	0.77	0.69	0.87

Where; SD= Standard deviation, CR= Composite reliability, AVE= Average variance extracted

Discriminant Validity

Table 2 present the results for discriminant validity which is acceptable as the diagonal bold values are more than its columns and rows. The bold values are the square root of AVE for all variables in higher than their correlations with all other variables. Fornell & Larcker (1981) This shows that overall all latent variable having adequate discriminant validity.

Table 2. Discriminant Validity

	1	2	3
1. Systematic interaction	**.71**		
2. Risk perception	.37	**.85**	
3. Exercise intention	.50	.31	**.83**

Predictive Validity

The predictive validity deals with whether a scale forecast study hypothesis or not (Rattray & Jones, 2007). If in correlational analysis hypothesized relationship exists among study variables, then the predictive validity of the scale is established. As the Table 3 presents statistically positive significant correlations among all study variables. This clearly highlighted that scales valid to predict hypothesized relationships.

Table 3. Correlations Matrix

	1	2	3
1. Systematic interaction	1		
2. Risk perception	.44**	1	
3. Exercise intention	.46**	.360**	1

*** Correlation is significant at the 0.01 level (2-tailed).*

Descriptive Analysis

Tale 4 presents descriptive statistics; minimum, maximum, means, and standard deviations for different variables. Baseline survey indicated that only five percent of the student was physically active and rest ninety-five percent were physically inactive. The only physically inactive individual was recruited to conduct further study. The participants were male (88%), married (88%), undergraduate (86%), and graduates completing 16 years of education (14%).

The experimental sample in this study represents physically inactive adults, not the whole population of Pakistan. Female sample of 12% in this study commensurate with the 10% women quota in jobs as well as participation in higher education and 13% women employment rate (Labour Force Survey, Pakistan 2014-15). Among the study participant, 88% don't have dependents and 12% of study participants have dependents

ranging from 1 to 5 dependents. The age of 82% of participants ranged from 18-26 while remaining were in the age bracket of 27-42 years. 10% study participants had their weight ranging from 40-50 kg, 36% in 52-60kg, 28% in 62-70kg, 20% 71-80kg, while 6% having weight from 82-120kg. Among 30% height from 5ft to 5.04ft, 50% from 5.04ft to 5.09ft, while remaining about 20 percent having their height from 5.10ft to 6.06ft. 10% of participants were neither currently exercising nor seriously thinking about exercising in the next 6 months. About 27% were not currently exercise but seriously thinking about exercising in the next 6 months. About 63% were exercising sometimes but not regularly. For their future intention to do the physical activity; 14% said they will often participate in the physical activity, 76% said they will participate sometimes in the activity while 10% said they will participate rarely in exercise in the coming week. The average age of the study participants was 24.73 years (S.D. 6.22). The average weight was 63.92kg (S.D. 12.55).

Table 4. Descriptive Analysis (n=95)

Sample characteristics	Minimum	Maximum	Mean	Std. Deviation
Gender	1.00	2.00	1.15	0.36
Age	18.00	49.00	24.27	5.88
Weight	40.00	120.00	63.24	12.78
Marital Status	1.00	2.00	1.89	0.31
Number of Dependents	0.00	5.00	0.32	1.00
Qualification	1.00	2.00	1.12	0.32
Systematic interaction	3.88	7.00	5.91	0.69
Risk perception	4.06	6.67	5.27	0.57
Exercise intention	4.00	7.00	6.11	0.80

To check the significance a one-way ANOVA was applied to examine whether any difference exists between experiment and treatment group for exercise intention (Table 5). Results revealed that the experimental group has higher exercise intention (mean = 6.11) than the control group.

Table 5. Descriptive Statistics for Treatment vs Control Group

	Experimental Group Mean	St. dev.	Control Group Mean	St. dev.
Exercise intention	6.11	0.81	3.35	0.16

Testing of Hypotheses

H1: Systematic Interaction Positively Reinforces Risk Perception

The systematic interaction was regressed on risk perception. The reliability of findings was established as regression analysis assumptions were fulfilled. Regression model significantly explained that systematic interaction accounts for 22% (ΔR^2_{SI} =.226, S.E. =.501, F (1, 110) =32.137, p<.000) variance in risk perception and that each one-unit change in systematic interaction can predict 40% (β=.40, p<.01) change in risk perception. Therefore, H1 of study is accepted.

H2: Systematic Interaction Reinforces Exercise Intention

The systematic interaction was regressed exercise intention. The reliability of findings was established as regression analysis assumptions were fulfilled. Regression model (Table4-8) significantly explained that systematic interaction accounted for about 22% ($\Delta R2SI$ =.229, S.E. =.761, F (1, 110) =32.666, p<.000) variance in exercise intention and that each one-unit change in systematic interaction can predict 61% (ß=.616, p<.01) change in physical activity intention. Therefore, H2 of study is accepted.

H3: Risk Perception Positively Reinforces Exercise Intention

The risk perception was regressed on exercise intention. The reliability of findings was established as regression analysis assumptions were fulfilled. Regression model (Table 4-10) significantly explained that risk perception accounted for about 18% ($\Delta R2FA$ =.182, S.E. =.784, F (1, 110) =24.554, p<.000) variance in exercise intention and that each one unit change in risk perception can predict 65% (ß=.650, p<.000) change in exercise intention. Therefore, H3 of study is accepted.

H4: Mediating Role of Risk Perception between Systematic Interaction and Exercise Intention

To test this hypothesis the model 4 of Hayes (2013) PROCESS was used. In the model SI was used as an independent variable (X), EI was dependent variable (Y), and risk perception was served as a mediator (M). This model produced the results in 3 steps. Step 1 highlighted the total effect of SI on EI was significant (b=.616, p<.000 by ignoring mediator. Step 2 highlighted the effect of SI on FA (mediator) i.e. path a which is significant (b=.402, p<.000). Step 3 highlighted the effect of RP on EI (path b) which is significant (b=.392, p<.001), when controlling for SI. In step 3, RP was controlled and showed results for path c i.e. significant direct effect of SI (b=.458, p<.001) on EI which has reduced total effect (path c) of SI (b=.616, p<.001) on EI in step 1. The above results indicate partial mediation. The effect size was measured using bootstrap showed that the indirect effect of SI on EI was significant i.e. (ab=.158). In figure 4-11 mediated model significantly explained that SI through intervening effect of FA account for about 28% (R^2= .280, F (2, 109) = 21.424, p <.000) variance in PAI. Equation 11 mathematically represented this relationship. Based on the analysis it is concluded that hypothesis 4 is accepted.

Discussion

This research study has been designed to introduce a unique proposition of theory and research design in social marketing. The study tended to address the issues of growing unhealthy lifestyles that impede quality of lives of the people. Social marketing using systematic interaction based on group dynamics provides a supportive system and communication to reinforce and augment desired behaviour changes (Stidsen & Schutte, 1972; Khan 2014). World Health Organization (WHO, 2014) report highlights that globally more than 4 million deaths accounted due to poor social habits and unhealthy lifestyles.

In the present age when most of the people in the world have access to modern communication technologies and it's quite painful to see that people are still dying not because of health but due to ignorance. Many of these alarming tragedies could have

been averted if we would have approached those approaches of intervention and communication filtered through the psycho-social reality of the target community where the desired change is required.

Several social marketing campaigns, notable ones are 'eradication of polio from Pakistan', cessation of smoking, opting healthy lifestyles should be reviewed considering this study and pioneer study by Khan (2005) that set the pace of researches in social marketing in Pakistan meeting the psychosocial reality of Pakistan. On the other hand, this study also provides some new insights and to tackle practical implications to cater to the sensitivity of the value and norms that vary from community to community.

This study has used systematic interaction as a strategic tool to induce behaviour change among study participants. The study supported major hypotheses of this study. Moreover, objective assessment of current lifestyles and their cost benefit analysis as a function of continuous interaction among group members develop rationally addressing the issues. Through group discussions, the members have not only internalized the true meaning of the fear appeals and developed mechanism to think systematically to address their poor social hobbits. Group dynamics propounded by Lewin (1947) and further advanced by many scholars by Sugiman, (2015; Khan 2005, 2014). The significance of the results of the study supports that activity theory provides and effective social mechanism that helps operationalize social marketing program and is an effective tool to give real understanding and meaning to fear appeal that leads to augment behaviour change. Although in past fear appeals have been used to bring about desired behaviour change, however, current study aims to find out the mechanism towards sustenance of behaviour change.

This study also highlights that developing countries such as Pakistan counters several social challenges in education, health, civic services. Thus, there is a need to improve service delivery system in social, economic and public welfare programs, social and infrastructure as well as in many development programs and institutionalization of district governance.

Theoretical and Practical Implications

The research study highlighted that interaction paradigm enhances the incremental value of risk perception to bring about sustained behaviour change. When people interact with each other they explore ways to address their problems. The activity theory support to create free and fair and purposeful discussion. The programmatic use of positive deviance strategies centers not on adopting "best practices" from abroad but identifying the local practices based on observed successes and encouraging their adoption by others through local communities of practice. Qaisar and Malik (2015) and Qaisar, Mariam, & Ahmad (2018) proposed to undertake appropriate measures at workplaces aiming at employee wellness. This study provides insights that workplace wellness promotion initiatives targeting employees' physical wellness may consider group dynamics to induce fears appeals (risk perception) and exercise intention through systematic interaction.

Limitations of Study

Lab experiments have issues regarding generalizability, secondly experiments were based on feedback from students and working population. Per Green (2018), *"What we*

call science and knowledge are constructed within a culture to achieve ends that are important for them at a given time.

Future Direction

There is need to explore sustainability of fear appeals using systematic interaction in future researches. Future researchers can study the same framework in natural field setting.

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