How personal beliefs determine adherence to standards of research ethics: an EFA and path analysis study

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Abstract

Purpose – This study aims to identify causes of (un)ethical behaviour in research and how they influence adherence to research ethics.

Design/methodology/approach – The authors developed and tested a conceptual model that includes mediation and helps to understand the mechanism of adherence to ethical standards of research based on the “social judgment theory” (SJT). In Study 1, the authors conducted an exploratory study using the exploratory factor analysis technique to identify factors responsible for adherence to research ethics. In Study 2, the authors used SJT to provide support for establishing a relationship between key variables.

Findings – Two factors, “Proclivity to Egoism” and “Proclivity to Emotivism”, were identified based on the personal beliefs of researchers. These factors were found to play an important role in determining the tendency towards adherence to standards of research ethics (Belmont Report and COPE). SJT successfully explains the mechanism of adoption of ethical standards. Adherence to Belmont principles was seen to mediate relationship between factors identified and tendency to adhere to COPE.

Originality/value – Majorly, this study is unique as it establishes and guides to incorporate researchers’ point of view in formulating ethical standards and guidelines, apart, from various other important theoretical and societal implications.

Keywords Research ethics, Research standards and guidelines, Ethical beliefs, Attitude shift, Unethical behaviour

Paper type Research paper

Introduction

Ethics in research is a hotly debated topic as it underpins the role that scientific knowledge has to play in the successful growth and development of modern society (Whittlestone et al., 2019; Martin, 2019; Wolf et al., 2017). UNO claims to focus on “innovation”, “industry” and “infrastructure” for sustainable growth (Sustainable Development Goal 9), however, the success of any new research endeavour towards the fulfillment of this goal would depend upon the successful deployment of ethics in doing so (Van den Hoven, 2016; Agyabeng-Mensah et al., 2020).

The research process works in a systematic manner, where multiple activities are conducted in an integrated way to achieve a cohesive research output. Several guidelines have been developed to assist in ethical considerations during the conduct of research...
activities (Miracle, 2016; Beauchamp and Childress, 2001, 2019; Shamoo and Resnik, 2009). Also, recently, there has been an increased focus on developing domain-specific guidelines for research (Jobin et al., 2019; Hewson et al., 2015; Townsend and Wallace, 2016) and adopting measures to ensure ethical compliance in research, such as institutional review boards or ethics committees (Huang et al., 2021). Still, cases of ethical misconduct continue to be reported. There have been several instances when researchers have bypassed research ethics through various means (Teitcher et al., 2015; Gopalakrishna et al., 2022). Also, so far, the development of ethical guidelines has focussed either on the characteristics of the domain of knowledge (domain-specific guidelines) (Jobin et al., 2019; De Wet, 2010) or on the characteristics of the research subjects (participants of research) (Pietilä et al., 2020). Additionally, people have tried to ascertain the magnitude or probable causes of misconduct in the system of academic research from various perspectives (Keith-Spiegel, 1977; Moreno and Arteaga, 2012; Gopalakrishna et al., 2022), however, neither the studies have solely focussed on exploring the possible causes responsible for adherence (non-adherence) to “research standards” in specific, nor the role of characteristics of the researcher, specifically their meta-ethics, have been considered in the development of ethical guidelines. Thus, an overarching or meta-view is lacking.

We in our study have tried to overcome this gap by taking the help of the social judgement theory (SJT) (Sherif et al., 1965) which talks about the use of “anchors” for acceptance or rejection of ideas. The study has been conducted in two parts. The first part of the study focuses on identifying the “anchors” for judgement using the technique of exploratory factor analysis (EFA). For this, we explored various reasons given in the literature to determine if they converge and point to one or more specific rationales that are responsible for adherence to research standards. While the second part of the study focuses on the effect of the identified “anchors” towards acceptance or rejection of the ethical standards of research through regression and path analysis. We have used principles given under “the Belmont report” (The Belmont report, 1979) and the “COPE guidelines on publication ethics” (The COPE Report, 1999) as the standards of research ethics.

Thus, this research aims to achieve the following two objectives. Firstly, it aims to explore one or more factors that could represent researchers’ psychological orientation, which forms the basis of their beliefs towards research ethics, and secondly, to examine the influence of these factors on adherence to research and publication standards. The present study contributes to the research fraternity by identifying factors that need to be addressed to promote a positive attitude shift towards adherence to ethical standards in research.

The following section of the article reviews the literature and presents the theoretical background. Subsequent sections will explain the development of the hypothesis, methodological aspects and results. The concluding part elucidates the discussion, implications, limitations and conclusions.

Review of literature and theoretical background

Standards of ethics in research

Talks of ethics in research started after the second world war in the aftermath of the experiments conducted by Nazi Germany, and thereafter the emergence of the “Nuremberg Code” in 1947 has been well-documented (Annas and Grodin, 2008). This was followed by the development of “the Declaration of Helsinki” (1964), The Belmont Report (1979) and the “Council for International Organisations of Medical Sciences” (CIOMS) in 1982. These four occupy the position of being the most influential formal statements on the ethical conduction of research. Though being originated as a model for guiding the ethics in biomedical research, it has found its application in other disciplines across the spectrum as well, including social science (Israel and Hay, 2006).
Current trends in ethical practices in research

All four statements on ethics have been used to formulate newer codes and guidelines for research practice (Israel and Hay, 2006). However, the basic principles and guidelines for the ethical conduction of research involving human subjects given in “the Belmont report (1979)” has been widely referred to and adapted in research (Miracle, 2016; Israel and Hay, 2006; Anabo et al., 2019). The Belmont Report describes three principles – Respect for person, Beneficence and Justice – for ethical conduction of research, which find their application in the form of – informed consent, assessment of risk and benefits and selection of subjects, respectively.

Ethics in research publication

Additionally, COPE (Doherty and Van De Putte, 2000; The COPE Report, 1999) provides guidelines on ethical publication practices in research. This includes data analysis (fabrication and falsification), authorship, conflicts of interest, plagiarism and redundant publication, which are some of the issues reported in the literature regarding unethical publication practices (Gopalakrishna et al., 2022; Singhal and Kalra, 2021; Olesen et al., 2018).

Underpinning theory

The SJT deals with self-persuasion and judgement analysis. Its application could be found in attitude and attitude change (Sherif et al., 1965). The SJT presents a concept to understand the process of attitude change in individuals by means of comparing two distinct sets of ideas/viewpoints. One set, known as anchors, represents existing beliefs, while the other set, known as stimuli, represents new ideas. Based on an individual’s evaluation of the two options, if the idea is perceived to align with their existing beliefs (viz. lies in the latitude of acceptance), it is more likely to be accepted rather than rejected (viz. lies in the latitude of rejection). The ideas that appear to be in the middle (latitude of non-commitment, viz., for which the individual seems indifferent or undecided) are the ones most likely to be worked on for a positive shift in attitude. SJT uses a “system-oriented-perspective” which renders it with the ability to maintain close contact with the immediate and specific ecological circumstances, and hence is especially advantageous in analysing judgement processes in the presence of a “representative design” or “criterion values”, where comparison is required. Thus, SJT provides a strong philosophical and conceptual foundation for analysing conflicting, complex and ambiguous environments similar to adhering to research standards (Cooksey, 1996; Smith et al., 2003).

Building on the premise of the above concept, research can be understood as operating under specific circumstances that are unique to each study. As a result, researchers are often faced with the task of making decisions when they are regularly presented with new ideas. The new information, like that of ever-evolving ethical guidelines for research, is representative of the “criterion values” (stimuli) which the researcher compares with his pre-existing beliefs and makes a judgement whether it is to be accepted or not. This marks the attitude formation of a researcher regarding his adherence to the ethical guidelines henceforth. Applying the concept of SJT, we explored the factors as “anchors” that influence adherence to research ethics standards, with research standards being “stimuli”.

Factors responsible for adherence to ethical practices in research and publication

Considering the role researchers’ meta-beliefs in adherence to ethical practices in research and publication, we need to know the “anchors” first which provide a basis for comparison of newly introduced ideas (suggested guidelines on research ethics). To ascertain the
anchors, the underlying beliefs of researchers towards research ethics need to be measured (Duell and Schommer-Aikins, 2001). Thus, we explored the extant literature for the possible causes that shape the belief of the people to follow or not to follow research ethics. We searched the google scholar platform, trying keywords like ignorance of research ethics, avoidance of ethics or ethical principles, research misconduct or possible causes for ethics avoidance, etc. We found that the keywords “violation of ethics or ethical principles” and “research misconduct” resulted in getting some articles relevant to our study. Thereby, we searched for the possible reasons for “violation of research ethics” and “research misconduct”. We also searched the literature from various aspects like personality, social sciences, qualitative research, psychology and biomedical research, to obtain possible reasons for the violation of research ethics. We found that some of the reported reasons in the extant literature pointed towards a lack of awareness or intent for violation of research ethics and research misconduct (Keith-Spiegel, 1977). Moreno and Arteaga (2012) mentioned paternalism, lack of strict ethical supervision, improper use of informed consent, absence of legislation regarding ethics in terms of health care and research, and pressure exerted by health institutions to increase the production of scientific material as some of the factors that contribute towards violation of ethical principles in research. Gopalakrishna et al. (2022) also report about the pressure to publish as one of the reasons for engaging in one or more questionable research practices frequently. From a personality perspective, impulsivity and sensation-seeking have been proven to be related to transgressive behaviours which include cheating (McTernan et al., 2014). Other personality characteristics like machiavellianism, narcissism and cynicism have been studied concerning the ethical decision-making process and were found to be negatively related to it (Antes et al., 2007; Tijdink et al., 2016), whereas conscientiousness and agreeableness traits were found to be negatively related with academic dishonesty (Giluk and Postlethwaite, 2015; Antes et al., 2007). A positive association has also been observed between unethicality and self-enhancement values like power and achievement. While unethicality was negatively associated with self-transcendence and conservation values like benevolence, universalism, tradition and security, thus, establishing a link between personal value structure and unethical attitudes and behaviour (Feldman et al., 2015).

From the above discussion, we could find many variables germane to divergent characteristics of a person such as information and knowledge, self-regulation, personality and need for achievement, and external regulatory mechanisms that potentially underpin the belief of a person towards research ethics.

Model building and hypothesis
There has been a multitude of studies that have focussed on identifying the belief of individuals in different contexts, such as about organisational ethics (Froelich and Kottke, 1991), students’ critical thinking (Stupple et al., 2017), teachers’ context beliefs regarding the use of technology (Lumpe and Chambers, 2001). Therefore, there is reasonable literature support that beliefs towards research ethics among researchers in the domain of commerce and management could also be identified. Thus, we proceed to state the first hypothesis:

\[ H1. \text{ Significant factors are identifiable that determine the personal beliefs towards research ethics (PBRE).} \]

Multiple studies indicate the impact of personal beliefs on a variety of human behaviour like tax compliance intention (Wenzel, 2005), internet use policy adherence, compatibility with organisational ethics (Li et al., 2014) and professional judgement, and behaviour in the field of nursing (Pickles et al., 2019). These indications in the literature provide ground to posit
that personal beliefs towards research ethics can also influence researchers’ tendency to adhere to standards of research ethics. As discussed in the literature, there have been plentiful standards suggested so far for research ethics. Comparison with all is not possible. Because the principles of research ethics and its applications, as defined in the Belmont Report, resonate with the core establishment of almost all the standards that came forth and have been used across the domains (Israel and Hay, 2006), hence, we choose “The Belmont Report” (BELMONT), as the standard, to carry forward our research. Similarly, COPE guidelines (COPE) suggest ethical publication practices in research by describing various unethical practices in publication.

So, the subsequent hypotheses for the study are as follows:

\[ H2a. \] Personal beliefs towards research ethics (PBRE) significantly influence the tendency to adhere to the principles of the Belmont Report (BELMONT).

\[ H2b. \] Personal beliefs towards research ethics (PBRE) significantly influence the tendency to adhere to the publication ethics given under COPE (COPE).

Also, some studies indicate the effect of prior attitude towards an item or an object may influence the formation of attitude towards another subsequent object in a related context. This influence can enhance the strength, size and direction of the effect towards the subsequent object (Tourangeau and Rasinski, 1988; Tourangeau et al., 1989; Schwarz and Strack, 1991). It has also been documented in the literature that preceding experiences help in shaping intention for subsequent behaviour (Ajzen, 1985; Stephens et al., 2019). Because the processes in the research system are such that data collection and analysis precede the manuscript preparation and publication. Thus, it can be said that the role of BELMONT precedes the role of COPE. Therefore, it is expected that ethical belief towards adherence to BELMONT may have a potential effect on adherence towards COPE guidelines in the form of perceived behavioural control (Ajzen, 1985). Accordingly, it may be hypothesised that the influence of factors (identified under \( H1 \)) expressing PBRE on COPE may be mediated through BELMONT. Thus, the following mediation hypothesis is stated:

\[ H3. \] Principles of the Belmont Report significantly mediate the tendency to adhere with the standards of publication ethics given under COPE.

\( H1 \) has been undertaken in Study 1 while \( H2a, H2b \) and \( H3 \) have been worked through in Study 2. A conceptual model of showing relationships among study variables is depicted in Figure 1.

**Methodology**

**Sampling and data collection**

A suitable sample size for factor analysis is not clearly prescribed in literature, but there are rules such as sample size should be ten times of number of variables in EFA (Nunnally, 1978), 300 as a comforting sample size to keep the test parameters stable (Tabachnick and Fidell, 2012, p. 613), and finally, Guadagnoli and Velicer (1988) explained that if factors have four or more loadings greater than 0.6 then the sample is reliable regardless of sample size. We generated the EFA result with a sample size of 319 and each of these criteria was met. The data were collected in two rounds through an internet-based survey following the purposive-snowball technique. Respondents of the study were faculty members, research scholars, and postgraduate sophomore students who completed their first-year dissertation. The entire respondents were from the discipline of management and commerce. It was
appropriate to seek responses from them to know what could be possible causes of ethics avoidance/violation among the existing and upcoming researchers or how likely they are to be ethically compliant in future research.

To reduce common method bias in responses, the survey forms were sent to 400 respondents in the first round with statements about personal research beliefs, and in the second round, the survey form contained statements on Belmont principles and COPE guidelines. In the first round, we received 347 valid and complete responses and after the second round 319 complete responses were received. The candidates were primed and made to understand the context before they began to answer through an opening note in the questionnaire and also through personal interaction as much possible. The questionnaire was designed keeping in mind how much respondents will be able to understand the context. Questions asked were so framed that they bring out the context without serving any bias, thus reducing any scope for biased responses. SPSS 20.0 and Smart PLS 3.2.9 were used for data analysis. We divided the study into two parts as Study 1 and Study 2. In Study 1, we explored factors as anchors of personal beliefs towards research ethics through the EFA technique. In Study 2, further insight into the role of these factors on adherence to Belmont and COPE guidelines was obtained through multivariate regression analysis and cross-validation through path analysis.

**Measurements**

Measures for PBRE are captured through 24 statements derived from the variables identified in the literature review. These statements reflect the anchors that define the belief towards research ethics and served as input for EFA.

The applications of general principles of the Belmont report being derivative of the formal statements defining its principles, they have been used to design items of the construct for measuring the tendency to adhere to Belmont Principles (BELMONT). Accordingly, each of the three principles of Belmont report has been measured through three statements based on its application, thus a total of nine items construct was initially developed. Similarly, guidelines of COPE regarding data analysis (fabrication and falsification), authorship, conflicts of interest, plagiarism and redundant publication, were used to initially develop a seven-item construct to measure the tendency to adhere to COPE guidelines (COPE). All the statements were measured on a five-point Likert’s scale, with, 1 as “strongly disagree” and 5 as “strongly agree”. Some of the statements were reverse coded to avoid agreement bias in response.

**Figure 1.**

Conceptual model

Source: Developed by authors
Results
Study 1
The data comprised 319 respondents with an average age of 29 years. Among all the respondents, 23% were faculty members, 43% were research scholars pursuing PhD and 34% were sophomore postgraduate students, all from management and commerce disciplines.

An EFA was conducted on 24 variables identified through a literature review that potentially influence the PBRE. The EFA was done using the “principal axis factoring” technique due to its suitability to generate and test the subsequent hypothesis (Field, 2013). Because we were interested to generalise our findings for the research fraternity in the domain of commerce and management, the EFA results were cross-checked with the maximum-likelihood method (Harman, 1976), and could not find any deviation between the two results. To ensure that factors remain uncorrelated, orthogonal rotation and “varimax” rotation methods were applied (Field, 2013). Moreover, our sample size was greater than 250, so we adopted Kaiser’s (1960) criterion for factor extraction; accordingly, the eigenvalues threshold was kept at 1. Subsequently, a two-factor solution was obtained, which we cross-checked through a “scree plot” with eigenvalue of 0.7, and again a two-factor solution was obtained. Thus, it was decided to proceed with two factors solution for further analysis. The analysis also expressed communalities greater than 0.6 for all the variables, reinforcing the suitability of sample size for the study and the choice of Kaiser’s criterion for factor extraction (MacCallum et al., 1999).

KMO test for sampling adequacy has a value of 0.953 which tells our sample and data is adequate for conducting factor analysis (Hutcheson and Sofroniou, 1999). We checked the correlation between the variables manually and also through Bartlett’s test for sphericity. Bartlett’s test for the null hypothesis that the correlation matrix is an identity matrix was rejected at $p = 0.0000$ with 210 degrees of freedom (approx. Chi-Square = 8,816.954). Therefore, we concluded there is a sufficient correlation between the variables for conducting EFA. Any potential multicollinearity in the data must be eliminated to ensure that factors make some unique contribution to the variables, which is not possible in those cases when variables are near to perfect correlation (Field, 2013). Therefore, we scrutinised the correlation matrix and found one group of three variables and another group of two variables were correlating more than 0.95. After carefully evaluating them in the factor analysis results, we found that the group of three variables belonged to the first factor and the other group of two variables belonged to the second factor. We eliminated the two variables from the first group and one variable from the other group from further analysis. After re-running the factor analysis, we had a better-rotated factor loading matrix (Table A1, see Annexure) with minimal cross-loading issues. Therefore, $H1$ is accepted and two factors are identifiable that represent the underlying beliefs of people towards research ethics. Factor 1 and Factor 2 are named “Proclivity to Egoism” (EGOISM) and “Proclivity to Emotivism” (EMOTIVISM), respectively, based on the underlying concept that they represent and a detailed account of this naming schema is presented in the discussion section.

Finally, to validate the EFA results, we assessed the issue of multicollinearity through the determinant of correlation matrix and found that determinant of the R-matrix was 0.013, greater than 0.00001 (Field, 2013), thus no evidence of multicollinearity was found in the data. As a part of the post analysis, the factors’ reliability was accessed through Cronbach’s alpha for each factor and the alpha for Factor 1 was found as 0.78 and it was 0.68 for Factor 2 (Nunnally, 1978). The correlation, “r” between the two factors was $-0.006$ which was insignificant at a 95% confidence interval ranging from $-0.100$ to $0.092$, which shows the
two factors are independent. Factors scores of both factors were saved for subsequent regression and path analysis.

Study 2
To understand the influence of these factors on the tendency of researchers to adhere to standards for research ethics, a subsequent regression analysis was performed. In regression analysis, two linear regressions following the “enter” method were conducted. In both the models’ factor scores of the two factors obtained through factor analysis served as independent variables and BELMONT was the dependent variable in Model 1 and COPE was the dependent variable in Model 2.

Cronbach alpha (CA) and composite reliability (CR) are the parameters through which the reliability of the dependent constructs (BELMONT and COPE) was measured. Average variance explained (AVE) was also estimated to establish the convergent validity of these constructs. The values of these parameters of the measurement model are given in Table 1. The values of CA and CR were within the acceptable threshold of 0.7, and that of AVE was 0.496 for BELMONT and 0.514 for COPE within the threshold level of 0.5, thus fulfilling the minimum cutoff criteria (Hair et al., 2013). CA for BELMONT and COPE are 0.730 and 0.723, respectively. These CA values are obtained after eliminating the items that were negatively related with other items in an item-wise correlation matrix. Three items were eliminated from BELMONT construct and two items were eliminated from COPE construct. The content validity after the elimination of items from the scales was reviewed. It was found that three items that we eliminated represented one of the three core principles of BELMONT and after their elimination; still we had two items representing each principle. Similarly COPE scale, after the elimination of two items, still covered all the important aspects of COPE guidelines. Thus, content validity for these constructs was acceptable.

Finally, the discriminant validity of these constructs was also evaluated based on heterotrait-monotrait (HTMT), cross-loadings and Fornell-Larcker criterion (Fornell and Larcker, 1981; Henseler et al., 2014). The HTMT values were below 0.85 (Henseler et al., 2014) (Table 1), and item-wise cross-loading was adequate as well as outer loading of items over respective latent variables was found to be significant. Fornell-Larcker criterion to express construct validity for these constructs was also met (Table 2).

The results for regression analysis are given in Table 3 for both models. The F score for Model 1 is 32.560 and for Model 2 it is 299.53 and both are significant at 0.05 level of significance with \( p = 0.0000 \). Therefore, both the models are able to significantly predict the dependent variables. Further, the total \( R^2 \) for Model 1 is 0.203 and \( R^2 \) change (0.047) is also significant at 0.05 level of significance, therefore implying both the independent variables contribute towards predicting the tendency of adherence to BELMONT principles. Similarly, the total \( R^2 \) for Model 2 is 0.318 and \( R^2 \) change (0.004) is insignificant at the 0.05

<table>
<thead>
<tr>
<th>Construct</th>
<th>Cronbach alpha (CA)</th>
<th>Rho_a</th>
<th>Composite reliability (CR)</th>
<th>Average variance explained (AVE)</th>
<th>HTMT</th>
</tr>
</thead>
<tbody>
<tr>
<td>BELMONT</td>
<td>0.690</td>
<td>0.708</td>
<td>0.748</td>
<td>0.496</td>
<td></td>
</tr>
<tr>
<td>COPE</td>
<td>0.693</td>
<td>0.713</td>
<td>0.756</td>
<td>0.514</td>
<td></td>
</tr>
<tr>
<td>BELMONT → COPE</td>
<td>0.717</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Authors’ analysis; SmartPLS 3.2.9
level of significance, implying only the first independent variable contributes towards predicting the tendency of adherence to COPE guidelines.

While analysing Model 1 (Table 3) at the predictors level, the first independent variable (EGOISM) had a regression coefficient of $-0.394$, with “$t$” value $-7.88$ which is significant at 1,000 bootstrap 95% confidence interval between $-0.446$ and $-0.282$. Likewise, the second independent variable (Emotivism) had a regression coefficient of $0.215$ with “$t$” value $4.35$ which is also significant at 1,000 bootstrap confidence interval of $0.096$–$0.331$. Therefore, the analysis provides sufficient evidence to accept $H_2a$ and conclude that EGOISM and EMOTIVISM have a significant effect on the tendency of researchers to adhere to the BELMONT principles. It is also visible that “EMOTIVISM” has positive effect whereas “EGOISM” has a negative effect.

In the case of Model 2 (Table 3), the first independent variable (EGOISM) had a regression coefficient of $-0.581$, with “$t$” value $12.23$ which is significant at 1,000 bootstrap 95% confidence interval between $-0.659$ and $-0.494$. The second independent variable (EMOTIVISM) had a regression coefficient of $0.072$, “$t$” value 1.40 which is insignificant at 1,000 bootstrap confidence interval of $-0.063$ to 0.194. Therefore, $H_2b$ is also partially accepted and we conclude that EGOISM has a significant and negative effect whereas EMOTIVISM does not affect the tendency of researchers to adhere to the COPE guidelines.

To specify the models and meet the assumptions of regression we evaluated statistics related to auto-correlation, linearity, multicollinearity and normality of residuals. The statistics of these criteria are presented in Table 4.

The Durbin-Watson parameter that examines the auto-correlation for both models was close to two, indicating no auto-correlation. The multicollinearity was evaluated by variable
inflation factor (VIF) and tolerance analysis and their values for both the models are close to 1. Therefore, multicollinearity also does not exist among independent variables. To inspect the linearity between dependent and independent variables, we drew a scatter plot by taking one independent variable at a time for both models and fitted a straight line on it. The results indicated fulfillment of the assumption of linearity between the dependent and independent variables. Finally, we checked the normality of residuals through a normal plot on a histogram. The results indicated “mean of residuals” = 0 and the normal plot fitted well with the histogram for both models. Thus, the normality of error terms is assumed to be true for both models.

The structure model fit was evaluated through PLS-SEM path analysis. The structure model had an SRMR = 0.103 and CFI = 0.92, which fulfills the model fit criterion (Henseler et al., 2009; Lohmöller, 1989), therefore, we proceeded with the examination of the mediation effect of BELMONT on the relationship between EGOISM and COPE. It was found that BELMONT significantly mediates the effect of EGOISM on COPE (Table 5). The path coefficient of EGOISM to COPE was −0.543 with a bootstrap confidence interval from −0.646 to −0.403 and the specific indirect effect with BELMONT as a mediator was −0.081 with a bootstrap confidence interval from −0.160 to −0.008, thus total effect was −0.624. The specific mediation effect of BELMONT was also found in the effect of EMOTIVISM on COPE with a specific indirect effect of 0.032 and a bootstrap confidence interval from 0.003 to 0.097 (Table 5), leading to a total effect of 0.054, which nevertheless was found to be insignificant. Because zero did not fall in either of the confidence intervals for specific indirect effects, we conclude there is a mediation effect in the model and hence H3 is also accepted. However, the mediation effect from EMOTIVISM to COPE is statistically very weak. Finally, the effect size through $f^2$ was also estimated for the model (Cohen, 1988).

### Table 4.
Auto-correlation, linearity, multicollinearity and normality of residuals

<table>
<thead>
<tr>
<th>Model</th>
<th>VIF</th>
<th>Tolerance</th>
<th>Durbin-Watson</th>
<th>Relation between the independent and dependent through graph plot</th>
<th>Residual normality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>1</td>
<td>1</td>
<td>2.14</td>
<td>Linear</td>
<td>Normal with mean = 0*</td>
</tr>
<tr>
<td>Model 2</td>
<td>1</td>
<td>1</td>
<td>1.809</td>
<td>Linear</td>
<td>Normal with mean = 0*</td>
</tr>
</tbody>
</table>

**Note:** *Significance $p = 0$ and 95% bias controlled and accelerated 1,000 bootstrap confidence interval (BCa)

**Source:** SPSS 20.0 output

### Table 5.
Path coefficients and mediation effect

<table>
<thead>
<tr>
<th>Path</th>
<th>Path coefficient##</th>
<th>Specific indirect effect</th>
<th>Bootstrap confidence interval</th>
<th>Effect size $f^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>EGOISM $\rightarrow$ BELMONT</td>
<td>$-0.464^*$</td>
<td>$-0.554$</td>
<td>$-0.379$</td>
<td>0.507</td>
</tr>
<tr>
<td>EGOISM $\rightarrow$ COPE</td>
<td>$-0.543^*$</td>
<td>$-0.646$</td>
<td>$-0.403$</td>
<td>0.740</td>
</tr>
<tr>
<td>EMOTIVISM $\rightarrow$ BELMONT</td>
<td>0.195*</td>
<td>0.036</td>
<td>0.343</td>
<td>0.165</td>
</tr>
<tr>
<td>EMOTIVISM $\rightarrow$ COPE#</td>
<td>0.022</td>
<td>$-0.155$</td>
<td>0.141</td>
<td>0.063@</td>
</tr>
<tr>
<td>EGOISM $\rightarrow$ BELMONT $\rightarrow$ COPE</td>
<td>$-0.081^*$</td>
<td>$-0.160$</td>
<td>$-0.008$</td>
<td></td>
</tr>
<tr>
<td>EMOTIVISM $\rightarrow$ BELMONT $\rightarrow$ COPE</td>
<td>0.032*</td>
<td>0.003</td>
<td>0.097</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:** *Significant at 95% bootstrap confidence interval; @Total effect is also insignificant; Path coefficient and regression results show comparable similarity

**Source:** Output of SmartPLS 3.2.9
A medium to large effect was found for all the paths in the model in producing $R^2$ except the effect of EMOTIVISM on COPE (Table 5).

**Discussion**

**Study 1**

As with the result of EFA, we see that the statements exploring the beliefs of a researcher converged in a set of two to represent Factors 1 and 2. Each factor (set of statements) possesses an underlying meaning which potentially explains the beliefs behind a researcher’s likelihood of adhering to ethical standards.

Of the two factors, Factor 1 comprises 15 statements. The content analysis of these statements reveals the nature of their beliefs like; lack of empathy, callousness, control and manipulative behaviour towards subjects, showing too much independence and determination to take the course which serves their interest first and foremost, recognise themselves as the master of the concept hence anything that they do is right, indifference to moral considerations, using lack of an external governing body to exact their purpose and goals and ready to break rules to see results in their favour.

These characteristics are akin to those describing characteristics of Machiavellianism, Machiavellian egocentricity, intrinsic motivations of “competence”, “autonomy” and “relatedness” (derived from social determination theory [SDT]) and “power” (derived from Schwartz 10 universal human values). The concept of egoism posits that anything which maximises gain for self is right (Shaver, 2002; Hills, 2010). Something which Machiavelli also associates with (Bennett, 1988). Also, the intrinsic motivations of “competence”, “autonomy” and “relatedness” (derived from SDT) and the universal value of “power” (derived from Schwartz) have been studied in reference to egoism (Tamborini et al., 2017; Hahn et al., 2019). Therefore, the overarching feature which predominates here is that of “egoism”. Because the nature of beliefs identified for researchers towards research ethics circumscribes to these meanings, it seems plausible to term Factor 1 as “Proclivity to Egoism” (EGOISM).

Subsequently, Factor 2 comprises a set of six beliefs, whose content analysis reveals the nature of these belief statements as being empathetic, like to take others’ thoughts and problems into perspective before any decision, and acting against impulsivity, it stresses them if not being ethically appropriate. In totality, its emotions that affect them while taking decisions without considering its consequences on others. In other words, emotions play a role in their actions and judgement. Such qualities are customary with the core concept of “emotivism”, which posits emotions play a central role in evaluations of moral reasoning (Chrisman, 2013; Stoljar, 1993; Satris, 1987; Jotterand, 2011). Hence, it can be considered feasible to term Factor 2 as “Proclivity to Emotivism” (EMOTIVISM). Thus, two factors, EGOISM and EMOTIVISM underpin the beliefs of a person towards research ethics.

**Study 2**

In the second part of the study, the influence of the two factors EGOISM and EMOTIVISM (obtained from Study 1), over researchers’ tendency to adhere to the standards of research ethics – BELMONT (H2a) and COPE (H2b), was examined along with the potential mediation effect of BELMONT on the relationship between EGOISM/EMOTIVISM with COPE (under H3). Thus, the subsequent study model took the following shape:

Proclivity to Egoism (EGOISM). The analytical value of the statistical data for EGOISM on BELMONT showed a significant negative regression co-efficient (as shown in Table 3), which implies, factor EGOISM is significantly negatively related to the “tendency to adhere to the principles of Belmont report”. This means, if a researcher shows high value for factor
EGOISM, then he is less likely to follow or adhere to the principles of research ethics as suggested in the Belmont report. Subsequently for COPE also, the statistical analysis reveals the significant negative relationship between variables EGOISM and “tendency to adhere to the guidelines of COPE”. This implies that a person possessing a higher value for EGOISM is also less likely to adhere to the guidelines suggested by COPE. Thus, H2a and H2b are accepted.

This also seems to be supported by SJT (Sherif et al., 1965). The researchers view the newly presented idea of principles under Belmont report and COPE guidelines (together referred to as standards of research ethics) by making a comparison between them and their existing anchors of EGOISM and EMOTIVISM. The persons with a higher value for EGOISM, i.e. demonstrate to possess characteristics defining egoism to a relatively higher degree, find the ideas communicated through BELMONT and COPE as not true to the benefits they want to derive out of them, thus Belmont report and COPE guidelines do not seem to lie in their region of acceptance, hence such people tend to oppose the idea and do not move to inculcate it in their attitude, rather reject it.

Additionally, an analysis based on the mediation effect of “tendency to adhere to principles of BELMONT” over the influence of factor EGOISM on the variable “tendency to adhere to the publication ethics given under COPE” was also conducted (Figure 2). This analysis revealed that the negative effect of EGOISM on COPE gets strengthened, which indicates the presence of a mediation effect, i.e. a part of H3 is supported. This phenomenon could be understood with the help of “Theory of Planned Behaviour” (TPB) (Ajzen, 1985). Wherein, a researcher who already holds a negative attitude towards COPE and whose “subjective norms” towards COPE are being overcome by EGOISM, finds an affirmation (perceived behavioural control) in the form of his “tendency to adhere to the principles of Belmont report” (which is also negative and whose purpose precedes that of COPE).

**Figure 2.** Path diagram

**Notes:** *Specific indirect effect (significant at p = 0.000); R2 in the circle
Source: SmartPLS 3.2.9 output
This furthers his intention to not adhere to COPE. And rightly so, someone who is least likely to practice or adhere to ethics throughout the process of research work would be least bothered to demonstrate ethical behaviour in reporting and publication of the research work as well. Conversely, it could be understood that the Belmont report communicates principles of research ethics to be followed throughout the process of research work, from its inception to completion, and a person inclined to do so in an ethically compliant manner is also expected to behave ethically while reporting the findings as well. Thus, it becomes imperative to work towards solutions that can prove to obtain higher adherence to the principles of the Belmont report among researchers, which would result in securing higher adherence to the publication ethics given under COPE as well.

Proclivity to Emotivism (EMOTIVISM). The obtained regression coefficient and path coefficient for the influence of factor “EMOTIVISM” on the variable “tendency to adhere to principles of BELMONT” shows a significant positive effect, which implies higher the value for “EMOTIVISM” in a researcher, the higher the chances of adhering to the principles of BELMONT during research. Thus, high “EMOTIVISM” yields better ethically compliant behaviour among researchers for BELMONT and accordingly H2a is accepted. For COPE, the regression coefficient as well as path coefficient obtained to understand the effect of “EMOTIVISM” on the “tendency to adhere to the publication guidelines given under COPE” was found to be insignificant. This implies that “EMOTIVISM” bears a very weak and statistically insignificant effect on the “tendency to adhere to the guidelines of COPE”, thus H2b is rejected.

The effect of EMOTIVISM over the “tendency to adhere to principles of BELMONT” and “tendency to adhere to the publication ethics given under COPE” can also be understood through SJT model. The ideas represented by BELMONT and COPE are compared with the anchors of EGOISM and EMOTIVISM by a researcher. The researcher with a higher propensity to EMOTIVISM seems to find ideals of “beneﬁcence”, “respect for person” and “justice” communicated through BELMONT as near to or similar to those of his anchors. Hence, they seem to lie on the latitude of acceptance for him, and it results in better adherence to these standards. The ideas communicated through COPE guidelines seem majorly to lie in the latitude of non-commitment, viz. for which the researcher seems undecided; hence its acceptance/inclusion is not reﬂected in his attitude towards adherence with it. An explanation for this could be, that, the guidelines of COPE are demonstrative of “truth values” only and its language does not invoke any sense of “emotionality” (Stoljar, 1993). Hence, it does not appeal to researchers driven by the factor of “Proclivity to Emotivism” for acceptance. As per the suggestions made in literature regarding messages falling on the latitude of non-commitment, COPE guidelines are the ones that could be worked upon to gain a positive shift in attitude towards acceptance of the same (Sherif and Hovland, 1961).

Now, proceeding to H3, the mediation of BELMONT yielded a slightly positive but weak effect for “EMOTIVISM” on “tendency to adhere to publication ethics given under COPE”. This means higher “EMOTIVISM” is likely to yield adherence to COPE as well but only in the presence of BELMONT.

Thus, H3 is also supported. This outcome is in-line with TPB as well. In this study we found that tendency to adhere to COPE lies in the non-commitment zone (neutral) for beliefs represented by “EMOTIVISM”. Because attitude, subjective norms and perceived behavioural control follow automatically and consistently from beliefs (Ajzen, 2011), therefore considering attitude and subjective norms for adherence to COPE under the influence of “EMOTIVISM” to remain neutral; the perceived behavioural control due to
previous adherence to BELMONT (found positive for EMOTIVISM) positively influence adherence to COPE.

Thus, in a nutshell, both BELMONT and COPE guidelines lie on the latitude of rejection for the factor “Proclivity to Egoism”. While, majorly BELMONT seems to lie on the latitude of acceptance and COPE on the latitude of non-commitment for factor “Proclivity to Emotivism”. Furthermore, these findings present some important implications for academia and society that are elaborated on in the following section.

Implications

Implication for academics and practice

Despite much discussion in literature suggesting that unethical behaviour in research is detrimental to the outcomes of research and also has numerous negative societal implications, little explains about its antecedents with clarity. More importantly, research on research ethics still lacks a strong theoretical basis that fully explains the process leading to non-adherence to ethical standards of research. As such, our research contributes to the domain of exploring antecedents of ethical behaviour in adherence to research ethics by exploring distinct antecedents. This contribution is noteworthy in many ways. Firstly, recent research ethics meta-analyses (Golder et al., 2017) have called on researchers to explore and develop guidelines based on “current evidence” and standardised to avoid discrepancies between institutions. However, these suggestions have been made based on the research participant’s point of view. Thus, we recognise that exploring antecedents with respect to researchers’ view-point is pertinent for the successful development of standardised guidelines. Therefore, the dimensions of EGOISM and EMOTIVISM identified in the current study may provide a specific direction in developing and designing new research standards and guidelines.

Secondly, this contribution has allowed us to extend the existing body of work by examining the attitude of researchers towards other principles of research ethics as well, as, so far, only informed consent (Ravn et al., 2020) and publication ethics (Gopalakrishna et al., 2022; Singhal and Kalra, 2021; Olesen et al., 2018) were the most researched and discussed principles in literature. We have conducted a study taking into consideration other wider principles of research ethics, namely, respect for person, beneficence and justice (as suggested in literature through the Belmont report) as well.

Thirdly, ours is the first study to examine the relationship between researchers’ pre-existing beliefs or judgement anchors towards research ethics and adherence to the standards of research ethics suggested in literature. Fourthly, while prior research studies have focussed on understanding the role of specific traits in relation to adherence to standards of ethics (e.g. sensation seeking, impulsivity) (McTernan et al., 2014; Tijdink et al., 2016; Antes et al., 2007); we examined a wider conceptualisation of beliefs, concerning factors not just internal but external as well. Finally, the current study is the first to explore the mediating role of the Belmont report (existing ethical standard) in the relationship between researchers’ beliefs (anchors) and their adherence to guidelines suggested by COPE.

This way, our findings explain how the personal beliefs of a researcher towards research ethics are related to adherence to standards of research ethics. Thus, our study has contributed by ascertaining “anchors” (namely, “Proclivity to Egoism” and “Proclivity to Emotivism”) involved in the judgement of ethical guidelines by researchers for adherence.

Therefore, this article offers theoretical reasons to assume that when researchers engage in non-compliant behaviour towards research ethics, it is likely due to their pre-existing notions towards it. Our argument also aligns with the SJT of Sherif et al. (1965), which posits that people adhere to or accept ideas/messages that fall in their latitude of acceptance. In this
regard, our contribution is key to both explaining reasons responsible for adherence to research ethics and the development of future research ethics guidelines.

Implication for society
The results of this study have several practical and beneficial implications for society as well. Research conducted unethically not only results in false outcomes but also defeats the very purpose of research, which is to better individual lives and benefit society at large. Research outcomes obtained through unethical means, how so ever concrete and scientifically sound they may be, accrue several negative implications on society in the due process already. Thus, firstly, our study suggests that to eliminate the detrimental and costly consequences of research on society (which includes organisations, industries and businesses), unethical behaviour among researchers should be mitigated. One promising way to do so is by making researchers/students aware of the research ethics, as well as of the consequences over society of not following them. This should be done on a case basis and in the form of an interactive training programme that goes beyond the mere handover of an ethics booklet or lecturing about the facts but discusses the core as well as its application. Our study particularly points out that to enhance adherence to research standards, sensitisation programmes could be designed in such a way that they provide means to offset the effects of EGOISM and enhance the effect of EMOTIVISM. Researchers in the social sciences domain have felt that the existing principles of research are appropriate for science and biomedical only (De Wet, 2010). Cases of unethical research in management and commerce discipline, i.e. apart from the ones reported for the scientific/medical community, must be discussed to make them aware and understand its relevance. Research supervisors could also contribute to this by making their subordinates understand the underlying causes of unethical behaviour explored in our study and conduct research in a compliant manner.

Limitations and future research directions
Though our study offers many notable contributions to academics and society, but as with all the pieces of research work, our study is also not without its set of limitations. Though we have tried to include all the possible reasons mentioned in the literature for not adhering to research ethics, in our study of factor analysis, however, omission of some is not ruled out due to the plausible limitation of keywords used in the search. Also, though our study is the first to provide a lead regarding judgement “anchors” of researchers in the field of management and commerce, and social sciences results of this study can be used to gain greater clarity over the mechanism and work out means with which higher adherence to research ethics can be achieved. Thus, as per the suggestions made in literature regarding messages falling on the latitude of non-commitment, COPE guidelines are the ones that could be worked upon to gain a positive shift in attitude towards acceptance of the same (Ramos Salazar, 2017). The Belmont report could be made more acceptable to researchers high on “Proclivity to Egoism” by devising means that make use of utilitarian benefits derived through egoistic motivations (Lee et al., 2019). Thus, future researchers may suggest innovative research standards that address egoistic motivations. As far as the other factor “Proclivity to Emotivism” is concerned, altruistic motivations are its prominent underlying feature, which is indispensably driven by empathy (Lee et al., 2019). So future research may focus on evaluating how the guidelines with more cooperative features may raise altruism and develop a “we-intention” (Riar et al., 2023), which, in turn, could further strengthen or retain the belief of researchers with “Proclivity to Emotivism” in adhering to the standards of ethics. Also, ascertaining assimilation and contrast effects in this regard could help gain greater insights into the mechanism that may be taken up by future research. Last but not
the least, exploring the applicability of “anchors” through other theories with regard to understanding the rationale of research ethics compliance is also plausible. Hence, society stands to gain largely from the current study as its application would yield ethically sound research which is likely to produce more reliable research outcomes.

Conclusion
The results of this study indicate that a researcher’s personal beliefs regarding research ethics are imperative in ensuring compliance with ethical standards and guidelines of research. The overall personal beliefs of a researcher towards research ethics could be classified into two broad categories; one is “Proclivity to Egoism” and the other is “Proclivity to Emotivism”. The ethical behaviour in research and adherence to standards of research ethics are significantly influenced by these personal beliefs. Where personal beliefs with a “Proclivity to Egoism” tend to prevent a researcher from adhering to the ethical guidelines of research, on the other hand, personal beliefs signifying “Proclivity to Emotivism” are found to be facilitative of higher adherence to ethical standards.

As far as adherence to publication ethics (COPE) is concerned, we conclude that in addition to “Proclivity to Emotivism”, it is also influenced by a person’s predisposition to adhere to the overall principles of research ethics as mentioned in the Belmont report. Thus, it is crucial to foster a tendency among researchers to comply with the ethical standards of the research system to ensure their adherence to publication ethics.

Therefore, based on the implications mentioned above and despite a few limitations, this research offers profound insights into understanding the mechanism for fostering high ethical standards in research and publication. We firmly believe that society stands to benefit greatly from the current study. Its application would result in ethically sound research which is likely to generate more reliable research outcomes and, consequently, contribute to the achievement of SDG goal 9.

References


**Further reading**


**Corresponding author**

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### Appendix

#### Table A1. Rotated EFA solution

<table>
<thead>
<tr>
<th>Statements</th>
<th>Factor 1 (EGOISM)</th>
<th>Factor 2 (EMOTIVISM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EFB_7 – 36. It is difficult to obtain regulatory clearance if we follow ethical guidelines</td>
<td>0.759</td>
<td></td>
</tr>
<tr>
<td>EFA_4 – 24. I like to collaborate for research with people who are exciting and unpredictable</td>
<td>0.759</td>
<td></td>
</tr>
<tr>
<td>EFA_2 – 19. If I’m sure that my research method/process is correct, there is no need to waste much time listening to other people’s arguments</td>
<td>0.753</td>
<td></td>
</tr>
<tr>
<td>EFA_3 – 23. Respondents’ misfortunes do not usually disturb me a great deal</td>
<td>0.751</td>
<td></td>
</tr>
<tr>
<td>EFA_9 – 31. Since there is no authorized body to monitor my work, I can conduct research as desired</td>
<td>0.751</td>
<td></td>
</tr>
<tr>
<td>EFA_6 – 28. I can take decisions based on what I think best suits my research goals at that moment</td>
<td>0.742</td>
<td></td>
</tr>
<tr>
<td>EFA_8 – 30. Since I understand research ethics fully, therefore there is no chance of violating it by me</td>
<td>0.739</td>
<td></td>
</tr>
<tr>
<td>EFA_5 – 25. I like to see new and exciting research outcomes, even if I have to break the rules</td>
<td>0.729</td>
<td></td>
</tr>
<tr>
<td>EFA_12 – 34. Following ethical guidelines is only a time consuming lengthy paper work</td>
<td>0.728</td>
<td></td>
</tr>
<tr>
<td>EFA_1 – 17. For my research I only need to ask questions to the respondents which will not cause them any harm, so there is no need to follow any ethical guideline</td>
<td>0.722</td>
<td></td>
</tr>
<tr>
<td>EFA_15 – 39. No one else is following the ethics guidelines, so I can also avoid it</td>
<td>0.720</td>
<td></td>
</tr>
<tr>
<td>EFB_9 – 41. I feel conducting research in ethically appropriate manner is stressful</td>
<td>0.713</td>
<td></td>
</tr>
<tr>
<td>EFB_10 – 32. Since, there are no harsh punishments available for not following ethical guidelines on research, we can go easy/avoid them</td>
<td>0.709</td>
<td></td>
</tr>
<tr>
<td>EFA_11 - 33. If participant for my research trust me fully then there is no need to inform them about each and every step/process of research</td>
<td>0.707</td>
<td></td>
</tr>
<tr>
<td>EFA_7 – 29. Only researchers who are abnormal or do poor quality research, and are greedy are caught by ethics committee</td>
<td>0.699</td>
<td></td>
</tr>
<tr>
<td>EFB_4 – 22. When I see respondents being treated unfairly, I sometimes don’t feel very much pity for them</td>
<td>0.842</td>
<td></td>
</tr>
<tr>
<td>EFB_3 – 21. I often have tender, concerned feelings for respondents less fortunate than me</td>
<td>0.826</td>
<td></td>
</tr>
<tr>
<td>EFB_1 – 18. Before criticizing the participant, I try to imagine how I would feel if I were in their place</td>
<td>0.807</td>
<td></td>
</tr>
<tr>
<td>EFB_2 – 20. I try to look at respondents’ side of a disagreement before I make a decision</td>
<td>0.772</td>
<td></td>
</tr>
<tr>
<td>EFB_5 – 26. I plan for job security, since it has implications to my family</td>
<td>0.754</td>
<td></td>
</tr>
<tr>
<td>EFB_8 – 40. I did not receive enough training to do the research in an ethically appropriate manner</td>
<td>0.659</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:** Extraction method: principal axis factoring; Rotation method: varimax with Kaiser normalisation; Rotation converged in three iterations

Source: SPSS output on data collected by authors