

**DIFFERENCES IN STUDENT ENGAGEMENT AND COPING
AMONG ABILITY GROUPS**

A Thesis submitted to Goa University for the award of the degree of

Doctor of Philosophy

In

Management

By

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DECLARATION

I, Joe Kurian, hereby declare that the present thesis entitled '**Differences in Student Engagement and Coping among Ability Groups**' is a bonafide record of research work done by me, under the supervision of Dr. Nandakumar Mekoth, Professor, Goa Business School, Goa University.

I further state that no part of the thesis has been submitted for a Degree or Diploma or any other similar titles of this or any other University.

Joe Kurian

CERTIFICATE

This is to state that the Ph.D. thesis entitled '**Differences in Student Engagement and Coping among Ability Groups**' is an original work carried out by Shri Joe Kurian, under my guidance and that no part of this work has been presented for any other Degree, Diploma, Fellowship or other similar titles.

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DEDICATION

This thesis is dedicated to God the infinite source of wisdom.

To my parents Kurian Joseph and Marykutty Kurian who imbued in me a quest for knowledge and discipline.

To my wife Sybil and daughter Celeste for their love and emotional support.

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ABSTRACT

Investigating the influential role of the teaching learning process encompassed within higher education was the primary research motivation. The ability of a standalone institution of higher education in engineering to deliver outcomes based education in the current context was an additional research interest. In this era of student centered education, this research examined the differences in student engagement and coping mapped by ability groups using complex cognitive models.

The research investigated students using emotional, cognitive and behavioural perspectives of psychology. The theories of self-determination, conservation of resources and social cognition were understood in the context of the higher education. Ability groups were defined using academic performance and personality traits of emotionality and conscientiousness. The initial cognitive model investigated hassles encountered through academic demands linked to student engagement and consequent academic performance. The predictor variables were personality traits and teacher support, whereas social support was modeled as an endogenous variable. The subsequent cognitive model investigated hassles encountered through academic demands linked to coping and consequent academic performance. Differences in the cognitive models of student engagement among ability groups were not statistically significant. Differences in the cognitive models of coping among ability groups revealed some statistically significant paths. A concluding structural path model explored the links between student engagement, burnout and coping.

The research envisaged the initial cognitive engagement model would drive adaptive coping in the subsequent model. However, in line with the investigative thought process, lack of student engagement has confirmed maladaptive coping. Emotionality and its scale Anxiety were significant predictors of weak student engagement predicting maladaptive coping. The

confirmatory structural path models established stronger engagement linked to maladaptive coping for the weaker students. Differences among ability groups were confirmed on the basis of the analysis carried out in this research. Reducing hassles associated with academic demands across ability groups could enhance student engagement enabling adaptive coping. The absence of hypothesized conscientiousness resource reveals lack of task engagement in the higher education system coupled with the presence of high levels of anxiety across ability groups. Differentiating the demands placed on students on the basis of ability grouping might promote eustress and reduce maladaptive coping. The insights of the study are key to future institutional interventions and research possibilities.

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CHAPTER 1

INTRODUCTION

Developing countries have seen a massive expansion in higher education driven by the goals of human capital development, entrepreneurship and technology needed to compete in a global knowledge economy. The Indian higher education system has seen massive investment from private and public sector, enabling access to many sections of society, with little information on the rigorous demands made by higher education. This mobility opened up possibilities to all who enrol to alter their worldview through education and adapt to a more lucrative and enlightened life.

1.1 Background of the study

A recent national survey identified 799 Universities, 39071 colleges and 11923 stand-alone institutions (Ministry of Human Resource Development, 2016). The engineering higher education sector in India has contributed to the increased intake capacity of 1662470 seats, with near fifty percent enrollment through 3500 institutions in the year 2017-2018 (All India Council of Technical Education, 2018). The All India Council of Technical Education (AICTE) is the national regulator entrusted with the responsibility for development and qualitative growth of the technical education system and preparation of syllabi to be adapted locally by state universities across India. AICTE grants fresh and continuing approval to the graduate and undergraduate programmes in engineering in the private and public sector. The enrolment figures in engineering sector started to drop from the academic year 2012-2013 and there exists significant concerns regarding the employability of the enrolled students (All India Council of Technical Education, 2018). A new

education policy has been drafted nationally and submitted on the 31st of May 2019, which lays out the road map to change and overcome the challenges in improving students' educational outcomes (Ministry of Human Resource Development, 2019). The higher educational context is in a standalone private institution affiliated to a state university located in a western state of India. Additionally, there exists autonomous public and private institutes offering programmes in engineering with access to students from across the nation. This research analysed an engineering higher educational standalone institution using cognitive models and ability groups.

1.2 Significance of the study

This thesis is contextualized in India when engineering higher education enrollment in core programmes of mechanical and electronics engineering are around 40% whereas the programmes of computer and information technology are higher at approximately 60% (All India Council of Technical Education, 2018). 40 % of the 40000 colleges that operate in India are standalone colleges which run a single programme and do not provide the multidisciplinary perspective required in higher education (Ministry of Human Resource Development, 2019). Majority of the engineering education in India is through standalone institutions, and this research surveys a standalone institution that offers four programmes in engineering.

The knowledge challenge facing institutions of higher learning are manifold. The primary challenge is to improve educational outcomes and enabling a competitive advantage to the students who enrol within an institution. This competitive advantage within an institution is fostered by the teaching resources equipping learners to be self-aware, socially conscious, humane and democratic (Ministry of Human Resource Development, 2019). Educational institutions are expected to be drivers of social and technological change overcoming the inertia of stability, while retaining the essential values and traditions of a society. This research focus arose from concerns in higher

education regarding failure rates, relevance of curriculum, the teachers' efficacy and the teaching learning process (Bryson & Hand, 2007). The societal change and progress is accompanied by a dynamic higher education system seeking to appropriately guide students to enable successful adjustment with personal anxieties and adjust effectively to the environment (Coleman, 1979). Understanding student behaviour, cognition and relevant factors that influence the current context of higher education drives this research. The factors that influence student cognition and the higher educational environment, change dynamically, and student behaviour requires models backed by theory to be formulated and tested. Higher educational institutions that understand the needs of students, through processes and supports, in an academic environment would garner competitive advantage and serve the society more appropriately (Sheth & Mittal, 2005). Students are more engaged when they experience student centred and autonomy supportive instructions where they have a decisive role (Pianta, Hamre, & Allen, 2012). In higher educational institutions interactive relationship between teachers and students, essential to core development of fundamentals, is often relegated in preference to funding, curriculum, academic structure and policies.

1.3 Introductory Theoretical Perspectives

Organization behaviour uses scientific methods to develop and empirically test generalizations about behaviour in organizations (Schermerhorn Jr, Hunt, & Osborn, 1997). The study of students' behaviour in an institution has implications for all the stakeholders of the higher educational process. Institutions of higher education are expected to foster intellectual competencies among learners in addition to developing physical, emotional and social competencies (Coleman, 1979). Learning outcomes of higher education include active thinking skills, intellectual engagement, motivation and a variety of academic skills as well as democracy outcomes of perspective taking, citizenship engagement, cultural understanding and compatibility

amongst groups, reducing social attitudes of prejudice and cynicism (Gurin, Dey, Hurtado, & Gurin, 2002). The higher educational process is a complex interaction involving cognitive factors, student behaviours amidst environmental factors as depicted in Figure 1. Enabling discipline specific competencies and academic competencies amongst students require the behavioural and cognitive perspectives of social cognitive theory. During the higher educational process institutional teacher and social supports can reduce hassles associated with demands, conserving student resources, promoting student engagement and preventing student burnout. The rigour of institutional student engagement when aligned with self-determination theory promotes competencies and adaptive coping behaviours.

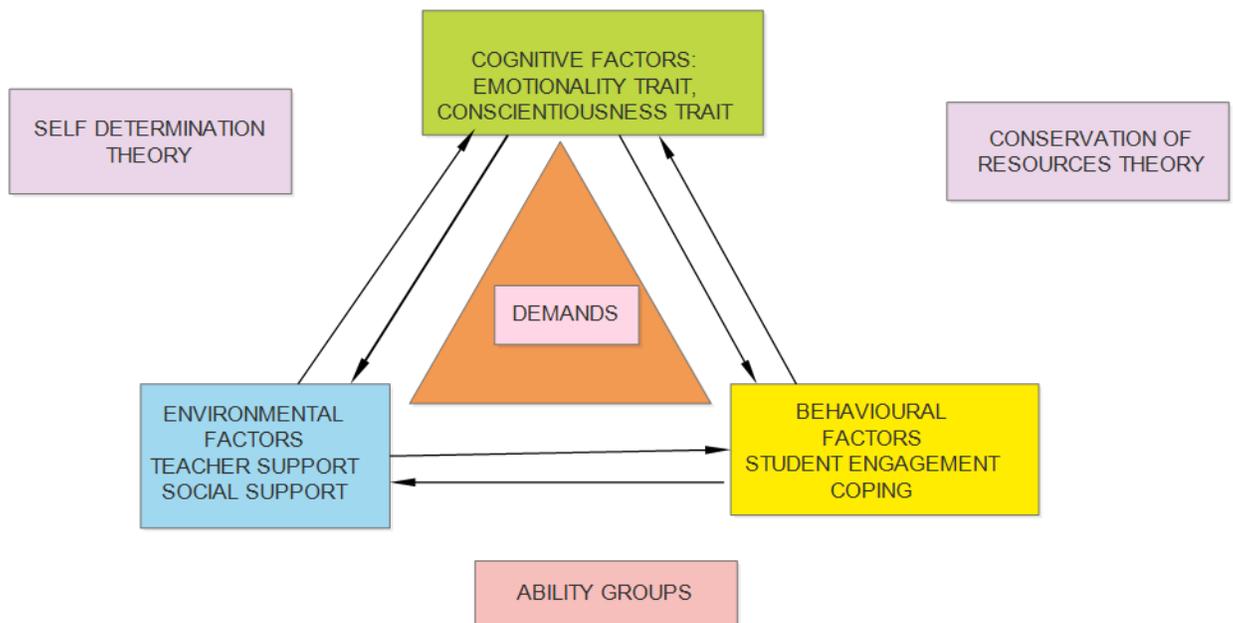


Figure 1. Theoretical perspective of the research

1.4 Statement of the Problem

This research examined a standalone institution of higher education and investigated whether the expected educational outcomes of a higher education process were met for enrolled students. Higher educational outcomes are measured using perspectives of behavioural, cognitive

and emotional engagement (Mahatmya, Lohman, Matjasko, & Farb, 2012). This research tried to understand using the concepts of cognitive psychology, the influence of quality teaching in effecting learning outcomes amongst individual differences and social support. This research attempted to discern differences in student engagement and coping behaviours among ability groups in an engineering institution of higher education. Research interest was in understanding the differential influences of institutional teacher and social supports during higher education across ability groups. Ability groups were conceived as an informal group of individuals, devoid of a formal structure but differentiated on the basis of aggregate academic performance linked to personality traits. Students above the median aggregate academic performance were supposed to acquire and exhibit personality dynamics differently from the students below the median score as depicted in Figure 2.

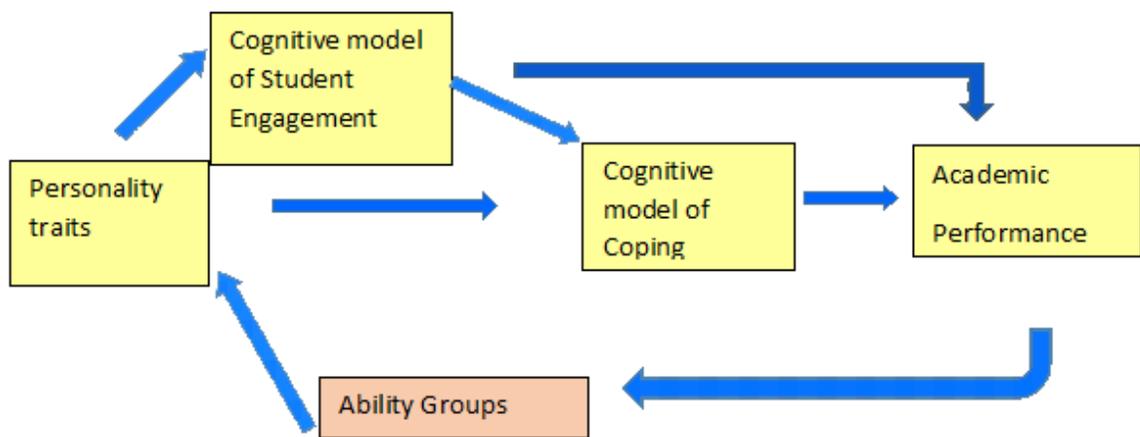


Figure 2. Research model

The concept of engagement has emerged as a way to understand—and improve—outcomes for students whose performance is marginal or poor (Finn & Zimmer, 2012). Aligned with modern trends of positive psychology, engagement has been defined to study positively oriented human resource strengths and psychological capacities that can be measured, developed and managed for the modern day organizations (Schaufeli & Bakker, 2003). Engagement behaviors considered

important for this research, include the everyday tasks needed for learning, attending classes, following teachers' directions, completing in-class and out-of-class assignments, and holding positive attitudes about particular subject areas and about higher education institutions in general. The idea that engagement behaviors can be manipulated to enhance educational performance is an important consideration for institutional students at risk of alienation. Behavioural, cognitive and emotional engagement are improved through relational supports (Pianta, Hamre, & Allen, 2012). This research attempted to discern differential relational influences of teacher and social support across ability groups. Derived from aggregate academic performance, students across ability groups were theorized to interact differentially with the institutional faculty resources, relevant supports and exhibit differences in behaviour, cognition and emotion. Adaptation to the higher educational process could change patterns of behaviour, cognition and emotion modelled on the observed patterns of the ability group. Traits were differentially acquired through a dynamic interaction with an educational environment predicted by ability groups. The perspectives of behaviour, cognition and psychology were consequently differentially responsive to the demands made by higher educational institutions across ability groups.

Human development is characterized by ability to adaptively cope with stress and adversity and research encompassing students of higher education has basic and applied importance (Compas, Connor-Smith, Saltzman, Harding, & Wadsworth, 2001). Information on coping enlightens an important perspective of self-regulation of emotion, cognition, behavior and the environment. This research used the concept of ability groups amongst students to comprehend the challenge encountered by students with differential abilities in engagement leading to differential student coping. The aim of higher education is to enable its students to resolve inner conflicts when pursuing goals and dealing with problems in life. Therefore, in addition to acquiring

discipline specific competencies a great deal of attention requires to be placed on emotion (Jersild, 2004). Emotions are constantly involved in the teaching learning process, and for successful learning outcomes the teacher needs to be sensitive to the emotions that arise in the classroom.

1.5 Scope of this study

Rapid technological progress across all sectors of the Indian economy has intensified the requirement of competent and skilled graduates to help industry solve problems, innovate and compete globally. The ability of standalone institutions of higher education to impart desirable outcomes amongst its students needs to be researched. A standalone undergraduate institution offering four programmes in engineering in western India was chosen and the students within the institution were surveyed during the period from January 2018 to May 2018. This research analyses differences among ability groups using the cognitive models of student engagement and coping explaining institutional higher educational process. The cognitive models analyse the predictive power of personality traits on academic demands amidst institutional supports. Understanding within an institutional context higher educational processes and factors that promote student engagement, prevent burnout and promote adaptive coping amongst students with diverse abilities defined the scope of this research. Links between the student engagement and coping were subsequently explored. The effectiveness of a higher educational process cannot simply be qualified by aggregate academic performance and ignore the underlying continuous, integrative and complex procedures (Rothney, 2004). The organization, programmes and procedures adopted for an institution grow out of the purposes and beliefs that were held at the time of the institutional establishment resulting in attenuated changes to meet current conditions and needs (Trabue, 2004). The higher education process also requires to be sustained by teachers and researchers driving quality learning outcomes amongst its learners as well as contributing to

the technological progress. This research viewed the academic performance linked to ability groups as a differentiator of personality factors.

The construct of student engagement was conceptualized in 1980's as a way to understand and reduce student boredom, alienation and dropping out (Finn & Zimmer, 2012). The pioneering definition of engagement by Wellborn in 1991, emphasizes on student's active participation in learning (Reeve, 2012). The perspective of behavioural engagement is aligned with the idea of participation in academic learning and cultural activities, cognitive engagement is associated with absorption and deep learning whereas emotional engagement encompasses positive reactions to institutional teachers, peers and an absence of negative emotions of fear and anxiety (Mahatmya, Lohman, Matjasko, & Farb, 2012). Student engagement is perceived as a relational process involving behavioural, emotional, cognitive and motivational states (Pianta, Hamre, & Allen, 2012). The larger developmental aims are activated by interpersonal relationships.

Successful engagement during higher education is essential to adaptively cope enabling students to manage their emotions, rationalize their fears, regulate their behaviour and be effective in their environments (Compas, Connor-Smith, Saltzman, Harding, & Wadsworth, 2001). Adaptive coping implies satisfaction of the basic psychological needs driven by student engagement.

1.6 Purpose of this study

All the stakeholders of engineering education in India are keen to understand the student engagement process and how students are coping with the demands of higher education. The research sought to understand the underlying reasons for student's failure, when enabled an access, to adjust to demands of the higher educational process. Failure to adjust results in their dropping out or leaving without expected academic competencies and outcomes. In making self-directed

choices students could experience anxiety and fail to operate on the environment and cope with stressors, leading to frustration, cynicism, alienation and despair. Social psychology inquires why unfair differences exist between students and the manner in which educational differences are subjectively perceived (Kuppens, Spears, Manstead, Spruyt, & Easterbrook, 2018). This research sought to inquire how educational differences based on academic performance were formed within institutions and to understand differential cognitive influences on student engagement and coping.

It was assumed in this research that a virtuous cycle of student's engagement, manifest through energy and effort, induces positive emotions of affect. The induced affect leads to deep learning, driving cognition and consequently enabling adaptive coping as depicted in Figure 2. Cognitive and emotional engagement are not easy to estimate (Mahatmya, Lohman, Matjasko, & Farb, 2012). The higher performers were assumed to achieve a social identity manifest in a cognitive awareness based on better academic performance, and more likely to identify with feelings of affect and institutional attachment. (Bagozzi, 2000). The formed ability groups were then used to analytically explore the differences and similarities of student engagement and coping. The interest on ability groups in education requires to be researched because educational outcome differences forms one of the major divides in society (Kuppens, Spears, Manstead, Spruyt, & Easterbrook, 2018).

Higher education institutions are required to adapt their processes to foster amongst its enrolled students disequilibria: characterised by appropriate levels of discontinuity and discrepancy enabling cognitive growth and human capital formation that fosters academic and discipline specific competencies (Gurin, Dey, Hurtado, & Gurin, 2002). The higher education process was thus expected to integrate the world of academics and the world of work for a majority of its enrolled students. Investment in higher education is made with the expectations of industry

and academia relevant competencies, leading to a lucrative career, unaware of the distress and discontent education promotes with every student's existing status. Institutional response to the emergent diversity challenge requires to consider the regulatory constraints placed on it by state universities as well as by the global competition from public sector institutes and other institutes in the private sector. The primary institutional challenge lies in maximizing human capital development amongst the students, encouraging persistence and launch of successful careers through its portals.

This research sought to investigate the energy of engagement with the institutional academic activities resulting in academic performance, and the consequent adaptive coping processes. Stress in the context of higher education, defines the manner in which students with individual differences, adapt to the institutional demands made (Luthans, 1998). A sense of achievement builds self-esteem and failure is a source of anger and self-reproach. Attitudes of trust, confidence and healthy self-regard creates an awareness of personal potentialities while profiting from correction and criticism. Failure, a bitter experience at any point of life creates frustration and leads to rejection initiating possibility of burnout (Jersild, 2004). The central problem associated with teaching learning is the extent to which teachers are supported to meaningfully interact with students and enable engaging relationships that produce learning and development (Pianta, Hamre, & Allen, 2012). The focus of the study was also on the important performance indicator of teaching function in higher education institutions aligned with increased scrutiny of public finance by governments in the context of mass education (Ramsden, 1991).

1.7 Research Questions and sub-questions

Why do some students achieve the academic learning outcomes in higher education whereas others fail to do the same within the same institutional environment?

Sub-questions

- 1) Do differences exist in student engagement and coping among ability groups during the higher educational process?
- 2) Do the personality traits of emotionality and conscientiousness differentially influence student engagement and coping when academic demands are made across ability groups?
- 3) Do teacher and social support differentially influence student engagement and coping when academic demands are made across ability groups?

1.8 Research Objectives

1. Conceptualize a cognitive model of student engagement to analyse differences among ability groups during higher education using structural path models.
2. Conceptualize a cognitive model of coping to analyse differences among ability groups during higher education using structural path models.
3. Use ability groups to understand differential influences of personality traits among students when academic demands are made during higher education.
4. Use ability groups to understand differential influences of teacher and social supports among students when academic demands are made during higher education.
5. Explore links between student engagement, burnout and coping.

CHAPTER 2

LITERATURE REVIEW

This chapter reviews literature on student engagement, coping and ability groups in the context of higher education. Cognitive models were conceptualised and ability groups were used to understand differences among students within an institution to build the theoretical basis for this research.

2.1 Review of Higher Education

This inquiry was based on the assumption of determinism as postulated by B.F. Skinner to study student behaviour using scientific methods (Coleman, 1979). Skinner's hypothesis, when contextualised in the higher education process, require students to be considered as conditioned by past experiences and not free. When free will and reciprocal determinism define the interactive behaviour in an academic environment during the higher education process, the outcomes were often intriguing.

The importance of higher education was explained by social psychologist Erik Erikson using the concept of identity defined by personal identity and social identity formed during the late adolescence and early adulthood (Gurin, Dey, Hurtado, & Gurin, 2002). The identity according to Erikson involves a persistent sameness and a persistent sharing with diversity. Adolescence during higher education involves a psychosocial moratorium wherein, students experiment personally with different social roles and confront diversity and complexity, promoting active thinking and cognitive growth. The humanistic model of psychology assumes internal psychological structures and processes as influencers of self and focuses on values and the evaluative process for guiding behaviour (Coleman, 1979).

Institutions have to enable students to understand their own unique abilities to decide, engage and cope inducing personal growth and fulfilment during the social learning process of higher education. The programme outcomes during higher education are focused on the ability of institutions to maximise student's success not only in the intellectual domain, but also on those competencies that emphasize positive potential for self-direction and growth. Institutions are entrusted with the responsibility to manage choices and support transitions, fostering human capital development and critical thinking for the widest pool of its learners (Gibbs, 2000). Individual students autonomously select institutions of higher learning wherein, conducive social and physical environments exist and regulate their motivation and activities, to produce desirable experiences. Students compare self against private and public standards and initiate changes in behaviour using cognitive feedback loops (Carver & Scheier, 2001). Discrepancies can be diminished if valued goals are approached. Disturbances during higher education can initiate discrepancy enlarging loops driving pursuit of undesirable goals.

2.2 Theoretical Perspectives

Carver and Scheier's theory (1981) explains the motivational influence of self-evaluation of one's own ability in comparison to the others. If a favourable assessment of one's own ability is made then facilitation is exhibited, else goals are not pursued and inhibition is exhibited (Blascovich, Mendes, Hunter, & Salomon, 1999). Theories under motivational-behavioural systems concur that eagerness, excitement, elation and similar feelings are experienced under approach process, whereas feelings like fear and anxiety are experienced under avoidance process. Theories of motivation reveal engagement through the psychological processes of energy, purpose and durability of human action (Deci, 1992).

The self-determination theory (Ryan & Deci, 2000) emphasizes the basic psychological needs of autonomy, relatedness and competence in the social context of higher education. Autonomy, relatedness and competence are sources of student engagement and undermining these basic needs, initiate disaffect and withdrawal (Skinner & Pitzer, 2012). The theory of self-determination defines autonomy, competence and relatedness as basic psychological needs requiring fulfilment to enable adaptive coping (Ryan & Deci, 2000). The conservation of resources theory states that students experience stress when resources are threatened, or when resources are actually lost (Hobfoll, 2001). Students with differences in resources and abilities, invest in higher education and try to gain competencies and skills enabling them to commence a career of their interest in a field of their choice. Productive coping is enhanced when personal resources are larger, leading to more resources (Alarcon, Edwards, & Menke, 2011). The cognitive factors that enhance or diminish intrinsic motivation, self-regulation and well-being according to self-determination theory was important consideration in this research (Ryan & Deci, 2000).

This research involves models that were contextualized within social cognitive theory, where self-referent thinking guides student behaviour. Social cognitive theory contextualizes student learning within an institutional environment as an outcome of student engagement. The theory defines learning as an internal mental process that may or may not be reflected in immediate behavioral change (Bandura, 1993). Heider's (1958) attribution theory explains the desire for consistency and stability reducing uncertainty a major driving force in social inference (Crisp & Turner, 2012). The social cognitive theory is based on a relatively complex model of interaction termed triadic reciprocity. Student attributes such as internal cognitive and affective states, external environment and overt behaviour operate as interlocking mechanisms affecting each other reciprocally (Lent, Steven, & Hackett, 1994). Current perspectives of the social cognitive theory

at the personal level involves phenomenal consciousness and the purposive use of information and self-regulative means to make desired things happen (Bandura, 2001). To successfully graduate through a complex higher education process students will have to judge accurately personal capabilities, anticipate the probable effects of failures, size up socio-structural opportunities and constraints, and regulate their behaviour accordingly. Social cognitive theory emphasizes the feed-forward impact of goals in guiding and organizing behaviour for long periods of time ensuring desirable outcomes. If competencies are not gained during institutional process, then a negative spiral of loss could commence that could initiate student burnout.

Theoretically three perspectives of psychology viz. behavioural, humanistic and cognitive were important to this research. Many studies of engagement bundle the effects of behavioral engagement on educational accomplishments as consistently statistically significant and moderate to strong—no matter what student populations are studied, control variables taken into account, or the composition of the measures (Finn & Zimmer, 2012).

2.3 Review of Student Engagement

In her pioneering effort to alleviate learning failures Carol Dweck experimented with attributions and responses to failures. Attributing academic failure to internal and stable causes or external factors beyond the control of students will impair persistence, whereas; if students are trained to attribute failure to insufficient effort, it enhanced persistence (Dweck, 1975). Weiner's adaptation of the attribution theory, emphasizing the importance of cognitive functionalism in the educational context was the basis for Dweck's academic interventions. Weiner's adaptation is relevant in the context of low achieving students, who can be cognitively engaged to sustain higher effort, to realize academic performance goals (Weiner, 1972).

Student attrition was a major concern to a group of researchers who analyzed the psychological patterns for student departure. Vincent Tinto's theory of student retention hypothesized that student retention is an expression of an institution's commitment to its students. Student integration into an academic environment, ensured by institutions through patterns of interactions between students and faculty in the initial year, was considered critical to student persistence (Tinto, 2007). The initial interest in student retention spawned interest in the construct of student involvement. Student involvement theory analyzed the amount of physical and psychological energy that the student devotes to the academic experience (Astin, 1999). Student time was modeled as the most important institutional resource, which when aligned to developmental goals results in measurable gains. Involvement was linked to the variables of place of residence, honors programs, academic involvement, student faculty interaction, athletic involvement, and involvement in student government all of which were positively correlated to cognitive development (Astin, 1999).

Engagement was modelled as a positive set of outcomes where resources were increased whereas burnout was modelled as the negative set of outcomes where resources were lost. The components of engagement was captured by energy or enthusiasm which implied a movement from stagnation or inertia. The behavior due to engagement ensures participation and interest in academics and other institutional activities. The accurate measurement of this behavioral energy driven by engagement is key to accurate measurement of student engagement. Research in engagement construct reveals that it has to encompass diverse perspectives of behaviour, cognition and emotion (Maroco, Maroco, Campos, & Fredricks, 2016). Emotional engagement is mapped by the student's positive and negative reactions to teacher's instructions, peers and institution, perceptions of institutional belonging, and beliefs about the value of higher education. Students'

investment and willingness to exert the necessary efforts for the comprehension and mastering of complex ideas and difficult skills measures the dimension of cognitive engagement. Behavioural engagement was defined and measured by tracking students' participation in classroom tasks, conduct, and participation in extracurricular activities within an institution. A holistic perspective of student engagement encompasses summation of behavioural, psychological, emotional and cognitive engagement (Skinner & Pitzer, 2012).

2.4 Review of Coping

The term stress, meaning hardship or adversity, was analysed in 17th century by the work of the prominent physicist-biologist, Robert Hooke. Hooke laid the foundations of classical mechanics probing how man-made structures can carry heavy loads whilst resisting winds and natural calamities like earthquakes. Load refers to a weight on a structure, stress is the load over an area, and strain the deformation of the structure created by the interaction of both load and stress (Lazarus, 1993). Hans Selye pioneered the study and stages of stress, the stressors and its impact on humans (Luthans, 1998). In the context of higher education stress is experienced in engaging with activities directed at promoting competence, autonomy and relatedness. In order to respond to a stressful situation, either problem focused efforts are directed at altering the stressors or an ameliorating emotional response is changed under an emotional strategy. Successful outcomes engenders paths wherein individuals manage their emotions, regulate and direct their behaviour, and act on the contextual environments to alter or decrease sources of stress (Compas, Connor-Smith, Saltzman, Harding, & Wadsworth, 2001). Research interest sought to understand whether emotional and cognitive activity were predominantly directed towards or away from the stressor. Coping explains how individual students deal with actual stressors in real-life contexts and how the effects of these episodes accumulate (Skinner & Zimmer-Gembeck, 2006). This research

intended to understand coping strategies in the context of academic demands made by institutions of higher education on students of varied academic abilities and personal resources.

The commencement of higher education is a transition that is accompanied by stressful discontinuities and discrepancies related to developmental change as postulated by Diane Ruble (Gurin, Dey, Hurtado, & Gurin, 2002). This research attempted to understand coping and adolescent development in the social context of undergraduate engineering programmes of higher education in India using cognitive variables and ability groups. Research interest was focused on analysing the higher education processes and comprehend the cognitive and behavioural variables impacting coping, while negotiating with the stressful demands of higher education. Coping was an organizational construct used to encompass the varied actions individuals use to deal with stressful experiences. This research utilized Skinners' twelve scales that are theoretically established and able to determine important needs of motivation dictated by the theory of self-determination to characterize the coping construct (Ryan & Deci, 2000).

2.5 Review of Ability Groups

In seeking to understand how individual students cope, engage and develop when classified as members of ability groups, this research also scientifically reviewed the higher education process on the humanistic perspective of psychology. Ability was defined as a dynamic attribute shaped by cognitive, behavioural, motivational and social skills alongside skills to manage aversive emotional reactions (Bandura, 1993). Ability groups were formed on the basis of shared intentions, knowledge and skills. Ability groups interact, co-ordinate and synergize their transactions to determine their outcomes in the form of discipline specific competencies and academic competencies.

Social identity processes are guided by self-enhancement and uncertainty reduction of group members, where compared social groups compete to be better and distinct (Hogg, Abrams, Otten, & Hinkle, 2004). Informational influences and normative influences could shape judgements, gain acceptance and avoid exclusion from groups explained by social identity approach (Crisp & Turner, 2012).

2.6 Conceptualisation of Student Engagement model

Engagement was characterized by effort, exertion, vigor, intensity, vitality, zest, and enthusiasm (Skinner & Pitzer, 2012). Burnout was characterized as a culmination of a vicious cycle of losses initiated from an instance of loss. The higher education process requires students to strive, conserve and augment valued personal resources as theorized by the conservation of resources theory. An occasional failure during the higher educational process could lead to emotional distress and leave an indelible impact on students' life (Hobfoll, 2001). An emotional distress and loss could lead to a prolonged period of maladaptive coping, eventually culminating in a burnout. Burnout is characteristic of low levels of energies leading to withdrawal and disinterest culminating in a lack of competencies and a loss of resources. Emotional exhaustion is attributed to the academic developmental challenge and time pressures, depersonalization due to lack of resources and supports whereas reduced personal accomplishment arises on account of poor coping strategies (Schaufeli & Salanova, 2007).

Student engagement with aspects of the institutional activities are dynamically shaped by the inventory of personal traits within the institutional context (Reason, Terenzini, & Domingo, 2006). The competitive and collaborative tendencies would differ across ability groups when the demands are made during the higher education process analysed across behavioural, cognitive and psychological perspectives. Traits are shaped dynamically by interactions of internal student

energies with external environmental energies shaping development of human capital (McConnell, 2004). The nomothetic view is that the science of personality consists of a search for general laws having wide applicability to people in which consistent patterns of individual differences in behavior, sometimes called traits, play a central role. Traits have predictive power of behaviour and the nomothetic approach assumes substantial behavioural consistencies when traits are reliably assessed (Rushton, Jackson, & Paunonen, 1981).

Social affordances of social support, social influence and group affiliations require an individual to be accepted by others (Leary & Guadagno, 2011). The social support probably is influenced by within-person factors, including both long-standing traits on the one hand, and temporal changes in attitude or mood on the other. Both of these may influence the perception of whether support is available or has been provided (Procidano & Heller, 1983). Social support is a significant environmental factor enabling integration and ameliorating distress encountered in an institution of higher education (Solberg & Viliarreal, 1997)

Overreaction to hassles accurately predicts the influence of everyday stressors on physical and mental health. The scales of academic demands yield to be operationalized with personality factors as an antecedent, permitting the interaction between personality traits and hassles to be estimated. Demands made on students are important mediating variables linking personality, supports and student engagement in the context of higher education process.

The conservation of resources theory perceives any support, that promotes in accomplishing personal growth of students and help realize goals, as a resource. The concept of value addition requires focus on the important aspect of teaching function enabling meaningful learning outcomes between the commencement and conclusion of higher education. This performance indicator assessing teaching performance is often neglected in higher educational

analysis (Ramsden, 1991). Every teacher is entrusted with goals of producing learning through stimulation, motivation, guidance, direction and most importantly evaluation (Anderson 2004). Teachers are required to strategize with the choice of teaching methodologies and activities enabling development and growth across ability groups. An effective teacher seeks to understand similarities and recognize differences amongst students to support learning (Trabue, 2004). Some researchers have sought to link the inventory of students Study Skills, Study Habits and Study Attitudes to predict academic performance. An ethical perspective of improving students learning, assesses the autonomy and independent learning fostered by responsible student interaction with responsible teachers (Bryson & Hand, 2007). The factors considered include cognitive and non-intellective factors which were also found in literature to have substantial predictive ability of academic performance (Crede & Kuncel, 2008). Student engagement is also perceived through the lenses of motivation and agency, transactional engagement, institutional support, active citizenship and non-institutional support (Zepke, Leach, & Butler, 2010). Teaching scale was the most influential scale and consequently teaching support was hypothesized to be positively correlated to the demands made. There exists a need to re-conceptualize and redesign mechanisms that involve teachers and supports that aid developmental processes amongst students across ability groups (Pianta, Hamre, & Allen, 2012). Feelings of satisfaction with teaching in the higher education process, enables students' resource gains, solve problems, overcome stresses that leads to successful learning outcomes and competencies. Teachers are expected to interactively support solution of real world problems, engaging students, promoting competence, autonomy and initiating social cognition (Pianta, Hamre, & Allen, 2012). Teachers are skillfully required to use in the current higher education scenario, appropriate scientific methods based on humanistic psychology, use of group dynamics and activities to maximize effective learning and outcomes.

2.7 Conceptualisation of the Coping model

The fundamental tenet of the conservation of resources theory is that students strive to obtain, retain, protect, and foster those things that they value (Hobfoll, 2001). Resource loss has a greater primacy over resource gain. Once a loss originates it increases emotional distress and could lead to a prolonged period of maladaptive coping, eventually culminating in a burnout. Coping explains how individual students deal with actual stressors in real-life contexts and how the effects of these episodes accumulate (Skinner & Zimmer-Gembeck, 2006). Coping should fully mediate the relationship of resources and perceptions of demands on stress and optimal functioning.

A different perspective in psychology also evolved conceptualizing linkages between emotion, motivation and personality (Carver, Sutton, & Scheier, 2000). Emotions induce motives and dictate behaviour directed towards goals that enable affect. Certain emotions direct either approach or avoidance actions and eventually lead to the intended emotional experience. Gray's theory adapted in (Carver & White, 1994) postulates that behavioural activation systems (BAS) responds to incentives and causes movement towards goals. The behavioural inhibition systems (BIS) reacts to threats and disengages from pursuit of goals. Individual differences exist in behaviour of people how their traits are attuned to the approach process or avoidance process with people sensitive to BIS displaying more levels of anxiety (Carver & White, 1994). An elemental tenet of coping theory holds that coping processes are activated in response to negative emotion. This fundamental assumption belies the traditional assumptions in the popular two factor definition of coping behaviour as either problem focused or emotion focused. Emotion is an antecedent variable of all coping behaviours (Duhachek & Oakley, 2007). The personality factors of emotionality and conscientiousness were posited as antecedent predictors of coping across the ability groups. It was also hypothesized that Anxiety, a facet of emotionality predicts coping across

the ability groups. Research on coping during adolescence has applied as well as basic importance and is a significant antecedent of self-regulation processes. Emotion, cognition, behaviour and the environment are self-regulated during developmental coping with long term consequences for future adjustment (Compas, Connor-Smith, Saltzman, Harding, & Wadsworth, 2001). Emotionality factor was hypothesized to predict social support in this research across the cognitive model assessing coping. Social Support can improve coping by meeting support needs through information, empathy, encouragement and communication (Stewart, et al., 2001). Support-seeking results from appraisals that identify stressors, which has to be dealt with appropriately. Research requires to inquire how family and social context supports engagement during the higher educational process (Mahatmya, Lohman, Matjasko, & Farb, 2012). This research speculated on the existence of groupthink to discern influences of ability groups. Groupthink is defined by Irving Janis as a deterioration of academic performance from pressures of conformity across ability groups (Luthans, 1998).

The course of action a teacher should pursue is, a result of decision based on how students learn, what his students already know and are ready to learn and the relative success the teacher has personally experienced in trying various ways of helping students to produce desirable learning experiences (Trabue, 2004). The teaching learning process and the assessment system is integral to institutional efforts in promoting competence, autonomy and connectedness. Teacher support was hypothesized in this research as a predictor of demands made, driving the energy of student engagement and enabling coping and, in instances of resource loss in students, teachers can attribute the loss to external reasons, thereby arresting depletion of student resources.

2.8 Gaps in existing literature

Institutions provide the social context wherein students form beliefs about what they can do, anticipate the likely consequences of prospective actions, set goals for themselves and plan courses of action that are likely to produce desired outcomes. The research context was a standalone institution offering four programmes in engineering. The Indian higher education faces a threat from rigid boundaries within a discipline and programmes defined with a narrow view of education (Ministry of Human Resource Development, 2019). The new education policy also defines lack of faculty and institutional autonomy as a challenge to higher education in India. The research using the construct of student engagement is based mainly in the United States of America and Australia. International measures of student engagement viz. the National Survey of Student Engagement (NSSE) and Australasian Survey of Student Engagement (AUSSE) help institutions garner insights to facilitate student's engagement and increase competitiveness (Trowler, 2010). Student engagement assesses task engagement: tasks that are meaningful to their educational success and achievement. It also assesses institutional support to help students succeed (Trowler, 2010). The shortcomings in students' efforts and institutional efforts are assessed by the current constructs of engagement so that students and institutes can respond and improve. There are concerns about the theoretical justification as well as the construct validity of NSSE. There exists in literature very few publications that correlate the measured construct with grades and retention thereby questioning its predictive ability. There exists a research gap in clarifying the antecedents, the state of engagement and the consequences of student engagement (Kahu, 2013). Research correlating demands with student burnout and student engagement is not very explicit (Alarcon, Edwards, & Menke, 2011). The postulated model contradicts a model tested to verify the

conservation of resources theory wherein personality traits predict demands driving coping and linked eventually to student engagement and burnout (Alarcon, Edwards, & Menke, 2011).

2.9 Conclusion

Standalone institutions of higher education require to be analysed using differences in student engagement and consequent coping. Differences between the better performers and the weaker performers were sought to be understood among ability groups amidst teacher and social support. This research intended to contribute to the body of knowledge of student engagement through the holistic perspective of student engagement confirming antecedents of the cognitive state of student engagement and linked to outcomes of aggregate academic performance. Coping, as a consequence of the student engagement requires to be measured confirming its important antecedents and proximal academic outcomes. Estimation of differential coping outcomes using ability groups and contribution to coping standardisation were important research objectives. Links between student engagement and coping were also to be explored across ability groups for differences.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter gives an outline of the research methodology utilised in this study. It addresses important aspects of research design, unit of analysis, sampling, sample size, data collection tools, data analysis procedure.

3.1 Time line of this research

This survey was carried out during the period of January 2018 to May 2018 preceding the implementation of the AICTE model curriculum in India. Future studies can review the impact, the changed curriculum has on the student's cognition, mapped by student engagement and coping, differentiated across ability groups. This research is contextualized during a time period wherein the employability skills of engineering graduates are dismal (Ministry of Human Resource Development, 2016). The time period is also characterized by idle capacities and closures of private self-financed engineering institutions across India whilst state funding is increasing public higher education capacities. Simultaneously, there is a time bound regulatory pressure in ensuring accreditation of all colleges of engineering through the national bureau of accreditation. The quality challenge has forced institutions to increasingly focus attention on competitive national and international rankings. Managements are renewing their vision and mission in consultation with all the stakeholders on enabling student centered education. Tracking the progress and designing appropriate interventions for every student's success require considerable investment of resources. The private institutions are under increasing constraints of optimizing resources to sustainably enhance quality through accreditation while balancing their financial budgets with decreasing student enrolments. The eventual challenge is successfully maximizing careers and

opportunities for all the enrolled learners through the successful adaptation of the model curriculum.

The engineering education sector in India permits students from higher secondary education to answer a standardised test and based on merit enter affiliated institutions. The standardized test addresses the prescribed syllabus of physics and mathematics after the higher secondary school certification across various state and national school boards. The bulk of the students entering an institution programme belong typically to the adolescent age group seventeen to eighteen. In the second year, an additional group of students belonging to an older age group is enabled an access based on performance in an appropriate diploma programme. Access is also permitted to students whose parents are central government employees, non-resident Indians based on proof of birth. Economic, domicile status and caste criteria are considerations for granting admissions. The admission procedure for the public and private institutions are regulated through state departments. The admission procedure is conducted in multiple rounds with upward mobility channels for the meritorious students within the system.

3.2 Research Design

This research design involved structural path models where personality traits, teacher and social support were linked through demands first to student engagement and burnout and then to coping. The primary cycle in higher education is the engagement of a student with academic tasks that drives the cycle of coping. Theorized on the philosophy of internal ladders by Colin Wilson, action overcoming negative emotions when academic demands are made, results in the cognitive states of vigour, absorption and dedication mapping student engagement. Efforts at ascending the internal ladder of cognition by approaching and engaging with academic demands drives adaptive coping actualizing the important psychological needs of competence, autonomy and relatedness.

This conceptualization assumes behavioural engagement overcomes the reactive emotional engagement leading to cognitive engagement and eventually to affective engagement. The energy of student engagement with academic activities in an interactive academic environment initiates a feed-forward virtuous cycle of eustress driving adaptive coping. Failure to engage with demanding academic tasks could initiate avoidance and a cycle of maladaptive coping initiating distress that could culminate in burnout. Consequently, the survey questions evaluating the construct of student engagement captured by scales of Vigour, Absorption and Dedication were framed using the present tense. The student engagement construct was to be measured amidst the institutional teacher and social support in a cognitive model of student engagement. Ability groups were to be differentiated, when academic demands were made, using personality traits and linked to academic performance as depicted in Figure 2. The coping construct utilized was a cluster of the present and past tenses across the scales of Problem Solving, Information Seeking, Helplessness, Escapism, Self-Reliance, Social Support, Delegation, Isolation, Accommodation, Negotiation, Submission and Opposition. The coping construct was to be measured amidst teacher and social support in a cognitive model of coping. Routine academic task engagement builds resilience that helps students cope with stressors and setbacks which in the long run develops autonomous and self-regulated learning (Skinner & Pitzer, 2012). In conclusion paths and differences in ability groups would be explored using structural path modelling between the latent variables of student engagement, burnout and coping.

3.3 Unit of Analysis

The unit of analysis is the student enrolled within the standalone Institution of higher education.

3.4 Sampling and Sample Size

An initial pilot survey was to be carried out to understand the difficulties encountered during the filling up of the questionnaire. An appropriate sample of students confirming the cognitive models were to be chosen from different programmes of engineering across different years of study would be surveyed. The researcher would explain the intent of the research and would hand out the questionnaire to willing students. The random sampling procedure of stratified sampling was proposed to ensure representation across the different programmes of engineering viz. Mechanical, Computers, Electronics & Telecommunication and Information Technology.

3.5 Data Collection tools

A printed questionnaire with 152 questions using 38 scales forming 8 constructs was the survey instrument to be used for data collection. The questionnaire was designed to collect some personal information and aggregate academic performance.

3.6 Data collection procedure

The data collection procedure was to be initiated after requisite permissions were granted to carry out the survey from the Management of the standalone institution of higher education. A pilot trial would be carried out to understand the difficulties encountered by students filling the survey instrument. The researcher would then schedule visits to different classrooms in consultation with Heads of Departments. The students would be addressed on the goals of the research and then the willing students would be given the survey instrument. The researcher would explain the intent of every survey statement to a student requesting explanation. The number of students surveyed would be differentiated across ability groups and hence the number of students surveyed had to be large enough to confirm structural path models. A general rule of thumb used

is the number of scales multiplied by a factor of 10 to statistically confirm the path models (Hoe, 2008).

3.7 Data analysis procedure

The data were to be coded using Microsoft Excel. Using academic performance as a decision variable, ability groups would be created. R program was sought to be used for analysis using the integrated development environment RStudio. The packages of ‘lavaan’, ‘semPlot’ and ‘psych’ were to be downloaded into the environment for the analysis. Structural path modelling would be used for analysing the cognitive models of student engagement and coping across ability groups. Scales and latent variables exhibiting negative variances would be removed to enable model convergence. Chi-Square and normed Chi-Square fit indices would be used for evaluating model fit. Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), Tucker Lewis Index (TLI) and Comparative Fit Index (CFI) would additionally be estimated to understand model fit. Correlations would be explored using Wright’s backward tracing algorithms. Subsequently links between student engagement and coping would be explored using structural path modelling and model fit indices.

CHAPTER 4

DEVELOPMENT OF MODELS AND HYPOTHESES

This chapter defines and summarises the instruments, elaborates the research design and conceptualises the models. It also used literature to establish the construct validity and reliability of the instruments utilised. Paths used to conceptualise the models were also justified using literature and hypotheses were then generated.

4.1 Measures, Operational Definitions and Construct Validity

The higher education process must understand differences in abilities amongst students that could impact learning experiences and outcomes. The psychometric approach was utilized in this research context and ability groups were used to understand differential influences of traits. A personality trait refers to differences among individuals in typical tendencies to behave, think and feel in some conceptually related ways, across a variety of relevant situation over long periods of time (Ashton M. C., *Individual Differences and Personality*, 2013). The traits of emotionality and conscientiousness were chosen from the short version of HEXACO considering the time requirement for filling up the elaborate questionnaire. The HEXACO personality inventory is a psychometrically sound measure of personality dimensions with acceptable convergent validities at factor and facet levels with discriminant validities (Lee & Ashton, 2004). Internal consistency reliability was comparable to the full version for the adapted HEXACO-60 version and scale inter-correlations were found to be smaller when compared to the full version (Ashton & Lee, 2009). Emotionality and conscientiousness personality inventories were unearthed by investigations into personality structure. Emotionality factor represents tendencies relevant to kin altruism and conscientiousness factor represents tendencies relevant to gains of resources.

Conscientiousness trait was defined by the commonly used adjectives of being organized, disciplined, diligent, careful, thorough, and precise versus sloppy, negligent, reckless, lazy, irresponsible and absent-minded. The chosen short version of conscientiousness trait had a high correlation with the NEO-Five Factor Inventory conscientiousness scale. Conscientiousness resource is revealed by the facets of organization, prudence, diligence and perfectionism. Conscientiousness trait represents task engagement and is considered similar to the B5/FFM definition of conscientiousness personality. Conscientiousness factor has already been established in literature as a predictor of student engagement (Alarcon, Edwards, & Menke, 2011).

Emotionality was defined by commonly used adjectives of being emotional, oversensitive, fearful, sentimental, anxious, and vulnerable versus brave, tough, independent, self-assured and stable (Ashton & Lee, 2007). The emotionality factor has sentimentality and sensitivity content at its positive pole and bravery and toughness content at its negative pole (Lee & Ashton, 2004). Emotionality factor was characterized by scales of anxiety, fearfulness, sentimentality, and dependence and the Emotionality factor had moderate correlation with the Neuroticism from NEO-FFI scales. Emotionality Factor includes anxiety associated with Big Five Neuroticism but excludes anger and includes sentimentality that is included in the Big Five Factor of Agreeableness (Ashton & Lee, 2007). Emotionality personality factor of HEXACO was selected as a personality trait of interest in this research by choice of the researcher to investigate the humanistic perspective of psychology. The humanistic perspective places strong emphasis on inner feelings, reflection and values for guiding behaviour. This research sought to explore the predictive influences of emotionality and conscientiousness traits in approaching the stressful demands of engaging emotionally, cognitively and behaviourally during the higher education process leading to adaptive coping.

Social Support refers to the impact social connections provided by an institutional environment has on an individual student (Procidano & Heller, 1983). The Multidimensional Scale of Perceived Social Support (MSPSS) used in the current research comprises scales assessing perceptions of social support adequacy from family, friends and significant other. Significant other could be interpreted as significant support received from a boyfriend, girlfriend, counselor or a teacher. The reliability, discriminant validity and factor structure has been demonstrated in relevant context of university students and adolescents. Adolescent students are exposed during higher education to an academic environment with complex stressors trying to influence their emotion, cognition and behaviour. The social support construct assesses the social network, instrumental support and the adequacy of support. The Multidimensional Scale of Perceived Social Support (MSPSS), has a number of properties which suggest that it may be a valuable tool for use in research involving urban adolescents (Canty-Mitchell & Zimet, 2000).

Academic Demands was defined in this research as the hassles a student encounters in an institutional environment (Kohn, Lafreniere, & Gurevich, 1990). The factor structure and concurrent validity was established and the subscales were correlated with daily hassles (Osman, Barrios, Longnecker, & Osman, 1994). Academic demands were measured by the scales of developmental challenge, time pressure, academic alienation and general social mistreatment. The scales were adapted from the ICSRLE (Kohn, Lafreniere, & Gurevich, 1990). Everyday life events, which in case of the higher education is mediated through academic demands has an indirect relationship to the stress-appraisal process causing it to be a critical determinant of adverse consequences of stress. This measure yields to be operationalized with personality factors as an antecedent, permitting the estimation of interaction between personality and hassles.

Inventory of College Students' Recent Life Experiences (ICSRLE) is developed as a measure of hassles without contamination by items reflecting physical and mental-health problems (Kohn, Lafreniere, & Gurevich, 1990). The primary developmental concerns of undergraduates are academic performance, physical conditioning, dating and career selection (Knight & Lee, 2008).

Teacher support was operationally defined in this research as the presence of trusted teachers who through quality teaching, appropriate assessment, foster skills and goals, making appropriate guidance demands on students. The student evaluation of teaching quality explains the use of course experience questionnaire as a performance indicator (Ramsden, 1991). The reliability and construct validity of the course experience questionnaire had been established (Wilson, Lizzio, & Ramsden, 2006). The course experience questionnaire (CEQ) has been used as a measure of perceived teaching quality in degree programmes in Australian higher education system and was being increasingly adapted as a measure of quality in teaching in universities in the United Kingdom (Wilson, Lizzio, & Ramsden, 2006). Quality teaching is an important institutional support and students are competent to evaluate teaching quality reliably (Byrne & Flood, 2003). This measure was adapted to evaluate programme teaching and operationally defined as teaching support to ascertain the presence of trusted teachers. The scales of Good Teaching, Clear Goals and Standards, Appropriate Workload, Appropriate Assessment and Generic Skills have statistically significant correlation with satisfaction (Richardson, 2010). Based on the course experience questionnaire, the construct of teacher support was designed as a performance indicator of teaching effectiveness at a degree level (Wilson, Lizzio, & Ramsden, 2006).

Engagement was defined in this research context as a persistent and pervasive affective cognitive state mapped by the scales of vigour, dedication and absorption (Schaufeli & Bakker, 2003). The student's version of Utrecht Work Engagement Scale was adapted to measure student

engagement. This conceptualization perceived engagement as a positive, fulfilling, learning-related state of mind that was measured by the scales of vigour, dedication, and absorption (Seppala, et al., 2009). Vigour, referred to high levels of energy and mental resilience while learning, the willingness to invest effort in one's work, and persistence in the face of difficulties. Dedication was characterized by a sense of significance, enthusiasm, inspiration, pride, and challenge. Absorption referred to being fully concentrated and deeply engrossed in academic tasks, and was characterized by time passing quickly and difficulties in detaching oneself from work (Schaufeli & Salanova, 2007). The construct validity, factor structure, subscale inter-correlations and internal consistency has been established (Schaufeli & Bakker, 2003). The scales of vigour, dedication and absorption were adapted from the UTRECHT work engagement scale adapted for students (Schaufeli & Bakker, 2003).

The conceptualization of burnout in the context of this research comprised of emotional exhaustion, depersonalization and reduced personal accomplishment (Schaufeli & Salanova, 2007). The conservation of resources theory suggests that four types of resources predict strain and optimal functioning: objects, conditions, personal characteristics, and energies. (Alarcon, Edwards, & Menke, 2011). Burnout was a psychological phenomenon of prolonged exhaustion and disinterest. Cynicism was a strategy of coping with emotional exhaustion and ideally prevents further emotional exhaustion from overload; however it typically had the opposite effect. Cynicism occurs when the individual attempts to withdraw from investing in the work. Exhaustion was characterized by low levels of energy and lack of mental resilience while studying, unwillingness to invest effort, and lack of persistence in the face of difficulties. Inefficacy maps reduced personal accomplishment and was correlated with poor resources and more particularly to poor coping strategies. The scales of exhaustion, cynicism and inefficacy were drawn from Maslach Burnout

Inventory-Student Survey (MBI-SS) (Schaufeli & Salanova, 2007). The construct validity and the internal factor structure of the burnout inventory had been established (Taris, Schreurs, & Schaufeli, 1999).

Coping structure was theorized around identifying a set of adaptive processes that mediates between students of higher education and stressful encounters (Skinner, Edge, Altman, & Sherwood, 2003). Episodes of coping forms steady state patterns that eventually coalesce into a hierarchical structure. Coping research was surveyed using Skinners' twelve scales that are theoretically established and able to determine important needs of motivation dictated by the theory of self-determination viz. autonomy, relatedness and competence (Ryan & Deci, 2000). The coping context of higher education was researched to understand stress and its effect on students and the underlying mechanisms through which students deal with stress. Guided by the psychological needs of autonomy, relatedness and competence under the self-determination theory and the premise of approach and avoidance, the coping structure was chosen (Skinner, Edge, Altman, & Sherwood, 2003). Competence in this research context referred to the ability to integrate theoretical and practical knowledge and the capacity to learn from practical experiences (Atkins, 1995). The coping process was mapped hierarchically with the Skinner's scales reliably assigned over higher order models with established discriminant and convergent validities for the selected 37 item, 12 dimensional structure (Duhachek & Oakley, 2007).

4.2 Cognitive Model of Student Engagement

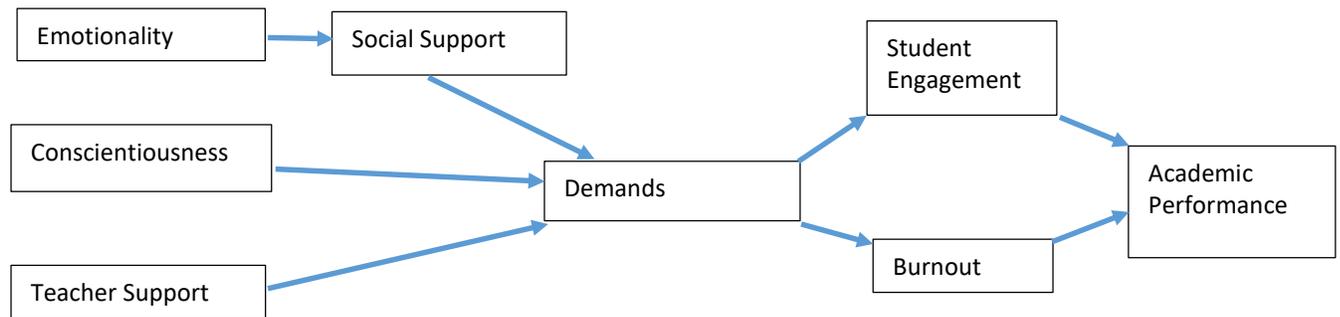


Figure 3. Cognitive model of student engagement

The model formulated included personality traits amidst institutional and social contexts of support, linking demands and academic performance through student engagement and burnout. This research importantly hypothesized that structural path models directed towards student engagement and burnout would be differentiated by ability groups. The framework of student engagement proposed in recent literature comprises the behavioural perspective, psychological perspective, sociocultural perspective and a holistic perspective (Kahu, 2013). The holistic perspective embraces the important influencer of emotions in constructing students' perceptions, expectations and experiences during higher education. This explains the choice of emotionality and conscientiousness as antecedent predictors of student engagement through academic demands made. Influenced by the humanistic perspective of psychology, the personality traits of conscientiousness and emotionality were posited as exogenous predictors of the internal cognitive state and affect, driving student engagement through the institutional demands made. The social cognitive theory was postulated to dynamically influence the traits differentiating ability groups through the cognitive models linked to academic performance. The importance of the

psychological perspective was addressed evaluating influence of cognition, behaviour and emotion on demands made and linking to the supports in the hypothesized model. Social cognitive theory emphasizes the feed forward mechanisms: anticipation, forethought and active interaction on the educational environment (Lent, Steven, & Hackett, 1994). Groups were formed when its members share a common autonomous vision of desirable competencies and interactively foster trusted relationships. The group intent forms the basis for their behaviour, goals, cognitive feed-forward, feedback, and regulation influencing academic outcomes. Ability groups, formed on the basis of aggregate academic performance, was the determinant of interest formation influencing behaviour, cognition and affect. Conformity to ability group norms could be promoted in uncertain higher educational environments through informational influence when students are unsure of their own perceptions (Crisp & Turner, 2012). Normative influence to avoid exclusion, punishment and gain praise from ability group members can also drive conformity. Perceived personal competence, diversity and social support have influence in undermining conformity to group norms promoting better group decision making. Significant changes in personality across ability groups may dynamically be accrued during the higher educational process, but these changes are not independent of the traits acquired earlier during the school education (McConnell, 2004).

The demands placed on the students were theorized as the source of academic engagement leading to student engagement. The student behaviour was mapped by the constructs of student engagement and the proximal learning outcome was the aggregate academic performance. However, it is acknowledged that Bandura's social cognitive theory emphasizes reciprocity and not one way causality assumed in this study. Bi-directional influences will alter the weights of the causal influence paths across both the ability groups leading to altered variable weights. The model was derived from research literature that affirms the influence of teacher support and social support

defined through family and friends on student engagement construct (Fredricks, Blumenfeld, & Paris, 2004). Social contexts that facilitate student engagement include warm and dependable interpersonal interactions with teachers, peers, and parents (Skinner & Pitzer, 2012). The relationship from teacher support to demands made explains the interactive behavioural perspective, deemed important for driving student engagement. Student behaviour and interactional teaching relationships forms the essence of the behavioural perspective, while the dynamic internal psycho-social processes of behaviour, cognition and emotion defines the psychological perspective. The socio-cultural perspective sought to understand the influence of social context on student experience and initiates engagement or alienation. Behavioural engagement is mapped by positive behavioural conduct, investment of time in academic tasks and absence of disruptive behaviours (Fredricks, Blumenfeld, & Paris, 2004). Cognitive engagement associates with thoughtful effort and self-regulation directed at mastering complex concepts and difficult skills. Association of positive emotions towards teachers, peers and other supports in an institution of higher learning explains affective engagement. Carver and Scheier's control theory of self-regulation proposes that students assess progress towards goals accompanied by cognitive feedback loops. The steps of test, operate, test and exit where students compare themselves with private and public standards, initiate feedback driven changes in behaviour (Crisp & Turner, 2012). The emotional connect to discrepancies when standards are compared with an envisioned self, was proposed by the self-discrepancy theory of Higgins. The way students use social information is essential to understand higher education processes, attitudes, identities and abilities (Crisp & Turner, 2012). Engagement is characterized by energy manifest in effort, exertion, vigour, intensity, vitality, zest, and enthusiasm; directed through outward expression of interest, focus, and

concentration; and durability evidenced by absorption, determination, and persistence (Skinner & Pitzer, 2012).

Low scorers of emotionality are tough whilst experiencing fear, relaxed in stressful contexts, feel self-assured in dealing with problems and have weak emotional bonds with others (Lee & Ashton, 2004). High scorers tend to avoid physical pain, get preoccupied with trifles, share their distress with others seeking encouragement and value strongly the empathetic attachments with others. Students with low values of emotionality trait, were believed to be resilient and tough and inferred to be the better performers of ability group II. The students of ability group I were believed to exhibit higher values of sentimentality, anxiety, dependence, fearfulness and emotional reactivity.

The correlation measure of emotionality trait with student engagement was hypothesized to be higher for the better performers of ability group II in comparison to the students of ability group I. It was also hypothesized that emotionality factor would be correlated more strongly to student burnout for the underachievers of ability group I when compared to the better academic performers of ability group II.

Hypothesis 1: The correlation measure linking emotionality trait to student engagement for ability group I students would be lower when compared to the ability group II students.

Hypothesis 2: The correlation measure linking emotionality trait to burnout for ability group I students would be higher when compared to the ability group II students.

Social support was defined in this research as the extent to which an individual believes that his or her needs for support, information and feedback were fulfilled (Procidano & Heller, 1983). It was hypothesized that students with lower values of emotionality would define a weaker structural path to social support for the ability group II that performs better. Underachieving

academic performers of ability group I would be characterised by higher values of emotionality linking strongly to social support. Low values of Emotionality was hypothesized as a personality resource in the higher education process promoting student engagement.

Hypothesis 3: The link from emotionality trait to social support would be stronger for the students of ability group I when compared to ability group II.

Conscientiousness personality factor is defined by traits seeking order and a structured approach in performing tasks, a disciplined and strong work ethic, concern for details and a tendency to be deliberate and cautious whilst considering options (Lee & Ashton, 2004). Consequently, high scorers of conscientiousness in ability group II were hypothesized to have weaker paths to academic demands made. Low scorers would be haphazard and unstructured, with low self-discipline, neglect details and is impulsive and would link strongly to academic demands made by institutions. Students scoring highly in conscientiousness would rigorously engage with academically relevant tasks and have higher resources in adaptive coping with stressors. The demands made would not be perceived as hassles by the students scoring highly in conscientiousness. The weaker ability students low in conscientiousness would magnify the associated hassles linking themselves by stronger structural paths to the academic demands.

Hypothesis 4: The link from conscientiousness trait to demands made would be stronger for the ability group I students when compared to the students of ability group II.

The students defined by high scores in emotionality trait are expected to link strongly to the demands made. The high scorers of emotionality would magnify the perception of demands made driving anxiety and consequently cope in a maladaptive manner. Students characterised by low scores of emotionality would be relatively resilient and tougher in addressing the demands made. The scales of demands also assesses the competitive standing amongst students.

Consequently, the perception of stress was viewed in positive light by the students who were less fearful and sentimental, characterising low emotionality traits of students. The perception of hassles associated with demands made during the higher education process was hypothesized to be higher for the underachieving students of ability group I.

Hypothesis 5: The students of ability group I would link through stronger paths from emotionality trait to demands made when compared to the students of ability group II.

The exogenous scales of teacher support were derived from the course experience questionnaire. The instrument was developed utilizing a theoretical basis wherein students' perceptions of curriculum, teaching and assessment are considered to influence learning approaches and the quality of learning outcomes (Byrne & Flood, 2003). The scales of good teaching, clear goals and standards, appropriate workload, appropriate assessment and generic skills coalesces into a composite performance measure of quality teaching. The perception of quality teaching should link through supporting structural paths to academic demands. It was also hypothesized that weaker paths would link teacher support to academic demands in case of the better academic performers when compared to the weaker academic performers. If the students are unable to plan their own workload then the perceived structural paths between teacher support and academic demands could turn negative (Byrne & Flood, 2003). Good teaching scales could encompass a developmental challenge of oral communication and magnify the appropriate workload scale causing a possible negative structural path between teacher support and academic workload.

Hypothesis 6: The paths from teacher support to demands made would be stronger for the students of ability group I when compared to the students of ability group II.

Therefore, it was also hypothesized that demands were positively linked with student engagement: mapped by the energy of vigour, absorption and dedication with stronger positive values for the students of ability group II. It was also speculated that demands were linked through negative structural paths to student burnout: Mapped by cynicism, inefficacy and exhaustion with stronger negative structural paths for the students encompassing ability group I.

Hypothesis 7: The link from demands to student engagement would be weaker for the students of ability group I when compared to the students of ability group II.

Hypothesis 8: The link from demands to burnout would be stronger for the students of ability group I when compared to the students of ability group II.

4.3 Cognitive model of Coping

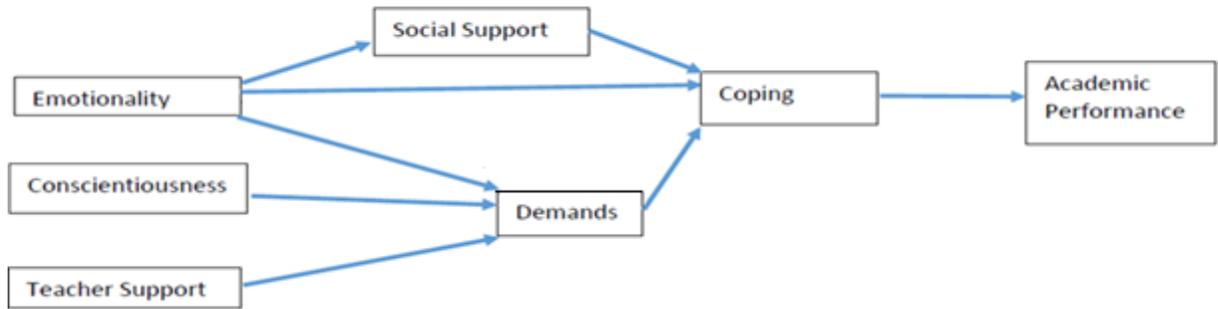


Figure 4. Cognitive model of coping

This cognitive model was formed by the inquiry whether personality traits of emotionality and conscientiousness influenced academic demands, consequent coping and academic performance. This research also inquired whether teacher and social support influenced demands and resultant coping leading to academic performance. Ascertaining whether ability groups were

also influencers of academic demands leading to differential coping and academic performance was a major research inquiry.

Students adaptively cope with stressors and developmental challenges when they energetically engage with academic tasks (Skinner & Pitzer, 2012). Consequently student engagement was postulated in this research to drive coping. Research gap exists in utilising the approach-avoidance distinction in comparison to other structural theories of coping (Duhachek & Oakley, 2007).

The theory of human agency postulates that individuals are autonomous agents of experiences rather than environmentally determined experiencers (Bandura, 2001). Individual students autonomously select institutions of higher learning wherein conducive social and physical environments, regulate their motivation and activities to produce desirable experiences. Groups were formed when its members share a common vision of desirable competencies and self-determination, interact and foster trusted relationships. The group intent forms the basis for their cognitive behaviour and regulation influencing academic outcomes.

Research interest laid in whether emotional and cognitive activity were predominantly directed towards or away from the stressor. Coping explains how individual students deal with actual stressors in real-life contexts and how the effects of these episodes accumulate. (Skinner & Zimmer-Gembeck, 2006). This research intended to understand coping strategies in the context of academic demands made by institutions of higher education on students of varied academic abilities and personal resources that enable academic performance.

The personality traits of conscientiousness and emotionality, acquired interactively during the engagement process was predicted to drive coping. The psychological needs of autonomy, relatedness and competence, defined by the self-determination theory forms the contextual higher

order goals while understanding the cognitive and behavioural influencers of coping. The influence of emotion as an antecedent of all coping behaviours when stressful demands were made during the higher education process was a basic research inquiry. Perception of social support contributes to adaptive coping with stress. The mediation of demands between emotionality trait and coping across ability groups was fundamental to this research. There exists incentive to research the individual differences across ability groups in the strength of students' approach or avoidance in dealing with stressors in higher education. Research requires to inquire the mediational links between personality and emotion (Carver, Sutton, & Scheier, 2000). Research has identified personality-based influences on coping stemming from an approach–avoidance motivational perspective (Skinner, Edge, Altman, & Sherwood, 2003). The cognitive model also reviews the teacher's supporting influence in promoting adaptive coping through the appropriate academic demands made on students differentiated by abilities.

Individual differences exist in behaviour of people how their traits are attuned to the approach process or avoidance process with people sensitive to BIS displaying more levels of anxiety (Carver & White, 1994). Research requires to inquire in the Indian context what are the higher educational goals and incentives that enable adaptive coping or prevent maladaptive coping. During the adolescent years in college multiple threats and incentives arise and students respond with priorities of approach and avoidance movements defining personality. Differential affective experiences follow and eagerness and elation dominate one end of the spectrum whereas anxiety and fearfulness dominate the other end.

The personality factors of emotionality and conscientiousness were postulated as antecedent predictors of coping across the ability groups. It was also hypothesized that anxiety, a facet of emotionality predicts coping across the ability groups. Research on coping during

adolescence has applied as well as basic importance and is a significant antecedent of self-regulation processes. Emotion, cognition, behaviour and the environment are self-regulated during developmental coping with long term consequences for future adjustment (Compas, Connor-Smith, Saltzman, Harding, & Wadsworth, 2001). Anxiety, a facet of emotionality, was hypothesized to predict coping differentially across ability groups.

Hypothesis 9: The correlation measure linking anxiety to coping was postulated to be higher for the ability group I students when compared to the ability group II students.

If anxiety levels were significant then it was hypothesized a negative relationship exists between coping and academic performance.

Hypothesis 10: If the anxiety levels were significant then it was postulated that a negative relationship exists between coping and academic performance with a stronger relationship for the students of ability group I when compared to the students of ability group II.

Social Support is a lower order construct trying to ascertain the presence of trusted support within the family of coping and additionally exists as a latent variable. Social support probably is influenced by within-person factors, including both long-standing traits on the one hand, and temporal changes in attitude or mood on the other. Both of these may influence the perception of whether support is available or has been provided (Procidano & Heller, 1983). Emotionality factor was hypothesized to predict social support in this research. Social Support is a significant factor enabling integration and ameliorating distress encountered in an Institution of Higher Education (Solberg & Viliarreal, 1997). Social Support can improve coping by meeting support needs through information, empathy, encouragement and communication (Stewart, et al., 2001).

Hypothesis 11: It was hypothesized that ability group I students would link more strongly emotionality trait to social support when compared to the students of ability group II.

The primary developmental concerns of undergraduates are academic performance, physical conditioning, dating and career selection (Knight & Lee, 2008). Overreaction to hassles accurately predicts the influence of everyday stressors on physical and mental health. The scales of academic demands yield to be operationalized with personality factors as an antecedent, permitting the estimation of interaction between personality and hassles. Academic demands were hypothesized in this research to predict coping across ability groups.

Hypothesis 12: The students of ability group I were postulated to link more strongly from emotionality factor to demands made when compared to the students of ability group II.

Hypothesis 13: The students of ability group I were postulated to link more strongly from conscientiousness factor to demands made when compared to the students of ability group II.

The scales of Course Experience Questionnaire viz. Good Teaching, Clear Goals and Standards, Appropriate Workload, Appropriate Assessment and Generic Skills has statistically significant correlation with satisfaction (Richardson, 2010). This measure was operationally defined as teaching support to ascertain the presence of trusted teachers and was hypothesized in this research as a predictor of demands made, enabling coping. The teaching learning process and the assessment system is critical to promoting competence, autonomy and connectedness through appropriate academic demands made in the context of the higher educational process.

Hypothesis 14: A stronger relationship was postulated to link the students of ability group I from teacher support to demands made when compared to the students of ability group II.

Hypothesis 15: The students of ability group I would link demands and maladaptive coping with a stronger relationship when compared to the students of ability group II. Ability group I students would link demands to adaptive coping with a weaker relationship when compared to the students of ability group II.

Hypothesis 16: It was postulated that emotionality factor would link to maladaptive coping more strongly for the students of ability group I when compared to the students of ability group II. It was postulated that emotionality factor would link to adaptive coping more weakly for the students of ability group I when compared to the students of ability group II.

4.4 Links between Student Engagement, Burnout and Coping

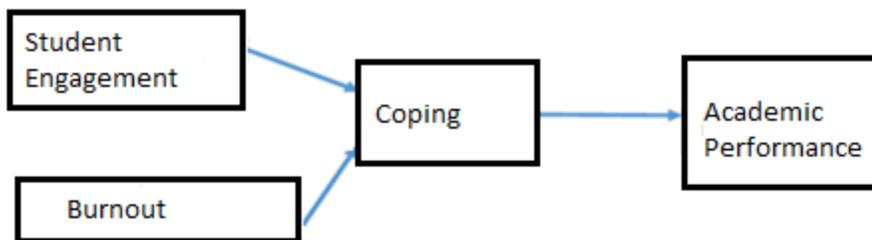


Figure 5. Links between Student Engagement, Burnout and Coping

The paths from student engagement, burnout to coping determining academic performance would be explored using structural path modelling. The scales of the student engagement and burnout confirmed in the cognitive model of student engagement and the coping scales confirmed in the cognitive model of coping would be used in establishing differences among ability groups.

4.5 Conclusion

This research speculated on the existence of indifference in the current higher education process towards the ability differences of students. The current higher education system compares and differentiates between students using an evaluation wherein the norms are dictated by the knowledge and assessment of an erudite teacher. Competency development amongst the learners were not prioritized and the current psychometric evaluation seeks standardization, whereas higher educational institutions increasingly adopt competence assessment programmes (Bartman, 2008). Gaps were identified and the key concern remains the differences in the student engagement

captured by the cognitive model of student engagement were hypothesized to drive the differences in coping. The complex conceptual models were theorized and the outcomes in both cognitive models were to be explored for differential links between the student engagement, burnout and coping across ability groups.

CHAPTER 5

ANALYSIS

5.1 Structural Path Modelling

The structural path modelling technique is a useful methodology in testing theories that contain multiple equations involving dependence relationships simultaneously. Structural equation modelling is defined as a multivariate technique that combines aspects of factor analysis and multiple regression to simultaneously examine a series of interrelated relationships among the measured variables and latent constructs, as well as between latent constructs (Hair, Black, Babin, & Anderson, 2018). The history of the field corresponds to three traditions: a) path analysis, originally developed by the geneticist Sewall Wright later picked up in sociology by Duncan b) simultaneous-equation models, as developed in economics by Haavelmo and Koopmans and, c) factor analysis, from psychology by Spearman, Lawley and Anderson & Rubin (Rosseel, 2012). The three traditions were ultimately merged in the early 1970s by the research of Jöreskog, Hauser & Goldberger, Zellner, Keesling, Wiley and Browne. Eventually Karl Jöreskog and Dag Sörbom developed a computer program by the name LISREL that popularized structural equation modelling (Rosseel, 2012). Structural equation modelling is a powerful statistical technique that combines measurement model or the confirmatory factor analysis and the structural model into a simultaneous statistical test (Hoe, 2008). This technique is useful in inferential data analysis and hypothesis testing when relationships between latent constructs are grounded in theory. Structural path modelling was chosen to compare path differences across ability groups when subject to the cognitive models of student engagement and coping.

5.2 Structural Path Modelling and Sample Size

The minimum sample size requirement had to be estimated prior to data collection for sufficient statistical power (McQuitty, 2004). Garver and Mentzer (1999), and Hoelter (1983) proposed a ‘critical sample size’ of 200 while a rule of thumb specifies 10 participants per free parameter estimated (Hoe, 2008). The researcher utilised his expertise in choosing sampling method to maximize representation to the population of interest. Stratified sampling was essential to ensure students with diverse academic performance across four different engineering programmes of mechanical, electronics & telecommunication, computer and information technology had to be represented. Stratified sampling is a random sampling scheme where the sampling frame is divided into subsections comprising groups that are relatively homogeneous with respect to one or more characteristics and a random sample from each stratum is selected (Collins, Onwuegbuzie, & Jiao, 2007).

5.3 Participants

The survey was carried out in western India in a standalone institution of higher education affiliated to a state university and approved by the national regulatory bodies. Twelve students completed the pilot survey forms with 152 questions from 38 instruments on 3rd November 2017. The researcher distributed the questionnaire to students who volunteered to fill across various programmes within the standalone institution. Subsequently, another 426 students enrolled in four programmes of engineering completed the survey during the period from 23rd January 2018 to 18th April 2018 with a total of 438 responses. The intent of the survey was explained briefly and difficult words as deemed during the pilot study were explained. During the filling up of the questionnaire the researcher was available to clarify all the queries that arose in the classroom. The students completed the questionnaire within an hour with a minimum completion time of forty

minutes. The data classification of the survey respondents are shown in Table 1. The completed survey forms were coded personally by the researcher using Microsoft Excel 2013 and the entire exercise was completed by July 2018. The missing data were verified to be less than 10 percent of the total data prior to commencement of analysis. The missing data were estimated using the maximum likelihood estimator in statistical package for social sciences (SPSS). R program (version 3.4.10) using RStudio application run on 64 bit platform was used for analysis. “Lavaan” package was utilized for structural path modelling and “semPlot” package for the graphical output.

Table 1. Data classification of the survey respondents.

Age	Urban/ rural	Gender	Programme
(17-18)=130	Urban= 226	Male=313	Mechanical=129
(19-20)=148	Rural=126	Female=124	E.T.C = 141
(21-22)=135			Computers= 102
(≥23)= 09			I.T. = 62
Not recorded=01	Not recorded=86	Not recorded=01	

Note: E.T.C= Electronics & Telecommunication; I.T. = Information Technology

5.4 Terminology for Structural Path Modelling

A discussion of structural path modelling must commence with terminology used in the context and explanation of associated graphics (Schreiber, Nora, Stage, Barlow, & King, 2006). Latent construct is the operationalization of a construct using measured or observed variables in structural equation modelling (Hair, Black, Babin, & Anderson, 2018). The latent variables are characterised by the measured variables and the arrow indicates the causal effect latent variables have on the measured variables. A directed arrow between two latent variables in a structural path

diagram would be indicative of the strength of a hypothesized path relationship (Schreiber, Nora, Stage, Barlow, & King, 2006). Exogenous variables are constructs that exert influence on endogenous variables and are determined by factors outside of the model. Endogenous variables are constructs that are determined by exogenous variables and other endogenous variables in a model. Causation is the principle by which cause and effect are established between two variables using theoretical support.

5.4.1 Chi Square (χ^2)

Chi Square is a statistical measure of difference used to compare the observed and estimated covariance matrices. It is the only measure that has a direct statistical test as to its significance and forms the basis of other goodness of fit measures. The goodness of fit measure indicated how well a specified model reproduces the covariance matrix among the indicator variables (Hair, Black, Babin, & Anderson, 2018).

5.4.2 Degrees of freedom

The number of bits of information available to estimate the sampling distribution of data after all the model parameters are estimated during structural path modelling. In structural path models, degrees of freedom are the number of non-redundant co-variances / correlations (moments) in the input matrix minus the number of estimated coefficients (Hair, Black, Babin, & Anderson, 2018).

5.4.3 Root Mean Square Error of Approximation (RMSEA)

One of the most widely used measures that attempts to correct for the tendency of the Chi-square test statistic to reject models with a large sample or a large number of observed variables. It represents how well a model fits a population not just a sample used for estimation and corrects for model complexity and sample size by incorporating the same in the computation. Although

research literature establishes cut-off as values lower than 0.06 (Schreiber, Nora, Stage, Barlow, & King, 2006), absolute cut-off values for RMSEA are considered inadvisable (Hair, Black, Babin, & Anderson, 2018).

5.4.4 Standardized Root Mean Square Residual (SRMR)

Error in prediction for each covariance term creates a residual and when covariances are used as input, standardised root mean square residual is estimated for comparison. A rule of thumb is that an SRMR over 0.1 suggest a problem with fit (Hair, Black, Babin, & Anderson, 2018), whereas literature deems $SRMR \leq 0.08$ as acceptable (Schreiber, Nora, Stage, Barlow, & King, 2006).

5.4.5 Normed Chi Square

This goodness of fit measure is a simple ratio of χ^2 to the degrees of freedom for a model. Generally $\chi^2 : (\text{degrees of freedom ratios})$ on the order of 3:1 or less are associated with better fitting models (Hair, Black, Babin, & Anderson, 2018).

5.4.6 Tucker Lewis Index (TLI)

The TLI is conceptually a comparison of the normed Chi Square values for the null and specified model which to some degree takes into account model complexity. A model with higher value that approach 1 suggests a better fit than a model with a lower value.

5.4.7 Comparative Fit Index (CFI)

The CFI is a normed incremental fit index with values above 0.90 are usually associated with a model that fits well.

5.5 Analysis of the cognitive model of student engagement

The aggregate data after coding were split into two data bases on sorted aggregate academic performance. Ability group I constitutes students sampled for the aggregate academic performance

from 23.17 percentage to the median value of 61.59 percentage and students with aggregate academic performance from 61.59 percentage to 96 percentage constitutes ability group II. The social cognitive theory was the basis for traits of emotionality and conscientiousness to be dynamically accrued by ability groups. The statistical rationale for the split was justified by the minimum sample size requirement of 68 for degrees of freedom greater than 400 and statistical power of 0.9 (McQuitty, 2004). As a rule of thumb any number above 200 is considered adequate to provide sufficient statistical power for data analysis in structural path modelling (Hoe, 2008). All the variables chosen had scales larger than two in order to minimize bias. For the model to converge and arrive at a proper solution a sample size of 150 will usually be sufficient (Iacobucci, 2009). The analyzed model has degrees of freedom of 2602 and a sample size of 219 justifying the statistical power requirement greater than 0.9 for a close fit. The confirmed model had seventeen scale instruments and consequently the sample size of 219 exceeded the minimum sample size requirement of 170 (Hoe, 2008). There were no alterations done to secure the model fit other than elimination of scales with negative variances.

The lavaan program converged for ability group I after 153 iterations, whereas lavaan converged after 155 iteration for ability group II. The fit statistics across both the ability groups are summarized in Table 2. The normed Chi-Square equals 1.511 for ability group I was a better fit as compared to ability group II where it equals 1.616 and are both considered acceptable (Hair, Black, Babin, & Anderson, 2018). The traditional hypothesis testing using a Chi-Square test outperforms all the other goodness of fit indices (Marsh, Hau, & Wen, 2004). Fit indices of Confirmatory Fit index (CFI) and Tucker Lewis index (TLI) were better for group II whereas root mean square error of approximation (RMSEA) and standardized root mean square residual (SRMR) were better for Group I. The 90 percent confidence interval for RMSEA for ability group

I lies between 0.045 and 0.051 whereas it lies between 0.050 and 0.056 for ability group II confirming the model fit. RMSEA and SRMR were considered acceptable for both the models (Schreiber, Nora, Stage, Barlow, & King, 2006).

Table 2. Fit Statistics for the engagement models.

Fit Statistics	Ability grouping up to the 50 th percentile (Ability Group I)	Ability grouping greater than the 50 th percentile (Ability Group II)
Chi-Square	$\chi^2(2602, N=219)=3932.685, p=0.00$	$\chi^2(2602, N=219)=4204.938, p=0.00$
Comparative Fit Index (CFI)	0.762	0.765
Tucker-Lewis Index (TLI)	0.753	0.756
RMSEA	0.048	0.053
SRMR	0.079	0.084

The cognitive model postulated that student engagement and burnout would be differentiated by ability groups amidst a complex interaction of personality traits, social support and teacher support in the context of institutional demands. The correlation between emotionality resource and student engagement was estimated using Wright's path tracing rules. The correlation estimated at 0.123 for the ability group I in comparison with a value of -0.017 for the academic achievers of ability group II. The standardized correlation estimated in Table 3 reveals higher association of emotionality resource to student engagement for the academic underachievers of ability group I. The estimates were insignificant for both the ability groups rejecting Hypothesis 1. Table 3 additionally reveals correlation of emotionality to burnout as 0.002 for the students of

ability group I as against a value of 0.133 for the academic achievers of ability group II rejecting Hypothesis 2.

Table 3. Correlation measures of the structural path engagement models

Correlation	Estimate (β)		Standard Error		Standardized Latent Variable(B)	
	Ability Group I	Ability Group II	Ability Group I	Ability Group II	Ability Group I	Ability Group II
Student Engagement ~ Emotionality	0.031	-0.489**	0.131	0.309	0.123	-0.017
Student Burnout~ Emotionality	0.002	0.315**	0.103	0.190	0.002	0.133

Note:* implies $\rho < 0.01$ hence statistically significant; ** implies $\rho < 0.0001$ hence statistically significant and considered meaningful for discussion.

The regressions in Table 4 of emotionality resources with social support was statistically significant at 0.260 for the ability group II students when compared to the statistically significant value of 0.234 for the ability group I students . However, Hypothesis 3 of a higher value of regression between emotionality and social support for the weaker students of ability group I was rejected. Social support provides pathways of relief from the stressful challenges of higher education but do not guide students to overcome the developmental challenges (Alarcon, Edwards, & Menke, 2011). Thus, the weaker students from ability group I link emotionality factor weaker than expected to social support in comparison to the better performers of ability group II. This raises questions on the adequacy of support for the weaker students of ability group I.

Table 4. Standardized regressions for the engagement models.

Regressions	1	2	3	4	5	6
1. EMO			0.234*	0.001		
2. TEACHS				-0.850**		
3. SOC	0.260*			0.003		
4. DEM	0.158	-0.963**	-0.029		0.900**	-0.843**
5. BUR				0.904**		
6. ENG				-0.876**		

Note: Standardised structural paths are presented for Ability Group I above the diagonal and for Ability Group II below the diagonal. EMO=Emotionality; TEACHS=Teacher Support; SOC=Social Support; DEM=Demands; BUR=Burnout; ENG= Student Engagement.

* implies $p < 0.01$ hence statistically significant; ** implies $p < 0.0001$ hence statistically significant and considered meaningful for discussion.

The conscientiousness personality trait was discarded to secure model fit querying cognitive engagement aspects of organization, hard work, carefulness, and thoroughness across both ability groups. Consequently, the relationships from conscientiousness personality factor to demands made in Hypothesis 4 across ability groups could not be tested. The structural paths in Table 5 linking emotionality trait and demands were not statistically significant to test the relationship made in Hypothesis 5 across both the ability groups. However, aligned with the thinking behind the research model, the structural path in Table 5 between emotionality resource and demands for

the ability group I students was stronger at value of 0.16 when compared to the value of 0 for the ability group II.

Table 5. Standardized structural paths for the engagement models.

Measure	1	2	3	4	5	6
1. EMO			0.084	0		
2. TEACHS				-0.85**		
3. SOC	0.24*			0		
4. DEM	0.16	-0.96**	-0.03		0.9**	-0.84**
5. BUR				0.9**		
6. ENG				-0.88**		

Note: Standardised structural paths are presented for Ability Group I above the diagonal and for Ability Group II below the diagonal. EMO=Emotionality; TEACHS=Teacher Support; SOC=Social Support; DEM=Demands; BUR=Burnout; ENG= Student Engagement.

* implies $p < 0.01$ hence statistically significant; ** implies $p < 0.0001$ hence statistically significant and considered meaningful for discussion.

The structural path linking teacher support to demands made was statistically significant at -0.85 for ability group I when compared to -0.96 for ability group II rejecting Hypothesis 6 as evidenced in Table No. 5. The structural path between demands and student engagement is a statistically significant negative value at -0.84 for ability group I when compared to -0.88 for ability group II rejecting Hypothesis 7. The hypothesis is rejected for the strength of the negative relationship with stronger negative path for the better performers of ability group II. Nearly

uniform statistically significant structural path values of 0.9 exist between demands made and student burnout across both the ability groups rejecting Hypothesis 8. The Clear Goals and Standards and Appropriate Assessment scales of teaching support during analysis were found to have negative variances and had to be discarded for securing model fit across both the groups. Developmental Challenge and General Social Mistreatment measuring demands had negative variances compelling it to be dropped to achieving model fit. The dropped scales provide insights linking demands to student engagement. These scales provide cues for the negative path relationship between teacher support and demands.

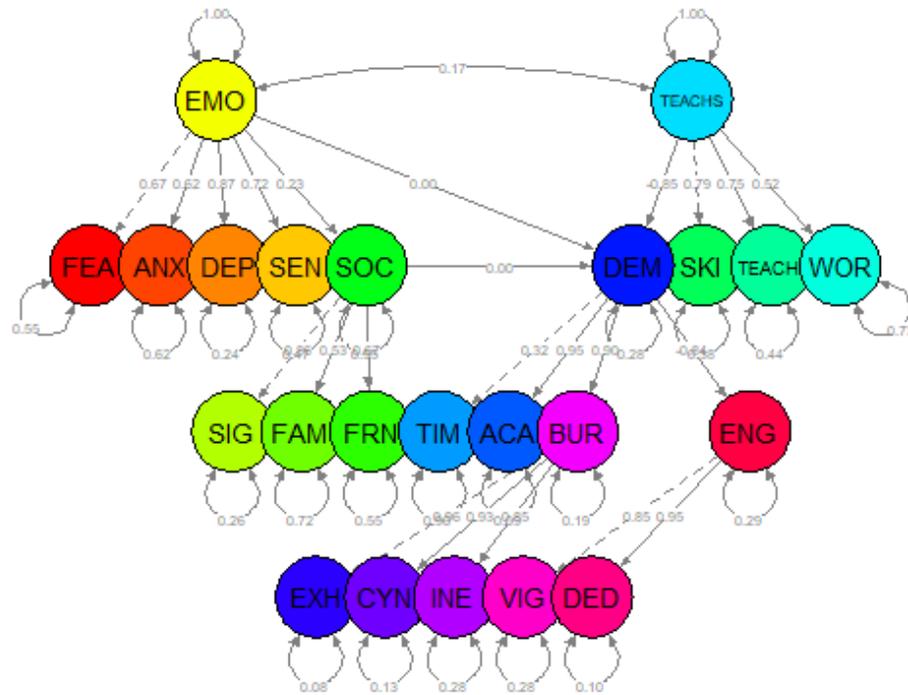


Figure 6 Cognitive model of student engagement for ability group I

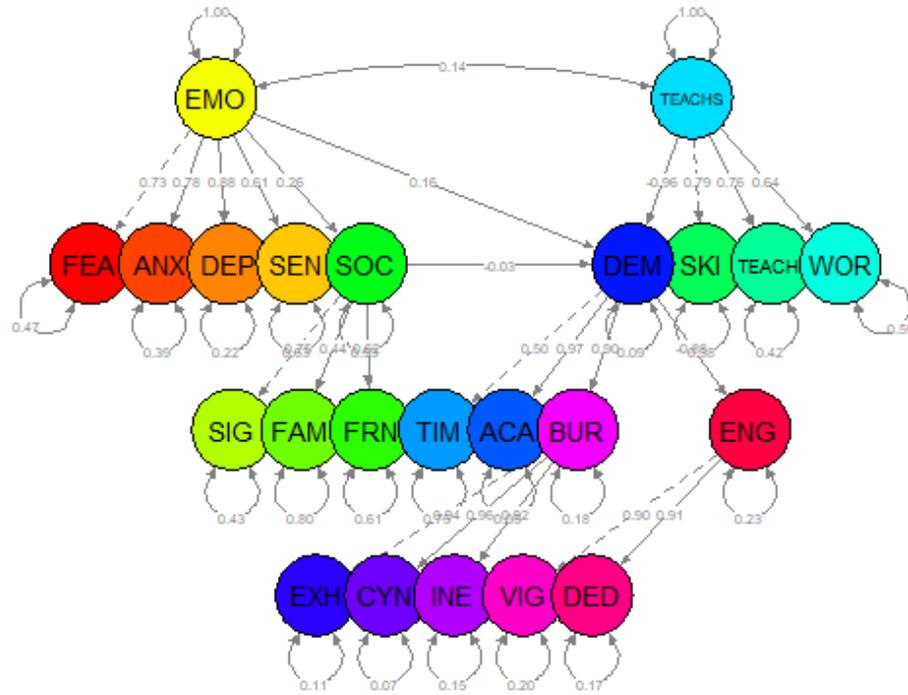


Figure 7 Cognitive model of student engagement for ability group II

5.6 Analysis of the cognitive model of coping

The cognitive model converged after 132 iterations for ability group I when compared to 160 iterations for ability group II. The analysed model had degrees of freedom of 3211 and sample size of N= 219 justifying the statistical power requirement of a close fit. The hypothesized existence of ability grouping provided the basis for the split on the academic performance. The fit statistics are summarised in Table 6.

Table 6. Fit Statistics for the coping models.

Fit Statistics	Ability grouping up to the 50 th percentile (Ability Group I)	Ability grouping greater than the 50 th percentile (Ability Group II)
Chi-Square	$\chi^2(3211, N=219)= 5159.813, p=0.00$	$\chi^2(3211, N=219)= 5457.338, p=0.00$
Comparative Fit Index (CFI)	0.632	0.653
Tucker-Lewis Index (TLI)	0.620	0.641
RMSEA	0.053	0.057
SRMR	0.089	0.091

Differences and similarities between the groups were important for research. A frequently used rule of thumb expects the number of scales in the survey to be multiplied by a factor of 10 (Hoe, 2008). In the confirmed model 21 scales were confirmed and hence 210 filled survey forms could be used to generate a structural path model.

In the analysis two ability group models had been generated by 219 survey responses. The normed Chi-Square equals 1.606 for ability group I was a marginally better fit as compared to ability group II where it equals 1.699 and were both considered acceptable (Hair, Black, Babin, & Anderson, 2018). Fit indices of Comparative Fit Index (CFI) and Tucker Lewis Index (TLI) were better for group II whereas root mean square error of approximation (RMSEA) and standardised root mean square residual (SRMR) were better for group I. RMSEA was acceptable for both ability groups (Schreiber, Nora, Stage, Barlow, & King, 2006) and SRMR was considered acceptable for the model confirmed by ability group I (Iacobucci, 2009). The 90 % confidence interval for

RMSEA laid between 0.50 and 0.55 for ability group I as compared to 0.54 and 0.59 for ability group II. The traditional hypothesis testing using a Chi-Square test confirming both the ability group models outperforms all the other goodness of fit indices and instances of Type I error have been reported for models considered mis-specified by Hu and Bentler (Marsh, Hau, & Wen, 2004).

The correlation of anxiety and coping was traced in the analysis using Wright’s path tracing rules and the Table 7 sums up the computation for both the groups. The hypothesized relationship between anxiety and coping was accepted for both the ability groups and anxiety was established as a significant determinant of coping. The standardised estimate of 0.236 for the better performers of ability group II was marginally lower than the estimate of 0.261 for the students of ability group I. Hypothesis 9 was consequently accepted.

Table 7. Correlation estimates for coping models

Correlation	Estimate (β)		Standard Error (S.E.)		Standardized Variable (B)	
	Ability Group I	Ability Group II	Ability Group I	Ability Group II	Ability Group I	Ability Group II
Anxiety ~ Coping	0.646**	0.745**	0.362	0.620	0.261*	0.236*

Note:* implies $p < 0.01$ hence statistically significant; ** implies $p < 0.0001$ hence statistically significant and considered meaningful for discussion.

The regression between coping and aggregate academic performance in Table 8 is statistically significant only for the ability group II with an estimate of -0.255 when compared to -0.136 for the ability group I. These values explain the influence of anxiety in the system but rejects Hypothesis 10.

Table 8. Regressions Estimated for coping models

Regressions	1	2	3	4	5	6
1. AGG. PERF.						-0.136
2. EMO				0.225*	0.359**	0.225*
3. TEACHS					-0.468**	
4. SOCS		0.260*			-0.339**	
5. DEM		0.270*	-0.501**	-0.363**		0.788**
6. COP	-0.255*	0.159			0.898**	

Note: Standardised regressions are presented for Ability Group I above the diagonal and for Ability Group II below the diagonal. AGG. PERF. = Aggregate Performance; EMO = Emotionality; TEACHS = Teacher Support; SOCS = Social Support; DEM = Demands; COP = Coping.

* implies $\rho < 0.01$ hence statistically significant; ** implies $\rho < 0.0001$ hence statistically significant and considered meaningful for discussion.

The hypothesized relationship between emotionality and social support is confirmed across both the ability groups through statistically significant model paths (Hoe 2008) as revealed in Table 9. The structural path coefficient is 0.22 for the students of ability group I that is marginally lower the structural path coefficient of 0.26 for the students of ability group II. These values compel the rejection of Hypothesis 11 that the better performing students of ability group II would have weaker structural paths to social support.

Table 9. Standardized structural paths for the coping models

Measure	1	2	3	4	5
1. EMO			0.22*	0.36**	0.22*
2. TEACHS				-0.47**	
3. SOCS	0.26*			-0.34**	
4. DEM	0.27*	-0.5**	-0.36**		0.79**
5. COP	0.16			0.9**	

Note: Standardised structural paths are presented for Ability Group I above the diagonal and for Ability Group II below the diagonal. EMO=Emotionality; TEACHS=Teacher Support; SOCS=Social Support; DEM=Demands; COP=Coping.

* implies $p < 0.01$ hence statistically significant; ** implies $p < 0.0001$ hence statistically significant and considered meaningful for discussion.

The hypothesized relationship between emotionality factor and demands was confirmed differentially across the ability groups as depicted in Table 9 (Hoe, 2008). The path between the emotionality factor and demands made was statistically significant for the ability group II with a value of 0.27, but the same path was statistically significant and needs to be critically examined for practical implications for the underachievers of ability I with a path value of 0.359. These values enable the acceptance of Hypothesis 12.

The conscientiousness resource was not confirmed during the structural equation analysis and had to be discarded to secure model fit for both the ability groups. The negative variances of conscientiousness latent variable implying task engagement struggled for confirmation with the rest of the latent variables used in this research. Hence, the relationship speculated in Hypothesis 13 between conscientiousness resource and demands made could not be tested.

The scales of teacher support confirm satisfaction of the surveyed students but are negatively associated to the demands made with a regression coefficient of -0.468 for the students of ability group I in comparison to -0.501 for the better performers of ability group II. The standardized structural path between teacher support and demands for the better performers is a stronger path compared to the weaker performers confirming the rejection of Hypothesis 14 as revealed in Table 8 (Hoe, 2008). The scale of Appropriate Assessment had not been confirmed in the path models due to negative variances across both the ability groups which provides cues with regard to the negative regressions between hassles associated with demands made and teacher support.

The strongest path in the entire cognitive model is the prediction of coping by demands made rejecting Hypothesis 15. There is a stronger prediction of coping by the academic demands made in case of the better performing students from ability group II as revealed in Table 8 with a regression coefficient of 0.898 in comparison to a value of 0.788 for the weaker performers of ability group I. Table 9 also reveals the significant ability of demands to predict maladaptive coping across both the ability groups with higher standardized values for ability group II. The scales confirming adaptive coping were rejected and scales confirming maladaptive coping were confirmed in the structural path models across ability groups.

Emotionality was established as a statistically significant predictor of coping only in ability group I but is not considered a significant predictor in case of ability group II. Hence, the hypothesized relationship was accepted only for ability group I and rejected in case of ability group II. The regressions in Table 8 confirm the same conclusions with a standardized estimate of 0.225 in case of ability group I as opposed to a standardized estimate of 0.159 in case of ability group II.

Consequently, significant differential path across ability groups exists between emotionality factor and maladaptive coping confirming Hypothesis 16.

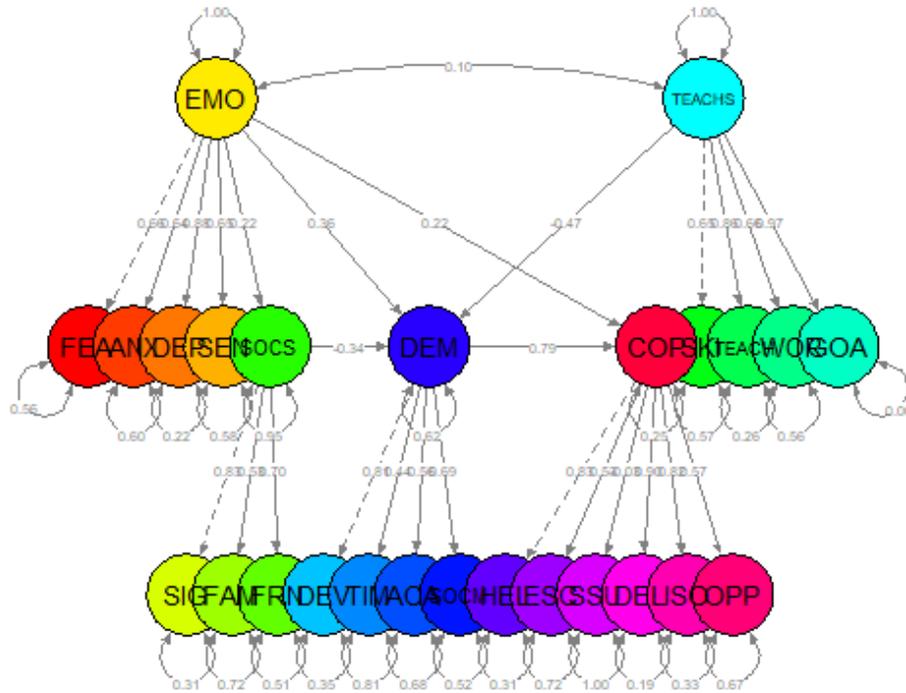


Figure 8. Cognitive model of coping for ability group I

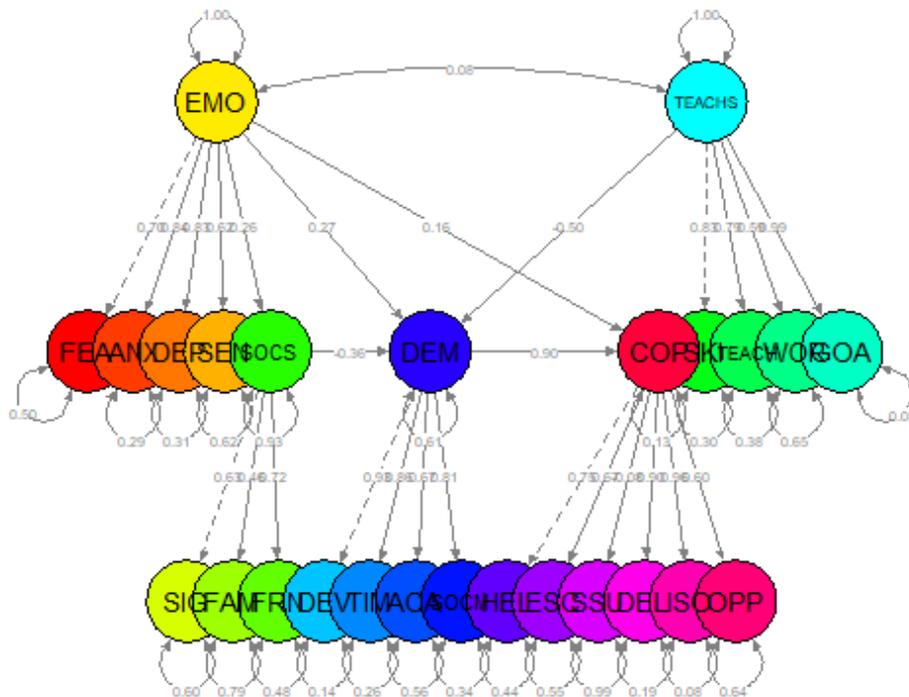


Figure 9. Cognitive model of coping for ability group II

5.7 Analysis of links between Student Engagement, Burnout and Coping

The links between student engagement, burnout and coping were explored using scales confirmed in the cognitive model of student engagement and in the cognitive model of coping. The structural path model converged after 181 iterations for ability group I while ability group II model converged after 118 iterations. The structural path model had 11 confirmed scales to link student engagement, burnout and coping utilizing 219 observations. The scales of Vigour, Dedication, Inefficacy, Exhaustion and Cynicism were confirmed from the cognitive model of student engagement. Helplessness, Escapism, Social Support, Delegation, Isolation and Opposition were the scales confirmed from the cognitive model of coping. The fit statistics are

shown in Table 10. The normed Chi-Square statistic for ability group I was 1.826 when compared to 1.822 for ability group II and were both considered acceptable (Hair, Black, Babin, & Anderson, 2018).

Table 10. Fit measures

Fit Statistics	Ability Group I	Ability Group II
Chi-Square	1781.243	1777.209
Tucker-Lewis Index (TLI)	0.716	0.759
Comparative Fit Index (CFI)	0.732	0.773
RMSEA	0.061	0.061
SRMR	0.081	0.076

Table 11. Regressions between Student Engagement, Burnout and Coping

	1.	2.	3.	4.
1.AGGPERF		-0.134		
2. COPE	-0.246*		0.592**	1.181**
3. ENG		0.403**		
4. BURN		1.129**		

Note: Standardised regressions are presented for Ability Group I above the diagonal and for Ability Group II below the diagonal. AGG. PERF. = Aggregate Performance; COPE = Coping; ENG= Student Engagement; BURN= Burnout.

* implies $p < 0.01$ hence statistically significant; ** implies $p < 0.0001$ hence statistically significant and considered meaningful for discussion.

A statistically significant negative covariance exists between student engagement and burnout confirmed in the structural path models across ability groups. The covariance is -0.768 for the weaker students of ability group I when compared to -0.794 for the better performers of ability group II as shown in Figures 10 and 11. The regression between engagement and coping is 0.592 for the weaker students of ability group I when compared to 0.403 for the better performers of ability group II as shown in Table 11. The regression between burnout and coping is 1.181 for the weaker students of ability group I which is marginally higher than the value of 1.129 for the better students of ability group II as shown in Table 11. A statistically significant negative regression exists between coping and academic performance for the students of ability group II with a value of -0.246 when compared to an insignificant regression of -0.134 for the weaker students of ability group I as shown in Table 11.

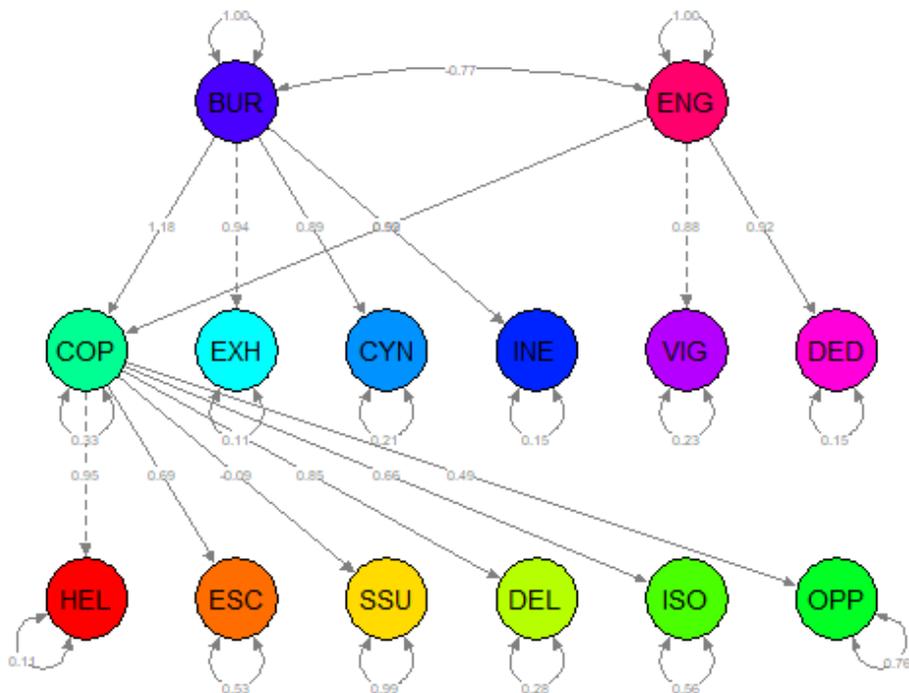


Figure 10. Links between Student Engagement, Burnout and Coping for ability group I

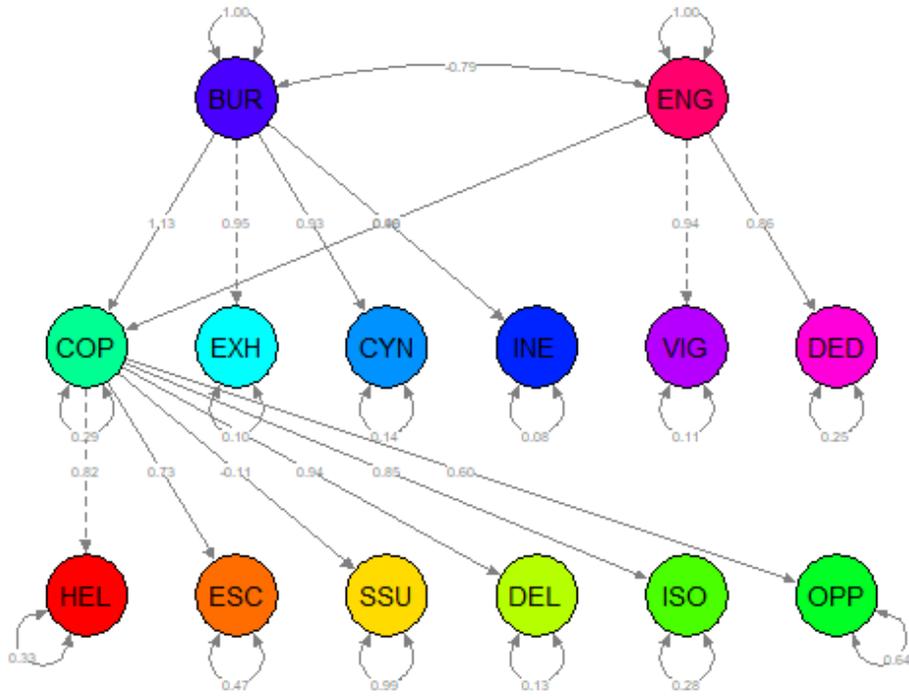


Figure 11. Links between Student Engagement, Burnout and Coping for ability group II

CHAPTER 6

DISCUSSION AND CONCLUSION

Higher educational institutions are progressive centres of learning driving a nation's quest for global competitiveness by enabling students a process that integrates academics to the world of work. Engineering higher education is a major stakeholder in developing national competitiveness in the technology sector. A standalone higher educational institution in engineering was quantitatively investigated empirically for differences in student engagement and coping among ability groups. Cognitive models of student engagement and coping were formulated and examined using the theoretical lens of social cognitive theory, self-determination theory and conservation of resources theory. Literature reviewed enabled identification of gaps and contextual research questions crystallized the objectives. The process of data collection was controlled and systematic. Differences in groups based on ability amidst behavioural, cognitive and psychological perspectives were tested in an engineering higher educational context in India. The models of engagement and coping were linked to academic performance of students through structural path models. In conclusion, structural path models explored links between the constructs of student engagement, burnout and coping using scales confirmed across the initial cognitive models of student engagement and coping.

The structural path analysis enabled simultaneous testing of dependence relationships between latent constructs based on theory established in research literature. The research using social cognitive theory assumed that, academic performance differentiated students into ability groups enabling personality traits during institutional socialization. The personality traits linked to ability groups were assumed to differentially predict the important constructs of student

engagement and coping, amidst a complex interaction of social support and teacher support when academic demands were made.

The non-confirmation of the conscientiousness personality trait across both the tested cognitive models and ability groups was a concern that requires attention by all stakeholders of higher education. Conscientiousness personality trait was not confirmed as a significant resource during the structural path modelling implying the absence of task-related engagement across ability groups. The students could be explained as cognitive misers reluctant to expend cognitive resources and avoiding effort in engaging with academic tasks (Crisp & Turner, 2012). Instead, the limited personal resources are expended in social cognition not captured by the models. Emotions and its regulation matter in the context of higher education, confirming emotionality personality trait in cognitive models of student engagement and coping across ability groups. Emotional regulation depletes cognitive resources when gearing up to meet the academic developmental challenge increasing student burnout (Baumeister, Bratslavsky, Muraven, & Tice, 1998). This explains the higher correlation between emotionality trait and burnout for the better academic performers when compared to the weaker performers in the cognitive model of student engagement. Differential coping across ability groups exists with an insignificant structural path between emotionality trait and coping for the better performers of ability group II when compared to a significant path for the weaker performers of ability group I (Kurian & Mekoth, 2019).

In the concluding structural path models, differences existed among ability groups with higher student engagement for the weaker students of ability group I when compared to the better performers of ability group II. This higher engagement resulted in a stronger regression link to coping for the weaker students of ability group I. Maladaptive coping had been confirmed in the cognitive model of coping and a statistically significant negative regression between coping and

academic performance differentiated the better performers of ability group II from the weaker performers of ability group I. This result could be partially explained by the social cognitive theory questioning the relevance of higher education to enable desirable skills and competencies of the better performers of ability group II (Bryson & Hand, 2007). The higher education process could be addressing the developmental challenges of the weaker students ignoring the developmental goals of the better performers. This inferred indifference could partially explain the negative paths between demands and student engagement. Rigorous engagement with the higher educational processes overcoming the hassles associated with demands can enable competence, relatedness and autonomy promoting adaptive coping.

The cognitive model of student engagement measured transient engagement states with questions that were framed using the present tense. The scales of Time Pressure and Academic Alienation associated with demands were confirmed. The consequent cognitive coping model using coping scales was measured in the same context using a combination of the past and present tenses. In addition to the scales of Time Pressure and Academic Alienation, Developmental Challenge and General Social Mistreatment scales associated with demands were confirmed. The absence of Developmental Challenge scale associated with demands in the cognitive model of student engagement was a concern. The absence of developmental challenge across ability groups could partially explain the negative path relationship between demands and student engagement. Higher educational processes mapping developmental concerns among ability groups could contribute to improved student engagement reducing possibilities of student burnout. Student engagement was essential to the ascent of internal ladders and consequent fulfillment of the basic psychological needs of competence, relatedness and autonomy. Engagement across ability groups develops awareness of personal potentialities with choices, limitations and realities. .

Anxiety, a facet of the emotionality resource was confirmed as an important predictor of coping across both the ability groups. These levels of anxiety might reduce maladaptive coping leading to better aggregate academic performance in resilient students with resources of low emotionality personality factor. The high levels of anxiety could dictate dominance of avoidance over approach and the emotional respite gained through avoidance provide the energy to the better performers for more effective subsequent approach responses. Grays's theory holds that activity in the behavioural inhibition system is responsible for experience of negative feelings (Carver et al. 2000). The high levels of anxiety coupled with absence of conscientiousness trait and confirmation of emotionality traits could possibly be explained by student procrastination.

The lower order constructs of coping posing threats to competence in the form of Helplessness and Escapism had defined paths in both the ability groups whereas Problem Solving and Information Seeking scales were discarded due to negative variances. The students who show prolonged use of ways of coping such as Helplessness and Escapism can be considered at developmental risk (Skinner, Edge, Altman, & Sherwood, 2003). These ways of maladaptive coping prevent resources mobilization during coping and, contributes to the development of coping vulnerabilities. The structural equation models confirmed the existence of threats to connectedness whereas adaptive coping through Social Support scale struggled for confirmation (Kurian & Mekoth, 2019). The scale of Self-Reliance was not confirmed due to negative variances across both the ability group models. Isolation and Delegation were scales confirmed in these models that threaten information, empathy and encouragement from trusted connections. The structural path models for both the ability groups confirmed Opposition a scale that threatens student autonomy. Accommodation and Negotiation, the scales that promote autonomy were discarded due to negative variances. The relationship between coping and academic performance was consequently

negative and statistically significant for the weaker performers when compared to the insignificant relationship for the better performers in the cognitive model of coping. Deep learning approaches are consistent with desirable and qualitatively superior outcomes whereas surface approaches are associated with mindless accumulation (Ramsden, 1991). The deep learning approaches are realized when teachers are enabled autonomy to gain mastery and promote and assess competencies using higher order Blooms' cognitive levels.

The better performers could also influence the perception of hassles associated with demands driving the negative paths between teacher support and demands. The regression link between teacher support and demands was a stronger negative relationship for the better performers of ability group II when compared to the weaker performers of ability group I in the cognitive models of student engagement and coping. The negative path relationship was stronger in the cognitive model of student engagement when compared to the cognitive model of coping. The Clear Goals and Standards and Appropriate Assessment scales of teaching support during analysis were found to have negative variances and had to be discarded for securing model fit across both the groups in the cognitive model of student engagement. In the cognitive model of coping only the Appropriate Assessment scale had to be discarded to secure model fit. The absence of Appropriate Assessment across both the cognitive models was a concern and needs to be addressed by the stakeholders of higher education. Further, students could be associating low levels of competence to the current assessment methods since studies have established strong relationship between learning and assessment (Myers & Myers, 2007). The students surveyed comprised of adolescent boys who could perceive morality and partisanship of teachers in terms of justice and fairness augmenting the negative perception of teacher support (Berg, Meegan, & Deviney, 1998). The absence of Clear Goals and Standards scale in the cognitive model of student

engagement could partially explain the lack of engagement by students across ability groups. If the students are unable to plan their own workload then the perceived structural paths between teacher support and demands could turn negative (Byrne & Flood, 2003). Good teaching scales could encompass a developmental challenge of mathematical skills and use of English as language of instruction.

The structural paths from social support to demands in the cognitive model of student engagement were negligible across ability groups whereas statistically significant negative paths link social support to demands in the cognitive model of coping. Social support provides pathways of relief from the stressful challenges of higher education but do not guide students to overcome the developmental challenges (Alarcon, Edwards, & Menke, 2011). The emotionality factor linked to social support across ability groups in the cognitive models of student engagement and coping. However, the weaker students from ability group I linked emotionality factor to social support when compared to the better performers of ability group II contrary to the expectation. The absence of relatedness, a basic psychological need, affects the process of attachment, undermining belonging and self-perception especially in case of the weaker performers of ability group I (Skinner & Pitzer, 2012). The needs of information, feedback and support were not fulfilled across both the ability groups in the cognitive model of student engagement. When encountering the stressors of the higher education process, the sources of support viz. family, friends and the significant other could promote avoidance causing the structural path between social supports and demands to turn negative paths in the cognitive model of coping. The weaker relationship between emotionality factor and social support for the underperforming students of ability group I has to be analyzed with concern. Under high levels of anxiety, weaker than expected relationships between emotionality and social support could be symptomatic of student burnout for ability group

I. The differential structural paths between emotionality factor and demands could also enlighten the hassles encountered by the academic underperformers of ability group I.

The existence of differences among ability groups linked to emotionality trait had been validated by the structural path models confirmed in this research. Mapping differential developmental challenges to diverse ability groups in order to prevent student burnout is a challenge to the stakeholders of higher education. The high measures of Inefficacy scale across both the ability groups imply poor coping strategies that has resulted in burnout (Alarcon, Edwards, & Menke, 2011). The consequences of Inefficacy confirming student burnout across ability groups has been analyzed using the coping process of higher education in the current context (Kurian & Mekoth, 2019). The trait of emotionality and its scale Anxiety had emerged as significant predictors of weak student engagement leading to differential coping. Resources are invested by students with the expectations of academic and discipline specific competencies that enable a successful transition to the job market. When confronted with a loss of resources there is an individual distress with a financial implication on the family, kin and the society at large.

6.1 Theoretical Contributions

This research attempted to contribute to a holistic and multifaceted perspective of student engagement through the chosen personality factors of emotionality and conscientiousness, the perception of institutional teacher and social support when academic demands were made on students. Student engagement is an important construct linked to resilience and focused research requires to determine cognitive interventions and supports for the weaker students to enhance persistence (Reschly & Christenson, 2012). Affective engagement is also an important driver of academic engagement and institutions require to devise processes that induce positive emotions across ability groups. Higher education processes require student engagement to be confirmed

across ability groups promoting adaptive coping. Conscientiousness trait requires to be confirmed during the higher educational process driving engagement across ability groups overcoming the hassles associated with academic demands made. Cognitive growth and development happens when students regulate the negative emotions at the bottom of the internal ladder to fulfill needs of autonomy, relatedness and competence. Undermining basic psychological student needs does have a negative effect on personal resources as postulated by conservation of resources theory.

This research attempted to promote standardization of coping using (Skinner, Edge, Altman, & Sherwood, 2003) model that coalesces into the important aspects of self-determination, relatedness and competence. Emotionality personality factor was also established as a significant predictor of differential approach-avoidance across ability groups in the coping process enabling academic performance (Kurian & Mekoth, 2019).

6.2 Managerial Implications

Institution's interventions require to address weak engagement of students in response to academic demands made reducing differences in coping amongst ability groups. Institutional autonomy needs freedom to budget resources for planning and implementing interventions across ability groups. Institutions have to identify and engage students across ability groups and reduce the hassles associated with demands made. Failure to engage across ability groups could have a significant impact on student satisfaction during institutional higher educational process.

The personal psychological needs of autonomy, competence and relatedness are proximate outcomes derived from the energy of engagement with academic activities across ability groups of students. The confirmed cognitive model of coping questions the levels of autonomy and consequently the responsibility accepted by students and teachers across ability groups (Bryson & Hand, 2007). Standalone institutions of higher education require to be developed as institutions

promoting multi-disciplinary perspectives required in higher education enhancing student engagement across ability groups. Institutions should integrate diverse programmes promoting student engagement through flexible pathways.

Reform requires to be initiated in the school education to optimize stress and reduce anxiety prior to higher education. Conscientiousness personality factor requires to be promoted prior to the entry into higher education. Family and peers require to be briefed on the higher education process, challenging students to adaptively approach the stressful demands of higher education. Since anxiety levels were high across both the ability groups, the students avoided the stressors magnifying the hassles associated with the demands made and consequently driving maladaptive coping.

Assessment of students' abilities for the programme requires to be linked to institutional interventions and support, enabling students to engage with the academic tasks and consequently cope adaptively. Institutions are required to track behavioural anxiety amongst students of differential abilities utilizing technology and enable approach of academic stressors to adaptively cope enabling academic performance (Kurian & Mekoth, 2019).

Institutions are required to appoint meritorious teachers passionate about multi-disciplinary perspectives benefitting the students (Ministry of Human Resource Development, 2019). Teachers are entrusted with igniting students' minds, providing personal feedback on goals and standards defined. The workload and assessment in autonomous environments reduces hassles associated with demands made enabling development of professional skills and competencies. Skills and desirable competencies need to be relevant and dynamically established for all ability groups of students to further improvements in higher education (Bryson & Hand, 2007). Teaching support has to build a foundation of care, trust and respect for diversity to enable students achieve

competencies by fostering student engagement, contributing to the larger society (Snyder, Lopez, & Pedrotti, 2011).

6.3 Policy Implications

Universities and institutions of higher learning have to enable environments conducive to autonomy, relatedness and competence of learners across ability groups. Autonomy in making choices and flexibly determining areas of interest are essential in enabling deep learning to improve outcomes in higher education (Bryson & Hand, 2007). There exists opportunities to facilitate more autonomous learning, promoting competence and relatedness in the models confirmed by this research (Ryan & Deci, 2000). Autonomy in the context of a higher educational institution means the freedom to innovate, to collaborate, to optimize resources given the local conditions (Ministry of Human Resource Development, 2019). Optimizing the demands of developmental challenge and time pressure, across ability groups during higher education, promotes student and teacher responsibilities and contributes to cognitive engagement. Cognitive engagement prevents the academic alienation and mistreatment inducing affective engagement.

Through faculty and institutional autonomy, pertinent to the local students' knowledge, career management systems should optimize the curricular demands made (Ministry of Human Resource Development, 2019). Assessment is a major concern that links teacher support to demands and crucially to student burnout and maladaptive coping. The current assessment system allocates question paper setting to a chosen teacher from an institution affiliated to the state university. Teachers perceive course outcomes differentially and the internal assessment process is carried out independently within the institutions. Subsequently, the end semester academic performance, is solely decided by a question paper set by the chosen teacher. Assessment is then carried out through a centralized assessment procedure at the university through a panel of

examiners including the teacher who set the question paper. Standardization of course outcomes during internal assessment and the end semester examinations could reduce the uncertainty and hassles experienced by students. Assessment reform requires to initiate and empower teachers and students to autonomously take ethical responsibilities to improve learning outcomes in higher education (Bryson & Hand, 2007). The stakeholders require to benchmark with competing higher education models and foster cognition through student engagement and coping. Aligned with the changes occurring in higher education the assessment systems have to migrate from centralized assessments to meaningful assessment of competencies. The basic quality criteria for competency assessments include comparability, reproducibility of decisions, acceptability, and transparency (Baartman, Bastiaens, Kirschner, & van der Vleuten, 2006)

Periodic engagement with stakeholders across ability groups needs to understand and reduce hassles associated with existing academic demands. Institutions of higher education require students to encounter diversity and complexity to encourage active thinking, intellectual experimentation and recognition of varied future possibilities (Gurin, Dey, Hurtado, & Gurin, 2002).

6.4 Directions for future research

These cognitive models could be tested for confirmation in higher ranked institutions of higher education offering multi-disciplinary perspectives. The linkage of socio-economic background to academic performance and ability groups in analyzing higher educational institutions using cognitive student engagement model and the cognitive coping model needs to be researched. The reasons for lack of engagement needs to be ascertained and links to psychology of procrastination needs to be probed. The differences in coping across ability groups could define the long term outcomes of education viz. autonomous lifelong learning, as defined by social

psychology. Education matters and forms a major divide in society with links to outcomes of health, employment and wellbeing as well as attitudes of cynicism and lack of trust (Kuppens, Spears, Manstead, Spruyt, & Easterbrook, 2018). Student satisfaction is questioned by the confirmation of student burnout, mapped by the scales of cynicism, inefficacy and exhaustion in the cognitive model of student engagement that drives the differences in maladaptive coping across ability groups. The implied dissatisfaction raises scope for future research probing the reasons for these levels of cynicism in the higher educational process and links to desirable educational outcomes. Interventions promoting multi-disciplinary perspectives among the students of standalone institutions could then be surveyed with the same cognitive models. Interventions promoting diversity amongst higher educational institutions could enhance positive outcomes including academic competencies, cognition, persistence and completion. Longitudinal studies tracking the students' growth or decline with the same set of variables considered in this research might reveal the dynamics of ability groups within the institutional process. Interventions made on the directions suggested in this research can further the basics of the coping process (Compas, Connor-Smith, Saltzman, Harding, & Wadsworth, 2001). Technological support can map differential pathways for students with varied abilities and the support infrastructure including assessment could enhance student engagement driving adaptive coping. The evolution of higher educational institutions into multi-disciplinary institutions is a challenge for technology, resource mobilization and regulation. This entails collaboration between private institutional providers, universities and regulators to maximize students' educational attainments. This evolution would involve incentivizing faculty to innovate, research and adapt to multidisciplinary perspectives (Ministry of Human Resource Development, 2019).

6.5 Conclusion

Higher Educational institutions are required to investigate student behaviour using perspectives of psychology to enable student satisfaction in an increasingly competitive environment. Research within a standalone institution of higher education investigated testing of important generalizations with links to behavioural sciences capturing behavioural, cognitive and emotional perspectives of students. In an era of student centered education the personality dynamics of students were captured using cognitive models of student engagement and coping amidst institutional supports and academic demands.

Structural path modelling was chosen to compare path differences across ability groups when subject to the cognitive models of student engagement and coping. Emotionality personality trait dynamics dominate the exogenous prediction of student engagement and coping over the conscientiousness personality trait across ability groups. Differences among ability groups that are marginal in the cognitive model of student engagement tend to become significant in the cognitive model of coping.

The higher education process has to engage students across ability groups with differential developmental challenges enabling conscientious personality trait. The developmental challenges should address competence through problem solving and information seeking, enable relatedness through self-reliance and social support and encourage autonomy via accommodation and negotiation. Cognitively engaging the better performers and influencing the weaker performers through institutional supports to sustain greater effort to realize academic goals enables adaptive coping. Lack of student engagement, prevents gain in personal resources, initiates burnout and drives maladaptive coping. Teachers can support engagement across ability groups by optimizing

workloads, fair assessments, enabling skills and goals apart from the traditional expectation of good teaching.

Transitioning from a standalone institution to a multi-disciplinary institution will be an economic, academic and regulatory challenge that needs urgent attention of all stakeholders of education in India. The evolution would probably involve memoranda of understanding between institutions leading to multi-disciplinary academic perspectives reducing educational differences among ability groups.

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APPENDIX

Questionnaire

This Survey Instrument evaluates the personal experience of students within an Institution. This questionnaire attempts to understand how individual students cope with demands made by Institutions and the support provided by Institutions.

NAME: _____ DEPT./INST: _____
 SEMESTER: _____ AGE: _____ GENDER: _____
 URBAN/RURAL: _____ ANNUAL FAMILY INCOME: _____
 EDUCATIONAL QUALIFICATIONS: _____ FATHER: _____
 _____ MOTHER: _____
 STUDENTS ACADEMIC PERFORMANCE TILL DATE: _____

SEM I	SEM II	SEM III	SEM IV	SEM V	SEM VI	SEM VII	SEM VIII	AGG.

On the following pages, you will find a series of statements about you. Please read each statement and decide how much you agree or disagree with that statement. Then indicate your response using the following scale:

- 5 = Strongly Agree = SA
- 4 = Agree = A
- 3 = Neutral (neither agree nor disagree) = N
- 2 = Disagree = D
- 1 = Strongly Disagree = SD

SA=5	A=4	N=3	D=2	SD=1
------	-----	-----	-----	------

1. I plan ahead and organize things, to avoid scrambling at the last minute.

5	4	3	2	1
---	---	---	---	---

2. I would feel afraid if I had to travel in bad weather conditions.

5	4	3	2	1
---	---	---	---	---

3. I often push myself very hard when trying to achieve a goal.

5	4	3	2	1
---	---	---	---	---

4. I sometimes can't help worrying about little things.

5	4	3	2	1
---	---	---	---	---

5. When working on something, I don't pay much attention to small details.

5	4	3	2	1
---	---	---	---	---

6. When I suffer from a painful experience, I need someone to make me feel comfortable.

5	4	3	2	1
---	---	---	---	---

7. I make decisions based on the feeling of the moment rather than on careful thought.

5	4	3	2	1
---	---	---	---	---

8. I feel like crying when I see other people crying.

5	4	3	2	1
---	---	---	---	---

9. When working, I sometimes have difficulties due to being disorganized.

5	4	3	2	1
---	---	---	---	---

10. When it comes to physical danger, I am very fearful.

5	4	3	2	1
---	---	---	---	---

11. I do only the minimum amount of work needed to get by.

5	4	3	2	1
---	---	---	---	---

12. I worry a lot less than most people do.

5	4	3	2	1
---	---	---	---	---

13. I always try to be accurate in my work, even at the expense of time.

5	4	3	2	1
---	---	---	---	---

14. I can handle difficult situations without needing emotional support from anyone else.

5	4	3	2	1
---	---	---	---	---

15. I make a lot of mistakes because I don't think before I act.

5	4	3	2	1
---	---	---	---	---

16. I feel strong emotions when someone close to me is going away for a long time.

5	4	3	2	1
---	---	---	---	---

17. People often call me a perfectionist.

5	4	3	2	1
---	---	---	---	---

18. Even in an emergency I wouldn't feel like panicking.

5	4	3	2	1
---	---	---	---	---

19. I prefer to do whatever comes to mind, rather than stick to a plan.

5	4	3	2	1
---	---	---	---	---

20. I remain unemotional even in situations where most people get very sentimental.

5	4	3	2	1
---	---	---	---	---

SA=5	A=4	N=3	D=2	SD=1
------	-----	-----	-----	------

21. There is a special person who is around when I am in need.

5	4	3	2	1
---	---	---	---	---

22. There is a special person with whom I can share joys and sorrows.

5	4	3	2	1
---	---	---	---	---

23. My family really tries to help me.

5	4	3	2	1
---	---	---	---	---

24. I get the emotional help & support I need from my family.

5	4	3	2	1
---	---	---	---	---

25. I have a special person who is a real source of comfort to me.

5	4	3	2	1
---	---	---	---	---

26. My friends really try to help me.

5	4	3	2	1
---	---	---	---	---

27. I can count on my friends when things go wrong.

5	4	3	2	1
---	---	---	---	---

28. I can talk about my problems with my family.

5	4	3	2	1
---	---	---	---	---

29. I have friends with whom I can share my joys and sorrows.

5	4	3	2	1
---	---	---	---	---

30. There is a special person in my life who cares about my feelings.

5	4	3	2	1
---	---	---	---	---

31. My family is willing to help me make decisions.

5	4	3	2	1
---	---	---	---	---

32. I can talk about my problems with my friends.

5	4	3	2	1
SA=5	A=4	N=3	D=2	SD=1

33. It was easy to know the standard of work expected.

5	4	3	2	1
---	---	---	---	---

34. The programme developed my problem solving skills.

5	4	3	2	1
---	---	---	---	---

35. The teaching staff motivated me to do my best work.

5	4	3	2	1
---	---	---	---	---

36. The workload was too heavy.

5	4	3	2	1
---	---	---	---	---

37. The programme sharpened my analytical skills.

5	4	3	2	1
---	---	---	---	---

38. I usually had a clear idea of the progress I was making in this programme.

5	4	3	2	1
---	---	---	---	---

39. The teaching staff put a lot of time into my personal feedback.

5	4	3	2	1
---	---	---	---	---

40. To do well in this programme all you really needed was a good memory.

5	4	3	2	1
---	---	---	---	---

41. The programme helped me develop my ability to work as a team member.

5	4	3	2	1
---	---	---	---	---

42. As a result of my course I feel confident about tackling unfamiliar problems.

5	4	3	2	1
SA=5	A=4	N=3	D=2	SD=1

43. The programme improved my skills in written communication.

5	4	3	2	1
---	---	---	---	---

44. The staff seemed more interested in testing what I had memorized than what I understood.

5	4	3	2	1
---	---	---	---	---

45. It was often hard to discover what was expected of me in that course.

5	4	3	2	1
---	---	---	---	---

46. I was generally given enough time to understand things I had to learn.

5	4	3	2	1
---	---	---	---	---

47. The staff made real effort to understand difficulties I might have with my work.

5	4	3	2	1
---	---	---	---	---

48. The teaching staff normally gave me helpful feedback on how I was going.

5	4	3	2	1
---	---	---	---	---

49. My teachers were extremely good at explaining things.

5	4	3	2	1
---	---	---	---	---

50. The Examinations were questions just about facts.

5	4	3	2	1
---	---	---	---	---

51. The teaching staff worked hard to make their subjects interesting.

5	4	3	2	1
SA=5	A=4	N=3	D=2	SD=1

52. There was a lot of pressure on me to do well in this programme.

5	4	3	2	1
---	---	---	---	---

53. My course helped me to develop the ability to plan my own work.

5	4	3	2	1
---	---	---	---	---

54. The sheer volume of work to be got through in this course meant it couldn't all be thoroughly understood.

5	4	3	2	1
---	---	---	---	---

55. The staff made it clear right from the start what they expected from students.

5	4	3	2	1
---	---	---	---	---

56. I struggle to meet my own academic standards.

5	4	3	2	1
---	---	---	---	---

57. I do not get enough leisure time for activities I consider enjoyable.

5	4	3	2	1
---	---	---	---	---

58. I dislike my studies.

5	4	3	2	1
---	---	---	---	---

59. I feel socially isolated.

5	4	3	2	1
---	---	---	---	---

60. I always end up with lower marks than what I hoped for.

5	4	3	2	1
---	---	---	---	---

SA=5	A=4	N=3	D=2	SD=1
------	-----	-----	-----	------

61. I do not get enough time to fulfil all my obligations.

5	4	3	2	1
---	---	---	---	---

62. I generally find the courses uninteresting.

5	4	3	2	1
---	---	---	---	---

63. I feel ignored.

5	4	3	2	1
---	---	---	---	---

64. I have to work really hard to get ahead.

5	4	3	2	1
---	---	---	---	---

65. I strongly feel I have a lot of responsibilities.

5	4	3	2	1
---	---	---	---	---

66. I am dissatisfied with my Institution.

5	4	3	2	1
---	---	---	---	---

67. I feel I am being taken advantage of.

5	4	3	2	1
---	---	---	---	---

68. I am dissatisfied with my mathematical ability.

5	4	3	2	1
---	---	---	---	---

69. Extracurricular activities demand a lot of my time.

5	4	3	2	1
---	---	---	---	---

70. I am dissatisfied with my University.

5	4	3	2	1
---	---	---	---	---

SA=5	A=4	N=3	D=2	SD=1
-------------	------------	------------	------------	-------------

71. I feel lonely in my Institution.

5	4	3	2	1
---	---	---	---	---

72. I am dissatisfied with my ability at written expression.

5	4	3	2	1
---	---	---	---	---

73. I often end up with too many things to do at the same time.

5	4	3	2	1
---	---	---	---	---

74. I often feel socially rejected.

5	4	3	2	1
---	---	---	---	---

75. I find the courses too demanding.

5	4	3	2	1
---	---	---	---	---

76. I stood my ground and fought for what I wanted.

5	4	3	2	1
---	---	---	---	---

77. I tried not to act too hastily.

5	4	3	2	1
---	---	---	---	---

78. I move on to other things while preparing for deadlines; there's little hope for my academic performance getting better.

5	4	3	2	1
---	---	---	---	---

79. I took my mind off the upcoming examination.

5	4	3	2	1
---	---	---	---	---

SA=5	A=4	N=3	D=2	SD=1
-------------	------------	------------	------------	-------------

80. I restrain myself from doing anything too quickly.

5	4	3	2	1
---	---	---	---	---

81. I talked to someone about how I was feeling.

5	4	3	2	1
---	---	---	---	---

82. I feel sorry for myself.

5	4	3	2	1
---	---	---	---	---

83. I avoided being with other students in general.

5	4	3	2	1
---	---	---	---	---

84. I changed or grew as a person in a good way.

5	4	3	2	1
---	---	---	---	---

85. I bargained or compromised to get something from the situation.

5	4	3	2	1
---	---	---	---	---

86. I criticized or lectured myself.

5	4	3	2	1
---	---	---	---	---

87. I took out my anger on others around me for my current situation.

5	4	3	2	1
---	---	---	---	---

88. I came up with a different solution to the problem.

5	4	3	2	1
---	---	---	---	---

SA=5	A=4	N=3	D=2	SD=1
-------------	------------	------------	------------	-------------

89. I work to understand my situational challenges.

5	4	3	2	1
---	---	---	---	---

90. I know there's little I can do about my academic performance.

5	4	3	2	1
---	---	---	---	---

91. I refused to think about academics too much.

5	4	3	2	1
---	---	---	---	---

92. I take time to figure out what I am feeling.

5	4	3	2	1
---	---	---	---	---

93. I accepted sympathy and understanding from someone.

5	4	3	2	1
---	---	---	---	---

94. I just become ineffective and stop functioning well.

5	4	3	2	1
---	---	---	---	---

95. I tried to keep my feelings to myself.

5	4	3	2	1
---	---	---	---	---

96. I came out of the experience better than I went in.

5	4	3	2	1
---	---	---	---	---

97. I tried to change someone's mind to improve the situation.

5	4	3	2	1
---	---	---	---	---

SA=5	A=4	N=3	D=2	SD=1
-------------	------------	------------	------------	-------------

98. I apologized or did something to make up.

5	4	3	2	1
---	---	---	---	---

99. I was aggressive.

5	4	3	2	1
---	---	---	---	---

100. I made an academic plan of action and followed it.

5	4	3	2	1
---	---	---	---	---

101. I am very cautious and look at all my options.

5	4	3	2	1
---	---	---	---	---

102. I give up the attempt to get what I want.

5	4	3	2	1
---	---	---	---	---

103. I turn to work or other activities to take my mind off studies.

5	4	3	2	1
---	---	---	---	---

104. I delve into my feelings to understand them.

5	4	3	2	1
---	---	---	---	---

105. I ask people who have had similar academic experiences what they did.

5	4	3	2	1
---	---	---	---	---

106. I complain about my current situation.

5	4	3	2	1
---	---	---	---	---

SA=5	A=4	N=3	D=2	SD=1
-------------	------------	------------	------------	-------------

107. I withdrew from others.

5	4	3	2	1
---	---	---	---	---

108. I tried to see the positive side of the situation.

5	4	3	2	1
---	---	---	---	---

109. I tried not to burn bridges; left things open somewhat.

5	4	3	2	1
---	---	---	---	---

110. I blamed myself.

5	4	3	2	1
---	---	---	---	---

111. I blame others for their role in the problems I encounter.

5	4	3	2	1
---	---	---	---	---

112. I changed something so that things would turn out better.

5	4	3	2	1
---	---	---	---	---

113. I just give up trying to reach my academic goals.

5	4	3	2	1
---	---	---	---	---

114. I thought about possible ways to improve the situation.

5	4	3	2	1
---	---	---	---	---

115. I feel emotionally drained by my studies.

5	4	3	2	1
---	---	---	---	---

116. I have become less interested in my studies since my enrolment at the college.

5	4	3	2	1
---	---	---	---	---

SA=5	A=4	N=3	D=2	SD=1
-------------	------------	------------	------------	-------------

117. I can't solve the problems that arise in my studies.

5	4	3	2	1
---	---	---	---	---

118. I feel used up at the end of a day at the college.

5	4	3	2	1
---	---	---	---	---

119. I have become less enthusiastic about my studies.

5	4	3	2	1
---	---	---	---	---

120. I believe that I don't make an effective contribution to the classes that I attend.

5	4	3	2	1
---	---	---	---	---

121. I feel tired when I get up in the morning and I have to face another day at the college.

5	4	3	2	1
---	---	---	---	---

122. I've become more cynical about the potential usefulness of my studies.

5	4	3	2	1
---	---	---	---	---

123. In my opinion, I am not a good student.

5	4	3	2	1
---	---	---	---	---

124. Studying or attending a class is really a strain for me.

5	4	3	2	1
---	---	---	---	---

SA=5	A=4	N=3	D=2	SD=1
-------------	------------	------------	------------	-------------

125. I doubt the significance of my studies.

5	4	3	2	1
---	---	---	---	---

126. I don't feel stimulated when I reach my study goals.

5	4	3	2	1
---	---	---	---	---

127. I feel burned out from my studies.

5	4	3	2	1
---	---	---	---	---

128. I haven't learnt any interesting things during my studies.

5	4	3	2	1
---	---	---	---	---

129. During class I don't feel confident that I am effective in getting things done.

5	4	3	2	1
---	---	---	---	---

130. I can efficiently solve the problems that arise in my studies.

5	4	3	2	1
---	---	---	---	---

131. I believe that I make an effective contribution to the classes that I attend.

5	4	3	2	1
---	---	---	---	---

132. In my opinion, I am a good student.

5	4	3	2	1
---	---	---	---	---

133. I feel stimulated when I reach my study goals.

5	4	3	2	1
---	---	---	---	---

SA=5	A=4	N=3	D=2	SD=1
-------------	------------	------------	------------	-------------

134. I learned many interesting things during the course of my studies.

5	4	3	2	1
---	---	---	---	---

135. During class I feel confident that I am effective in getting things done.

5	4	3	2	1
---	---	---	---	---

Questionnaire on welfare and academic context (UWES-S) ©

As a student you do certain tasks, such as attending classes (both theoretical and practical, go to the library, do group work, study, etc. The following items refer to feelings, beliefs and behaviors related to your experience as a student of higher education. Please respond to each of the items according to the scale of responses below, whose values vary between 0 (if you have never had this feeling or belief) and 6 (if you have it all the time).

Never	Almost Never	Sometimes	Regularly	Quite Often	Often	At all times
0	1	2	3	4	5	6
Not once	Sometimes Per year	Once or less per month	Sometimes per month	Once per week	Sometimes per week	Everyday

136. My assignments as a student make me feel full of energy.

0	1	2	3	4	5	6
---	---	---	---	---	---	---

137. I believe my course has meaning and purpose.

0	1	2	3	4	5	6
---	---	---	---	---	---	---

138. Time flies when I am studying.

0	1	2	3	4	5	6
---	---	---	---	---	---	---

139. I feel strong and energized when I am studying or going to class.

0	1	2	3	4	5	6
---	---	---	---	---	---	---

Never	Almost Never	Sometimes	Regularly	Quite Often	Often	At all times
0	1	2	3	4	5	6
Not once	Sometimes Per year	Once or less per month	Sometimes per month	Once per week	Sometimes per week	Everyday

140. I am enthusiastic about my course.

0	1	2	3	4	5	6
---	---	---	---	---	---	---

141. I forget everything that happens around me when I am concentrating on my studies.

0	1	2	3	4	5	6
---	---	---	---	---	---	---

142. My studies inspire me with new things.

0	1	2	3	4	5	6
---	---	---	---	---	---	---

143. When I get up in the morning I feel like going to class or studying.

0	1	2	3	4	5	6
---	---	---	---	---	---	---

144. I feel happy when I am doing tasks related to my studies.

0	1	2	3	4	5	6
---	---	---	---	---	---	---

145. I am proud to take this course.

0	1	2	3	4	5	6
---	---	---	---	---	---	---

146. I am immersed in my studies.

0	1	2	3	4	5	6
---	---	---	---	---	---	---

147. My assignments as a student do not tire me.

0	1	2	3	4	5	6
---	---	---	---	---	---	---

Never	Almost Never	Sometimes	Regularly	Quite Often	Often	At all times
0	1	2	3	4	5	6
Not once	Sometimes Per year	Once or less per month	Sometimes per month	Once per week	Sometimes per week	Everyday

148. My course is challenging for me.

0	1	2	3	4	5	6
---	---	---	---	---	---	---

149. I get carried away when I perform my tasks as a student.

0	1	2	3	4	5	6
---	---	---	---	---	---	---

150. I am a person with the strength to face my tasks as a student.

0	1	2	3	4	5	6
---	---	---	---	---	---	---

151. I feel involved in my course.

0	1	2	3	4	5	6
---	---	---	---	---	---	---

152. At my education I always persevere, even when things do not go well.

0	1	2	3	4	5	6
---	---	---	---	---	---	---

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Deconstructing coping using cognitive influences on ability groups

Joe Kurian & Nandakumar Mekoth

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