EFFECT OF CRITICAL THINKING SKILLS ON SOCIO-POLITICAL ATTITUDES: A MEDIATING ROLE OF MORAL COMPETENCE

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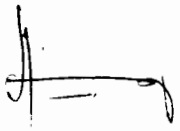
This is to certify that this thesis is solely my original work. It has not been previously submitted for any other degree or professional qualification. The contributions and statements of other authors have been mentioned both in the reference list and the running text.



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Dedicated to

My alma mater, my primary school in Darya Abad, Gawalmandi, Rawalpindi, where I learned to take my first steps toward formal education

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Abstract

The presenet study is grounded in Cornell-Illinois conception of crticial thinking abilities (Ennis, 1962, 2015a) and dual-aspect theory of moral competence (Lind, 2008). It aims to investigate the effect of critical thinking on moral competence and socio-political attitudes (national militarism and ethnocentrism) and also the mediation of moral competence between critical thinking and socio-political attitudes. In the first phase, the Cornell Critical Thinking Test-Level Z was translated and adapted into Urdu language. The sample constituted young adults studying in undergraduate and graduate programs of colleges and universities (n = 270). More than one translations were obtained and a committee approach was used to assess the best fitting translation; the back-translations were also carried out keeping in view Brislin's guidelines (Brislin, 1970, 1986; Jones, Jerry, Linda, Zhang, & Jaceldo, 2001). Confiramtory Factor Analysis (CFA) was carried out to determine the theoretically predicted factor structure of the test. The translated version did not fit the theoretical model and test items were retained on the basis of point-biserial correlation coefficients. The second phase was the pilot study that constituted the same sample included in the first phase. An Urdu language version of Moral Competence Test (MCT-Urdu) was used to measure principled moral orientations and moral competence. This version was previously validated in the local population (Liaquat, 2011, 2012) . The Ethnocentrism scale (Neuliep & McCroskey, 1997) and National Militarism scale (McConochie, 2010) showed moderate alpha reliability coefficients (α = .70 and α = .79 respectively) and appeared suitable to use for the population of the research. Mixed trends were observed with some results leading to hypothesized conclusions and some needing more interpretation. The third and final phase of the study included a sample of college and university students from BS, master and higher degree programs from two colleges.

seven universities and one teaching hospital (n = 367). The students belonged to three provinces of Pakistan and the sample constituted multiethnic groupings. The results indicated a positive partial correlation between critical thinking and moral competence (indicated as c-score) on the first story of MCT (also known as the workers' dilemma) ($r = .11$, $p < .05$). A non-significant relationship between critical thinking and moral competence on euthanasia dilemma and between critical thinking and overall moral competence (including both stories of MCT) was observed. Critical thinking had a significant positive partial correlation with postconventional orientation to morality ($r = .10$, $p < .05$), and it also positively predicted national militarism. Moral competence negatively predicted national militarism ($\beta = -.16$, $p < .05$). No mediation of moral competence was observed between critical thinking and national militarism and also between critical thinking and ethnocentrism. No gender differences were observed for both critical thinking and moral competence; however, female students showed higher moral segmentation ($M = -11.66$, $SD = 4.69$) than males ($M = -5.14$, $SD = 4.51$). Females also showed higher preference for postconventional moral arguments as a significant interaction effect of gender with moral orientations was observed ($F = 6.82$, $p < .05$). Interestingly, females also showed significantly higher scores on national militarism ($M = 36.57$, $SD = 6.40$) than males ($M = 32.79$, $SD = 7.55$). College students exhibited significantly better critical thinking skills ($M = 14.75$, $SD = 4.62$) as compared to university students ($M = 16.08$, $SD = 4.40$). Comparing with many international studies, overall lower mean moral competence and lower levels of critical thinking skills were noted in the present study. The findings have been discussed under suitable theoretical frameworks and available literature to draw plausible conclusions. Furthermore, limitations and future implications of the study are also highlighted.

INTRODUCTION

Chapter I

Introduction

This study aims to investigate the mediation of moral competence between critical thinking and socio-political attitudes (national militarism and ethnocentrism). The focused constructs are based on Cornell-Illinois conception of critical thinking abilities by Ennis (1962, 2015a) and dual-aspect theory of moral competence by Lind (2008). Critical thinking (CT) is one of highly debated skills that is said to play a crucial role in academic learning, decision making and problem solving (Facione, 2011). There are competing and contrasting opinions about the nature and definition of critical thinking, its use in academic and other spheres of life, its subject-specificity or generality, and nature of measurement (Bailin and Battersby, 2016; Ennis, 1962, 1989, 2011a; Facione, 1990, 2011; McPeck, 1981; Sanders & Moulenbelt, 2011). Despite the concept's general acceptance and usage among scholars, researchers, and professionals in various fields, reaching at a consensus definition of critical thinking seems a highly difficult and challenging task (Marsh, 2013). On the one hand, there are academics and scholars who completely reject the notion of critical thinking as a set of general skills due to its vagueness among educational policy makers themselves (Anderson, 2015; McPeck, 1981), while on the other hand, there are those who strictly adhere to the notion that teaching of critical thinking in academic circles and other spheres of life is extremely important (Calma, 2019; Ennis, 1962, 1989, 2002, 2011a; Facione, 2011; Halpern, 2013). Sanders and Moulenbelt (2011) have provided a comprehensive chronological review of various definitions of critical thinking including Dewey (1997); Ennis (1962); Facione (1990); Halpern (2013); Kurfiss (1988); McPeck (1981); Morgan (1995); R. Paul (1981) (see annexure I for a brief overview of various definitions of CT). A review of the literature confirms the lack of consensus regarding

a uniform definition of critical thinking. According to Marsh (2013), critical thinking is sometimes erroneously perceived as being the same as formal logic. One result of this perception is that many universities fulfill critical thinking requirements through philosophy courses.

Sanders and Moulenbelt (2011) have found a common ground among multiple definitions of critical thinking and summarized all the various definitions into two broad categories i.e. i. Context-specific definitions, and ii. Cross-disciplinary definitions.

Context-specific Definitions

Context-specific definitions assume critical thinking cannot occur without a specific context, which means that the development of critical thinking skills always requires some subject matter in a particular context within which the critical thinking activity occurs. According to this view, critical thinking *per se* as a general ability devoid of some context cannot exist. Following this definition, we can conclude that, in different contexts, critical thinking skills will also differ. For instance, critical thinking skills required in mathematics cannot be the same as required in understanding of literature or business. McPeck's definition is an example of context-specific definition. According to McPeck (1981):

> "In isolation from a particular subject, the phrase 'critical thinking' neither refers to nor denotes any particular skill. It follows from this that it makes no sense to talk about critical thinking as a distinct subject and that it therefore cannot be profitably be taught as such" (p. 5).

Due to the strict dependence on the specific subject-matter, the context-specific definitions are easier to formulate and more helpful while designing various subject-specific assessment tools.

Cross-disciplinary Definitions

Cross-disciplinary definitions discuss critical thinking skills in broader and general terms. According to these definitions, specific subject-matter is not a necessary condition to develop critical thinking habits. It does not mean that critical thinking can occur in a void without some content. Obviously, there would always be some content for the application of critical thinking skills, but as per these definitions, critical thinking is composed of such skills that are quite general in nature and not strictly dependent on some context. The skills acquired would equally be applicable in various subject areas. We can say that cross-disciplinary definitions claim that critical thinking skills used in learning mathematics can be helpful in understanding literature or business as well. The definition provided by Halpern (2003) depicts the cross-disciplinary nature of critical thinking

> "Critical thinking is the use of those cognitive skills or strategies that increase the probability of a desirable outcome. It is used to describe thinking that is purposeful, reasoned, and goal directed...[it is not] merely thinking about your own thinking... it is using skills that will make "desirable outcomes" more likely. Decisions as to which outcomes should be desirable are embedded in a system of values" (Halpern, 2003, p. 6-7).

By their very nature, cross-disciplinary definitions remain ambiguous, always demanding increasing clarity due to their loose focus on specific-subject matter. It can be argued that general nature of critical thinking is just like a man who regularly goes

to gym to build his muscles. He starts with lighter exercises and as time passes by develops a rigorous routine to build his muscle strength and overall stamina. The development and strength of his muscles is not limited to the premises of the gym only but would ultimately help him in all those areas where physical strength is required. Similarly, the focus of cross-disciplinary definitions is upon people developing some general critical thinking habits that are not limited to some academic subjects but would definitely help them in many other areas of life.

The Socratic Method of Reflective Thinking

Historically the idea of critical thinking can be traced back to the Greek philosopher Socrates (469-399 BC) whose method of teaching named after him is quite well-known today and has wide applications (Hoaglund, 1993). According to Socratic viewpoint, an individual may rely on the people in authority in order to gain maximum insight and sound knowledge. However, a contradiction still exists as Socrates explained that the possession of social prestige and power does not necessarily imply the acquisition of sagacity as well.

Socratic method is quite different from traditional teaching approaches and is based on 'inquiry' as a central aspect rather than unidirectional transfer of information. Also, it is based on dialogues among students, providing them an opportunity to reach at the inconsistencies within their own arguments and getting encouragement to modify those arguments, if necessary (Brown & Gunderman, 2020). The teacher's role is more like a guide that not only highlights discrepancies in students' arguments but also facilitates them in inductively focusing upon their own experiences that would ultimately change arguments and conclusions (Morgan, 1995).

The Socratic method has five stages:

*1. **Wonder Stage or Ironic Stage**.* Asking questions of very fundamental nature e.g. what is courage? what is truth? The purpose of this exercise is to ensure the learner that his/her knowledge is limited

*2. **Hypothesis Formulation Stage.*** A tentative argument is developed and a hypothesis is formulated to provide a tentative response to counter the irony of the ignorance experienced in the first stage.

*3. **Elenchus.*** This is the beginning of dialogue based on the newly formed hypotheses. This is the core aspect of Socratic method. Hypotheses are argued and analyzed with examples and counterexamples. Movement toward approval or rejection of hypotheses is facilitated.

*4. **Acceptance/Rejection Stage.*** Hypotheses are finally accepted or rejected on the basis of the process of active dialogue.

*5. **Action Stage.*** Once a conceptual understanding about the phenomenon under discussion is reached, acting toward a certain way becomes easier and more desirable (Boghossian, 2012; Delić & Bećirović, 2016).

So, the Socratic method with its richness and originality to understand inconsistencies in one's own thought proved to be a powerful pedagogical tool to help students think critically and reflect on particular issues with more deliberation.

Socrates's ideas were later followed by his student, Plato, and afterward Aristotle and many other Greek philosophers and skeptics especially Stoics who emphasized that, only through mental training, careful thinking habits could develop and only then the original nature of things could be explored. They strongly believed

that the world was not as it looked on the surface and it was a necessity to go deeper to reach at the Truth (Adriana & Zhanna, 2011).

The emphasis on careful thought during the Middle Ages can be found in the writings of Thomas Aquinas (1225-1274) who in response to personal criticism, always remained systematic, logical, and considerate to cultivate critical thinking habits. This kind of introspective activity leads to the awareness about how critical thinking can be cultivated while observing and challenging one's own thoughts (now termed as metacognitive activity).

Renaissance Period

During the 15th and 16th centuries (the Renaissance), a large number of scholars in Europe began to think critically about almost every domain including society, art, religion, law, freedom, and human nature. Francis Bacon (1561-1626) questioned the rationality and irrationality of man and opined that untrained mind was susceptible to many frailties. Sound reasoning and knowledge were necessary for developing desirable mental faculties. He laid the foundation for modern science with his emphasis on the information-gathering processes and reliance on empirical procedures rather than blindly following traditions. His book 'The Advancement of Learning' could be considered one of the earliest texts in critical thinking (Paul, Elder, & Bartell, 1997). In France, Descartes (1596-1650) wrote 'Rules for the Direction of the Mind' which can be considered as the second text in critical thinking. Descartes argued for the need for a special systematic disciplining of the mind to guide it in thinking. He developed a method of critical thought based on the principle of systematic doubt and deemed necessary that every thought should be doubted, questioned and tested (Paul, Elder, & Bartell, 1997).

John Locke (1632-1704), an English philosopher, also provided theoretical foundation for critical thinking by discussing basic human rights and the responsibilities of governments. In his essay 'Concerning Human Understanding' (Locke, 1824, 2020), he argued that the government should surrender to the reasoned criticism of thoughtful citizens. Locke's essay articulated how reflection, intuition, reason, and sensation produce critical thinking. He was of the opinion that metaphysical interpretations of the nature of thought were mere speculative, while ideas came from sensation or reflections which were complex and systematic functions, and could be understood with a careful introspective attitude (Alberts, 2004).

John Dewey and the Progressive Movement

In the modern times, John Dewey (1859-1952) a psychologist, philosopher and educationist is considered pioneer in bringing revolution to traditional educational system of the USA with his progressive ideology infused with his support for democratic education and democratization of educational institutes in the US. His contributions are manifold especially laying foundations of functional psychology, developing philosophy of pragmatism and bringing progressive education to forefront (Hopkins, 2017). Dewey (1997) presented his view about critical thinking which he termed as 'reflective thinking' in these words, "the ground or basis for a belief is deliberately sought and its adequacy to support the belief examined. This process is called reflective thought; it alone is truly educative in value" (pp. 1-2), and, "active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it, and the further conclusions to which it tends" (p. 06).

In 1899, Dewey put forward many ideas for educational reforms which he termed as 'New Education'. Keeping in view the rapid industrialization and urbanization of American society, he insisted that the old model of schooling—students sitting in rows, memorizing and reciting—was outdated. Students' role was increasingly more active, than being only passive receptors of information. They needed engaging and relevant projects, not lectures. Students needed to become problem-solvers and critical thinkers, and their interest and aptitudes, should be used to motivate them instead of old methods of punishment. They should cooperate, not compete (Dewey, 1907). While traditional education focused on rote memorization and mental discipline, progressive education's main goal was practical relevance. Two main components of progressive education were learning by doing' so that understanding and meaning can take place and 'advancing social responsibility' for the democracy to be strengthened in a society. Progressive education in the early twentieth century moved away from traditional, literature-based education into a more socially-conscious curriculum.

Dewey's influential ideas lead to the establishment of Progressive Education Association (PEA) and an eight-year long study in the 1930s. The study was focused on how schools implementing progressive education prepared their students for colleges comparing to traditional schools. Many of the schools that participated in this study adopted critical thinking as an educational goal, and, for that purpose, different tests to measure critical abilities were developed, and various experiments were also designed as well as performed for study and improvement of critical thinking (Hitchcock, 2018).

The Delphi Report

From February 1988 to November 1989, American Philosophical Association conducted a study known as the Delphi Method led by Peter Facione. A forty-six-members panel consisting of experts from diverse fields including the faculties of Philosophy, Education, the Social Sciences, and the Physical Sciences was constituted to reach at the consensus in conceptualization of critical thinking (Possin, 2002). The Delphi panel participated in six rounds of questions which called for thoughtful and detailed responses. The panel worked on an integral conceptualization of critical thinking with a conclusion that critical thinking was not only comprised of set of cognitive skills, but also *affective dispositions and metacognition,* ideas that are very well-known today. The consensus of experts defined critical thinking as, "purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based." Along with these CT skills, the panel also described critical thinkers having a number of dispositions including inquisitiveness, trust in reason, fairmindedness in evaluation, honesty in facing personal biases, prudency in making judgments, clarity about issues, focused inquiry and some more dispositions (Facione, 1990).

Cornell-Illinois Model by Robert H. Ennis

The Cornell-Illinois Model (Ennis, 1962, 2011a, 2011b, 2015a, 2015b) is important to mention as the present study is based on the operationalization provided by this model. This model of critical thinking was based upon the definition that "critical thinking is reasonable and reflective thinking focused on deciding what to believe or do"(Ennis, 2015a). Ennis refined and elaborated his system in number of

years and developed assessment tools to measure his conception of critical thinking. Ennis initially based his definition of critical thinking on Othanel Smith's definition (1953 as cited in Ennis, 2011a) who held that critical thinking was determining both the meaning of statements and assessing these statements. While working on this model of critical thinking, he added three basic features to his conception of critical thinking that included; (a) emphasis on detailed criteria, (b) emphasis on good judgment in a vague situation with Sensitivity, Experience, Background Knowledge, and Understanding of the situation (SEBKUS), and (c) attention to credibility of sources (Ennis, 1962). In later refinements of his model, he added more features to it that included (a) the definition of critical thinking (Ennis' own definition), (b) inclusion of critical thinking dispositions, (c) suitable deduction, (d) detailing of assumption ascription, (e) enumerative induction and inference-to-best explanation, (f) emphasis on equivocation, and (g) value judging.

His major distinction was between two aspects of critical thinking called dispositions and abilities. For Ennis, there are twelve dispositions and eighteen abilities that are distinct but interdependent and overlapping and that's why not completely separable in measurement (Ennis, 2011a).

Critical Thinking Dispositions

Ennis (1996) defined disposition as a "tendency to do something given certain conditions," and "brittleness of glass" as a standard example of a disposition (p. 166). As a glass can potentially break into a number of pieces if struck with something, similarly critical thinking disposition can be regarded as a potential to respond in certain ways (for example one being open to alternatives) once that response conditions are present. Ennis suggests that critical thinking dispositions are not always observable in all conditions, instead certain specific conditions are necessary for the elicitation of

these dispositions. Also, unlike abilities, the dispositions are easier to be faked in measurement. It is noteworthy that the conception of critical thinking dispositions is not something completely new introduced by Ennis only; there are number of theorists who discussed various critical thinking dispositions including Siegel (1988) presenting his model with several sub-dispositions of intellectual honesty, objectivity, impartiality, a commitment to seek and evaluate reasons, and a willingness to conform judgments and actions to principle. Perkins, Jay & Tishman (1993) have presented a triadic theory of dispositions with inclination, sensitivity, and ability as three components of dispositions. Facione, Sanchez, & Facione, (1994) have provided a model of seven dispositions of open-mindedness, analytical attitude, truth-seeking, systematic attitude, critical thinking self-confidence, inquisitiveness, and maturity. Norris (1992) also talked about the disposition to think critically.

Ennis' Model of Critical Thinking Dispositions. Ennis (1996) presented his own system of critical thinking dispositions and divided his system into three basic broad categories of dispositions; (1) to "get it right" to the extent possible, (2) to represent a position honestly and clearly, and (3) to care about the dignity and worth of every person. He termed the first two dispositions as the constitutive and the third one as correlative as the third disposition by definition cannot be the necessary condition for critical thinking. One can have other dispositions and abilities to think critically without having the third category of disposition. But, for Ennis, in order to make critical thinking a more humane activity it was desirable to have this third basic disposition and lack of it could make critical thinking useless or even harmful. Each broad disposition has several sub-dispositions as well; Ennis has presented a list of 12 dispositions early on (Ennis, 1996), but later refinements lead to a broader model of 18 dispositions (Ennis, 2011a, 2015a) (see Annexure II for a list of dispositions).

Critical Thinking Abilities

Ennis (1962, 1989, 2011a, 2011b, 2015a, 2015b) elaborated a comprehnsive model of critical thinking abilities which were distinct qualities as compared to dispositions. Abilities are the hard congnitive aspects of critical thinking in comparsion to affective dispositions. Abilities are considered as specific skills of critical thinking, for example McPeck's (1981) definition of critical thinking included both propensity (which is a disposition) and skill (which is an abilitiy) to engage in an activity with reflective scepticism. There has been a debate that critical thinking can be only subject/domain specific with some subject-related content always there to apply one's reasoning on (Glaser, 1984; McPeck, 1981). Ennis, on the other hand, remained a proponent of critical thinking as a general ability that if developed can be used in many situations (Ennis, 1989). Ennis did not deny subject-specificity of critical thinking dispositions and abilities but emphasized at the larger picture where it was needed that crtitical thinking should not only be developed for school contexts but should also become helpful in nonschool everyday life situations. Ennis evolved a very elaborate model of critical thinking abilities over a number of years from 1960s till to-date and published assessment tests to measure both critical thinking dispositions and abilities.

Ennis' Model of Critical Thinking Abilities. In his updated description of model of abilities, Ennis (2015b) has described four basic features containing eighteen separate though overlapping abilities. These basic features include basic clarification, Bases for a decision, Inference and Advanced Clarification (see Annexure III. for an overview of these abilities)

1. Basic Clarification (Abilities 1-4). In solving some problem or discussing some issue, it is imperative to understand the nature of the argument to proceed further.

It is also important to remain focused on the main objective and not to sway from the key concern. Asking clarification questions and putting attention to details is necessary. It is good to know in advance that what type of argument is going on (whether deductive or inductive) and then deal with it accordingly. Having a basic or advanced understanding of graphs and math is vital to make sense in many of the situations. Many newspaper writings, journal articles and many of our daily jobs require that we understand mathematical relations (ideas like statistical significance, averages, group comparisons etc.) and/or their graphical interpretations.

2. Bases for a Decision (Abilities 5-7). Good critical thinkers also look for a validity of information through credibility of the sources providing that information. If possible, make their own observations (obviously first-hand experience is very important). Benefitting from one's personal experience, and knowledge about previously established solutions to a problem also matters.

3. Inference (Abilities 8-10). Reaching at some conclusion from the available information is not clear-cut in many situations. Sometimes it is easier as the information at hand or certain facts obviously lead to certain conclusions but, on many occasions, we have to make sense out of missing pieces of information. The inferences to reach at conclusions require logical *deduction*, *induction,* and *value judgments.* Deduction is the ability to see the possibility that the conclusions necessarily follow from the premises, while the induction involves basing one's conclusions on consistent and collective observations (experiences). Sometimes induction as an inference to best explanation is used when the information at hand is limited but the conclusion drawn does not contradict the available information and no contradictory data exist that can lead to some other valid explanation. Value judging is a particularly difficult area for critical thinking instruction, as it is controversial to decide how to make defensible value

judgments. What course of action is suitable, when more than one options are available, sometime remains a point of debate though it is generally agreed that the available facts, upon which the decision was based, were true and non-controversial.

4. Advanced Clarification (Abilities 11-18). Defining terms appropriately to increase understanding and to make sense of things is necessary. The terms can take different meanings in different contexts or with different procedures used to observe some phenomena (e.g. contextual definitions, or operational definitions) or can be misused intentionally or unintentionally in order to take advantage of the ambiguity of a term to support a position (equivocation). The ability to define things properly and understanding underlying unstated assumptions in conversations regarding various issues are important abilities of critical thinking. Good critical thinkers are aware of imprecise fallacy labels as well as rhetorical strategies that may be in the form of intended misuse of words or terminologies, factual distortions, exaggerations, etc. to prove a point.

5. Metacognition. Sometimes considered as a separate ability, metacognition involves monitoring one's own cognitive system or thought processes. Good critical thinkers are well-aware of their own thinking and can evaluate and regulate appropriate thoughts for appropriate situations. (The detailed treatment of critical thinking dispositions and abilities with examples is provided in Ennis, 2015a).

Though both aspects of critical thinking are importatnt, the present study is based only on the critical thinking abilities for operationaliztion purposes and does not take into account crtitical thinking dispostions. Currently no single instrument is available based on Cornell-Illinois model that simultaneusly meaures both aspects of critical thinking.

Cornell Critical Thinking Tests

Cornell Critical thinking tests-levels X and Z (Ennis, Millman, & Tomko, 2005) are widely used measures of critical thinking. The CCTT was developed in 1971 (Ennis & Millman, 1971), it was revised in 1982 and published in 1985 (Ennis, Millman, & Tomko, 1985). We have used CCTT fifth edition of the test (Ennis, Millman, & Tomko, 2005). Level X of test is used for students in grades 4 to 14, whereas level Z is intended for advanced and gifted high school students, college students, graduate students and other adults (Ennis, Millman, & Tomko, 2005). Both tests are based on the 'Cornell/Illinois model' developed by Ennis during his stay at Cornell University and University of Illinois. The definition proposed by Ennis, states that "critical thinking is reasonable and reflective thinking focused on deciding what to believe or do" (Ennis, 2011, p. 10; 2015, p. 01)." There is a distinction between critical thinking as an ability which is more of a cognitive aspect and critical thinking as a disposition which is more of an affective aspect. The CCTT is an ability test that does not include critical thinking dispositions.

The CCTT-level Z is a 'general-content; critical thinking test uses content from a number of subject matter areas and/or everyday life experiences. Unlike subject specific critical thinking tests that have a limited focus on the problems related to only one subject, the CCTT-level Z discusses broader areas of everyday life that include very common discussion about making a dough to very technical experimental designs. This is the content with which most people, especially college and university graduate students, at the target level of sophistication can be expected to be familiar.

The CCTT-Level Z is a 52-items, multiple choice paper and pencil test that is dichotomously scored with each question having three options with a one correct option in each. The questions are not simple statements, but different scenarios are given, and

questions related to these scenarios are responded to by opting for one out of the three response options for each question. The section I-A contains five items in which a debate between two people about the voting rights of 18-year old persons is given. Section I-B (five items) contains a debate about immigration rights of foreigners. For each item, the respondents have to indicate whether the conclusion necessarily follows from the premise, it is against the premise or unrelated to it. Section II consists of items (11-21) that contains a debate about water chlorination of city water source and its effects. The respondents have to identify the logical errors in statements. Sections III (items 22-25), section IV (items 26-38), and section V (items 39-42) present an experimental situation on ducklings. In section III, respondents have to tell which statement is more believable related to the experiment. In section IV, respondents have to tell whether the additional information supports, refutes, or is unrelated to the conclusion drawn from the experiment. For Section V, respondents have to look at hypotheses and indicate which predictions are more useful for a new experiment similar to the previous experiment. Section VI (items 43-46) contains dialogues about different issues. Respondents have to indicate the best fitting intended definition about the central concept discussed during the conversation. Section VII (items 47-52) also presents dialogues about certain topics in which respondents have to identify unstated assumptions.

The author mentioned two methods of scoring CCTT-Level Z; one is a straightforward 'rights only' method in which each correct response is given one score and an incorrect response is marked zero. The other method requires that one-half score should be deducted for each incorrect answer. There are no restrictions on the part of researchers to use any one specific technique, though the latter method of scoring is

recommended by the author to develop more careful thinking habits and avoid wild guessing (Ennis, Millman, & Tomko, 2005).

Ennis, Millman, & Tomko (2005) considers critical thinking to be a multidimensional construct and their test consists of the following seven subsections.

1. Deduction (Items 1-10). In these items, the proposed conclusion can follow necessarily from the arguments given can contradict\ them, or can be irrelevant to the arguments. The ability to reason neutrally in the presence of some value- laden suggestive content is important here.

2. Meaning and Fallacies (Items 11-21). Many of these items are concerned with the more verbal and linguistic aspects of argument. It requires on the part of the test-taker the ability to detect logically correct or incorrect arguments while ignoring or filtering the verbal exaggeration or expressivity of the information.

3. Observation and Credibility of Sources (Items 22-25). These items are concerned with how much attention a person gives to authenticity of the information by looking at who is saying what.

4. Induction (Hypothesis testing) (Items 26-38). These items focus on how much importance is given to the best explanation to understand the facts. Hypotheses should relate to facts and should provide testable options to verify their consistency with the facts.

5. Induction (Planning Experiments) (Items 39-42). The items relate to participants' ability to make inductive judgments with a scientific outlook. The ability to understand comparisons with control groups in experimental situations, to generate results that could conflict with the hypothesis, and to be fairly specific.

6. Definition and Assumption Identification (Items 43-46). Mostly in everyday conversations the terminologies and meanings of things are not explicitly stated. These items are mainly concerned with one's ability to extract true meaning from a certain situation e.g. a conversation or a dialogue.

7. Assumption Identification (Items 47-52). Quite similar to the above section.

These seven dimensions (or five if we consider induction and assumption identification subtests as single tests), though presented by the authors, do not find an empirical support in a number of studies (Follman, Brown, & Burg, 1970; Frisby, 1992; Leach et al., 2020; Michael, Devaney, & Michael, 1980; Verburgh et al., 2013) (this matter is dealt in greater detail in the discussion section).

The Cognitive Moral Paradigm

This study is not only based on Ennis' model of critical thinking but also takes into consideration the cognitive paradigm of moral development with emphasis on Georg Lind's dual-aspect theory of moral competence in order to see the interrelationship between these two cognitive variables and also their relationship with socio-political attitudes. The dual-aspect theory elaborates that moral development occurs in two distinct cognitive and affective areas that cannot be taken as separable domains or components but are intertwined in such a way that each one is an essentiality for the other (Lind, 2008).

Jean Piaget's pioneering work in the cognitive moral development of children and Kohlberg's elaboration of Piagetian model with his use of moral dilemmas to assess the nature of moral reasoning with Moral Judgment Interview lead to the development of Lind's dual-aspect theory of moral competence and moral affects. For Piaget, it was a central problem that how children come to construct and respect moral norms. He

was also intrigued by the ways in which human societies, in general, came to recognize and constitute laws (Carpendale, 2009). For Piaget, the general cognitive and moral reasoning develop in parallel fashion. As child's cognitive functions move toward greater equilibrium from egocentrism to more sociocentrism, similarly, his moral cognitions gradually change from heteronomous to the attainment of more autonomous functions. The heteronomous morality constitutes predominantly uncritical acceptance of others' points of view on moral issues especially elders and those in authority while the autonomous morality is developed through increasing experience of mutual cooperation and disagreement. It is based on 'rules' and 'principles' as defining features of actions rather than authoritative influences (Colby et al., 1987). Piaget had presented his ideas by observing children playing game of marbles and developing a questioning strategy to explore children's minds about various rules of the game and their application. For Piaget, children up to three years are mostly unaware of rules of the game and they mostly behave purely individualistically without the awareness of social aspect of games. From about age of 3 to 6 years, children start showing improvement in individualism in play, though their behavior is still predominantly egocentric, but they start imitating older children with many idiosyncrasies in application of rules still present. At about the age of 7 to12 years, social reciprocalism and cooperation begin; now 'rules' come to the center-stage of games and winning and losing become socially important, though rules are still not completely developed like in adult manner. The mastery of rules comes at later age of roughly 13 years and above (Carpendale, 2009, p. 274)

Kohlberg's Stages of Moral Reasoning

The cognitive developmental theories can be understood according to four criteria of development viz.; (1) stages of development represent qualitative differences

in cognitive operations and modes of thought at various developmental points. These stages might not be mutually exclusive but can be judged along a continuum; (2) the changes are usually irreversible; (3) each point of development shows a unique thought organization; and, (4) stages are hierarchical with each advancing stage showing more complex organization than the preceding one (Colby et al., 1983; Colby et al., 1987).

Kohlberg elaborated Piaget's work of heteronomous and autonomous distinction of moral reasoning. While working on the basic idea of development of moral thoughts in children, he presented his own stage theory of moral reasoning as a developmental concept. His theory is also a cognitive theory where an individual is believed not to be a passive recipient of information about the social world, but actively operates on the environment to make sense of everything around . The moral world is not externally imposed but is a subjective construction. Like Piaget, he believed that as they age, babies move from self-centered to more socially-centered morality and focus on the endorsement of rules and laws for stable functioning of society (Rest, Narvaez, Thoma, & Bebeau, 2000).

Kohlberg presented his theory of cognitive moral developments that constituted six distinct stages of moral reasoning that were the part of three broader levels. The 1st level of moral development known as preconventional level constitutes 1st and 2nd stages of moral reasoning. This level is marked by the core aspect of egocentrism. The first stage is usually called 'punishment and reward orientation' which is characterized by child's interpretation of right and wrong on the bases of objective consequences of action. The intrinsic quality of action or the intention behind it has no worth independent of its consequences. An action is considered good if it results into rewarding consequences and is bad if it entails some sort of disadvantage or punishment. The second stage is sometimes named as a 'self-interest orientation' which

defines right behavior as fulfilling the individual's best interest. This stage is marked by self-centered morality where children find it difficult to understand other persons' point of view. For Kohlberg, the preconventional level of reasoning is mostly seen in children under the age of nine years, some adolescents, most of juvenile delinquents and in criminal adults.

The conventional level of moral development is characterized by a shift from egocentric morality toward more socio-centric morality. It constitutes 3rd stage of 'interpersonal accord and conformity' whereclose social relations including family, friends and peers take the central role and morality is defined by them. Good behaviors are those that conform to social norms and lead to social praise. Things, that are stigmatic, are considered as morally bad. More evolved aspect of this level is the 4th stage with its emphasis on rules and laws defining standards of good and bad. A kind of fundamentalism, with rules as absolute standards to judge oneself or others, is a distinction of stage 4 reasoning. The social system is considered to be a generalized set of rules that need to be impartially applied to people and their acts. In this stage, morality is heavily socio-centric, but sometimes cannot be considered mature enough as it lacks flexibility and social rules, that are constituted by public themselves, are considered to be absolutes.

For Kohlberg, the postconventional level is the highest level of cognitive development that individuals can attain. This level is identified by stage 5th reasoning that is characterized by more democratic orientation to life. People start seeing laws as man-made codes decided for the welfare of society. Laws are no more understood as absolutes that must be followed in any case. This does not mean that people in this stage would like to discard laws for their own interests (in that case it might be a stage 1 or 2 reasoning); instead, they can see exceptions in implications of laws especially if laws

are not fulfilling the purpose for which they are formulated. It is a 'democratic orientation' where people can think that laws once made, can be discarded later, and can be replaced with more suitable ones if the need arises. The final stage of moral development represents a thought's movement from society to increasing abstraction. Morality is defined by 'universal moral principles' of truth, justice, beauty, service, fairness and impartiality. These abstract moral principles take primary importance over codified laws to judge right and wrong (Colby et al., 1983; Colby et al., 1987).

Since its introduction, Kohlberg's theory has been criticized by many other theorists and researchers. According to Carpendale (2009), it is generally assumed that Kohlberg formulated his theory by extending Piaget's work, while in fact, Kohlberg had rejected many of Piaget's conclusions. Piaget had never provided an explicit stage theory with well-defined boundaries while Kohlberg's theory is mainly known by its stage-wise division. Another criticism on explicitly demarcating stages of moral reasoning has been put forward by Siegler (1997, cited in Rest, Thoma, & Bebeau, 1999). For him not only moral but other cognitive developmental areas in children show a gradual shift of changes that remain somehow waxing and waning with overlapping waves of thoughts merging with already present thoughts. These multiple ways of thinking are very difficult to be demarcated in somehow mutually exclusive stages.

Kohlberg is sometimes blamed to be an absolutist due to his staunch emphasis on stage 6th moral reasoning of universal principles. According to Rest et al. (1999) this objection is unjustified as Kohlberg himself distinguished between two distinct types of principled orientations i.e. rule principlism and constructive principlism. Rule principlism is a rigid approach to moral principles where the context of the situation is ignored and decisions are made on the basis of strict adhenrence to moral principles

alone, theconstructive principlism, on the other hand, creates a margin to the exercise of moral principles, taking context into account and making informed moral decisions.

Another criticism on Kohlberg is from the proponents of bottom-up approaches. Piaget, stressed that morality in children tended to develop via 'social interaction,' as authoritative figures or abstract moral principles could not be enough to develop clear understanding of moral rules (Carpendale, 2009). This interactionist emphasis is ignored in Kohlberg's model. His model is considered a top-down approach that is based upon foundational principlism. With abstract moral ideals already delineated, these just provide foundational principles to deduce concrete moral guidelines (Rest et al., 1999, pp. 24-25).

James Rest's Neo-Kohlbergian Approach

On the basis of Kohlbergian concepts, Rest et al. (1999, 2000) developed their own modified version of cognitive theory of moral schemas. According to them, schema is "a cognitive structure that consists of the mental representation of some stimulus phenomena, including the relationships among the elements. Schema are general cognitive structures in that they provide skeletal conception that is exemplified (or instantiated) by particular cases or experiences" (p. 136). For them, the moral schemas are qualitatively different from other cognitive schemas as they are highly abstract. Instead of providing a full-scale stage theory like Kohlberg, they have described moral schema in general. They have distinguished two important types of schemas as orientations to morality. The 'maintaining norms schema' is roughly equivalent to stage 4 moral reasoning of Kohlberg. This schema constitutes around social and legal definition of morality. People with well-developed maintaining norms schema would consider laws as extremely imperative and immoral acts are those acts

that do not conform to social norms. The other schema is 'postconventional schema' that roughly constitutes stages 5 and 6 of Kohlbergian conception. It is more democratic orientation toward morality wherein laws and ideals are not taken rigidly. Laws and principles are open to debate and discussion, and are prone to change if they are not serving the collective interest of the society.

Along with the basic modifications in Kohlbergian model, Rest et al. (1999) provided a more comprehensive four-component model in which they emphasized that other personality factors including moral sensitivity, moral motivation and moral character were equally important for moral behavior than moral judgment alone. Moral sensitivity refers to the ability to notice whether some moral situation in fact exists; empathy is an important quality that helps people become sensitize to others' problems. Moral judgment is the ability to effectively reason to solve moral issues and decide on what is right and wrong. Moral motivation is the behavioral dimension that drives a person to have a moral course of action, whereas moral character includes such personality traits that are necessary for sustained moral behavior.

Gilligan's Feminist Morality

Carol Gilligan had provided an alternate feminist approach to morality (see Blum, 1988; Jorgensen, 2006). For Gilligan, the Kohlbergian model gave inferior position to females and put them on the lower stages of moral reasoning. According to Gilligan, Kohlberg's approach to morality is more focused on masculine version of rational objective thinking and consequently gives higher status to moral thoughts that are based on such principles (Hekman, 2013). For her, females have a different orientation to morality. For centuries, their role had been to look after their families and to raise and nurture children. Females are more oriented toward compassion and care

than applying strict logical principles of morality. That kind of morality might be more suitable in courts of justice where codified laws are given primary importance but not necessarily applicable in homes. Social relations exist due to the norms of care, responsibility, and empathy. Emotions are also important in morality as rationality and moral behavior cannot be identified by cognitive activity alone. She rejected Kohlberg's moral impersonal universalism with moral ideals existing at their own right. Instead of that, she talked about a practical morality of everyday world (Blum, 1988; Hekman, 2013; Jorgensen, 2006). Considering the division between micro and macro morality by Rest et al. (1999), Gilligan's model can be thought of as a micro-model of morality. Micro-morality is more concerned with personal loyalties, etiquettes, care and empathy. The social behaviors associated with micro-morality include helpfulness to others, care in close relationships, visiting family gatherings and occasions of mutual importance etc. The macro-morality, being more oriented toward universalism and objectivism, has a larger orbit of functionality. This morality is concerned with institutional functions on the basis of justice, merit and impartiality for their smooth functioning. Inter-cultural, inter-ethnic, and international communication can be understood with macro-level of morality.

Georg Lind's Dual-Aspect Theory

According to Lind (2008), there have been three dominant approaches to treat morality as a subject. One approach is to see morality as objectively ordained from some authority whether metaphysical, religious or political. Moral and immoral are defined by the conformity of individuals to that authority. The other approach can be termed as an intentional approach. Herein, morality is defined as good intentions behind behaviors irrespective of their consequences. In real life, it is not necessary that certain actions would definitely lead to specific consequences due to many undetermined and

uncontrollable factors, so the only thing left to judge behaviors is intentions behind them. For Lind (1985b, 2008), the problem with these approaches remains that they do not take into account cognitive operations in moral decision making. Behaviors are either externally controlled by authority figures or behaviors remain discrepant with intentions sometime functioning independent of consequences. Logical operations and reasons are not thought to be related to morals at all and morality is mostly reduced to affective or attitudinal aspect only.

While criticizing these approaches, Lind (1985b, 2000c, 2008) has put forth his own theory of cognitive moral judgment termed as dual-aspect theory of moral affects and moral cognitions. The theory is built on Piaget's work, Kohlberg's model of moral development and James Rest's model of moral orientations, though it disagrees with these approaches on some fundamental points. Lind had rejected multi-componential approach of Rest et al. (1999) who considered moral cognitions and moral affects as two independent, though interrelated systems. Instead, Lind said that cognitions and affects are both inseparable aspects of moral system and it is not possible to measure one aspect while completely ignoring the other one. These cannot be treated as separate domains but qualitatively distinct aspects of the same whole. For this cognitive-affective dimension of morality, he coined a term known as "moral competence".

For Lind (2008), the comprehensive definition of moral competence was actually given by Kohlberg, who defined it *as* "the capacity to make decisions and judgments which are moral (i.e. based on internal moral principles) and to act in accordance with such judgments". This definition of moral competence discusses all three cognitive, affective and behavioral dimensions of morality.

Moral affects are included in the form of one's internal moral principles. This is the content aspect of morality because decisions and judgments cannot be made in a void without some content to work on. These can be termed as 'moral attitudes' as well. In Lind's model, the moral affects are usually based on Kohlberg's 6-stage categorization of moral orientations. People can think about and choose from preconventional, conventional and postconventional moral principles.

The moral cognitions are included in this definition in the form of the capacity to make decisions and judgments about the moral principles. So, as like other cognitive theories, Lind's work's omphalos remains on moral cognitions or judgment abilities. By introducing this judgmental aspect, morality can be considered as an ability and, like any other ability, this can be enhanced or retarded. The judgmental aspect of the theory makes it quite different from authoritarian, intentional or behavioral approaches to morality.

The third dimension of moral behavior is included in this definition as 'actions in accordance with moral judgments'. So, unlike the separate domain approaches discussed by Rest et al. (1999), moral behavior is not taken as some domain independent of moral affects and cognitions. Lind treats moral behavior as a necessary part of moral affects and cognitions with overall moral competence of the person providing sufficient information about all three aspects of that person's morality.

The content-structure separation in moral theories led to the development of componential models that treat moral attitudes as different from moral judgments or sometimes lead to the confusion in measurement of the construct. Some tests (for example Rest's Defining Issues Test) mixed structural aspect with content as well yielding confounding findings.

> The organization of person's moral judgment behavior is not characterized solely by the moral norms it serves (or fails to serve), which we may call the affective content of behavior, nor solely by the formal properties of the individual reasoning, i.e., the consistency or structure of reasoning. It is only by referring to content that one speaks meaningfully of behavioral consistency. There is no consistency of behavior as such; it is always consistency in relation to a criterion of principle. In other words, consistency is a bivalent relations concept (Lind, 1985b, p. 22).

Criteria to Measure Moral Competence. Lind (2008) has provided the following eight criteria to measure a person's reasoning in relation to moral principles:

i. Cognitive and affective aspects are inseparable. It is not possible to measure moral judgment (moral cognitions) alone without measuring the principles on which these judgments are based. A measurement tool should be based on such a way to simultaneously measure both aspects.

ii. The measurement should contain some actual moral task e.g. some moral dilemma situation. Though moral competence is a cognitive-affective ability, it cannot be assessed with a test of general cognitive abilities like intelligence or aptitude tests.

iii. Like any other cognitive ability test, a person should not be able to simulate or fake scores upward on a moral judgment measure as well.

iv. A moral judgment measure should not a priori impose any moral principles on a subject, instead subjects should be free to prefer whatever moral principles they like.

v. The moral competence is an ability affected by conducive circumstances. So, a measure should reflect this variability in case of prolonged change of circumstances.

vi. Moral orientations that contrast with each other show lesser correlation while similar moral orientations should have higher correlation coefficients.

vii. Cognitive and affective aspects should be correlated with each other in such a way that people with higher score on cognitive aspect should also score high on conventional and postconventional orientations, while lesser score on cognitive aspect should correlate higher with preconventional orientations.

viii. Moral competence measure should provide contrasting opinions regarding any moral situation. It is easier to make a moral decision in a situation if only one point of view is known. The true competence could be assessed only if subject's decision regarding any moral dilemma/situation is challenged by an equally opposing point of view. In that case, the subject would have to face a cognitive challenge to look at their own judgment and some opposing judgment on the basis of moral principles and not on the basis of biasness toward one's own judgment.

Empirical Measurement of Moral Competence. Lind (1989) criticized Kohlberg's method of moral judgment interview as it contained some scoring confusions. By following classical testing theory (CTT), the interview method searched for internal consistency of subjects' responses. Lind argues that the internal consistency approach has its shortcomings, as it puts the blame of inconsistency in subject's responses on the *defective test items* rather than seeing it genuine inconsistency of responses in a subject him/herself. For Lind, the measurement of moral competence requires that a complete response pattern of a subject should be taken into account (pp 9-10). Moral judgment also did not ask subjects to apply their moral principles on moral tasks and only focused on moral reasons given for certain moral dilemmas. For Lind, an ability test should go a step further than this and pose a cognitive challenge by providing opposing perspectives and asking the individual to judge for both favored as well as opposed perspectives.

He argued that Rest's Defining Issues Test (DIT) (Rest, 1979) was also not able to measure moral competence as it also asked for preference for moral reasons related to postconventional morality. For Lind, the DIT can be considered as an attitude measure to see moral choices of individuals, but it lacks a moral task on which moral principles can be rationally applied. The test scores have been found to be upwardly simulated when participants were asked to take higher moral perspective than their own in their imagination (Emler, Renwick, & Malone, 1983). The upward simulation of the test might indicate that it is not a measure of cognitive ability.

Lind (1978) introduced another measure called Moral Judgment Test (MJT)-now known as Moral Competence Test (MCT) (Lind, 2020) with the view to measure both affective and cognitive as aspect in a unified single instrument. The MCT is an experimental questionnaire in which moral dilemmas are judged on the basis of moral principles (Lind, 1982). The arguments are presented that are simultaneously compatible as well as contrary to the decision made by the subject. This provides a subject an opportunity to see the moral situations from two different perspectives, and the task of the individual becomes to rate the moral arguments on the quality of the arguments and not due to biasness toward one's own decision. This approach to test development is different from the tests made according to classical test theory where inconsistency of responses on various test items is treated as a measurement error leading to the interpretation of lower reliability. In MCT, no objective response criteria are set to judge consistency of responses and response inconsistency is not attributed as a measurement error; instead, the response inconsistency is treated as a genuine intra-subject variability within the same instrument (subjective variance) and is included as part of the scoring of the test.

Educational Environment and Moral Competence

People would develop effective learning only when they would have an opportunity to actively interact with educational stimuli. Information does not have meaning in itself until it becomes part of one's experience and any piece of information can become part of experience when a learner has an opportunity to actively attend, organize, manipulate and reject that information (Mergler, Spencer, & Patton, 2008). Lind (2016b) thinks that like other cognitive abilities, moral competence is also a learnable and teachable phenomenon depending on the provision of conducive environment where this competence can be fostered. Considerable research has shown that moral competence is enhanced when participants receive such educational environment where they have opportunities of guided reflection and active role-taking (Lind, 1985a; Lind, 2006, 2016b; Lupu, 2009; Schillinger, 2006; Schillinger & Lind, 2002). Moral competence does not seem to improve with traditional teaching methods where students have a passive role and discussions focused on moral issues are not encouraged. Indoctrination of moral values also does not seem to be a good strategy, because it does not provide an opportunity of reflective thinking on moral issues. For Lind (2008), the moral principles or ideals are more or less universal as measured by MCT and it is the competence aspect (which is the consistent application of these ideals) that needs to be improved. The focus of indoctrination or straightforward lecturing is to instill moral values in subject's mind which is usually unnecessary as most of the people have an idea about goodness and they want to be good. Unless a person is put into some actual moral conflict and provided a suitable opportunity to think through it, they cannot be improved morally.

The role-taking activities provide opportunities to acquire practical decision making roles where people can face real-life dilemmas "a complex new helping

experience in a real world context such as teaching for the first time, mentoring, counseling, tutoring, collaborative inquiry, or a community internship that is voluntarily assumed by a person. The role-taking (action) precedes and shapes the intellectual consciousness (reflection) that grows out of it" (Reiman, 1999, p.603). Education is important both for fostering moral cognitive development and for making it stable across times. The self-sustaining moral-cognitive development has been found in people with such careers that demand higher levels of education; people who have lower levels of education show lower levels of moral competence and also competence erosion. A study found that students from middle schools in Germany who at the age of15 became apprentices as well as students from vocational schools where they worked for four days or joined labor force gradually lost their moral competence while students who continued higher education showed gradual increase in their competence (see Figure 1).

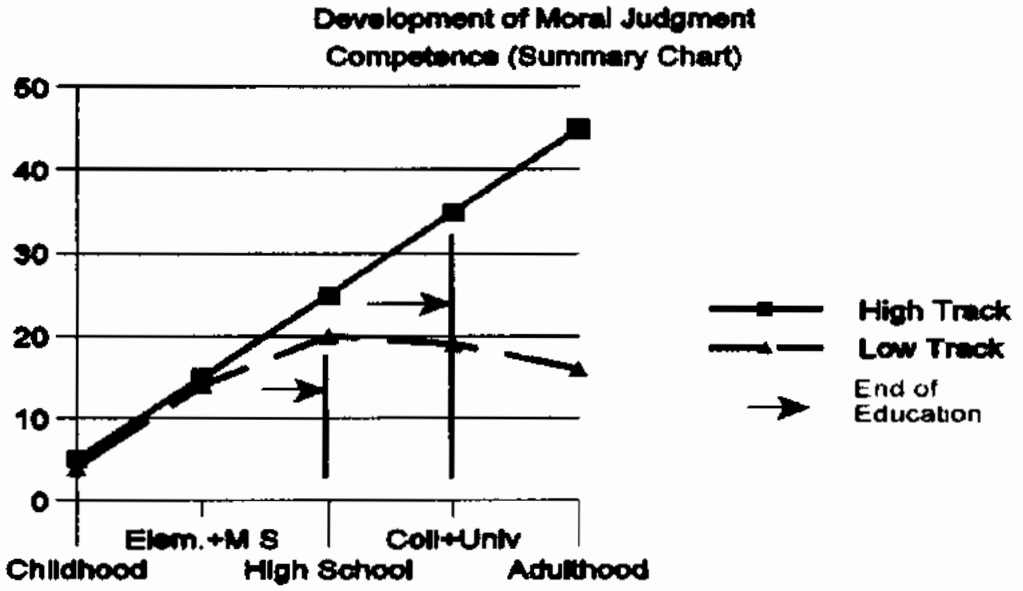

Figure 1. Moral sustainability patterns of high track (university/college) and low track (elementary/middle school) students

Source: Lind (2000). The importance of role-taking opportunities for self-sustaining moral development. Journal of Research in Education, 10(1), 9-15.

Niemczynski et al. (1988) cited in Lind (2000a) showed stability of moral competence in male subjects with a university degree, while males with lower education showed significant loss in moral competence. It is important to note that only education is not enough for sustainable levels of moral competence. Self-sustaining levels of moral development can be obtained when the individuals have reached a certain threshold and have acquired critical levels of moral competence. This critical level of moral competence can be achieved with educational environment that not only provides role-taking opportunities but also the guided opportunity of reflective thinking. The availability of competent advice and opportunities for reflection are very important. According to Reiman (1999), guided reflection can be described as "one that describes a process of problem solving, reconstruction of meaning, and subsequent reflective judgments while persons are engaged in significant new activity"(p. 598) and "the word guided, in guided reflection, implies active consideration by more capable others or co-learners of a person's ZPD or current preferred ways of solving complex problem"(p. 600),), where ZPD or zone of proximal development is "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, cited in Reiman, 1999, p. 600). The guided reflection opportunities require conducive environment where capable teachers, mentors or instructors can provide ample opportunities to their pupils to think about variety of matters and take responsible roles as well. When faced with new problems and with sufficient opportunities to think about these problems, a state of dissonance or in a Piagetian sense a disequilibrium is created in students' minds that

leads to greater ability to cognitively work through the problems to reach at a solution and a decision.

Educational institutes especially colleges and universities that are centers of higher education programs can be effective places to provide to students such opportunities of reflective and critical thinking about the matters of personal, social and political importance. Students can engage in many tasks and activities that help them achieve not only specific skills related to their professions but also the general skills needed in their day-to-day lives. According to Dunne (2015), higher education has the goals of; (i) the pursuit of truth through critical investigation, (ii) the expansion of the student's outlook, (iii) the development of student's capacity for social and civic interaction, and (iv) the development of the student's general intellectual capabilities. The impact of conducive educational environment that supports reflective thinking has been established in many studies. Schillinger (2006) found significant effects of educational environment on students' moral competence in a cross-cultural study conducted on university students of Germany and Brazil. She found that quality of learning environment and not the number of years of study had a significant impact on students' moral competence. Students in lower quality of education (especially institutes where plentiful opportunities for guided reflection and role-taking were not present) showed lower moral competence and even moral regression. Similar findings have been reported by Lupu (2009), Saeidi-Parvaneh (2011), and Rose (2012). In a longitudinal study by Rest and Thoma (1985), they found greater effect of higher education on moral judgment using DIT. Kim and Park (2019) in a Korean study found a significant improvement in the idealistic moral judgment and realistic moral judgment in the group that received debate-based ethics education than the group that received simple lecture-based ethics education.

Paxton, Ungar, and Greene (2012) in an experimental study used Critical Reasoning Test (CRT) that is used to make people become more reflective in their answers while inhibiting an intuitive but incorrect response. They found that exposure to CRT test prior to the introduction of moral dilemmas led the participants to be more reflective of moral arguments as they showed more acceptability for utilitarian moral solutions for dilemmas as compared to those participants who were not exposed to CRT first. In their second study, they found that stronger arguments (containing more information, background, and scientific reasoning) were more persuasive than weak ones to accept some moral position but only when subjects were encouraged to reflect by giving them extra time to think.

A longitudinal study by Deemer and Rest (in Rest, 1986) on high school students using Defining Issues Test (DIT) as a measure of moral judgment showed that those students who completed college degrees displayed significant gains in DIT scores. Those students who did not attain college degrees dropped in DIT scores and those who had some college education tended to show moderate changes in DIT scores. Colby et al. (1983) using Kohlberg's moral judgment interview also found a positive correlation between education, IQ and moral judgment, while Deemer (1987, cited in Rest & Narvaez, 1991) had shown that students who were highly involved in academics showed significant gains in moral judgment in DIT. Liaquat (2012) found madrasah students showing significantly low moral competence on MCT in comparison to college and university students in Pakistan.

Following Ennis's definition of critical thinking, Larsson (2017) conducted a textual analysis of Swedish school students' responses to ethical tasks related to deontological arguments about death punishment and importance of forgiveness in order to trace the use of critical thinking skills in those responses. The author found

various depths and degrees of application of critical thinking skills in students' ethical reasoning. The author concluded that, generally, students with more profound use of critical thinking made more accurate ethical decisions and showed more flexibility of thought in their ethical judgments.

Differential Processing of Moral Dilemmas: Two Systems View of Moral Judgment

Literature tells that moral judgments are related to two systems, a lower one and a higher one (or system 1 and system 2), also sometimes called a dual-process theory (Baron, Scott, Fincher, & Metz, 2015; Greene, 2009; Greene, Sommerville, Nystrom, Darley, & Cohen, 2001). System 1 is fast, unreflective, effortless, driven by emotion, based on associations rather than rules, and puts less load on cognitive apparatus. System 2 sometimes is said to respond after the system 1 has produced a tentative judgment and is more controlled, effortful, and analytical in nature.

Greene et al. (2001) conducted an experimental study to test the dual-process theory of cognitive systems for utilitarian moral judgments. They used two moral dilemmas called trolley dilemma and footbridge dilemma. The trolley dilemma is a relatively mild situation where subject is asked for a preferred course of action if a runaway trolley that is heading toward five people can kill them; the people can be saved only if a switch is pressed in time that would change the track of the trolley toward one person only, the trolley then would kill that single person instead of five. The other dilemma i.e. the footbridge dilemma is relatively stronger one in which a person is asked about a preferred course of action if the trolley that is heading to kill five people can only be stopped by pushing and throwing another person from a footbridge to in front of the trolley, killing that single person but saving five. They theorized that people would use system 1 for the resolution of footbridge dilemma that

is emotionally stronger due to the nature of the act performed (moral personal dilemma), and would use system 1 reasoning for the resolution of trolley dilemma (moral impersonal dilemma). The fMRI findings showed distinct brain mechanisms underlying the two sorts of dilemma resolutions: personal dilemma activated the limbic system areas associated with emotional processing including medial frontal gyrus. posterior singulate gyrus, angular gyrus L and R. The impersonal dilemma activated frontal regions including middle frontal gyrus and areas of parietal lobe that are more related to working memory and cognitive control. They also measured the reaction time of subjects providing answers to moral dilemmas. The subjects took the longest time to agree with the solution to save the lives of five men (i.e. throwing the man in front of trolley) in a footbridge dilemma which indicated that while resolving moral personal situations people need to make effortful thinking and to put more cognitive load to reach at a solution. Though no direct evidence of this nature has been reported in studies conducted using MCT as a tool of assessment of moral competence, in several studies using MCT, a discrepancy of c-scores between two dilemmas is frequently noted, the phenomenon that was later termed as 'moral segmentation' (Bataglia et al., 2002; Lind, 2000b; Schillinger, 2006; Schillinger & Lind, 2003). Moral segmentation has been consistently reported in more conservative societies specially where people are oriented toward more dogmatic religiosity. According to Lind (2000b):

> "Religiously oriented subjects suppress their autonomous moral judgment on dilemma contents, on which the church takes a strong stance. The segmentation phenomenon seems to indicate that *internalized rules (super-ego)* rather than external social pressure constrain the use of *autonomous* moral judgment" (p. 03) (emphasis added).

The neurological studies using MCT have reported a correlation between moral competence scores and activity in the dorsolater prefrontal cortex (DLPFC) region of the brain (Li, Yang, Li, & Li, 2016; Prehn et al., 2008) hinting at more controlled and rational nature of moral activity, though studies lack the neurological findings related to differences in competece for c-scores in two dilemmas on MCT. Going with Lind's (2001b) interpretation of poor c-score on euthenasia dilemma (which is harder and emotionally more arousing than the workers' dilemma) comparing to the workers' dilemma in the background of the findings by Greene et al. (2001), it can be suspected that distinct cognitive/neurological processes are involved when persons are attempting these two dilemmas. Emotional processing might dominate while attempting the euthanasia dilemma comparing to milder situation in the workers' dilemma that might put less cognitive load.

Moral Judgment and Socio-Politcal Attitudes

Moral judgment has been found to have a relationship with conservative and liberal ideological affiliations in various cultures. According to Narvaez, Getz, Rest, and Thoma (1999), moral judgment along with fundamentalism creates an ideological complex of 'orthodoxy' which becomes stronger at the time when people are acquiring maintaining norms schema; this orthodoxy especially leads to the generalization of religious doctrines over civil and political systems. In a study by Ishida (2006), moral competence scores (measured on MCT) were negatively correlated with idealistic orientation. Subjects with the absolutist orientation got the lowest c-scores in comparison to subjectivist relativists.

Gross (1996) conducted a study to find the relationship between moral competence and political ideology among political activists. The findings showed that, in the US sample, the liberals got significantly higher scores on moral competence than

the conservatives. In a study by Lind (1986), samples from five Esatern and Western European countries were compared on the moral affects and moral competence. The results showed no significant differences in preferred moral choices in all five countries; however, a significant difference of moral competence was noted. Students from more conservatively oriented Eastern European countries showed lower moral competence than ideologically more liberal Western countries.

In a Brazilian study, Bataglia et al. (2002) compared the levels of moral competence (using MCT) among groups of people highly committed to religion and people with no commitment to religion. Although no between-group moral segmentation was observed, within-group segmentation was noticeable as both groups got higher scores on workers' dilemma than euthanasia dilemma. Due to the conservative nature of Brazilian culture, the authors concluded that cultures that are stronger on orthodoxy or conservative dimension usually tend to show more segmentation in comparison to people belonging to cultures with more liberal orientations.

National Militarism

Militarism is an attitude supportive of military having a central role in many affairs of the state and the nation as usually defined by the military strength it has. Vagts (1967) defined militarism as a "complex of feelings which rank military institutions and ways above the ways of civilian life, carrying military mentality and modes of acting and decision into the civilian sphere" (p. 15). According to Stavrianakis (2015), militarism can be broadly defined as "an ideology glorifying war; the propensity to use force; military buildup; excessive influence (of either the institution of the military or of the military–industrial complex (MIC); or the influence of military relations on social

relations in general" (p. 490). Militarism as an ideology puts military at the center stage, war is glorified, military institutions and military values are considered to be prime in importance. A decade prior to World War I, European climate could be explained as captured in a myth of war. Honor, patriotism, duty and courage became the core aspects to judge various nations. For Stavrianakis, the ideological definitions are less glamorized and rarely used these days due to change in global circumstances owing to the growth and popularity of democratic institutions, although the basic idea of militarism sustains and is more prevalent in the forms of favorable militaristic attitudes. Skjelsbaek (1979) has explained three dimensions of militarism.

i. Militaristic Behavior. This is an excessive use of violence, which can be directed against other human beings, military installations or anything useful for human survival. Latent use of weapons, as a policy to make defense stronger and as a strategy of deterrance to meet potential threats, are also kinds of militaristic behaviors.

ii. Militaristic Mind. According to Skjelsbaek, some individuals are more prone to warfare than others. Mental attitudes and inclinations provide a sowing field for war engagements. There is a debate about whether human aggression is innate, instinctual or a product of social exploitation and social conditioning; however, the militaristic mind readily accepts, enjoys and endorses violence. This acceptance of violence is not a simple thing to be explained as it is ususally fueld by societal and cultural values, beliefs about human nature and social relationships, cognitive schemas and emotional characteristics of indiviudals.

iii. Structural Militarism. it is the structure of military organization as a unit of a particular society in comparison to other civil units of the same society. The utilization of resources, percentage of educated population joining military, size of

military personnel, etc. are the indicators of strucutral aspect of militarism. Another aspect of structural militarism is about the relationship of military organization with national political institutions that are highlighted by various patterns of control, integration and infiltration.

As the literature quoted above, moral competence seems to have a strong relationship with reflective, critical thinking and oveall cultural environment. Conservative cultures have been found to reduce or hamper moral competence due to the climate not supportive of flexible debate on various moral issues. The moral competence is also called 'democratic competence' and is enhanced in social climates that are more democratically oriented. Cultures that experience frequent disruptions in democratic process due to military interventions, or partially supportive environment for democracy, or no democracy at all tend to show underdeveloped moral competence.

In a study conducted by Seitz (1991), moral competence showed a positive correlation with understanding of democratic institutions, tolerance of ambiguity, anti-authoritarianism and refusal of violence. In a five-year longitudinal study of Eastern and Western European countries from 1977 to 1982 (Nowak & Lind, 2009, 2018) a distinct pattern of c-scores was observed especially for Polish university students. From the 1977 to 1979, a rise in moral competence (the study used only c-scores for euthanasia dilemma) was observed, while a significant decline of c-socres was observed from 1979 to 1982. The authors interpreted the time period in which the c-scores improved due to the democratizaton process going on at that time in the Polish culture with atmosphere of semi-legal discursive freedom, tolerated by some university teachers and participation to criticize the legal order of that time. The sudden drop of c-scores was attributed to the military coup d'état that spanned from December 1981 to July 1983 and that ultimately led to the reversal of the democratic process. The German

sample at that time period showed overall higher c-scores and a steady pattern of c-socres throughout these years.

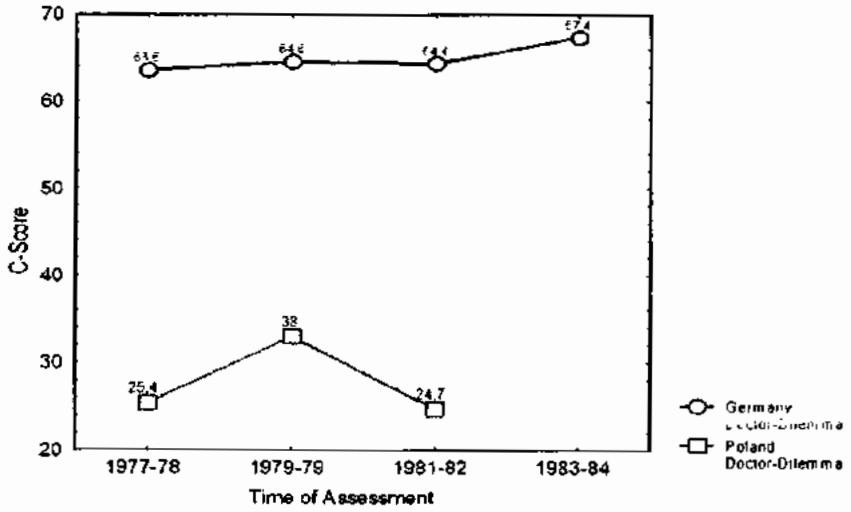

Figure 2: Change of moral competence scores for Polish and German samples before and during the Polish martial-law period (i.e. December 1981)

Source: Nowak, E. & Lind, G (2018) Mis-educative martial law – The fate of free discourse and the moral judgment competence of Polish university students from 1977 to 1983. Ethics in Progress. 9(2), pp 56-74

Findings like that suggest that moral competence flourishes in a liberally conducive environment and is linked with more democratic ideology. van Ijzendoorn (1987) found significant correlation between moral judgment (measred through SROM which is based on Kohlbergian dilemmas) and concern about nuclear war. Moral judgment was also significantly related with moral critical attitude toward NATO. In a study conducted in Pakistan, Asim, Liaquat, and Shah (2014) found a negative correlation of moral competence with national militarism (r = -.27). and negative correlations between higher moral orientations (stage 4, 5, and 6) and national militarism in a sample from Southern Punjab region of Pakistan

The studies and theoretical directions indicate to the point that conservative groups are less likely to obtain higher c-scores and tend to have more moral segmentation on two distinct dilemmas presented in MCT. This leads to the hypothesizing that countries like Pakistan that are more conservatively oriented, with deeper roots in religion would show distinct patterns of moral competence scores and moral segmentation. Also keeping in view the history of Pakistan where democracy is still fragile with frequent military interventions in the form of martial law governments and religious and ethnic conflicts, this study also attempts to establish a direct and mediating effect of moral competence with attitude toward military strength of the country (also called national militarism or militarism) and ethnocentrism. There is a strong assumption that general critical thinking skills affect moral competence as the literature suggests that moral competence is improved when educational institutes build critical thinking habits in students by providing an opportunity of guided-reflection and active role-taking. Moral competence might intervene as a positive variable to change our attitudes toward more conservative cognitive dimensions.

Ethnocentrism

According to Klopf (1998), ethnocentrism is a composition of two Greek words: *ethnos* meaning nation and *kentron* which implies center. So literally, ethnocentrism means considering one's nation as the center of everything. In actuality, the term ethnocentrism can be applied narrowly to a group within a country (e.g. Punjabi, Pakhtun) or to country-related nationality (e.g. Pakistani, Indian) or even beyond country (e.g. Asian). Essential thing is that the group must see themselves as a unique grouping and one to which they have strong emotional ties. In fact, ethnocentrism refers to the central position that is granted by the individual to the group with which they

most strongly identify. One can be ethnocentric with regard to one's country, and/or with regard to one's ethnic group, or religion or region of one's origin.

Ethnocentrism is the core concept to understand the ingroup-outgroup attitudes. According to Sumner (1906), ehtnocentrism can be defined as "the technical name for this view of things in which one's own group is the center of everything, and all others are scaled and rated with reference to it. . . Each group nourishes its own pride and vanity, boasts itself superior, exalts its own divinities, and looks with contempt on outsiders" (p. 13). The ethnocentric groups see the ingroup memebers as superior and virtuous, and consider their own group values as uinversal and the point of reference The outgroup members are seen as aliens, contemptible, weak, and immoral. Behaviorally, the ingroup members cooperate in matters of mutual importance and show compliance to group norms, while disobediance and competition is expressed for the outgoup members (Neuliep & McCroskey, 1997). Ethnocentrism as a negative psychological aspect has been viewed by various scholars (Adorno, Frenkel-Brenswik, Levinson, & Sanford, 2019; Levinson, 1950). According to LeVine and Campbell (1972), ethnocentrism contains the following tendencies:

(i) to distinguish different groups; (ii) to perceive situations in terms of the group's own interests; (iii) to consider one's own group as the center of everything and to regard its way of life as superior to all others; (iv) to be doubtful of and feel contempt for other groups; (v) to view one's own group as superior, forceful, and diligent: and (vi) to see other groups as inferior, powerless, and cheap troublemakers.

Adorno et al. (2019) in their book *The Authoritarian Personality* discussed the psychology of anti-democratic nature of personality that is behind anti-semitism and fascism. They pointed out for the first time that ethnocentrism was a kind of personality

trait and prejudices against minority groups or other outgroup members should not be treated in isolation without keeping in view the personality aspect of these behaviors. Allport (1954) considered prejudice as a natural human tendency to categorize peoples and groups as was the case with many other cognitive phenonmena. There was nothing abnormal in prejudice as the categorization of information was natural to make sense out of the meaningless and overwhelming sensory information. For him, this was mind's information-organization function to make sense of the social world (Cargile & Bolkan, 2013). Evolutionary pscyhologists even have described ethnocentrism as a natural biological phenomenon that "represents an extension of the basic mechanisms underlying kin-group selection to ethnic groups" (Bizumic & Duckitt, 2012; p. 02). Instead of taking a prejudic point of view of ethnocentrism as provided by Adorno et al. or Livineston; Bizumic and Duckitt (2012) defined ethnocentrism as 'an ethnic group self-centerndness', and 'group level narcissism'.

Historically there seems to be a shift in how scholars and researchers approached the concept of prejudice in general and ethnocentrism in particular. Different theories and approaches for explaining prejudice remained dominant in different historical periods. In the 1950s, Adorno's theory of authoritarian personality remained dominant and produced a considerable research. In the 1960s and 1970s, emphasis on sociocultural processes became central, while from 1980s onward the cognitive theories of prejudice came to forefront (Duckitt, 1992).

Bennett's Developmental Model of Intercultural Sensitivity (DMIS)

Based on constructivist perception and communication theory (Berger & Luckmann, 1991), and perceptual integration and accomodation pesented by cognitive developmentalists (Mooney, 2013), the DMIS by Bennett (1993, 2017) proposes that

intercultural challenges cause people's experiences of cultural differences to become more complex; these experiences increase cultural competence of people to understand and develop intercultural relationships. The movement from communicative competence in one's own culture to communicative competence across cultures is the key concept for DMIS. Bennet proposed a six stage model with two general levels of ethnocentrism and ethnorelativism with each stage representing specific cultural orientation showing increasing culutral sensitivity. The names of the stages respresent the issues or specfic cultural orientation while the description of each stage shows its perceptual structure. This theory depicts perceptual structures changing from ethnocentrism to ethnorelativism. The first three stages of Denial, Defense, and Minimization represent ethnocentrism; as these refer to issues where person's own culture is thought to be central. The last three stages of Acceptance, Adaptation, and Integration are ethnorelative; these refer to the perceptions that all other cultures are different ways of organizing reality. Bennet's conception is not like stage theories presented by cognitive developmentalists, where persons must move to next stage once the previous stage requisites are fulfilled. In this model, movement through the stages is not inevitable; it depends on the need to become more competent in communicating outside one's primary social context. People can remain in the fist stages of intercultural sensitivity if no need arises to change one's attitudes. If the need is present, people can form new complex structures to deal with increasingly complex issues of cultural adjustments. The brief description of six stages are given below:

Stages Representing Ethnocentric Orientations

i) Denial. Inability to perceive that culturally different people really exist. Perceptual catgeories are not so elaborate to look at dfferences in variations of otherness. Others might be vaguely perceived as minorities without much congnizance

of subtleties of the nature of differences. Denial occurs if people who desire more stable perceptual systems are forced to experience cultural diversity, e.g. in case of significant number of migrations or immigarations happen in their culutre and people have to face cultural differences.

ii) Defense. When people are able to resolve the first stage of denial, they can move to a little more inclusive stage of defense. People at this stage do not totally reject the possiblity of others' existence. Instead, this stage is dichotomized into "us versus them" distinction. In this stage, one's own culutre is defended at all costs and people from other cultures are seen in a stereotypical negative and inferior ways. This can be resolved by focusing on commonalities and shared values of humans, in general, irrespecitve of cultural affiliations.

iii) Minimization. In this more inclusive stage, people start reconizing that some cultural aspects are not exclusive, rather they are shared by other cultures as well. These similarities are mostly grounded in one's own cultural perceptions and lack cognizance about deeper cultural differences. The similarities are exaggerated and genuine culutural differences are ignored that put people at risk to revert to earlier stage of Defense if exposed to those genuine cultural differences.

Stages Representing Ethnorelative Orientations

iv) Acceptance. People start recongnizing actual cultural similarities and differences. This does not mean wholehearted accpetance of everything because the cultural differences might be judged negatively. But people become more interested in knowing about other cultures.

v) Adaptation. This stage is marked by increasing empathy and ability to understand cultural nuances. People develop the ability of context-shifting and become

able to put themselves into others' shoes. Like bilingualism, people may develop biculturalism, that means ability to understand things with diversified cultural conceptions in mind.

vi) Integration. In this final stage of cultural competence development, people become able to communicate on the basis of sustainable integration of cultural differences. People develop a kind of meta-cultural outlook whereby they can easily come in and out of various cultural contexts and, thus, cross-cultural mediation becomes easier.

Cultural Competence and Moral Judgment

The relationship of ethnocentrism with moral judgment is an important consideration as moral and cultural dilemmas are largely interrelated. The cognitive developmental theories of moral reasoning support the assumption that ethnocentrism should corrleate negatively with moral judgment. As a general hypothesis, we know that as moral judgments are prone to negatively correlate with militarism which sometimes leads to aggression and degradation of democratic values, so moral judgments should also discourage discriminating characteristics of people, such as sex, race, and status. In a democratically balanced society, all individuals need to be treated on the basis of equality and basic human rights should be protected. A number of studies confirm this general hypothesis. van Ijzendoorn (1989) found significant negative correlations of moral judgment (measured through Sociomoral Reflection Objective Measure (SROM) based on Kohlbergian dilemmas) with authoritarianism, ethnocentrism, and political position in Dutch university students. Similar findings have been reported by him in another study as well (van Ijzendoorn, 1990). AlSheddi, Russell, and Hegarty (2020) found a cultural relativity of moral ideals in Saudi Arabian

and British subjects. Saudi subjects showed greater orientation toward ethnic and group-related morality while British subjects identified themselves with individualistic morality.

Multicultural experiences in particular are hypothesized to be relevant to both moral and intercultural development by means of promoting flexible thinking. Rich social expereicnes in general are found to be positively related to moral judgment (Rest & Narvaez, 1991). Endicott, Bock, and Narvaez (2003) argued that increase in moral judgment complexity and intercultural sensitivity represented increases in types of flexible thinking. They investigated the parallel development of moral judgment and intercultural sensitivity on the hypothesis that neo-Kohlbergian moral developmental approach (Rest et al., 2000; Rest et al., 1999) and developmental model of intercultural sensitivity (Bennett, 1993) both are based on the critical shift from rigid thinking to more flexible modes of thinking. As predicted, they found that postconventional schemas were, on one hand, negatively correlated with ethnocentric orientations while, on the other hand, they were positively correlated with ethnorelative developmental stages.

Rationale of the Study

As suggested in the literature, moral competence has a strong relationship with educational environment that has good opportunities for reflective thinking and role-taking (Liaquat, 2012; Lind, 1985a, 2000a; Lind, 2016b; Schillinger, 2006; Schillinger & Lind, 2002; Schillinger & Lind, 2003). This study has derived ideas from some important theoretical foundations. Main operationalizations were based on Cornell-Illinois Model of critical thinking by Ennis (1962, 1987, 1996, 2011a, 2011b, 2015a, 2015b), and the dual-aspect theory of moral affects and moral competence by Lind

(1985b, 1989, 2000a, 2008). Some indirect assumptions were made based on the work of Greene et al. (2001) for an idea of differential moral judgments depending on type of dilemmas, that is also a phenomenon of moral segmentation on MCT (Lind, 2000b).

In a previous study conducted by the author (Asim et al., 2014) a negative relationship between moral competence and national militarism (r = -.27), and negative relationships of higher moral stages with national militarism (stage 4, r = -.29, stage 5, r = .27, stage 6, r = -.23) were established. Positive impact of university education on moral segmentation was also observed (Liaquat, 2012). Studies have also found lower moral competence scores in Pakistani samples comparing to several international studies (Asim et al., 2014; Irfan, 2019; Liaquat, 2011, 2012). In a previous study by the author (Liaquat, 2012), the impact of educational environment on moral competence was observed. There were problems in operationalizing the educational environment in terms of role-taking opportunities as the ORIGIN/u questionnaire developed by Schillinger and Lind (2002) was based on German educational system that markedly contrasted with Pakistani educational system. In Pakistan, the educational system has remained a neglected sector with dearth of funding and lack of clear and consistent policy decisions (Hamiddullah, 2005; Rahman, 1998, 2004). The system is built on traditional grounds where creativity is less encouraged than obtaining good grades. In spite of it, the role of Higher Education Commission (HEC) in Pakistan is noteworthy; according to an estimate, a three hundred percent increase in international research publications was observed for Pakistani universities in five years since the establishment of HEC (Qazi, Simon, Rawat, & Hamid, 2010). Pakistani society, in general, is going through a transitional phase. After about a decade of terrorism, violence, and political unrest due to the aftermath of 9/11, Pakistani society is finding its steps once again and coming back to normalization. Historically, democracy in

Pakistan had remained waxing and waning due to frequent military interventions. Due to an instable democratic system, the military has far stronger influence upon general public shaping their conceptions of power; hence, military and civil administrative services in Pakistan still remain the first choice for the youth due to more prestige, power and financial status associated with these careers (Rahman, 1998). Though the dominant majority of Pakistan follows Islamic faith i.e. 94.6%, Pakistan is an ethnically diverse society. According to an estimate, Pakistani society comprises 52.6% of Punjabi, 13.2 % of Pashtun, 11.7% of Sindhi, 7.5% of Muhajir, 4.3% of Baloch and 10.7% of other ethnic groups (Burki & Ziring, 2020). There always remain questions on distribution of resources and equality in terms of jobs, facilities and social status for various ethnic groups. The civil and military bureaucracy is dominantly Punjabi and Pashtun (Ahmed, 1996). The ethnic tensions in Pakistan have several dimensions ranging from genuine ethnic differences and unequal opportunities, to political exploitation by various interest groups (Azhar & Muhammad, 2017; Levesque, 2013; Majeed, 2000).

Considering higher education as the backbone for the development of human resources in the modern world, and for democracy that is the legitimate system of governance in Pakistan, it is important for the educated citizens of Pakistan to have sufficient and well-developed democratic competencies. This study tries to establish a link between critical thinking skills and moral/democratic competence. A good quality education especially the higher education at the levels of colleges and universities in Pakistan should develop the necessary critical thinking skills and flexibility of thought which is the objective of all educational policies of Pakistan as well as around the world. If the link between moral competence and critical thinking is established, then certain policy decisions can be made to include critical thinking as a focused learning program

within campuses. Furthermore, if the impact of critical thinking and moral competence on militarism and ethnocentrism is established, then it would be an important finding in terms of theory validation and refinement as well as practical implication. Considering the history and status of military in Pakistan, it is expected that people of Pakistan would like militaristic solutions to political problems and, considering multi-ethnic diversity, it is also expected that certain ethnic groups would be more ethnocentric. Higher levels of militarism and ethnocentrism are not desirable in democratically oriented societies that are mostly (at least ideally) based on the principles of equality of citizens in terms of opportunities and status. Developing good amounts of moral competence might hinder these tendencies helping individuals to become more democratically functional human beings. This study is both theoretically and practically relevant considering the present-day problems of Pakistan. Findings of this study might help a great deal in providing fruitful insights for the formulation of policies aiming at enhancing critical thinking skills in future.

Conceptual Framework

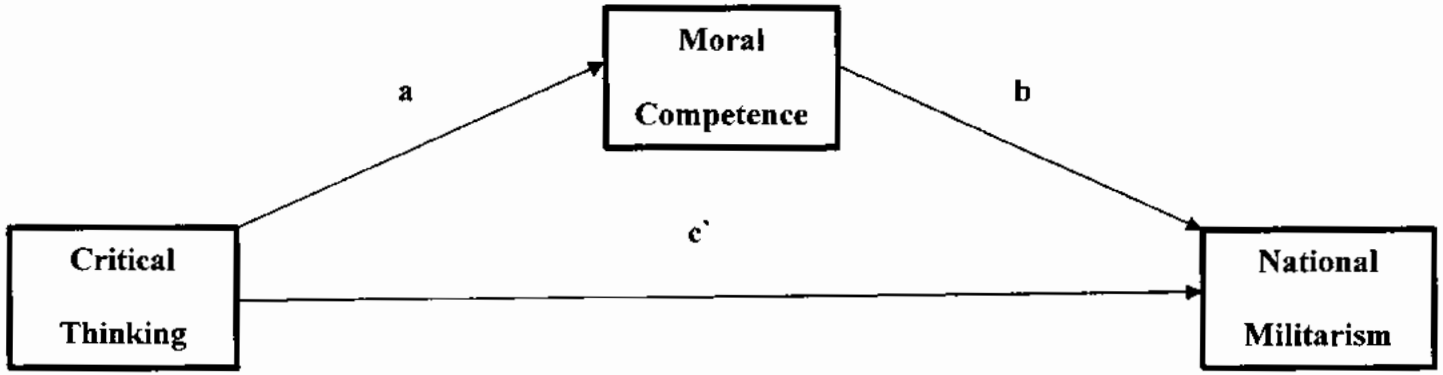

Figure 3 (a): Effect of critical thinking on moral competence and national militarism; effect of moral competence on national militarism; mediating role of moral competence between critical thinking and national militarism

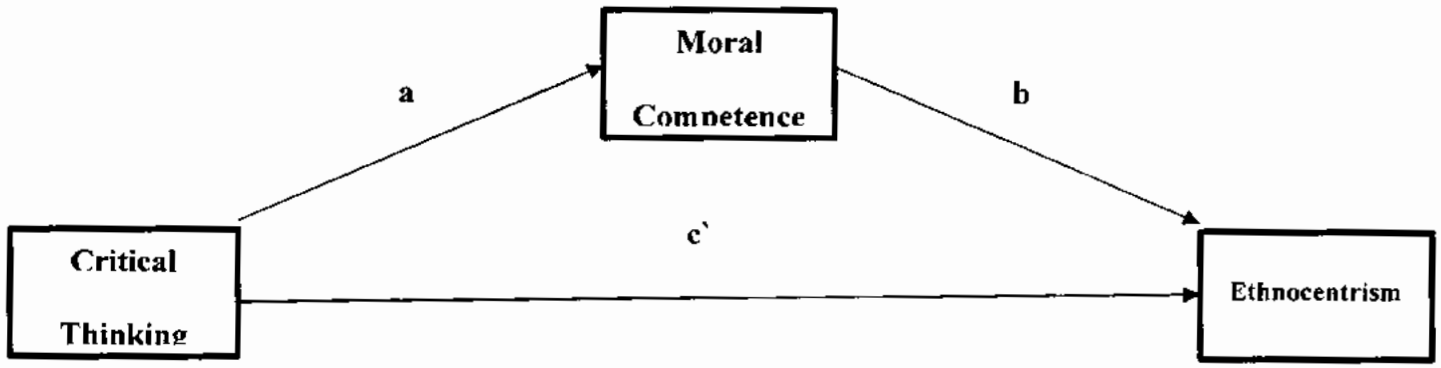

Figure 3 (b): Effect of critical thinking on moral competence and ethnocentrism; effect of moral competence on ethnocentrism; mediating role of moral competence between critical thinking and ethnocentrism

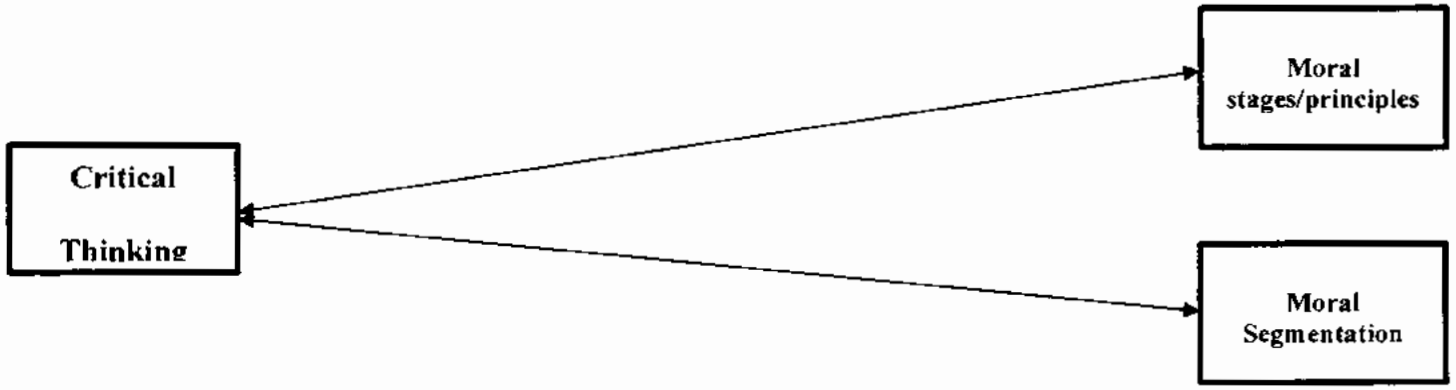

Figure 3 (c): Relationship between critical thinking, moral principles/stages and moral segmentation

METHOD

Method

This research comprised three phases; phase-I dealt with Urdu language translation, adaptation, and establishment of psychometric properties of the Cornell Critical Thinking Test (CCTT)-Level Z; phase-II was a pilot study, and phase-III was conducted to test research hypotheses.

Phase I: Urdu Translation and Adaptation of CCTT-Z

The Phase-I of the present study had the following objectives.

Objectives

1. To translate and adapt Cornell Critical Thinking Test (CCTT)-Level Z into Urdu language.
2. To examine the item difficulty and item discrimination indices of the Cornell Critical Thinking Test (CCTT)-Level Z (Urdu version)
3. To examine the factor structure of the Cornell Critical Thinking Test (CCTT)-Level Z (Urdu version)
4. To examine the reliability of the Cornell Critical Thinking Test (CCTT)-Level Z (Urdu version)

Translation and Adaptation of the Test into Urdu Language

The phase-I of the present research is based on the translation and adaptation of Cornell Critical Thinking Test (CCTT)-Level Z into Urdu language and establishing its psychometric properties. Brislin's (1970; 1986) translation guidelines with some modifications were used (Jones, Jerry, Linda, Zhang, & Jaceldo, 2001; Willgerodt, Kataoka-Yahiro, Kim, and Ceria, 2005, p. 231-233). The first phase was conducted in a systematic manner as given below.

Step I: Forward Translations

Three different Urdu language test translations were obtained from three bilingual experts, including a university lecturer in the field of psychology from National University of Modern Languages, Islamabad, an assistant professor of Psychology specializing in Educational Psychology (for more specificity) from Government Gordon College, Rawalpindi and a lecturer in Urdu language from the same institution with an experience of translations of various literary works from English language into Urdu language.

Step II: Review and Selection of an Appropriate Translation

A separate panel consisting of a university lecturer in psychology from National University of Modern Languages, Islamabad, a PhD assistant Professor of Psychology from International Islamic University, Islamabad, and a PhD assistant professor of Psychology from Government Viqar-un-Nisa College, Rawalpindi reviewed all three translations resulting in a merger of single agreed-upon translation.

Step III: Back Translation of the Urdu Language Translated Version

The final translation was blindly back translated into English language by a bilingual English language Assistant professor from Government Gordon College, Rawalpindi. The translated and back-translated versions were assessed by a PhD Assistant Professor of Psychology at International Islamic University, Islamabad. Certain modifications were made in the Urdu language version that was again back translated to see its equivalence with the original Urdu language version.

Step IV: Pre-tryout Study

A pre-tryout study was conducted on a small sample (N = 15) of college students. Overall, the test was reported to be very hard and lengthy that required quite a lot of effort on part of the participants. The time limit suggested for the administration

i.e. 50 minutes did not seem sufficient to complete the test. Participants took about 1 hour and 15 minutes to about 1 hour and 45 minutes for completion of the test. Since certain lingual difficulties were noted related to the comprehension of difficult words and terms, so slight modifications were made based on that.

Step-V: Selection of Final Translated and Adapted Version of the Test

Going through all the above steps, a final translated version was quite appropriate and equivalent to the English language version. Keeping in view the *emic* and *etic* sensitivity (Berry, 1969; Barnouw, 1982; Phillips & Luna, 1996), certain changes were made in the test to make it more culturally familiar. These changes mainly concerned with introducing indigenous names instead of foreign ones without affecting the core structure of the test. The major changes that were introduced in the Urdu language version of the test are provided in the following table.

Table 1

Major changes in the Urdu language adaptation of CCTT-Level Z

Serial No.	Type of Change	English Language Version	Urdu Language Version
		Section IA and IB	**Section IA and IB**
1	Name of person	Mr Pinder	Parvaiz Sahab/پرویز صاحب
2	Name of person	Mr Wilstings	Wajahat Sahab/وجاہت صاحب
		Section II	**Section II**
3	Name of person	Dobert	Daniyal/دانیال
4	Name of person	Algan	Ahsan/احسان
5	Name of city	Galton city	Fateh Abad/ فتح آباد
		Section III, IV, V	**Section III, IV, V**
6	Name of person	Dr E. E. Brown	Dr. Baqir/ڈاکٹر باقر
7	Name of person	Dr M. R. Kolter	Dr Kamran/ڈاکٹر کامران

8	Name of duckling	Mallard	Green headed duck/ سبز سر والی بطخ
9	Name of duckling	Pintail	Pin tailed duck/ نوکیلی دم والی بطخ
10	Name of duckling	Canvasback	White Back duck/ سفید پشت والی بطخ
		Section VI	**Section VI**
11	Name of person	Bill	Naeem/نعیم
12	Name of person	Joan	Junaid/جنید
13	Name of person	Mary	Sara/سارہ
14	Name of person	Jim	Nadeem/ندیم

Specific names of ducklings (Mallard, Pintail, and Canvasback) were used in the English language test. It was difficult to translate these names into Urdu language as no Urdu language equivalent words existed for these types of ducks. The internet search revealed that these names matched with outward features of the ducks (especially Pintail-that has a pointed tail, and Canvasback-that has a white back like a canvas). So, the English names were replaced with such names in Urdu language that described these characteristic features of the ducks. In order to make things more comprehensible, the colored pictures of three types of ducks were also printed along with their names in the Urdu language version (see the figure below).

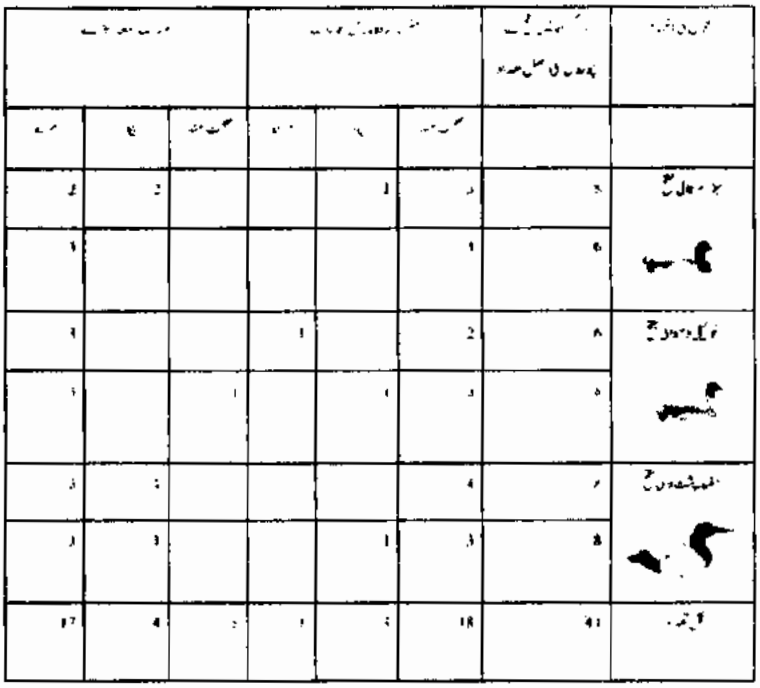

Figure 4: Types of ducklings along with their colored pictures in the Urdu language version of the CCTT-Level Z

Empirical Evaluation of the Scale

After translation and adaptation, a study was conducted for the examination of the validity and reliability of the Cornell Critical Thinking Test (CCTT)-Level Z (Urdu).

Participants

The test was initially administered on a sample of 300 college and university students. A convenieene sampling technique was used for participant selection (Suen, Huang, and Lee, 2014). After data collection, the incomplete test forms were dropped for further analysis. The final sample for data analysis included 270 participants (males 38.5 %, females 61.5%), ranging from 19 years to 32 years of age (mean age = 21.75 years), with 81% students from BS and master level classes, 17.8 % doing MPhil, and 1.1% doing their PhD. These students belonged to four disciplines including Psychology, Applied Psychology, Mass Communication and Mathematics. The sample

was selected from 2 colleges including Government College, Asghar Mall, Rawalpindi, Government MAO College, Lahore, and 2 universities including International Islamic University, Islamabad and National University of Modern Languages, Islamabad.

Procedure

After receiving required permissions from the authorities, the test forms were administered in the classrooms of the respective institutes to those students who opted to participate in the study. Informed consent was obtained from all research participants prior to administration of main instruments. Uniform instructions were given to all of the participants that included description of the purpose of research and explanation of the method to fill the test as provided in the administration manual of the test (Ennis, Millman, & Tomko, 2005). Though time restraint of 50 minutes for the completion of the test are preferred by the authors of the original version of the test, it is also suggested that time limits might be extended whenever it is feasible to do so. Keeping in view the nature of the study i.e. the very first translation of the test and difficulty of the construct specifically for Pakistani students,, no time restrictions were imposed on participants. It was observed that average completion time for the test exceeded one hour and, in most of the cases, participants took about one and a half hour to complete the test, and for some individuals it even took about one hour and forty-five minutes.

Results

The first part of the present study was based on (a) translation and adaptation of Cornell Critical Thinking Test (CCTT)-Level Z into Urdu Language and the second objective was to (b) examine the psychometric properties of the scale. For this purpose, the data were subjected to various statistical analyses:

1. Item analysis was performed by finding out item difficulty (i.e. percentage of correct responses) and item discrimination (calculating point biserial correlation) indices (Tables 3 and 4).
2. Alpha reliability coefficients were computed to examine the internal consistency of the scale (Table, 3).
3. Descriptive statistics were computed to explore the salient trends in the items, subscales, and the overall scale (Tables 2 and 3).
4. Skewness and kurtosis were computed to examine the univariate normality of the items, subscales and the overall scale (Table 3).
5. Confirmatory factor analysis (CFA) was computed to analyze the factorial validity of the scale (Tables 5, 6, 7, and 8).

Table 2

Means and Standard deviations of test items of CCTT-Level Z (Urdu)(N =270)

Items	M	SD	Items	M	SD
1	0.36	0.48	27	0.40	0.49
2	0.64	0.48	28	0.34	0.47
3	0.14	0.34	29	0.41	0.49
4	0.52	0.50	30	0.28	0.45
5	0.43	0.50	31	0.33	0.47
6	0.25	0.43	32	0.33	0.47
7	0.33	0.47	33	0.53	0.50
8	0.57	0.50	34	0.40	0.49
9	0.29	0.45	35	0.31	0.46
10	0.61	0.49	36	0.51	0.50
11	0.34	0.47	37	0.36	0.48
12	0.34	0.47	38	0.43	0.50
13	0.31	0.46	39	0.28	0.45
14	0.26	0.44	40	0.33	0.47
15	0.52	0.50	41	0.42	0.49
16	0.33	0.47	42	0.47	0.50
17	0.59	0.49	43	0.31	0.46
18	0.23	0.42	44	0.36	0.48
19	0.31	0.46	45	0.36	0.48
20	0.29	0.46	46	0.45	0.50
21	0.17	0.37	47	0.47	0.50
22	0.26	0.44	48	0.39	0.49
23	0.36	0.48	49	0.42	0.49
24	0.40	0.49	50	0.44	0.50
25	0.39	0.49	51	0.29	0.45
26	0.49	0.50	52	0.29	0.45

Table 2 provides mean and standard deviations of test items of CCTT-Level Z (Urdu). The lowest mean score is .14 (item 3) and the highest mean score is .64 (item 2). Majority of the mean scores range between .3 to .5 that is indicative of high difficulty of the test.

Table 3

Descriptive statistics and alpha coefficients for Cornell Critical Thinking Test (CCTT)-Level Z (Urdu) (N = 270)

CCTT-Level Z (Urdu)	Items	α	*M*	*SD*	Skewness	Kurtosis	Range	
							Potential	Actual
Deduction	10	.34	4.37	1.72	-.17	-.58	0-10	0-08
MandF	11	.03	3.79	1.53	.02	-.43	0-11	1-07
OBandCS	04	.07	1.33	0.96	.34	-.62	0-04	0-04
Induction (HT)	13	.18	5.01	1.89	-.04	-.17	0-13	0-10
Induction (PE)	04	-.37	1.45	0.84	.09	-.56	0-04	0-03
Def and AI	04	.24	1.58	1.08	.21	-.71	0-04	0-04
Assump ID	06	.03	2.38	1.20	.13	-.17	0-06	0-05
Total (52 items)	52	.44	19.91	4.52	.63	.13	0-52	12-33
Total-shortened	39	.58	14.44	4.32	.48	.00	0-39	6-28

Note: MandF = Meaning and Fallacies; OBandCS = Observation and Credibility of Sources; Induct(HT) = Induction (Hypothesis Testing); Induction (PE) = Induction (Planning Experiment); Def and AI = Definition and Assumption Identification; Assump ID = Assumption Identification; Total-shortened = 39-items shortened version of the test after removing non-significant items of point-biserial correlation.

Table 3 shows alpha reliability coefficients for the full-length test and subtests of Cornell Critical Thinking Test-Level Z (Urdu). The reliability for the full test is low ($\alpha = .44$). The reliability coefficient improved ($\alpha = .58$) once the non-significant items from the point-biserial correlation were removed from the test (see Table 3). The

reliability coefficients are quite unsatisfactory for most of the subtests including Induction-Planning Experiment subtest (-.37), Meaning and Fallacies subtest (.03), Observation and Credibility of sources subtest (.07), Assumption Identification subtest (.03), and Induction-Hypothesis subtest (.18). The Deduction subtest, and Definition and Assumption Identification subtest also have somewhat lower reliability coefficients of .34 and .24 respectively. The low reliability coefficients for the subtests show that there is no homogenous structure within subtests. Skewness and Kurtosis values for all subtests and full test are lesser than 1 that indicate scores for the CCTT-Level Z (Urdu) are normally distributed.

Table 4

Point-biserial correlation and item-difficulty information for the items of Cornell Critical Thinking Test (CCTT)-Level Z (Urdu Version) (N = 270)

Cornell Critical Thinking Test (CCTT)- Level Z (Urdu Version)											
Sr. No.	Item No.	Point-Biserial Correlation (r_{bis})	Item Difficulty (p)	Sr. No.	Item No.	Point-Biserial Correlation (r_{bis})	Item Difficulty (p)	Sr. No.	Item No.	Point-Biserial Correlation (r_{bis})	Item Difficulty (p)
1	1	.28**	.35	10	10	.16**	.60	19	19	.29**	.30
2	2	.19**	.64	11	11	.19**	.34	20	20	.14*	.29
3	3	.16**	.13	12	12	.23**	.34	21	21	.06	.17
4	4	.28**	.51	13	13	.26**	.30	22	22	.23**	.25
5	5	.28**	.43	14	14	.24**	.26	23	23	.18**	.35
6	6	.25**	.25	15	15	.21**	.52	24	24	.09	.40
7	7	.19**	.33	16	16	.19**	.33	25	25	.24**	.39
8	8	.23**	.57	17	17	.18**	.60	26	26	-.02	.48
9	9	.09	.28	18	18	.06	.22	27	27	.16*	.40

**$p < .01$; * $p < .05$

Table 4 (Continued …)

Point-biserial correlation and corrected item-total correlation for the items of Cornell Critical Thinking Test (CCTT)-Level Z (Urdu Version) (N = 270)

Cornell Critical Thinking Test (CCTT)-Level Z (Urdu Version)											
Sr. No.	Item No.	Point-Biserial Correlation (r_{bis})	Item Difficulty (p)	Sr. No.	Item No.	Point-Biserial Correlation (r_{bis})	Item Difficulty (p)	Sr. No.	Item No.	Point-Biserial Correlation (r_{bis})	Item Difficulty (p)
28	28	.23**	.34	37	37	.04	.36	46	46	.29**	.45
29	29	.33**	.41	38	38	.17	.43	47	47	.26**	.47
30	30	.22**	.28	39	39	-.04	.28	48	48	.28**	.39
31	31	.06	.33	40	40	.09	.33	49	49	.22**	.42
32	32	.18**	.33	41	41	.05	.42	50	50	.21**	.44
33	33	.34**	.53	42	42	.25**	.46	51	51	.29**	.29
34	34	.23**	.40	43	43	.29**	.31	52	52	.09	.29
35	35	.16**	.31	44	44	.17**	.35			Mean p	.38
36	36	.13*	.51	45	45	.26**	.36			Mean r_{bis}	.19

**$p < .01$; * $p < .05$

Table 4 shows item analysis of the test. For this purpose, point-biserial correlation coefficients and item difficulty levels of the test items were calculated. Point biserial correlation is a measure of item discrimination which is suitable to calculate for dichotomous item tests. High point biserial correlation for a test item shows that the item is working fine in the test and discriminating well among good and poor performers. Values of 0.15 or higher mean that the item is performing well (Varma, n.d.) According to Varma, good items usually have a point-biserial values of above 0.25. very low discriminating items would show point-biserials close to or below zero. Researchers have recommended removing items that have a negative point-biserial(Kaplan & Saccuzzo, 2013). In the table the point biserial correlation for various items ranges from $r_{bis} = -.17$ to $r_{bis} = .42$. Items 7 and 9 from the Deduction subtest, items 14, 15, 18, 19, 21 from Meaning and Fallacies subtest, Item 24 form Observation and Credibility of Sources subtest, items 26, 27, 31, 34, 35, 36 37 from Induction (Hypothesis testing) subtest, items 39, 40, 41 from Induction (Planning experiments) subtest, and items 48, 50, 52 from Assumption Identification subtest showed significantly lower point-biserial correlation. The varying pattern of correlation values indicate a heterogenous nature of the construct as argued by the authors of the test (Ennis, Millman, & Tomko, 2005). The item difficulty is the percentage of correct responses on a single item. The mean item difficulty for this test is $p = .383$ which means on average there is a 38.3 % chance of items to be attempted correctly. This indicates critical thinking to be a rather difficult construct for the present group of participants.

Table 5

Confirmatory Factor Analysis to determine five factor theoretical structure of Cornell Critical Thinking Test (CCTT)-Level Z (Urdu Version) (N = 270)

	Deduction			MandF			OBandCS			Induction			Assumption	
	USD	SD		USD	SD		USD	SD		USD	SD		USD	SD
Items			items			items			items			Items		
1	1 (--)	.52	11	1(--)	.37	22	1(--)	.24	26	1(--)	.12	43	1(--)	.35
2	.41 (.21)	.21	12	.67(.33)	.25**	23	.11(.57)	.03	27	-2.28(1.95)	-.03	44	.66(.34)	.23
3	.22(.24)	.11	13	.94(.43)	.35**	24	-1.27(.95)	-.31	28	-.95(1.11)	-.11	45	.30(.30)	.10
4	.48 (.22)	.25**	14	.52(.35)	.19	25	1.91(1.33)	.46	29	-4.43(3.58)	-.54	46	1.70(.56)	.59**
5	1.00 (.24)	.52**	15	.49(.31)	.18				30	-.93(1.24)	-.11	47	1.28(.47)	.44**
6	.58 (.24)	.29**	16	.24(.29)	.09				31	2.48(1.92)	.31	48	.60(.34)	.20
7	.30(.21)	.15	17	.81(.34)	.30**				32	-1.87(1.50)	-.23	49	.77(.36)	.26**

8	1.03(.27)	.53**	18	-.42(.35)	-.16	33	-4.34(3.61)	-.53	50	.95(.42)	.32**
9	.02 (.23)	.01	19	1.03(.42)	.39**	34	-2.99(2.47)	.37	51	.61(.35)	.21
10	.43 (.21)	.22**	20	-.41(.36)	-.15	35	.48(.96)	.06	52	.02(.32)	.00
			21	.23(.33)	.08	36	-1.29(1.27)	-.16			
						37	1.82(1.69)	.22			
						38	-1.13(.80)	-.02			
						39	2.97(2.39)	.36			
						40	-.87(.94)	-.11			
						41	.62(.91)	.08			
						42	-2.17(1.98)	-.27			

**$p < .01$; * $p < .05$

Note: MandF = Meaning and Fallacies; OBandCS = Observation and Credibility of Sources; Induction = Induction (Hypothesis Testing) + Induction (Planning Experiment); Assumption = Definition and Assumption Identification + Assumption Identification.

Table 5 shows factor loadings of test items on theoretically extracted five factors (Ennis, Millman, & Tomko, 2005). Most of the items do not show significant loadings on relevant factors. Items 4, 5, 6, 8, and 10 showed significant loadings on the factor of Deduction (i.e. deduction

subtest); items 12, 13, 17, and 19 showed significant loadings on Meaning and Fallacies subtest; items 46, 47, 49, and 50 showed significant loadings on the subtest of Assumption. No item showed significant loading on Observation and Credibility of Sources subtest, and Induction subtest; whereas most of the items on the factor of Induction typically showed negative loadings.

Table 6

Confirmatory Factor Analysis to determine four factor structure of Cornell Critical Thinking Test (CCTT)-Level Z (Urdu Version) (N = 270)

	Deduction			MandF			OBandCS			Assumption	
	USD	SD		USD	SD		USD	SD		USD	SD
Items			items			items			items		
1	1 (--)	.79	11	1(--)	.24	22	1(--)	.68	43	1(--)	.29
2	.19 (.13)	.15	12	.35(.52)	.08	23	.12(.19)	.08	44	1.02(.46)	.30**
3	.22(.24)	.15	13	1.40(.85)	.33	24	-.27(.95)	-.18	45	.68(.41)	.20
4	-.10(.22)	-.08	14	-.72(.62)	-.17	25	.42(.23)	.29	46	1.37(.57)	.40**
5	.91 (.19)	.72**	15	1.30(.82)	.31				47	.99(.52)	.29
6	.31 (.14)	.25**	16	-.04(.47)	-.01				48	1.06(.51)	.31**

7	.23(.13)	.18	17	1.84(1.02)	.44	49	1.62(.68)	.48**
8	.31(.13)	.24**	18	2.35(1.27)	-.56	50	.78(.49)	.23
9	.24 (.14)	.19	19	.79(.58)	.19	51	1.69(.69)	.50**
10	.05 (.12)	.04	20	-1.48(.89)	-.35	52	.64(.41)	.50
			21	-.17(.55)	-.04			

**$p < .01$; * $p < .05$

Note: MandF = Meaning and Fallacies; OBandCS = Observation and Credibility of Sources; Assumption = Definition and Assumption Identification + Assumption Identification

Table 6 shows factor loadings of test items for a four-factor structure after removing Induction subtest from the analysis (that showed too many negative loadings and poor model fit). In the four-factor structure, most of the items still do not show significant loadings on relevant factors. Items 5, 6, and 8 showed significant loadings on Deduction subtest; items 44, 46, 48, 49, and 51 showed significant loadings on the subtest of Assumption. No item showed significant loading on Meaning and Fallacies subtest, and Observation and Credibility of Sources subtests.

Table 7

Confirmatory Factor Analysis to determine three-factor structure of Cornell Critical Thinking Test (CCTT)-Level Z (Urdu Version) (N = 270)

	Deduction			MandF*			Assumption*	
	USD	SD		USD	SD		USD	SD
Items			items			items		
1	1 (--)	.69	11	1(--)	.27	43	1(--)	.22
4	-.07(.15)	-.05	12	.62(.52)	.17	46	2.23(.46)	.49
5	1.07(.28)	.74**	13	1.84(.97)	.50	47	1.88(1.17)	.41
6	.34(.18)	.23	17	.79(.56)	.22	49	1.10(.82)	.24
8	.56 (.16)	..38**	19	1.63(.93)	.44	50	1.42(1.00)	.31
10	.23(.15)	.16						

**$p < .01$; * $p < .05$

Note: MandF = Meaning and Fallacies; Assumption = Definition and Assumption Identification + Assumption Identification

Table 7 shows factor loadings of test items for a three-factor structure after removing all the non-significant items from the five-factor solution. In the three-factor structure, items 4, 6, and 10 showed significant loadings on Deduction subtest; items 12, 13, 17, and 19 showed significant loadings on Meanings and Fallacies subtest, and items 46, 47, 49, and 50 showed significant loadings on the subtest of Assumption.

Table 8

Comparison of model fit for three-factor, four-factor, and five-factor structures of Cornell Critical Thinking Test (CCTT)-Level Z (Urdu Version) (N = 270)

Model	*Items*	χ^2	*df*	SRMR	TLI	CFI	RMSEA	LCI	UCI
Five Factor Model (default)	52	1774.49*	126	.113	.42	.45	.039	.034	.043
Four Factor Model (M1)	35	804.88*	594	.114	.44	.48	.041	.035	.047
Three Factor Model (M2)	16	153.66*	101	.102	.67	.72	.04	.029	.058
One Factor Model (M3)	52	1865.02*	1274	.068	.18	.22	.04	.037	.045

Note: default model = Five Factor model is a default model; M1 = four factor model is without induction subtest; M2 = three-factor model after removing all non-significant items from the default model; M4 = One Factor Model to see unidimensional structure of the test.

Table 8 shows CFA comparison for 3 models. The default five-factor model showed a significant model Chi-square, $\chi^2(df)$ = 1774.49 (1264), other indices included CFI = .45, TLI= .42, SRMR= .11, and RMSEA= .039 (LCI = .034, UCI = .043). Model 1 was estimated after deleting Induction subtest for too many items negatively loading. Model 1 showed a significant model Chi-square, $\chi^2(df)$ = 804.88 (594), other indices included CFI = .48, TLI= .44, SRMR= .11, and RMSEA= .041 (LCI = .035, UCI = .047). Model 2 was estimated after deleting all non-

significant items from the default model. Model 2 showed a significant model Chi-square, $\chi^2(df)$ = 153.66 (101), other indices included CFI = .72, TLI= .67, SRMR= .11, and RMSEA= .04 (LCI = .029, UCI = .058). Model 3 was estimated to see the unidimensional structure of the test. Model 3 showed a significant model Chi-square, $\chi^2(df)$ = 1865.02(1274), other indices included CFI = .22, TLI= .04, SRMR= .068, and RMSEA= .04 (LCI = .037, UCI = .045).

Discussion

The study in the Phase-I was conducted to translate and adapt Cornell Critical Thinking Test (CCTT)-Level Z into Urdu language and determine its psychometric properties. The CCTT is one of the oldest instruments published in 1971 for the first time and has been widely used throughout the globe till to-date. The CCTT has been translated into various languages including Japanese (Hirayama, Tanaka, Kawasaki, & Kusumi, 2010), Dutch (Verburgh, François, Elen, & Janssen, 2013), and Turkish (Sahin, French, Hand, & Gunel, 2015). It was deemed important to translate this test into Urdu language as no test for the measurement of critical thinking as a general ability existed in Pakistan. The literature search also did not reveal any indigenized critical thinking test. The test could have been used in the English language as it was aimed at college and university students who in Pakistan have relatively better English language skills, but the Urdu translation was thought to be an important step due to a difficult nature of the construct and the use of difficult language in the test comparing to more familiar attitude measures generally used in psychological research in Pakistan. Unfamiliarity and lack of experience of the participants for these kinds of tests was also a consideration to translate the test into their local languages for ease of comprehension. Another concern was regarding test's future utility for the people who understand Urdu in the region or elsewhere.

Recommended protocols were followed for the translation of the test (Brislin, 1970; Brislin, 1986; Wilgerodt, Kataoka-Yahiro, Kim, & Ceria, 2005), that included multiple forward translations, review of translations, back-translations and a pre-tryout. Some changes in the names and places were included in order to give it a localized look, though precautions were taken not to disturb the core structure of the test.

In order to obtain the theoretically predicted factor structure a Confirmatory Factor Analysis (CFA) was performed using R version 3.6.1 (R, 2019). The R packages used for extraction of factors and their graphical representation included lavaan (Yves, 2012), psych (Revelle, 2018), and semPlot (Epskamp, 2019). Diagonally Weighted Least Squares (DWLS) method of estimation was used to estimate fit and coefficients as it was a preferred approach over Maximum Likelihood (ML) estimation for categorical/dichotomous variables. As the CCTT-Urdu was a test with dichotomous items, this estimation was preferred as it was a statistically better approach (Rhemtulla, Brosseau-Liard, & Savalei, 2012). The model fit indices included model Chi-square (χ^2) with degrees of freedom and p-value, Comparative Fit Index (CFI), Tucker Lewis Fit Index (TFI), Standardized Root Mean Square Residual (SRMR), and Root Mean Square Error of Approximation (RMSEA). The χ^2 statistic if non-significant suggests a good model fit, though this is rare as Chi-square statistic goes after a perfect fit which is not practical (Byrne, 2016, p. 93). Also, in large samples this statistic usually becomes significant and in small samples it has a lower power (Hu & Bentler, 1999; Patrick, 2018). The best acceptable fit for CFI is > 0.90 (Kline, 2005) or ≥ 0.95 (Hu & Bentler, 1999), for TLI is ≥ .90 ((Brown, 2006) and for RMSEA including 90% of confidence intervals is ≤ .05, upper CI bound ≤ 0.10 (Hu & Bentler, 1999). For Kline (2005) RMSEA ≤ .05 indicates close approximate fit, values between .05 and .08 suggest reasonable error of approximation, and RMSEA ≤ .10 suggests poor fit. The value of SRMR should be ≤ .08 (Hu & Bentler, 1999).

For the present study, four CFA models were estimated for CCTT-Level Z (Urdu). The default model of CCTT-Level Z (Urdu) included 5 factors on which the test was actually based, that included (1) Deduction, (2) Meaning and Fallacies, (3) Observation and Credibility of Sources, (4) Induction and, (5) Assumption

Identification. The Induction subtest was based on two subtests, namely (i) Induction: Hypothesis testing, and (ii) Induction: Planning experiment. Items from the both subtests were combined to make a single subtest of Induction. Similarly, Assumption Identification subtest consisted of two subtests including (i) Definition and Assumption Identification, and (ii) Assumption Identification. The items from these two subtests were also combined in a single Assumption Identification subtest for the purpose of analysis. Model 1 was estimated after deleting Induction subtest for too many items negatively loaded. Model 2 was estimated after deleting all non-significant items from the default model, and Model 3 was estimated to see the unidimensional structure of the test.

The CFA results show that there is no satisfactory theoretical structure for the CCTT-level Z. Factorial validity is a great concern for this test and finding an appropriate factor structure is still unresolved. May be due to the intentional complex factor structure of the scale with overlapping dimensions, there is surprisingly limited empirical evidence available on its dimensionality to guide score-based decisions (Leach, Immekus, French, & Hand, 2020). There are a limited number of published studies that have assessed the factorial structure of CCTT. These studies have also achieved onlyconfusing and discrepant results in finding a simple theoretical structure (Follman, Brown, & Burg, 1970; Frisby, 1992; Leach et al., 2020; Michael, Devaney, & Michael, 1980; Verburgh et al., 2013). In one of the earliest studies, Michael et al. (1980) on the level X of CCTT used principal component analysis and found only Deduction subtest to be theoretically compatible. Verburgh et al. (2013) found a unidimensional structure in the Dutch version of CCTT-level Z using multiple item response theory (MIRT) that indicated that five separate scales correlated sufficiently to form a single dimension. Sahin et al. (2015) compared differential item functioning

(DIF) of test items between Turkish and English versions for both Turkish and US students. Results demonstrated that each subtest contained DIF items and 10% of the items in the instrument were identified as DIF. Leach et al. (2020) used both CFA and EFA to determine factor structure of CCTT-Level X that resulted in substantial item reduction and fewer interpretable factors. They have found an interpretable structure by using exploratory structure equation modeling (ESEM) that was quite different from the predicted factor structure.

Considering the perplexed nature of the structural composition of CCTT, it is important to look into the test manual developed by the authors themselves. According to Ennis et al. (2005), there is a considerable overlap and interdependence among the aspects of critical thinking.

> "...Putting all this together, one can see the pervasiveness of basic deduction, the perhaps even greater pervasiveness of ability to deal with meaning, and the consequent theoretical difficulty of securing totally independent part scores and strong independent factors in a factor analysis. Critical thinking is not a unidimensional concept either, making it difficult to obtain high internal consistency reliability estimates" (Ennis et al., 2005, p. 3).

On the basis of the available evidence and the opinion of the test developers as well, it would be justified to say that a proposed theoretical structure consisting of various separate aspects of critical thinking cannot be presented as an evidence of validity of the test. Even if that structure is obtained somewhere in some very sophisticated settings, it would not be a universal one and might show gross discrepancies in cross-cultural studies.

The inability of the test to provide a meaningful factor analytic structure does not mean that the test is altogether invalid and is unrelated to the construct. Instead,

Ennis et al. (2005) have provided various other evidences of content and criterion-related validity (pp. 20-21). One of the important considerations is that the test is based on Cornell/Illinois conception of critical thinking, which is a framework developed after years of concerted efforts (Ennis, 2011b, 2015b). The authors state that the individual items have been intensively discussed by members of the Illinois Critical Thinking Project and there was a universal agreement on the correctness of the keyed answers of the test. The authors opine that the test items fairly represent the content of the Cornell/Illinois conception of critical thinking and the agreement of experts on various aspects of the test is an evidence of content validity of the test.

Apart from the content-related validity, the administration manual has provided number of evidences for the test's criterion and construct related validity. The CCTT-level Z has a correlation ranging from $r = .25$ to $r = .79$ with seven other critical thinking measures and a correlation ranging from $r = .24$ to $r = .71$ with IQ, Aptitude and Admission tests (p. 33).

The Cronbach alpha coefficient of reliability is quite low for the various subtests ranging from -.37 for Induction: Planning Experiment subtest to .34 for Deduction subtest. The low or inappropriate reliability coefficients for subtests are not surprising as they show the heterogeneous nature of subtests which was also observed in CFA analysis. The point biserial correlation coefficients were also calculated to see the items' relevance and relatedness with the overall test. There were 13 items showing non-significant correlation coefficients. The Cronbach alpha reliability coefficient, for the full-length test, improved from $\alpha = .44$ to $\alpha = .58$ after having these items removed from the test. This value of alpha seems quite reasonable for the test that appears neither unidimensional nor has a clear-cut multidimensional structure. A very high alpha value for all the items of CCTT is neither possible nor desirable as it is measuring multiple

concepts within it. A high value certainly does not imply that an instrument or scale is unidimensional—and in some cases, a very high value may indicate an inefficient level of redundancy in items (Taber, 2018). The authors have reported various reliability studies with reliability coefficients ranging from .49 to 87 (p. 17). It is noteworthy that the higher ability groups showed higher reliability coefficients than lower ability groups which indicates that, with more sophisticated individuals, the consistency of the instrument increases (Frisby, 1992).

The item analysis of the test showed mean item difficulty of 0.38. The test manual reports mean difficulty indices for different ability groups that range from 0.55 (for undergraduate students in junior-level educational psychology at a Midwestern state university) to 0.61 (undergraduates in a small state university in upstate New York with one-semester introduction to deductive logic) (pp 15-19). The mean discrimination index (point-biserial correlation) for the present sample is r_{bis} = .19 that is also lower than the reported item discrimination in the manual which is .23. Taking many things into account— i.e. general educational environment of educational institutes in Pakistan, lack of exposure to critical thinking as part of curriculum, unfamiliarity of the students with such kind of testing, and the difficulty of the construct itself— the higher item difficulty and lower discrimination values are not surprising. In fact, it provides a glimpse into the state of critical thinking in our society.

Phase II: Pilot Study

Phase-II of this research is the pilot study that aims to achieve the following objectives:

Objectives

1. To examine the psychometric properties and the pre-testing of the instruments to be used in the main study.
2. To conduct the preliminary analysis on study variables in order to see the trends of findings and directions of the relationship among variables.

Participants

The target population for this research was students of undergraduate and graduate courses from various colleges and universities of Pakistan. The sample for the pilot study was the same on which the validity study of the CCTT-Level (Urdu) was done. The convenience sampling as a method for obtaining data was used (Kumar, 2019). The sample of 270 participants included BS/Master (81.1%), MPhil (17.8%) and PhD (1.1%) students from two public sector universities (67%) and two public sector colleges (32.6%). The sample included 38.5% male and 61.5% female students The mean age of the sample was 21.76. These students belonged to four disciplines including Psychology, Applied Psychology, Mass Communication and Mathematics.

Instruments

Four instruments were used in the present study. Cornell Critical Thinking Test (CCTT)-Level Z (Urdu) that has already been discussed in the first section (see Study-I). Fully valid and certified version of the Moral Competence Test- Urdu version (Liaquat, 2011) was used in the study. MCT-Urdu is a 24 items experimental questionnaire (see (Lind, 1982, pp. 14-16) which measures cognitive (C-scores) and

effective (stage scores) aspects of moral reasoning. The c-scores for the MCT range from 0 to 100. Generalized Ethnocentrism Scale (GENE) (Neuliep, 2002; Neuliep & McCroskey, 1997, 2013) is a 22-item, 5-point Likert scale which measures people's likeness and preferences for their own ethnic groups over others. National Militarism Scale (McConochie, 2010) is a 10 items 5-point Likert scale which measures how much people like to have their countries to be military centric, giving priority to military strength more than other welfare options.

Procedure

Formal permissions were sought from the authorities of the institutes to collect data from the students. The tests and scales were administered in the classrooms of the respective institutes after taking written consent from the students. Uniform instructions were used for all the participants that included description of the purpose of research and explanation of the recommended method to fill the test forms and rating scales. Participants were ensured about their anonymity and confidentiality of the information provided by them. No psychological harm was intended during the whole process of data collection. Queries of the participants were responded to the fullest of their satisfaction.

Results

The pilot study was carried out to test the suitability of the scales for the further analyses and to conduct preliminary analyses in order to understand the trends in the results of the study. For the pilot study, following analyses were carried out:

1. Descriptive statistics i.e. means, standard deviations, skewness, kurtosis, and ranges were computed for all the scales used in the study except CCTT-Urdu as it had already been done during the first phase of the research (see tables 9. and 11).

2. Alpha reliability and Spearman-Brown coefficients were computed for Ethnocentrism scale and National Militarism Scale (see table 9).
3. Item-total correlation coefficients were computed for National Militarism Scale and Ethnocentrism Scale (table 10).
4. Recommended statistical analyses were performed on the present data to determine theoretical validity of the test (tables 12, 13, and 14).
5. Pearson correlation was applied to study the relationship between variables to see overall relationship patterns among main study variables (table 15).
6. Partial correlation was applied between Critical thinking scores, MCT C-scores and C-scores on MCT separate tests (table 16).
7. Mediation analyses were done to see the mediation of c-scores for the effect of CT on national militarism (table 17).
8. Mediation analyses were done to see the mediation of subtests of MCT for the effect of CT on national militarism (tables 18, 19).
9. Mediation analyses were done to see the mediation of C-scores for the effect CT on ethnocentrism (table 20).
10. T-tests were conducted to see gender differences between main study variables (table 22).
11. T-tests were done to see the differences in main variables between college and university students (table 21).

Table 9

Descriptive Statistics and Cronbach alpha and Split-Half reliability coefficients of National Militarism Scale and Ethnocentrism Scale (N = 270)

Scales	No. of items	Cronbach alpha reliability	Spearman-Brown Coefficient	M	SD	Skewness	Kurtosis	Range	
								Potential	Actual
National Militarism Scale	10	.81	.79	35.17	7.34	-.27	-.66	10-50	15-50
Ethnocentrism Scale	15	.69	.65	39.66	7.69	-.22	.01	15-75	20-61

Table 9 shows descriptive statistics, alpha reliability coefficients and Spearman-Brown coefficients (i.e. split-half reliability) for National Militarism Scale and Ethnocentrism Scale. Both scales show moderate to high reliability coefficients. Skewness value is lesser than 2 and kurtosis is lesser than 7 which is an indication of normal distribution of scores for these scales (West, Finch, & Curran, 1995). Also the sample is relatively large and normality is not a concern due to central limit theorem (Field, 2013)

Table 10

Item-total correlation for the items of National Militarism Scale and Ethnocentrism Scale (N = 270)

	National Militarism Scale			Ethnocentrism Scale	
Sr. No.	Item No.	Item-total Correlation	Sr. No.	Item No.	Item-total correlation
1	1	.68**	1	1	.46**
2	2	.56**	2	2	.44**
3	3	.39**	3	4	.33**
4	4	.65**	4	5	.42**
5	5	.60**	5	7	.18**
6	6	.62**	6	8	.46**
7	7	.67**	7	9	.32**
8	8	.57**	8	10	.27**
9	9	.69**	9	11	.51**
10	10	.62**	10	13	.49**
			11	14	.52**
			12	18	.44**
			13	20	.53**
			14	21	.52**
			15	22	.58**

**$p < .01$; * $p < .05$

Table 10 shows item-total correlation of National Militarism Scale and Ethnocentrism Scale. The correlation coefficients for National Militarism Scale range from .39 to .69. The correlation coefficients for Ethnocentrism Scales range from .18 to .53. All the items in both scales have significant positive correlation coefficients that indicate homogeneous structures of both scales.

Table 11

Descriptive Statistics for Moral Competence Test-Urdu (N = 270)

Moral Competence Test	No. of items	M	SD	Skewness	Kurtosis	Range	
						Potential	Actual
C-Scores	24	16.59	11.57	1.16	1.59	0-100	0-67.9
Stage 1	4	.44	4.86	-.08	.25	-16-16	-16-14
Stage 2	4	1.58	4.98	.09	-.17	-16-16	-13-16
Stage 3	4	2.81	4.69	-.53	.16	-16-16	-14-13
Stage 4	4	2.86	4.73	-.25	.47	-16-16	-14-16
Stage 5	4	3.26	4.81	-.32	-.01	-16-16	-12-16
Stage 6	4	3.17	4.95	-.38	.29	-16-16	-12-15

Table 11 shows descriptive statistics for Moral Competence Test-Urdu (MCT-Urdu). Two types of scores are given; C-scores that measure cognitive aspect or moral competence, and stage scores that indicate moral preferences which is also called the affective aspect of the MCT (Liaquat, 2011; Lind, 2008). Skewness value is lesser than 2 and kurtosis is lesser than 7 that indicate normal distribution of scores for these scales(West et al., 1995). Also, the sample is relatively large and normality is not a concern due to central limit theorem (Field, 2013).

Table 12

Validity analyses of Moral Competence Test-Urdu (MCT-Urdu): Means, Standard Deviations and F value for participants on six moral stages/preferences (N = 270).

	Stage 1		Stage 2		Stage 3		Stage 4		Stage 5		Stage 6			
	(*n* = 270)		(*n* = 270)		(*n* = 270)		(*n* = 270)		(*n* = 270)		(*n* = 270)			
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*		
Moral stages													*F*	*p*
Stage Scores	0.43	4.86	1.58	4.98	2.81	4.69	2.86	4.73	3.26	4.81	3.17	4.95	23.19	.000

Within group *df* = 4.71; Groups total *df* = 1265.98

Table 12 shows results of repeated measures ANOVA, with Greenhouse-Geisser correction to assess the differences between the mean scores of 6 moral stages. Stages 1 and 2 being reflective of Preconventional morality, stages 3 and 4 reflecting Conventional Morality and stages 5 and 6 being reflective of Post-conventional morality should show a hierarchical pattern of preference from lower to higher. Results indicate that participants rated 6 moral stages differently, F(4.71, 1265.98) = 23.19, $p < .000$. The mean scores indicate that participants preferred 6 moral stages in a desired hierarchical order. Polynomial contrasts indicated, in support of this, there was a significant linear trend, F (1.269) = 75.15, *p*

<.00, partial eta^2 = .21. However, a significant quadratic trend, F (1,269) = 16.48, p < .001, is also observed reflecting little flattening of the curve for higher moral orientations. Overall the preference hierarchy criterion for the validity of the test is fulfilled.

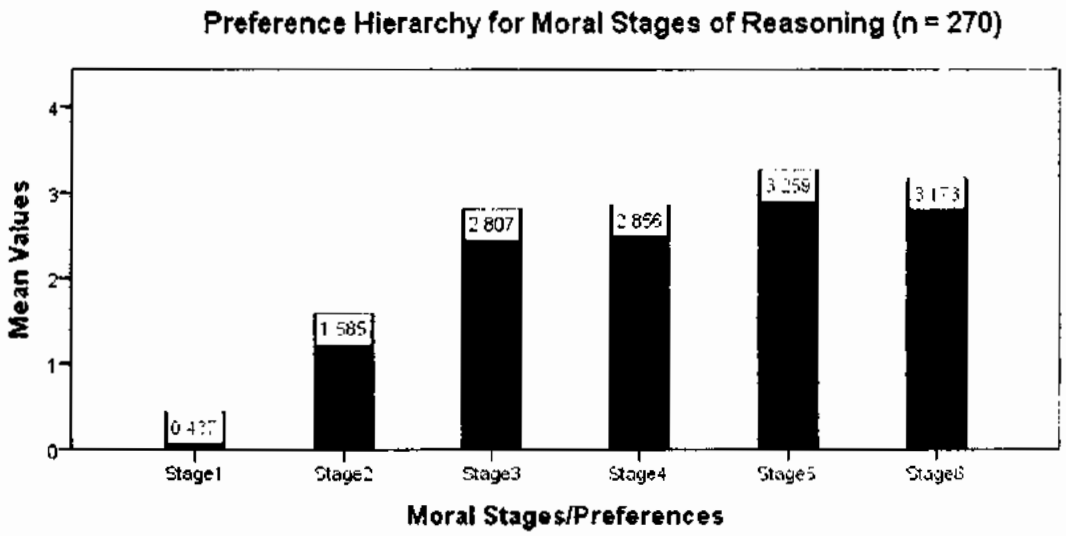

Figure 5: Preference hierarchy for 6 moral stages (N = 270)

Table 13

Validity analyses of Moral Competence Test-Urdu (MCT-Urdu): Pearson Correlation between Moral stages and C-Scores (N = 270)

Moral Stages	C-Scores (Moral competence)
1. Stage 1	-.17**
2. Stage 2	-.08
3. Stage 3	.06
4. Stage 4	.08
5. Stage 5	.02
6. Stage 6	-.09

**$P < .01$

Table 13 shows Pearson correlation coefficients for moral stages and c-scores. According to this validity criterion, c-scores should negatively correlate with lower moral stages (representing preconventional morality) and positively correlated with higher moral stages (representing conventional and postconventional morality) The correlation coefficients are suppressed and are not significant, though a slight trend toward expected correlation patterns can be noticed excluding the negative correlation with 6th stage of moral reasoning (which is showing an exception). For this validity criterion to meet, significance is not that important as the theoretically expected trend, and the trend shows partial fulfillment for the criterion of Cognitive-Affective Parallelism.

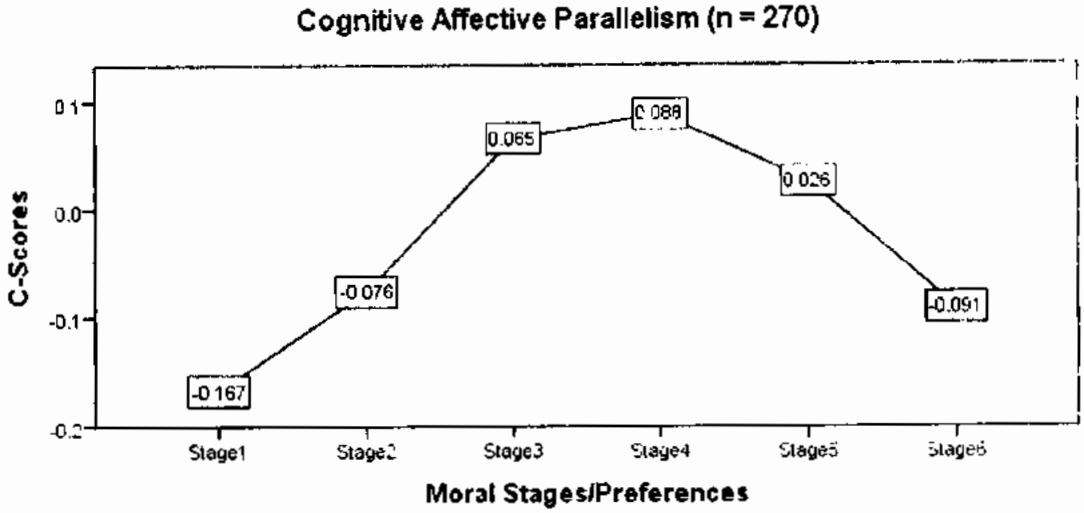

Figure 6: Cognitive-Affective Parallelism (N = 270)

Table 14

Validity analyses of Moral Competence Test-Urdu (MCT-Urdu): Principle Component analysis with varimax rotation, component loadings for 6 moral stages (N = 270)

	Component Loadings	
Moral Stages	1	2
Stage 1	----	.951
Stage 2		.492
Stage 3	.735	----
Stage 4	.819	----
Stag 5	.730	----
Stage 6	.640	----

Loadings < .40 are omitted

Table 14 shows results for Principal component analysis with varimax rotation to explore the underlying structure of 6 moral stages. Two components were extracted for this purpose. Ideally, stages 1 and 2 should correlate highly with each other and load on a single component. In contrast, stages 5 and 6 should highly correlate with each other and load on another component. This pattern, though not ideal, can be observed for the present sample where lower and higher stages of moral reasoning are loading on separate components.

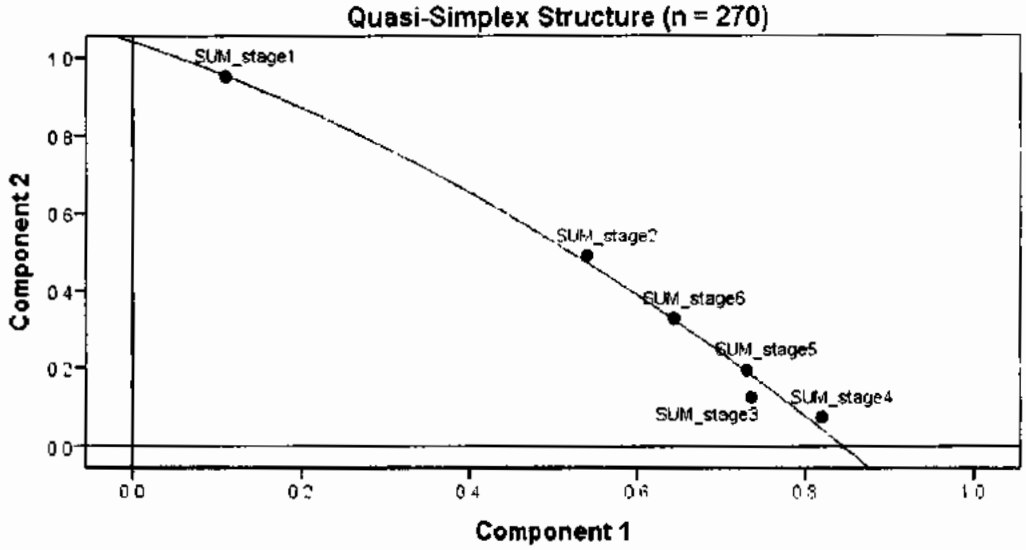

Figure 7: Component loadings of six moral orientations (N = 270)

Table 15

Pearson Correlation coefficients (zero-order correlation coefficients) for main study variables (N = 270)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	C-scores [a]	-	.26**	.52**	0.08	-.17**	-0.08	0.07	0.09	0.03	-0.09	-.14*	0.05	-.17**	-.15*
2	C-workers [b]		-	0.08	-.82**	0.01	-0.1	0.09	0	0.06	-0.11	-0.01	0.05	0.1	0.07
3	C-doctors [c]			-	.51**	-0.08	-0.06	-0.06	-0.04	-0.06	-.24**	-.31**	.12*	-.17**	-.19**
4	C-segmentation				-	-0.05	0.07	-0.1	-0.01	-0.08	-0.03	-.16**	0.03	-.18**	-.17**
5	Stage1					-	.37**	.24**	.22**	.31**	.33**	-0.09	0.06	0.07	0.09
6	Stage2						-	.45**	.44**	.34**	.38**	.12*	0.03	-0.03	-0.03
7	Stage3							-	.45**	.44**	.35**	.14*	-0.03	0.05	0.02
8	Stage4								-	.49**	.48**	.23**	0	-0.09	-0.1
9	Stage5									-	.46**	.18**	0.04	0.11	0.11
10	Stage6										-	.37**	0	-0.02	0.01
11	NMS [d]											-	0.02	0.1	0.09
12	Ethnocentrism												-	0	0.04
13	CT (Items removed) [e]													-	.92**
14	CT (52 items)														-

** $p<.01$; * $p<.05$

[a]*C-scores = Moral competence scores*, [b]*C-workers = c-scores on workers' dilemma*; [c]*C-doctors = c-scores on euthanasia dilemma*; [d]*NMS = National Militarism Scale*, [e]*CT (items removed) = non-significant items from item-total correlation removed*

Table 15 shows Pearson correlation coefficients among main study variables. There is a significant negative correlation between CT and c-scores ($r = -.17$, $p < .01$). CT is differentially associated with two types of dilemmas, showing a positive, though non-significant correlation with worker's dilemma ($r = .10$, $p > .01$), and a significant negative correlation with doctors' dilemma ($r = -.17$, $p < .01$). CT also has a significant negative relationship with moral segmentation ($r = -.18$, $p < .01$). Moral competence has a significant negative correlation with national militarism ($r = -.14$, $p < .01$). Moral stages have positive relationship with national militarism while critical thinking has a non-significant relationship with national militarism. Ethnocentrism does not seem related to any of the main variables except c-scores on euthanasia dilemma where it shows a significant positive relationship ($r = .12$, $p < .05$).

Table 16

Partial Correlation of MCT c-scores and its subtests with critical thinking (N = 270)

Control Variables		Variables	1	2
C-workers & C-doctors	1	C-Score	-	-0.13*
	2	CT		-
			1	2
C-Score	1	CT	-	-0.09
	2	C-Doctor		-
			1	2
C-Score	1	CT	-	.15*
	2	C-Workers		-

*$p < .05$

Table 16 shows partial correlation coefficients of c-score, c-score (workers' dilemma), and c-score (euthanasia dilemma) with critical thinking. Partial correlations were taken to control the variance contributed by c-score and c-scores for separate dilemmas on their relationship with critical thinking. A significant negative partial correlation is observed between c-score and CT when both c-score (worker's dilemma) and c-score (euthanasia dilemma) are controlled ($r = -.13$, $p < .05$). Relationship of c-scores with critical thinking seems to be dilemma specific with c-scores (workers' dilemma) showing a significant positive correlation with CT ($r = .15$, $p < .05$) when c-score is controlled, while the relationship between c-score (euthanasia dilemma) with CT becomes non-significant ($r = -.09$, $p = .13$) when c-score is controlled. It seems that higher critical thinking skills are more helpful when the nature of moral dilemma is not highly intense and emotionally demanding and, in that case, people show more consistency and competence in moral arguments.

Table 17

Linear regression analysis for mediation by c-score (moral competence) for the relationship between critical thinking and national militarism (N = 270)

	National Militarism			
		Model 2		
			95% CI	
Variables	Model 1 B	B	*LL*	*UL*
Constant	32.69**	34.53**	31.01	38.05
Critical Thinking	.172	.136	-.06	.34
Moral Competence (c-score)		-.079*	.04	-.003
R^2	.01	.02		
ΔR^2		.01		
F	2.76	3.49		
ΔF		.73		

**$p < .05$

Table 17 shows indirect effect of critical thinking on national militarism through moral competence. The model tells that critical thinking negatively affects moral competence ($\beta = -.45$, $p < .05$), while moral competence negatively predicts national militarism ($\beta = -.08$, $p < .05$). There is no significant direct effect of critical thinking on national militarism ($\beta = .14$, $p = .19$). There is an indirect effect of critical thinking on national militarism through moral competence (*.03, CI .003, .077*). The total variance explained by the model is 1%. According to Preachr & Hayes (2004), this effect can be interpreted as an indirect effect but not a mediation as no significant total effect of critical thinking on national militarism was initially noted ($\beta = .17$, $p = .09$).

Table 18

Linear Regression Analysis for Mediation by c-score (workers' dilemma) for the relation between critical thinking and national militarism (N = 269)

	National Militarism			
		Model 2		
			95% *CI*	
Variables	Model 1 B	B	*LL*	*UL*
Constant	37.19**	37.23**	33.64	40.81
Critical Thinking	.08	.09	-.11	.28
C-scores (workers' dilemma)		-.00	-.03	.02
C-score (euthanasia dilemma)(covariate)	-.10**	-.11**	-.16	-.06
C-score (covariate)	.02	.02		
R^2	.10	.10		
ΔR^2		.00		
F	9.90	7.41		
ΔF		2.49		

**$p < .05$

Table 18 shows effect of critical thinking on national militarism through mediation of c-score (worker's dilemma). C-score (euthanasia dilemma) and c-score are taken as covariates in the model. The model tells that critical thinking positively affects c-score (workers' dilemma) ($\beta = 1.03$, $p < .05$), while c-score (workers' dilemma) has non-significant negative effect on national militarism ($\beta = -.002$, $p = .87$). There is no significant direct effect of critical thinking on national militarism ($\beta = .09$, $p = .39$). Mediation was not observed as there is non-significant indirect effect of critical thinking on national militarism through c-score (workers' dilemma) (-.002, *CI* = -.04, .00).

Table 19

Linear Regression Analysis for Mediation by c-score (euthanasia dilemma) for the relation between critical thinking and national militarism (N = 269)

	National Militarism			
		Model 2		
			95% *CI*	
Variables	Model 1 B	B	*LL*	*UL*
Constant	34.73**	37.23**	33.95	40.91
Critical Thinking	.13	.09	-.12	-.28
C-scores (doctors' dilemma)		-.11**	-.14	-.06
C-score (workers' dilemma)(covariate)	.00	-.00	-.03	.03
C-score (covariate)	-.08**	.02		
R^2	.03	.10		
ΔR^2		.07		
F	2.41	7.40		
ΔF		4.99		

**$p < .05$

Table 19 shows indirect effect of critical thinking on national militarism through c-score (euthanasia dilemma). C-score (workers' dilemma) and c-score are taken as covariates in the model. The model tells that critical thinking negatively affects c-score (euthanasia dilemma) (β = -.36, $p < .05$), while c-score (euthanasia dilemma) has a significant negative effect on national militarism (β = - .11, $p < .05$). There is no significant direct effect of critical thinking on national militarism (β .09, p = .39). Mediation was not observed as there is non-significant indirect effect of critical thinking on national militarism through c-score (euthanasia dilemma) (.04, *CI* = - .01, .09).

Table 20

Linear regression analysis for mediation by c-score (moral competence) for the relationship between critical thinking and ethnocentrism (N = 270)

	Ethnocentrism			
		Model 2		
			95% *CI*	
Variables	Model 1 B	B	*LL*	*UL*
Constant	39.57**	59.44**	35.09	42.55
Critical Thinking	.01	.02	-.19	.24
C-score		.03	.44	.11
R^2	.00	.00		
ΔR^2		.00		
F	.0037	.306		
ΔF		.30		

***p < .05*

Table 20 shows effect of critical thinking on ethnocentrism through c-score. The model tells that critical thinking negatively affects c-score ($\beta = -.45$, $p < .05$), while c-score has non-significant effect on ethnocentrism ($\beta = .02$, $p = .44$). There is no significant direct effect of critical thinking on ethnocentrism ($\beta = .02$, $p = .84$). Mediation was not observed as there was non-significant indirect effect of critical thinking on ethnocentrism through c-score (*-.01, CI = -.06, .02*).

Table 21

Mean, Standard Deviation and t-values for university and college students on ethnocentrism Scale (N = 270)

	Universities (n = 181)		Colleges (n = 88)						
Variable	*M*	*SD*	*M*	*SD*	*T*	*p*	*LL*	*UL*	*Cohen's d*
Ethnocentrism	38.94	7.92	41.01	6.98	-2.18	.038	-4.02	-.12	.28

Table 21 shows difference of ethnocentrism between university and college students. There is a statistically significant difference between two groups *t(267) = -2.18, p = .05,* with college students showing a higher mean score on ethnocentrism (*M = 41.01, SD = 6.98*) than university students (*M = 38.94, SD = 7.92*). A small effect size of .28 was noted (Cohen, 1988).

Table 22

Mean, Standard Deviation and t-values for male and female students on main study variables (N = 270)

	Males (n = 104)		Females (n = 166)						
Variable	*M*	*SD*	*M*	*SD*	*t*	*p*	*LL*	*UL*	*Cohens' d*
Critical thinking	13.87	4.07	14.80	4.45	-1.7	.087	-1.98	.13	0.22
C-scores	17.03	12.55	16.33	10.93	.481	.631	-2.5	3.5	0.06
C-scores (workers' dilemma)	39.08	31.67	39.21	32.51	-.03	.97	-8.06	7.79	0.00
C-scores (euthanasia dilemma)	35.98	22.70	29.56	19.96	2.43	.016	1.23	11.61	0.30
Moral Segmentation	-3.10	39.43	-9.99	35.34	1.49	.138	-2.22	16.00	0.18
Moral stage 1	.17	5.53	.60	4.40	-.705	.481	-1.63	.77	0.09
Moral stage 2	1.36	5.27	1.72	4.81	-.573	.567	-1.59	.88	0.07
Moral stage 3	2.93	4.64	2.73	4.92	.347	.729	-.95	1.36	0.04
Moral stage 4	2.29	4.38	3.21	4.92	-1.56	.119	-2.08	.24	0.19
Moral stage 5	2.09	4.59	3.98	4.81	-3.19	.002	-3.05	-.73	0.40

Moral stage 6	2.37	4.58	3.67	5.12	-2.11	.036	-2.51	-.09	0.27
National militarism	32.68	7.81	36.73	6.56	-4.56	.000	-5.79	-2.30	0.56
Ethnocentrism	40.12	7.21	39.38	7.98	.765	.445	-1.16	2.63	0.09

Table 22 shows comparison of male and female students on main study variables. The findings show significant gender differences on c-score (euthanasia dilemma) ($t = 2.43$, $p < .05$, *Cohen's d* = .30). Males got significantly higher scores ($M = 35.98$, $SD = 22.70$) than females ($M = 29.56$, $SD = 19.96$). Significant gender differences were noted for preference for moral stage 5 as well ($t = -3.19$, $p < .05$, *Cohen's d* = .40) with females scoring higher ($M = 3.98$, $SD = 4.81$) than males ($M = 2.09$, $SD = 4.59$). Significant gender differences were also noted for preference of moral stage 6 ($t = -2.11$, $p < .05$, *Cohen's d* = .27); females getting higher mean score ($M = 3.67$, $SD = 5.12$) than males ($M = 2.37$, $SD = 4.58$). Females also got higher mean scores on national militarism ($M = 36.3$, $SD = 6.56$) than males ($M = 32.68$, $SD = 7.81$) with a difference statistically significant ($t = -4.56$, $p < .05$, *Cohen's d* = 56)

Discussion

A pilot study is one of the important stages in a research project and is conducted to identify potential problem areas and deficiencies in the research instruments and protocol prior to implementation during the full study (Hassan, Schattner, & Mazza, 2006). The pilot study is useful in many ways as it provides researchers an overall outlook about their choices of research design, operationalization of variables, and the outcomes and practical problems coming in the way of carrying out the research. It helps researchers to identify strengths and weaknesses of their methodology in advance and rectify them prior to conducting their final study.

This pilot study was carried out to test the suitability of the scales for further analyses and to conduct preliminary analyses in order to understand the trends in the results for the main study. The statistical analyses were done with the IBM SPSS software, version 21 (IBM, 2012). The reported Cronbach alpha reliability of the National Militarism scale by the test author was .92 while the present study showed an α = .81 and Spear-Brown coefficient = .79 (Table 12). Since the very high alpha reliability coefficients i.e. closer to or above .90 are not desirable as they show the presence of some redundant items (Goforth, 2015; Taber, 2018), so the reliability score in the present study seems more realistic. The Cronbach alpha for Ethnocentrism scale is α = .69 and Spearman-Brown coefficient is .65 both showing a moderate value within acceptable range (Goforth, 2015).

A fully certified Urdu language version of Moral Competence Test (MCT-Urdu) that had been previously validated on the Pakistani sample (Liaquat, 2011, 2012; Lind, 2016a) was used for the present study. The test validation procedures recommended by the test author (Lind, 2016a) were again applied for this study to see any aberrations for the

present sample. The MCT-Urdu shows that the patterns of scores, though not ideal, mostly fulfil the validation requirement and do not have gross aberrations to declare it invalid (see tables 15, 16, 17, and Figures 6, 7, 8). The mean c-score that represents moral competence — which is the core aspect of the MCT — for the whole sample is quite low (M = 16.59, SD = 11.57) (table 14) consistent with past studies in Pakistan (Asim et al., 2014; Liaquat, 2011, 2012) and in contrast to many international studies that show higher levels of c-scores in general (Lind, 1986; Lupu, 2009; Saeidi-Parvaneh, 2011; Schillinger, 2006; Yang & Wu, 2011).

Pearson correlation among main variables shows that critical thinking (CT) is showing a rather complex trend in its relationship to moral competence (Table 18). There is a significant negative correlation between CT and c-scores which is counterintuitive. However, it appears that CT is differentially associated with two types of dilemmas, showing a positive though non-significant correlation with worker's dilemma, and a significant negative correlation with euthanasia dilemma. CT also has a significant negative relationship with moral segmentation. Moral segmentation refers to difference in moral judgment competence between two dilemmas.

Moral competence has been found to have a significant negative correlation with national militarism, while CT has a non-significant relationship with national militarism. Ethnocentrism does not seem related to any of the main variables except c-scores on euthanasia dilemma where it shows a significant positive relationship .

A more reasonable approach to look deeper into the relationships among variables seemed to be taking partial correlation coefficients. Pearson correlation coefficients, though useful, often provide contaminated results when there is a shared variance among

more than two correlated variables. In partial correlation, we have the opportunity to statistically control the effect of the third variable in order to obtain the uncontaminated correlation between two desired variables (Field, 2013).

The partial correlations show a somewhat different picture than the Pearson correlations (Table 19). Though a significant negative partial correlation is observed once again between c-score and CT when both c-score (worker's dilemma) and c-score (euthanasia dilemma) are controlled, the relationship between c-scores (workers' dilemma) and CT this time is *significant*ly positive CT when c-score is controlled. While the relationship between c-score (euthanasia dilemma) with CT becomes *non-significant* when c-score is controlled. It seems that higher critical thinking skills are more helpful when the nature of moral dilemma is not emotionally *too much* demanding.

The mediation analyses were performed in the IBM SPSS through PROCESS version 3.4.1 (Hayes, 2018). The mediation of c-score, c-score (worker's dilemma), and c-score (euthanasia dilemma) was estimated for the effect of CT on national militarism. Simple mediation models were used with a single mediator between CT and national militarism. A significant negative effect of CT on moral competence was observed when no covariates were included in the model. Moral competence negatively predicted national militarism , and a significant indirect effect of critical thinking on national militarism was observed in the presence of moral competence (table 20). CT positively effects c-score (workers' dilemma) ((table 21 description), and negatively effects c-score (euthanasia dilemma) (Table 22 description). C-score (euthanasia dilemma) has a significant negative effect on national militarism (Table 22 description).

No significant effects of CT or moral competence were found for ethnocentrism (Table 23). College students scored significantly higher on ethnocentrism than university students (Table 24). Males showed significantly more competence on euthanasia dilemma than females and also showed lower moral segmentation than females (table 25). Females got significantly higher scores on their preference of postconventional stages of moral reasoning i.e. stage 5 and stage 6 than males with stage 5 and stage 6 (table 25). Females also got significantly higher mean scores on national militarism than males (Table 25).

Overall, the results show that relationship (through partial correlation and through a mediation model as well) between critical thinking and moral competence seems to be dilemma-specific. Critical thinking seems to facilitate those moral dilemmas that can be considered mild and relatively easier to manage than the ones that are more sensitive and contain highly conflict arousing information in matters of personal and social importance (especially life and death issues as in euthanasia dilemma). Consistent with previous findings (Asim et al., 2014), moral competence seems to negatively predict national militarism which supports the assumption that increasing democratic competence might discourage perceptions related to military centralized state system. College students were found to be more ethnocentric, a trend that requires explanation and that would be reconfirmed in the main study as well. Consistent with previous studies in Pakistan (Irfan, 2019; Liaquat, 2012), female students have shown higher moral segmentation than males, though no significant gender differences in the level of moral competence were observed. Females have also exhibited significantly higher scores on stage 5 and 6 moral orientations and scored higher on national militarism as well. The findings would be more interpretable in the final phase of the research.

Phase III: Main Study

After the translation and adaptation of Cornell Critical Thinking Test (CCTT)-Level Z into Urdu language and the pilot testing of the instruments, the phase III of the study was conducted to test the research hypotheses. This phase aims to achieve the following objectives:

Objectives

1. To understand the relationship among moral competence, critical thinking, national militarism, and ethnocentrism
2. To determine the impact of critical thinking on moral competence, ethnocentrism and national militarism.
3. To find out the mediating role of moral competence for the effect of critical thinking on national militarism and ethnocentrism
4. To find out the differences in ethnocentrism and national militarism for various ethnic groups.
5. To understand gender differences for critical thinking, moral competence, moral affects, national militarism, and ethnocentrism
6. To determine differences between college and university students in critical thinking, moral competence, national militarism and ethnocentrism

Hypotheses

1. Critical thinking will positively predict moral competence.
2. There would be significant difference of c-scores on two separate dilemmas of MCT (i.e. significant moral segmentation would be observed).
3. Critical thinking will significantly predict national militarism
4. Moral competence will negatively predict national militarism
5. Moral competence will act as a mediator between critical thinking and national militarism.
6. Critical thinking will significantly predict ethnocentrism
7. Moral competence will negatively predict ethnocentrism
8. Moral competence will act as a mediator between critical thinking and ethnocentrism.
9. Critical thinking would have a positive correlation with postconventional moral orientations
10. Males would have significantly lower levels of moral segmentation than females.
11. There will be significant gender differences in ethnocentrism and national militarism
12. University and college students will significantly differ in levels of critical thinking.

Operational Definitions of Variables

Critical Thinking

Ennis (2011b, 2015b) has defined critical thinking as "reasonable reflective thinking focused on deciding what to believe or do" (Ennis, 2011, p. 10; 2015, p. 01). In

deciding what to believe or do, one uses a set of critical thinking abilities and dispositions. The dispositional aspect of critical thinking is not a focus of this study, and it is the abilities that are a primary concern for this research.

For Ennis (2015b), "the ideal critical thinker has the ability to clarify, to seek and judge well the basis for a view, to infer wisely from the basis, to suppose and integrate imaginatively, and to do these things with sensitivity and skill" (p. 8).

For the present study, the critical thinking (CT) is operationally defined as "scores on Cornell Critical Thinking Test (CCTT)-Level Z (Urdu)". Higher scores on the test indicate higher CT ability while lower scores represent lower ability.

Moral Competence

Kohlberg (1964, cited in Lind, 2008, p. 190) defined moral competence as "the capacity to make decisions and judgments which are moral (that is, based on internal principles) and to act in accordance with such judgments". According to Lind (2020), moral competence is the "ability to resolve problems and conflicts on the basis of one's moral principles through deliberation and discussion, instead of through violence and deceit, or through submitting to others". Moral competence consists of all cognitive, affective and behavioral dimensions and moral behavior depends on the individual's ability to see the moral implications of a situation and to organize and consistently apply moral rules and principles to concrete situation (Lind, 1985b).

For the present study, moral competence is operationally defined as the "c-scores of individuals on a Moral Competence Test (MCT)-Urdu that was translated and validated from the MCT standard English version of Georg Lind (Liaquat, 2011).

Moral Attitudes/Affects/Preferences

Moral attitudes or preferences are what Lind called 'content' aspect of moral behavior or termed as moral principles or maxims or according to Kohlberg as 'internal moral principles' (Lind, 1985b, 2000b; Lind, 2008). This aspect is also defined as "the direction and the strength of the respondents' affective commitment to Stage-typical moral concerns" (Lind, 1985a; p. 7). In MCT, the moral attitudes/preferences are the *affective aspect* of individual's moral thinking which are the separate sum scores for each of the six moral stages that are derived from Kohlbergian idea of moral reasoning. Each stage score tells an individual's level of preference for a specific stage comparing to any other stage. In the present study, the stage sum scores for six stages constitute the operational definition of the affective aspect of moral reasoning.

Moral segmentation

Moral segmentation occurs when "subjects apply a different level of moral judgment competence when deciding on different moral issues" (Lind, 2003; p. 1). Moral segmentation is highly related to dogmatism and conservatism. According to Lind (2000b; p. 3), "religiously oriented subjects suppress their autonomous moral judgment on dilemma contents, on which the church takes a strong stance. *The segmentation phenomenon seems to indicate that internalized rules (super-ego) rather than external social pressure constrain the use of autonomous moral judgment"* (emphasis added).

The MCT measures moral segmentation as significantly low c-scores on a dilemma for which strong religious or cultural prohibitions exist (known as euthanasia dilemma or doctor's dilemma in MCT) as compared to the other dilemma (workers' dilemma) that is less religiously or culturally sensitive. Generally, eight-point difference in c-scores

between two dilemmas has been reported as a high segmentation score in research literature.

Socio-Political Attitudes (Militarism and Ethnocentrism)

National militarism

For Stavrianakis (2015), militarism can be broadly defined as "an ideology glorifying war; the propensity to use force; military buildup; excessive influence (of either the institution of the military or of the military–industrial complex (MIC)); or the influence of military relations on social relations in general" (p 490).

For the purpose of present research, national militarism is operationally defined as total score on the National Militarism Scale developed by McConochie (2010). Higher scores on the scale show more pro-militaristic attitudes indicating fondness for military power, military arsenal, authority, and role of military within the country.

Ethnocentrism

According to Sumner (1906), "Ethnocentrism is the technical name for this view of things in which one's own group is the center of everything, and all others are scaled and rated with reference to it. Folkways correspond to it to cover both the inner and the outer relation" (p.13). For the present study, ethnocentrism is operationally defined as total scores on the General Ethnocentrism Scale (GENE) by Neuliep and McCroskey (1997, 2013). Higher scores on the scale show higher ethnocentrism and lower scores indicate lower ethnocentrism in individuals.

Participants

The participants of the study ($N = 367$) consisted of students of BS (Hons), Master, MPhil and PhD programs from two colleges, seven universities and one teaching hospital from the Federal Capital, Islamabad, and the provinces of Punjab, Khyber Pakhtunkhwa, and Baluchistan. A non-random convenience sampling technique was used for the selection of the sample. Most of the students mainly belonged to the disciplines of Psychology, Applied Psychology, Mathematics, Mass Communications, English, and Physiotherapy. Initially 400 participants were included in the study but the incomplete forms (i.e forms that were totally left blank or participants withdrew from study) were dropped from the study. The final data set on which all main analyses were done consisted of 367 participants. The demographic characteristics of the sample are given in the following table:

Table 23

Demographic Information of the sample (N = 367)

Institute	N	Mean Age	Gender	Program	Ethnicity
1. University of Management and Technology, Lahore	105	20.5	M = 11, F = 94	BS/Master = 92 MPhil = 13	Kas = 7,Pkh=2, Pun=69, Sar=2,Ur=25
2. Islamia University Bahawalpur	39	21.9	M = 34, F = 05	BS/Master = 36 MPhil = 03	Bal=3,Gil=2, Pkh=2,Pun=11, Sar=18,Ur=3
3. University of Baluchistan	33	22.4	M = 12, F = 21	BS/Master = 28 MPhil = 05	Bal=23,Haz=4, Pkh=4,Pun=2
4. National University of Modern Languages, Islamabad	29	22.9	M = 03, F = 26	BS/Master = 29	Gil=1,Kas=2, Pkh=4,Per=1,Pun=17,Ur=4
5. Quaid-e-Azam University, Islamabad	20	25.1	M = 20	MPhil = 17 PhD = 03	Chi=2,Haz=1 Kas=3,Pkh=7,Pun=6,Ur=1
6. International Islamic University, Islamabad	09	23.1	M = 09	BS/Master = 05 MPhil = 04	Bal=1,Chi=1 Gil=1,Kas=1,Pkh=2,Sar=1

Institute	N	Mean Age	Gender	Program	Ethnicity
7. University of Malakand	06	19.3	M = 01, F = 05	BS/Master = 06	Pkh = 06
8. MAO College, Lahore	70	21.6	M = 21, F = 49	BS/Master = 70	Gil=1,Kas=1 Pkh=1,Pun=52, Sin=1,Ur=1
9. GC, Asghar Mall, Rawalpindi	39	21.1	M = 21, F = 18	BS/Master = 39	Kas=8,Pkh=1 Pun=29,Ur=1
10. Gulab Devi Hospital, Lahore	16	20.6	M = 02, F = 14	BS/Master 16	
	N = 367	Mean Age = 21.56	M = 134, F = 233	BS/Master =322 MPhil =42 PhD =03	Bal=27,Gil=7, Chi=3,Haz=5, Kas=22,Pkh=29,Per=1,Pun=199,Sar=22,Sin=1,Ur=50

Note: Bal = Baloch, Chi = Chitrali, Gil = Gilgiti, Haz = Hazara, Kas = Kashmiri, Pkh = Pakhtun, Per = Persian, Pun = Punjabi, Sar = Saraiki, Sin = Sindhi, Ur = Urdu

Instruments

1. Cornell Critical Thinking Test (CCTT)-Level Z (Urdu)

A translation and adaptation of Cornell Critical Thinking Test (CCTT)-Level Z was done into Urdu language (Phase I). CCTT levels X and levels Z are one of the oldest instruments developed by Ennis and Millman (1971) that measure critical thinking abilities. The test has gone through several revisions and its five editions have been published so far (Ennis & Millman, 1971; Ennis, Millman, & Tomko, 1985; Ennis et al., 2005). The 5th revised edition of the test (Ennis et al., 2005) was translated and adapted into Urdu language to be used in the final study. CCTT-Z contains 52 multiple-choice questions. The questions are not simple statements, but several different scenarios are given, and each scenario has a set of questions with three response options, viz. A, B, and C. There are two methods of scoring the test; one is a straightforward 'rights only' method in which each correct response is given one score and an incorrect response is marked zero. With this method the scores of any individual taking the test would range from 0 to 52. The other method requires that one-half score should be deducted for each incorrect answer (Ennis, Millman, & Tomko, 2005). The rights-only method was used as a standard scoring procedure for this study.

According to the authors of the test, CCTT-Z consists of seven subtests (or five as four of the subtests can be merged into two), measuring different critical thinking abilities. These subtests include; i. Deduction (items 1-10), ii. Meaning and Fallacies (items 11-21), iii. Observation and Credibility of Sources (items 22-25), iv. Induction (Hypothesis testing) (Items 26-38), v. Induction (Planning Experiments) (items 39-42), vi. Definition and Assumption Identification (items 43-46), and vii. Assumption Identification (items 47-52) (details of these subtests are discussed in Phase I). Despite

consisting of several sub-dimensions, the test considers CT as a general ability with all sub-dimensions adding up to give a single score.

As no reasonable factor structure emerged in the translation and validation study of CCTT-Z (Urdu), the subtests in the analyses have not been discussed separately and only the total score on the test has been used. Based on point-biserial correlation, 12 questions including questions 18, 20, 24, 26, 31, 35, 37, 39, 40, and 41 showed non-significant correlation coefficients and these were subsequently not included for final analyses. Question 42 was also dropped as it belonged to the same cluster of questions 39, 40 and 41. So, a 40-item test was used for the purpose of data analysis.

Moral Competence Test – Urdu (MCT-Urdu)

A certified and fully validated version of Moral Competence Test (MCT-Urdu) was used in the present study (Liaquat, 2011, 2012). Moral Competence Test (MCT) was developed by Lind (1978) to measure the level of cognitive moral development termed as *moral judgment competence* now simply known as *moral competence*. MCT is quite different from traditional attitude measures based on classical testing theory (CTT). In fact, MCT is classified as an Experimental Questionnaire (EQ). EQs are paper-pencil tests that are not necessarily to be used in experimental settings, rather these are economic, multi-factorial approaches combined in a single test (Lind, 1982, pp. 14-16). MCT is a multivariate N=1 experiment that uses a 2 x 2 x 6 factorial design with real moral tasks that require participants to have a flexibility as well as consistency of judgment while solving some moral issues. The test consists of two moral dilemmas with two stories stating moral situations in the form of a euthanasia dilemma and a workers' dilemma. In each dilemma the characters of the stories make a decision and participants have to rate how much they agree with that decision on a 7-point scale (-3 to +3). Each moral dilemma is followed by six arguments representing six moral stages

that correspond to the developmental stages elaborated by Kohlberg, the arguments are provided both in favor of the decision and against the decision and participants have to rate how much they accept or reject these arguments on a 9-point scale (-4 to +4). Two types of scores are calculated in MCT:

i). The *affective aspect* is calculated by taking sum of the arguments for each stage of moral reasoning, in this way separate sums for 6 stages are obtained. These scores are termed as affective aspect as they represent preference or *liking* of certain moral stages over others.

ii). The *cognitive aspect* which is also called *moral competence* or c-score is calculated by using a technique similar to multivariate analysis of variance devised by Lind (2000c). The c-scores on MCT range from 0 (no competence at all) to 100 (maximum competence). The c-scores actually show consistency of response on pro and contra arguments. Higher response consistency is necessary but not enough for getting higher c-scores. Higher c-scores also require increasing differentiation and integration of moral arguments by rating arguments according to their moral quality whether in favor or contrary to the decision made. Low c-scores usually result when participants are unable to understand moral arguments, are pressured to show compliance to some authority, have rigidity in thought (lacking reversibility) by mostly rating only pro arguments positively whereas rating contra arguments negatively without considering moral quality of those arguments. The MCT appears to be the least biased as its c-index is a value neutral measure. Any person preferring even lower moral stages over higher stages can get higher c-scores if their pattern of responses is meaningfully integrated and differentiated (Lind, 1995).

National Militarism Scale

National Militarism Scale (NMS) is a 5-point Likert scale containing ten items developed by McConochie (2010). The scale measures a person's attitude toward military strength for their own nation. The persons scoring higher on this scale usually like country's military might, having always ready for war, taking interest in military-related ceremonies, having a large stockpile of weapons, and military influence in politics. According to the author of the test, this attitude is representative of basic human trait that hypothetically loads on the conservative psychological trait factor contrasting with the liberal trait factor. The item no. 9 of the scale was a culturally specific item mentioning US Independence Day, that item was replaced with a more culturally relevant statement in the context of Pakistan.

Item No.	Original Item	Replaced Item
09	Parades of military equipment and personnel are very important for national holidays, such as the Fourth of July in the U.S.A	Parades of military equipment and personnel are very important for national holidays, such as 23rd March or 6th September.

The reported alpha reliability of the scale is .90 and it shows a significant positive correlation with construct of conservatism (.57) and a significant negative correlation with liberalism (-.35). In the pilot study (see Phase II), the Cronbach alpha reliability of the scale on the Pakistani sample was .81 and Spearman-Brown reliability coefficient was .79, showing satisfactory levels of reliability.

Generalized Ethnocentrism Scale (GENE)

The Generalized Ethnocentrism Scale (GENE) was developed by Neuliep and McCroskey (1997, 2013) based on the conception of ethnocentrism by Hewstone and Ward (1985); Islam and Hewstone (1993); Segall (1979), and Sumner (1906) that

measures the "view of things in which one's own group is the center of everything, and all others are scaled and rated with reference to it" (Sumner, 1906). Superiority of one's ethnic group in terms of lifestyle, customs, and values are discussed. Trust and cooperation with other ethnic groups are also measured by the scale. The test consists of 22 items with 5-point Likert scale. Only 15 items are scored, according to the authors of the scale items 3, 6, 12, 15, 17, and 19 are just to balance the number of negatively and positively worded items and are dropped from the scoring. Items 4, 7, and 9 are reversed scored items. The reported Cronbach alpha reliability coefficient of the scale is .92 (Neuliep & McCroskey, 1997, p. 394)

There was one important change made in the statements of the scale. All the statements contain 'culture' as a central word e.g. "Most other cultures are backward compared to my culture" (Item No. 1). The word 'culture' is a very broad term and can mean many things depending on the context. For example, in Pakistan, the cultural and ethnic identities are quite fluid and there can be no specific singular identity unless explicitly asked. The religious, ethnic and nationalist identities are quite different but can be equally strong depending on the context. So, the use of the term 'culture' is vague and not context-specific. It was not clear that if the scale was to be administered without changing the term 'culture" into some more specific identity term, the participants might rate the scale with quite varied conceptions of the term in their minds. In order to reduce this semantic confusion, the term 'culture' was replaced by a more suitable term i.e. 'ethnic group' to narrow down the scale's focus on the ethnic identity only. The pilot study (Phase II) revealed that the Cronbach alpha reliability of the scale was .69, and Spearman-Brown coefficient was .65, that are quite moderate reliability estimates, showing no gross problems in the scale when replaced with 'ethnic group' as a more context-specific term.

Procedure

Institutional permissions were sought for the collection of information from various universities and colleges. Written consent forms were distributed prior to administration of tests and rating scales to the research participants. Uniform instructions were used throughout different administration sessions. Anonymity of the participants was ensured, and it was conveyed that there was no commercial or any other hidden aspect of the research. It was ensured that all the information would be kept confidential and the results of the study would be used for PhD research purpose only and might later be published in some research journals. Students were briefed about the purpose of the research and their queries were satisfactorily discussed. A researcher's email was provided to the students with the instruction that if they were interested to know about their scores of critical thinking or any other query, they could contact him. Though there was no psychological harm intended in the research, students were told that they had the right to withdraw from research at any stage if they were feeling uncomfortable.

A total of 400 sets of questionnaires were distributed in various institutes, out of which 376 questionnaire sets returned (Return rate = 94%). Nine questionnaire sets were further removed that had incomplete information. Final data, on which analyses were done, consisted of 367 students. Questionnaire sets were mostly distributed in classrooms. The CCTT-Z recommends a time limit of 50 minutes for the completion, though students were informed and encouraged about this recommendation, but practically no strict time limits were imposed. The institutional administration and research participants were thanked for their time and cooperation.

RESULTS

Chapter III

Results

The main study was carried out to see the effect of critical thinking on socio-political attitudes of national militarism and ethnocentrism with a mediating role of moral competence. The study was not only restricted to this singular finding. Determining separate effects of critical thinking on moral competence and socio-political attitudes and effect of moral competence on socio-political attitudes was also the focus of the study. The effective aspect of morality cannot be ignored, so the relationship of moral stages with various variables was also an important concern in this study. Differences of critical thinking, moral competence, moral stages, national militarism and ethnocentrism on the basis of gender, education, and ethnic affiliations were also explored in this study. The following statistical analysis were performed with the help of IBM SPSS version 21 (IBM, 2012) including PROCESS version 3.4.1 for mediation analyses (Hayes, 2018)

1. Descriptive statistics i.e. means, standard deviations, skewness, kurtosis, and ranges were computed for all the tests and scales used in the study (Tables 25, 26, and 28).

2. Point-biserial correlation coefficients and item difficulty levels were calculated for CCTT-Z (Urdu) (Table 24)

3. Cronbach alpha reliability and Spearman-Brown coefficients were computed once again for Ethnocentrism scale and National Militarism Scale (Table 26).

4. Item-total correlation coefficients were computed for National Militarism Scale and Ethnocentrism Scale (Table 27).

5. Recommended statistical analyses (repeated ANOVA, correlation between stage scores and c-scores, principle component analysis) to judge theoretical validity of MCT were performed (Tables 29, 30, and 31).

6. Pearson correlation was used to see overall relationships among main study variables (Table 32).

7. Partial correlation was applied between critical thinking scores, MCT C-scores and c-scores on MCT separate tests (Table 33).

8. Mediation analyses were done to see the mediation of c-scores for the effect of CT on national militarism (Table 34).

9. Mediation analyses were done to see the mediation of subtests of MCT for the effect of CT on national militarism (Tables 35, and 36).

10. Mediation analyses were done to see the mediation of c-scores for the effect CT on ethnocentrism (Table 37).

11. Mediation analyses were done to see the mediation of MCT subtests for the effect of CT on ethnocentrism (Tables 38 and 39).

12. Partial correlation was performed between CT and moral stages (combined into three Kohlbergian preconventional, conventional, and postconventional orientations) (Table 40).

13. Partial correlation was performed between national militarism and moral stages (combined into three Kohlbergian preconventional, conventional, and postconventional orientations) (Table 41).

14. Partial correlation was performed between ethnocentrism and moral stages (combined into three Kohlbergian preconventional, conventional, and postconventional orientations) (Table 42).

15. T-tests were conducted to see gender differences between main study variables (Table 43).

16. T-tests were done to see the differences in main variables between college and university students (Table 44).

Table 24

Point-biserial correlation and item-difficulty information for the items of Cornell Critical Thinking Test (CCTT)-Level Z (Urdu Version) (N = 367)

Cornell Critical Thinking Test (CCTT)-Level Z (Urdu Version)											
Sr. No.	Item No.	Point-Biserial Correlation (r_{bis})	Item Difficulty (p)	Sr. No.	Item No.	Point-Biserial Correlation (r_{bis})	Item Difficulty (p)	Sr. No.	Item No.	Point-Biserial Correlation (r_{bis})	Item Difficulty (p)
1	1	.28**	0.37	10	10	.17**	0.62	19	19	.26**	0.27
2	2	.18**	0.65	11	11	.20**	0.36	20	20	.10	0.30
3	3	.13**	0.14	12	12	.19**	0.32	21	21	.07	0.16
4	4	.29**	0.51	13	13	.28**	0.32	22	22	.22**	0.24
5	5	.27**	0.43	14	14	.21**	0.28	23	23	.17**	0.35
6	6	.23**	0.25	15	15	.21**	0.52	24	24	.08	0.41
7	7	.19**	0.34	16	16	.17**	0.33	25	25	.23**	0 38
8	8	.23**	0.60	17	17	.19**	0.60	26	26	.03	0 48
9	9	.14**	0.28	18	18	.09	0.22	27	27	.18**	0 42

**$p < 01$; * $p < .05$

Table 24 (Continued …)

Point-biserial correlation and item-difficulty information for the items of Cornell Critical Thinking Test (CCTT)-Level Z (Urdu Version) (N = 367)

Cornell Critical Thinking Test (CCTT)-Level Z (Urdu Version)											
Sr. No.	Item No.	Point-Biserial Correlation (r_{bis})	Item Difficulty (p)	Sr. No.	Item No.	Point-Biserial Correlation (r_{bis})	Item Difficulty (p)	Sr. No.	Item No.	Point-Biserial Correlation (r_{bis})	Item Difficulty (p)
28	28	.27**	0.36	37	37	.06	0.34	46	46	.32**	0.45
29	29	.32**	0.41	38	38	.18**	0.41	47	47	.28**	0.46
30	30	.23**	0.29	39	39	-.01	0.29	48	48	.19**	0.38
31	31	.03	0.34	40	40	.09	0.33	49	49	.28**	0.41
32	32	.18**	0.32	41	41	-.00	0.42	50	50	.20**	0.43
33	33	.35**	0.53	42	42	.23**	0.46	51	51	.28**	0.29
34	34	.25**	0.42	43	43	.31**	0.31	52	52	.11*	0.29
35	35	.08	0.32	44	44	.15**	0.35		Mean p	---	.376
36	36	.13*	0.51	45	45	.23**	0.35				

**p < .01; * p < .05

Table 24 shows point-biserial correlation coefficients and difficulty levels of the test items. The point biserial correlation for various items ranges from $r_{bis} = -.01$ to $r_{bis} = .35$. Items 18, 20, 24, 26, 31, 35, 37, 39, 40, and 41 showed non-significant correlations with total test scores. These items were not included for final analyses. Item 42 though showed a significant positive correlation was also removed because it was the only item remaining from the induction subtest that had all other items showing non-significant correlation coefficients. The percentage of correct responses for each item was calculated to determine item difficulty levels. The mean item difficulty for this test is $p = .376$ which might be quite high considering the conventional standards (Kaplan & Saccuzzo, 2005, pp. 168-169; Riaz, 2017, p. 273).

Table 25

Descriptive statistics and alpha coefficients for Cornell Critical Thinking Test (CCTT)-Level Z (Urdu Version) (N = 367)

							Range	
CCTT-Level Z (Urdu)	Items	α	*M*	*SD*	Skewness	Kurtosis	Potential	Actual
Deduction	10	.30	4.18	1.72	.27	.18	0-10	0-09
MandF	11	.19	3.58	1.67	.47	-.41	0-11	0-09
OBandCS	04	-.01	1.37	0.94	.39	-.02	0-04	0-04
Induction (HT)	13	.19	5.14	1.92	-.09	-.38	0-13	0-10
Induction (PE)	04	-.11	1.49	0.92	.08	-.74	0-04	0-04
Def and AI	04	.19	1.46	1.04	.25	-.60	0-04	0-04
Assump ID	06	.29	2.26	1.35	.19	-.36	0-06	0-06
CCTT-52 items	52	.47	19.59	4.65	.7	.18	0-52	12-35
CCTT-short	40	.59	15.21	4.52	.2	-.03	0-40	5-28

Note: MandF = Meaning and Fallacies; OBandCS = Observation and Credibility of Sources; Induct(HT) = Induction (Hypothesis Testing); Induction (PE) = Induction (Planning Experiment); Def and AI = Definition and Assumption Identification; Assump ID = Assumption Identification

Table 25 shows descriptive statistics and alpha reliability coefficients for the whole test and for subtests of Cornell Critical Thinking Test-Level Z (Urdu Version) Similar to that of the pilot study, there is not much change in reliability coefficients of the test in the final study as well. The subtests show inconsistent and unsatisfactory reliability coefficients. Overall reliability for the 52-item complete test is also low (α = .47). The full test reliability of 40 items version improved from .47 to .59 when those

items were removed that showed non-significant point-biserial correlation coefficients. The low reliability coefficients show that there is no homogenous structure within subtests. Skewness values for all subtests and full test are less than 2 and kurtosis values are less than 7 that indicates score for the CCTT-Level Z (Urdu) are normally distributed (West et al., 1995). Then mean score for 52-item version is 19.59 (SD = 4.65) and for shorter version is 15.21 (SD = 4.52).

Table 26

Cronbach alpha and Split-Half reliability coefficients of National Militarism Scale and Ethnocentrism Scale (N = 367)

Scales	No. of items	Cronbach alpha reliability	Spearman-Brown Coefficient	M	SD	Skewness	Kurtosis	Range	
								Potential	Actual
National Militarism Scale	10	.79	.78	35.19	7.07	-.26	-.57	10-50	15-50
Ethnocentrism Scale	15	.70	.66	39.52	7.78	-.20	-.09	15-75	19-61

Table 26 shows descriptive statistics, alpha reliability coefficients and Spearman-Brown coefficients for National Militarism Scale and Ethnocentrism Scale. Both scales show moderate to high reliability coefficients. Skewness and Kurtosis values are lesser than 2 which is an indication of normal distribution of scores for these scales.

Table 27

Item-total correlation for the items of National Militarism Scale and Ethnocentrism Scale (N = 367)

	National Militarism Scale			Ethnocentrism Scale	
Sr. No.	Item No.	Item-total Correlation	Sr. No	Item No.	Item-total correlation
1	1	.65**	1	1	.45**
2	2	.53**	2	2	.44**
3	3	.41**	3	4	.33**
4	4	.65**	4	5	.42**
5	5	.57**	5	7	.23**
6	6	.63**	6	8	.47**
7	7	.64**	7	9	.33**
8	8	.54**	8	10	.28**
9	9	.69**	9	11	.55**
10	10	.59**	10	13	.44**
			11	14	.53**
			12	18	.48**
			13	20	.55**
			14	21	.51**
			15	22	.55**

**$p < .01$; * $p < .05$

Table 27 shows item-total correlation of National Militarism Scale and Ethnocentrism Scale. The correlation coefficients for National Militarism Scale range from .41 to 69 The correlation coefficients for Ethnocentrism Scales range from .23 to .55. All the items in both scales have significant positive correlation coefficients.

Table 28

Descriptive Statistics for Moral Competence Test-Urdu (N = 367)

Moral Competence Test	No. of items	M	SD	Skewness	Kurtosis	Range	
						Potential	Actual
C-Scores	24	16.36	11.39	1.19	1.64	0-100	0-70
Stage 1	4	.39	4.72	-.07	.23	-16-16	-16-14
Stage 2	4	1.67	4.84	.06	-.15	-16-16	-13-16
Stage 3	4	2.93	4.73	-.52	.56	-16-16	-15-14
Stage 4	4	3.05	4.62	-.26	.48	-16-16	-14-16
Stage 5	4	3.49	4.72	-.36	.02	-16-16	-12-16
Stage 6	4	3.55	4.69	-.46	.50	-16-16	-12-15

Table 28 shows descriptive statistics for Moral Competence Test-Urdu (MCT-Urdu) on both cognitive (c-score) and affective (stage scores) aspects. Skewness value is lesser than 2 and kurtosis is lesser than 7 that indicate normal distribution of scores for these scales (West et al., 1995). The mean c-score on MCT-Urdu is 16.36 (SD = 11.39) while mean scores from stage 1 to stage 6 range from 0.39 to 3.55.

Table 29

Validity analysis of Moral Competence Test-Urdu (MCT-Urdu): Means, Standard Deviations and F value for participants on six moral stages/preferences (N = 367).

	Stage 1 (N = 367)		Stage 2 (N = 367)		Stage 3 (N = 367)		Stage 4 (N = 367)		Stage 5 (N = 367)		Stage 6 (N = 367)			
Moral stages	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	*p*
Stage Scores	0.39	4.72	1.67	4.84	2.93	4.73	3.05	4.62	3.49	4.72	3.55	4.69	41.92	.000

Within group *df* = 4.76; Groups total *df* = 1742.14

Table 29 shows results of repeated measures ANOVA, with Greenhouse-Geisser correction to assess the differences between the mean scores of 6 moral stages. Results indicate that participants rated 6 moral stages differently, $F(4.76, 1742.14) = 41.92$, $p < .000$. The mean scores show that participants preferred 6 moral stages in an expected hierarchical order favoring higher moral stages over lower moral stages. Polynomial contrasts indicated, in support of this, there was a significant linear trend, $F(1,366) = 141.89$, $p < .05$, *partial eta*^{2} = .28. However, a significant quadratic trend, $F(1,366) = 24.76$, $p < .05$, *partial eta*^{2} = .06 is also observed reflecting little flattening of the curve for higher moral stages. Overall, the orderly preference hierarchy criterion for the validity of the test is fulfilled.

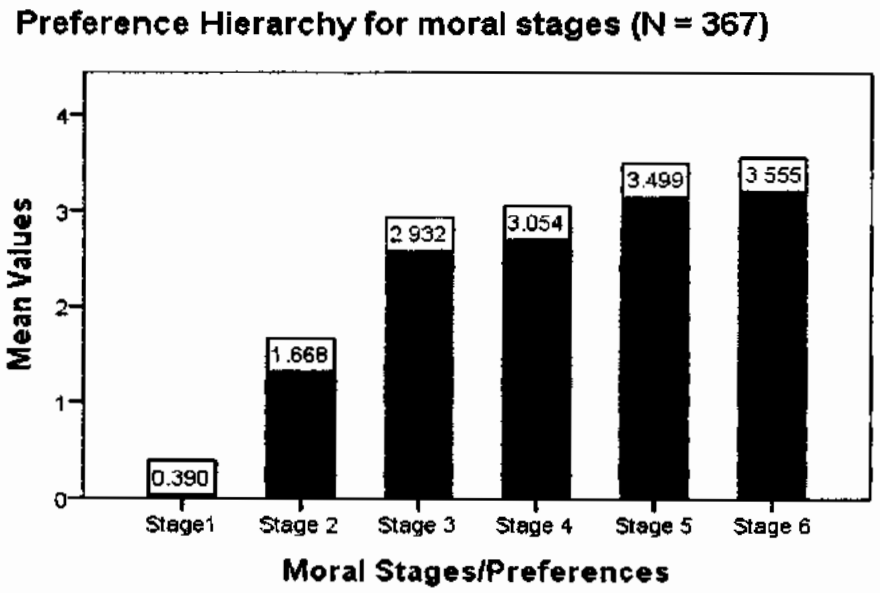

Figure 8: Mean scores of participants on 6 moral stages (N = 367)

Table 30

Validity analysis of Moral Competence Test-Urdu (MCT-Urdu): Pearson Correlation between Moral stages and C-Scores (N = 367)

Moral Stages	C-Scores (Moral competence)
1. Stage 1	-.12*
2. Stage 2	-.08
3. Stage 3	.06
4. Stage 4	.10*
5. Stage 5	.06
6. Stage 6	-.03

*$P < .05$

Table 30 shows Pearson correlation coefficients for moral stages and c-scores. As like the pilot study, the correlation coefficients are suppressed and not significant, though a slight trend toward expected correlation patterns can be noticed except the negative correlation with 6th stage of moral reasoning.

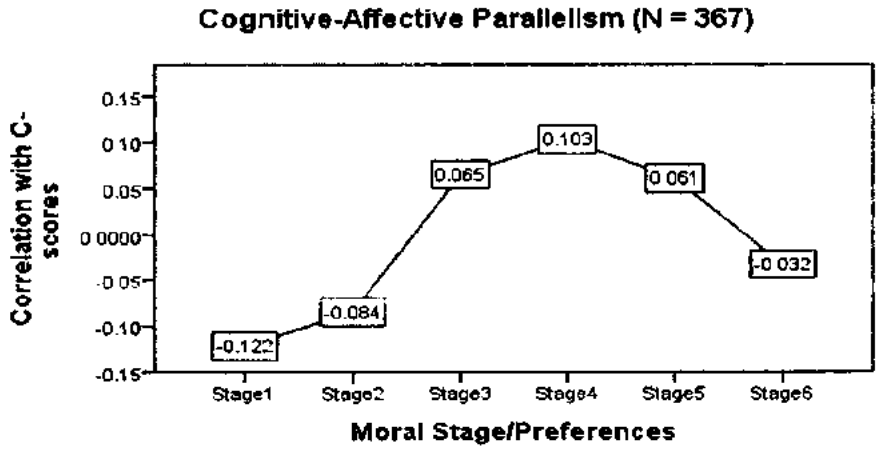

Figure 9: Pearson Correlation between Moral stages and C-Scores (N = 367)

Table 31

Validity analysis of Moral Competence Test-Urdu (MCT-Urdu): Principle Component analysis with varimax rotation, component loadings for 6 moral stages (N = 367)

	Component Loadings	
Moral Stages	1	2
Stage 1	----	.886
Stage 2	.604	.431
Stage 3	.725	----
Stage 4	.801	----
Stag 5	.790	----
Stage 6	.726	----

Loadings < .40 are omitted

Table 31 shows results for Principal component analysis with varimax rotation to explore the underlying structure of 6 moral stages. Two components were extracted for this purpose. Ideally, stages and 1 and 2 should correlate highly with each other and load on a single component. In contrast, stages 5 and 6 should highly correlate with each other and load on another component.

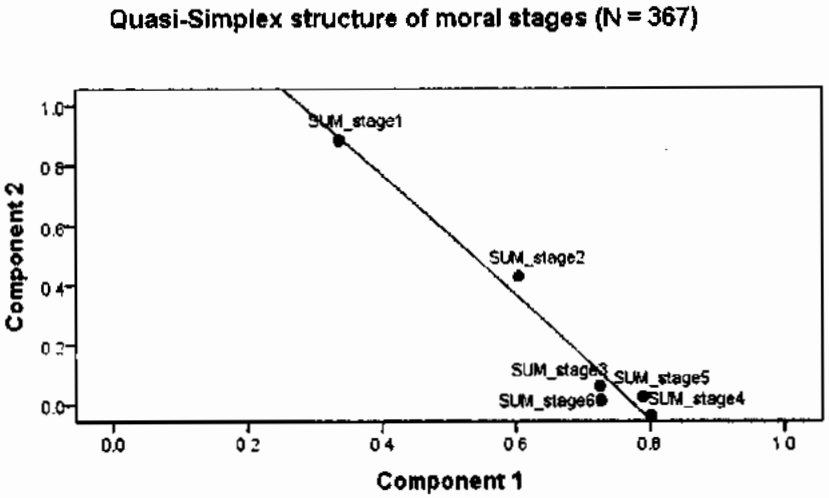

Figure 10: Principle Component analysis with varimax rotation, component loadings for 6 moral stages (N = 367)

Table 32

Pearson Correlation coefficients (zero-order correlation coefficients) for main study variables (N = 367)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	CCT-52 items	-	.92**	-0.08	0.06	-0.11*	-.11*	0.06	-0.04	0.01	-0.05	.13*	0.02	.11*	0.05
2	[a]CCT-short		-	-0.08	0.08	-0.11*	-.13*	0.02	-0.07	0.02	-0.04	.13*	-0.01	.13*	0.07
3	[b]C-scores			-	.23**	.56**	.1*	-.12*	-0.08	0.06	.103*	0.06	-0.03	-.10*	-0.00
4	[c]C-workers				-	0.06	-.82**	0.04	-0.07	.12*	0.04	.11*	-0.05	-0.01	0.06
5	[d]C-doctor					-	.52**	-0.05	-0.08	-0.09	-0.03	-0.05	-.16**	-.25**	0.07
6	C-segmentation						-	-0.06	0.02	-.15**	-0.04	-.12*	-0.05	-.13**	-0.01
7	Sage 1							-	.37**	.28**	.27**	.34**	.30**	-0.09	0.07
8	Stage 2								-	.43**	.46**	.36**	.35**	.11*	0.06
9	Stage 3									-	.44**	.48**	.35**	.13*	0.00
10	Stage 4										-	.50**	.46**	.21**	0.03
11	Stage 5											-	.48**	.21**	0.03
12	Stage 6												-	.36**	-0.00
13	[e]NMS													-	0.02
14	Ethnocentrism														-

*** p<.01; *p<.05*

Note = *[a]CCT-short = non-significant items from item-total correlation removed; [b]C-scores = Moral competence scores; [c]C-workers = c-scores on workers' dilemma; [d]C-doctors = c-scores on euthanasia dilemma; [e]NMS = National Militarism Scale*

Table 32 shows Pearson correlation coefficients among main study variables. There is a non-significant correlation between CT and c-scores ($r = -.08$, $p = .14$). As in the pilot study, CT is differentially associated with two types of dilemmas, showing a positive, though non-significant correlation with worker's dilemma ($r = .08$, $p = .10$), and a significant negative correlation with doctors' dilemma ($r = -.11$, $p < .05$). CT also has a significant negative relationship with moral segmentation ($r = -.13$, $p < .05$) and a significant positive relationship with national militarism ($r = .13$, $p < .05$). Moral competence has a significant negative correlation with national militarism ($r = -.15$, $p < .05$). Ethnocentrism does not seem related to any of the main variables except c-scores on euthanasia dilemma where it shows a significant positive relationship ($r = .12$, $p < .05$).

Table 33

Partial Correlation between moral competence scores (c-scores) and critical thinking (N = 367)

Control Variables		Variables	1	2
C-workers & C-doctor	1	C-Score	-	-0.04
	2	CCT		-

			1	2
C-Score	1	CCT	-	-0.08
	2	C-Doctor		-

			1	2
C-Score	1	CCT	-	.11*
	2	C-Workers		-

*$p < .05$

Table 33 shows partial correlation coefficients of c-score, c-score (workers' dilemma), and c-score (euthanasia dilemma) with critical thinking. Relationship of c-scores with critical thinking seems to be dilemma specific with c-scores (workers' dilemma) showing a significant positive correlation with CT ($r = .11$, $p < .05$) when c-score is controlled. A non-significant negative partial correlation is observed between c-scores (euthanasia dilemma) and CT ($r = -0.08$, $p = .12$) when c-score is controlled. The c-score has a non-significant negative correlation with CT when both c-score (workers' dilemma) and c-score (euthanasia dilemma) are controlled (r -0.04, p .41).

Table 34

Multiple Linear Regression Analysis for Mediation by c-scores (moral competence) for the relation between critical thinking and national militarism (N = 367)

	National Militarism			
		Model 2		
			95% *CI*	
Variables	Model 1 B	B	*LL*	*UL*
Constant	35.29*	35.09*	32.20	37.98
Critical Thinking	.16*	.17*	.01	.32
C-score		.03	-.04	.11
C-score (work) (cov)	-.00	-.00	-.03	.02
C-score (doc) (cov)	-.08*	-.09*	-.13	-.05
R^2	.07	.08		
ΔR^2		.01		
F	9.88*	7.59*		
ΔF		2.29		

*$p < .05$

Table 34 shows the possible mediation of c-scores for the relation between critical thinking and national militarism. There is a significant total effect ($\beta = .16$, $p < .05$), and direct effect ($\beta = .17$, $p < .05$) of critical thinking on national militarism. The effect of critical thinking on moral competence (c-score) is not significant ($\beta = -.09$, $p = .11$), and the effect of moral competence on national militarism was also not significant ($\beta = -.03$, $p = .38$). No significant indirect effect was noted ($\beta = -.00$, $CI = -.02, .00$) indicating no mediation. C-scores (workers' dilemma) and c-scores (euthanasia dilemma) were taken as covariates in the model.

Table 35

Multiple Linear Regression Analysis for Mediation by c-doctor for the relation between critical thinking and national militarism (N = 366)

	National Militarism			
		Model 2		
			95% *CI*	
Variables	Model 1 B	B	*LL*	*UL*
Constant	33.28*	35.01*	32.16	37.86
Critical Thinking	.19*	.16*	.01	.32
C-doctor		-.09*	-.13	-.05
C-score (cov)	-.06		-.04	.10
R^2	.03	.07		
ΔR^2		.04		
F	5.08*	10.11*		
ΔF		5.03		

*$p < .05$

Table 35 shows the possible mediation of c-score (euthanasia dilemma) for the relation between critical thinking and national militarism. There is a significant total effect ($\beta = .19$, $p < .05$), and direct effect ($\beta = .16$, $p < .05$) of critical thinking on national militarism. The effect of critical thinking on c-score (euthanasia dilemma) is not significant ($\beta = -.36$, $p = .08$). The effect of c-score (euthanasia dilemma) on national militarism was statistically significant ($\beta = -.09$, $p < .05$). No significant indirect effect was noted ($\beta = .04$, $CI = -.00, .09$) indicating no mediation. C-score was taken as a covariate in the model.

Table 36

Multiple Linear Regression Analysis for Mediation by c-workers for the relation between critical thinking and national militarism (N = 366)

	National Militarism			
		Model 2		
			95% *CI*	
Variables	Model 1 B	B	*LL*	*UL*
Constant	32.80*	32.50*	29.58	35.42
Critical Thinking	.29*	.28*	.12	.44
C-workers		.01	-.01	.04
C-scores (cov)		-.13*	-.21	-.05
R^2	.07	.07		
ΔR^2		.00		
F	11.96*	8.21*		
ΔF		3.75		

*$p < .05$

Table 36 shows the possible mediation of c-score (workers' dilemma) for the relation between critical thinking and national militarism. There is a significant total effect ($\beta = .29$, $p < .05$), and direct effect ($\beta = .28$, $p < .05$) of critical thinking on national militarism. The effect of critical thinking on c-score (workers' dilemma) is not significant ($\beta = .36$, $p = .25$). The effect of c-score (workers' dilemma) on national militarism was also not statistically significant ($\beta = .01$, $p = .39$). No significant indirect effect was noted ($\beta = .00$, $CI = -.00, .02$) indicating no mediation. C-score was taken as a covariate in the model.

Table 37

Multiple Linear Regression Analysis for Mediation by c-scores for the relation between critical thinking and ethnocentrism (N = 366)

	Ethnocentrism			
		Model 2		
			95% CI	
Variables	Model 1 B	B	*LL*	*UL*
Constant	37.76	37.74*	34.62	40.86
Critical Thinking	.11	.11	-.06	.29
C-scores		.00	-.07	.07
R^2	.004	.004		
ΔR^2		.00		
F	1.65	.82		
ΔF		.83		

*$p < .05$

Table 37 shows the possible mediation of c-score for the effect of critical thinking on ethnocentrism. There is a non-significant total effect ($\beta = .11$, $p = .19$), and a non-significant direct effect ($\beta = .11$, $p = .20$) of critical thinking on national militarism. No mediation in the model was observed with a non-significant indirect effect ($\beta = -.00$, $CI = -.02, .01$)

Table 38

Multiple Linear Regression Analysis for Mediation by c-workers for the relation between critical thinking and ethnocentrism (N = 366)

	Ethnocentrism			
		Model 2		
			95% *CI*	
Variables	Model 1 B	B	*LL*	*UL*
Constant	37.76*	37.34*	34.07	40.08
Critical Thinking	.11	.10	- 10	25
C-workers		.01	.00	.06
R^2	.004	.00		
ΔR^2		.00		
F	1.65	1.37		
ΔF		.28		

*$p < .05$

Table 38 shows the possible mediation of c-score (workers' dilemma) for the effect of critical thinking on ethnocentrism. There is a non-significant total effect (β = .11, p = .19), and a non-significant direct effect (β = .11, p = .23) of critical thinking on ethnocentrism. No mediation in the model was observed with a non-significant indirect effect (β = -.00, *CI* = -.01, .03)

Table 39

Multiple Linear Regression Analysis for Mediation by c-doctors for the relation between critical thinking and ethnocentrism (N = 365)

	Ethnocentrism			
		Model 2		
			95% *CI*	
Variables	Model 1 B	B	*LL*	*UL*
Constant	38.71**	36.55**	33.38	39.72
Critical Thinking	.12	.13	-.04	.31
C-doctors		.03	-.01	.07
R^2	.004	.01		
ΔR^2		.01		
F	1.72	2.02		
ΔF		0.3		

*$p < .05$

Table 39 shows the possible mediation of c-score (euthanasia dilemma) for the effect of critical thinking on ethnocentrism. There is a non-significant total effect ($\beta = .12$, $p = .19$), and a non-significant direct effect ($\beta = .13$, $p = .14$) of critical thinking on ethnocentrism. No mediation in the model was observed with a non-significant indirect effect ($\beta = -.01$, $CI = -.05, .00$).

Table 40

Partial Correlation between moral orientations and critical thinking (N = 367)

Control Variables		Variables	1	2
Conventional level & Postconventional level	1	Critical thinking	-	-0.05
	2	Preconventional Level		-
			1	2
Preconventional level & Postconventional level	1	Critical thinking	-	-0.05
	2	Conventional level		-
			1	2
Preconventional level & Conventional level	1	Critical thinking	-	.10*
	2	Postconventional level		-

*$p < .05$

The six moral stages representing affective aspects of morality were combined into three moral orientations i.e. preconventional (stage 1 and 2), conventional (stage 3 and 4), and postconventional (stage 5 and 6). Table 40 shows partial correlation coefficients of these moral orientations with critical thinking. Partial correlations were taken in order to get the uncontaminated correlation values of moral orientations with critical thinking. Both preconventional and conventional orientations showed non-significant correlations with critical thinking ($r = -.05$, $p = .35$), while a statistically significant positive correlation was observed between postconventional orientation and critical thinking ($r = .10$, $p < .05$).

Table 41

Mean, Standard Deviation and t-values for male and female students on main study variables (N = 367)

	Males (n = 134)		Females (n = 233)						
Variable	*M*	*SD*	*M*	*SD*	*t*	*p*	*LL*	*UL*	*Cohen's d*
Critical thinking	15.04	4.35	15.29	4.63	-.50	.61	-1.21	.72	0.05
C-scores	16.46	11.77	16.30	11.19	.13	.89	-2.3	2.6	0.01
C-scores (workers' dilemma)	39.77	32.81	40.69	31.21	-.27	.79	-7.70	5.86	0.03
C-scores (euthanasia dilemma)	34.62	22.24	29.28	20.39	2.33	.02	.84	9.84	0.25
Moral Segmentation	-5.14	40.51	-11.66	34.69	1.63	.10	-1.36	14.39	0.17
National militarism	32.79	7.55	36.57	6.40	-5.10	.000	-5.24	-2.32	0.50
Ethnocentrism	40.16	7.15	39.14	8.11	1.21	.226	-.64	2.68	0.13

Table 41 shows mean, standard deviations and *t*-values for male and female students on main study variables. The findings show significant mean differences in c-scores (euthanasia dilemma) with $t\ (1,\ 365) = 2.33,\ p < .05,\ Cohen's\ d = 0.25$. The results indicate that males have significantly higher scores ($M = 34.62,\ SD = 22.24$) than females ($M = 29.28,\ SD = 20.39$). Significant gender differences were also noted for national militarism ($t\ (1,\ 365) = -5.10,\ p < .05,\ Cohen's\ d = 0.50$) with females getting significantly higher scores ($M = 36.57,\ SD = 6.40$) than males ($M = 32.79,\ SD = 7.55$).

Table 42

Means, Standard Deviations and F value of males and females on three moral orientations (N = 367).

Moral Orientations		Preconventional (n = 367)		Conventional (n = 367)		Postconventional (n = 367)				
		M	*SD*	*M*	*SD*	*M*	*SD*	*F*	*p*	partial et^2
Gender	Males (n = 134)	1.9	8.6	5.8	7.7	5.2	7.9			
	Females (n = 233)	2.9	7.5	6.1	8.1	8.1	8.0			
Moral orientations								72.69	.000	.17
Gender (b/w sub. effect)								02.79	.079	.01
Orientations*Gender								06.82	.018	.02

Within groups df = 1.9; within groups df (interaction) = 1.9; Between groups df = 1

Table 42 shows results of Mixed ANOVA, with Greenhouse-Geisser correction that was conducted to assess the preference of moral orientations with respect to gender. Results indicate a significant main effect for moral orientations noted, F(1.9, 706.86) = 72.69, p < .000. There was no

significant main effect of gender, $F(1,365) = 2.79$, $p = .08$. A significant interaction effect between gender and moral orientations was observed $F = 6.82$, $p < .05$ indicating gender did influence the rating of moral stages.

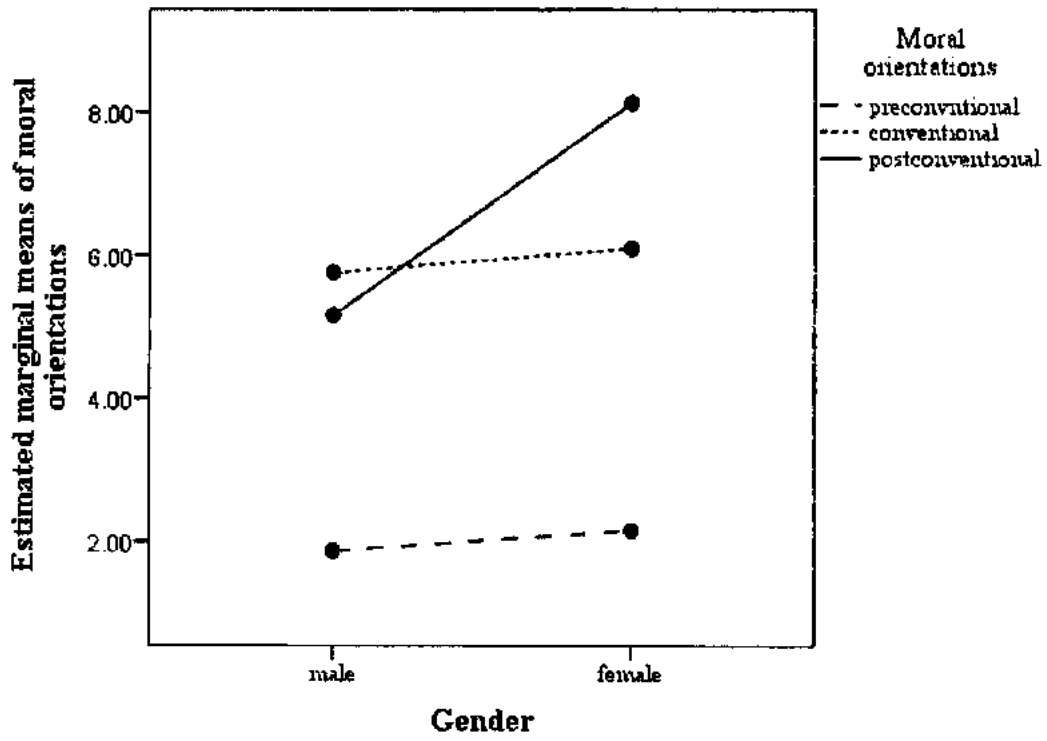

Figure 11: Interaction of gender and moral orientations. Females getting higher score on postconventional moral orientations than males

Table 43

Mean, Standard Deviation and t-values for university and college students on main study variables (N = 367)

	Universities (n = 241)		Colleges (n = 109)						
Variable	*M*	*SD*	*M*	*SD*	*t*	*p*	*LL*	*UL*	*Cohen's d*
Critical thinking	14.75	4.62	16.08	4.40	-2.53	..01	-2.37	-.29	0.29
C-scores	17.03	11.16	15.44	11.36	1.23	.22	-.96	4.14	0.14
C-scores (workers' dilemma)	40.93	32.89	38.03	30.32	.78	.43	-4.39	10.19	0.09
C-scores (euthanasia dilemma)	31.23	20.87	33.12	21.35	-.78	.44	-6.67	2.88	0.32
Moral Segmentation	-9.94	38.03	-4.91	35.97	-1.16	.24	-13.53	3.47	0.13
Preconventional lvel	2.83	8.06	1.10	7.66	1.89	.06	-.07	3.53	0.22
Conventional level	6.01	8.21	6.08	7.39	-.08	.93	-1.88	1.74	0.01
Post-conventional level	7.12	8.14	6.74	8.27	.407	.68	-1.47	2.24	0.05
National militarism	34.91	7.16	34.96	6.83	-.07	.95	-1.66	1.55	0.01
Ethnocentrism	38.55	7.99	41.34	6.41	-3.19	.00	-4.49	-1.07	0.38

Table 43 shows mean, standard deviations and *t*-values for university and college students on main study variables. The findings show significant mean differences in critical thinking with $t\ (1, 365) = -2.53, p < .05$, *Cohen's d = 0.29*. The results indicate that college students have significantly higher scores on critical thinking ($M = 16.08$, $SD = 4.40$) than university students ($M = 14.75$, $SD = 4.62$). Significant differences were also noted for ethnocentrism ($t\ (1, 365) = -3.19, p < .05$, *Cohen's d = 0.38*) with college students getting significantly higher scores ($M = 41.34$, $SD = 6.41$) than university students ($M = 38.55$, $SD = 7.99$).

Table 44

Mean. Standard Deviation. and F-values of males and females for c-scores on two dilemmas of MCT (N = 367).

	Workers' dilemma (N = 367)		Euthanasia dilemma (N = 367)			
Dilemma types	*M*	*SD*	*M*	*SD*	*F*	*p*
C-scores	40.51	31.67	31.24	21.21	22.99	.00

Within group *df* = 1; Groups total *df* = 365

Table 44 shows results of repeated measures ANOVA. with Greenhouse-Geisser correction to assess the differences between the mean c-scores of two moral dilemmas. Results indicate that participants got significantly higher c-score on workers' dilemma than euthanasia dilemma, $F(1, 365) = 22.99$. $p < .000$. , *partial eta*^{2} = .06. This phenomenon is also known as moral segmentation which is sometimes calculated as simple mean difference between c-score on euthanasia dilemma and c-score on workers' dilemma.

DISCUSSION

Chapter IV

Discussion

This research was mainly based upon two theoretical perspectives i.e. the Cornell/Illinois Model of critical thinking abilities provided by Robert H. Ennis (Ennis, 2002, 2011b, 2015b; Ennis & Millman, 1971), and a dual-aspect theory of moral affects and moral cognitions elaborated by Georg Lind (Lind, 1978, 1985a, 2006, , 2008). Some other ideas to formulate hypotheses came from the works of Greene et al. (2001) and Lind (2000b) especially differential processing of various moral dilemmas. Work of Schillinger and Lind (2003) has also provided directions to understand the role of quality of education with opportunities of guided reflection for the development of moral competence; work by Larsson (2017) who explicitly studied influence of critical thinking using the same Cornell-Illinois model on ethical reasoning of school students. Moreover, the opinions of Kohlberg (1975) and findings by Hill (1995) also lead to the formulation of hypotheses related to relationship between critical thinking and moral competence. The work by Nowak and Lind (2009, 2018) highlighted the importance of democratization process in society and its role in the development of moral competence and the negative impact of totalitarian system of government on moral competence. The works by Saeidi-Parvaneh (2011) and Lupu (2009) have provided great insights into the role of dogmatic thoughts to hamper moral competence. The research ideas were conceived, and hypotheses were formulated while keeping in view this multi-perspective approach.

This stduy comprised of three phases. Phase-I of study aimed at translation, back-translation and cultural adaptation of CCTT-Z (Ennis et al., 2005) into Urdu language and establishment of the psychometric properties of the test on local sample. Phase-II of the study focused on determining psychometric properties of Moral

Competence Test (MCT-Urdu), National Militarism Scale, and Ethnocentrism Scale. The other aim of that study was to look for the trends of various variables for the final study.

The third phase of the study was carried out to measure the impact of critical thinking on socio-political attitudes of national militarism and ethnocentrism with a mediating role of moral competence. Separate effects of critical thinking on moral competence and socio-political attitudes, and the effects of moral competence on socio-political attitudes were also the foci of the study. We also explored the relationship of six moral stages or mainly three moral orientations in a Kohlbergian sense (Colby et al., 1983; Colby et al., 1987) specifically with critical thinking as well as with other variables of stduy. Role of demographic variables, such as gender and institutional affiliations, were also studied.

After theoretical conception and elaboration of ideas, the most valuable step in the development of social sciences is proper operationalization of the ideas. For the purpose of the present research, the tools of assessment derived from both theoretical perspectives were used as main operationalization of these constructs. The Cornell Critical Thinking Test-Level Z (Ennis et al., 2005) was translated and adapted into local Urdu language for ease of comprehension due to the complex nature of the construct and level of difficulty vis-à-vis the usage of English language. As the test was based on Cornell-Illinois Model of critical thinking abilities (Ennis et al, 2005), it was a theoretical possiblity that specific test items measuring specific abilities should make meangful groups and distinctively load on relevant factors. However, CFA results did not show any meaningful theoretical structure of the test (Phase I, table 11). These findings are not surprising because all of the available literature as well as opinion of the authors of the test indicate that there is a considerable overlap in various critical

thinking abilities and it seems that for CCTT, it is not statistically possible to separate each critical thinking aspect as a theoretically predictable unique set of abilities (Ennis et al., 2005; Follman et al., 1970; Frisby, 1992; Hirayama et al., 2010; Leach, Immekus, French, & Hand, 2020; Modjeski, 1982; Sahin et al., 2015; Verburgh et al., 2013). Theoretically, we can have a rough picture of separate critical thinking abilities being utilized in many situations, but these abilities are interlinked in such subtle ways that it becomes very unlikely to separate them. The literature informs that the structural studies on CCTT vary from reporting a unidimensional nature of the test (Verburgh et al., 2013) to having no structure at all (Frisby, 1992). In the present study, the subtests of the CCTT showed poor Cronbach alpha reliability coefficients. The test items were retained on the basis of point-biserial correlation and overall reliability coefficient. Twelve items, that showed non-significant point biserial correlations, were dropped for the final analyses. The reliability of the full test also improved from $\alpha = .47$ to $\alpha = .59$ after removal of these items. Various statistical analyses were done on the basis of total score on CCTT-Z (Urdu) and subtests were not used as bases of comparison or for finding out relationships due to lack of meaningful groupings of test items. The CCTT-Z (Urdu) scores show that the test was quite difficult with mean difficulty $p = .376$, with rights-only method of scoring, participants got low mean scores of ($M = 19.59$, $SD = 4.65$) for 52-item version, and ($M = 15.21$, $SD = 4.52$) for 40-item version. Comparing with normative tables provided in the test manual, the mean score for the present study can be considered the lowest.

The Moral Competence Test (MCT-Urdu) (Liaquat, 2011; Lind, 1978) is used for measuring both the cognitive and affective aspects of moral reasoning. The Urdu translated version is a certified version fulfilling the validation criteria of hierarchical preference of moral stages, cognitive-affective parallelism, and quasi-simplex structure

(Liaquat, 2012; Lind, 2016a). The validation information was checked twice both in the pilot study as well as the main study, where the test showed no gross aberrations from the theoretically predicted criteria.

The mean c-score that represents moral competence was quite similar to the scores obtained in the pilot study (M = 16.36, SD = 11.39) and also matches the already available evidence obtained in limited studies on MCT done in Pakistan (Abbasi et al., 2017; Asim et al., 2014; Irfan, 2019; Liaquat, 2011, 2012). The mean c-score can be regarded as quite low as at present, c-score of 20.0 is considered a kind of threshold. Experimental studies indicated that people's behavior in various domains improved markedly if their moral competence increases beyond this level (Lind, 2020). Studies in Western European countries especially in Germany have shown moral competence scores up to 40 and above (Lind, 1985a; Lind, 1986). Chinese samples have shown a mean c-score of about 31.4 (Yang & Wu, 2011); in Iran about 20 (Saeidi-Parvaneh, 2011); in a Brazilian study, mean c-score of 25 (Schillinger, 2006); in Israel, the mean of 25.7; and in US sample, the mean of 23.8 have been reported (Gross, 1996). The very low c-scores consistently found in Pakistani studies especially in samples from university students show lower levels of moral competence in general even in people who are engaged in higher education.

The mean scores on moral stages show a predictable hierarchical pattern. The lower stages (stages 1 and 2 constituting preconventional moral orientation) are preferred less than the higher moral stages (stages 5 and 6 constituting postconventional orientation). This is an established pattern observed in a lot of studies throughout the globe including the 40 test translations that have been validated across cultures (Lind, 2016a). The Cronbach alpha reliability of the National Militarism scale is α = .79, and Spearman-Brown = .78. The Cronbach alpha for Ethnocentrism scale (α = .70) and

Spearman-Brown coefficient of .66 are also within acceptable ranges (Goforth, 2015) (table 29). Overall, the scales used in the study were suitable for the present population.

The first hypothesis states that critical thinking would have a positive impact on moral competence. Pearson product moment correlation between CT and c-score is non-significant There is a significant negative correlation between CT and c-score (euthanasia dilemma), and there is a non-significant correlation between CT and c-score (workers' dilemma). In order to get the uncontaminated relationships, partial correlation coefficients were calculated between CT and c-score, and CT and c-scores on separate dilemmas. Critical thinking seems to be differentially associated with types of dilemmas. C-score (workers' dilemma) shows a significant positive correlation with CT when c-score is controlled. A non-significant partial correlation is observed between c-score (euthanasia dilemma) and CT when c-score is controlled, and a non-significant correlation between c-score and CT was observed when both c-score (workers' dilemma) and c-score (euthanasia dilemma) are controlled. Keeping in view the low mean CT scores as well as lower mean moral competence for the entire sample and small variance in the data, the results might have been suppressed. The relationships might become more explicit in samples with higher range of variation in both CT and moral competence. The nature of moral task seems relevant to critical thinking. The workers' dilemma is generally a milder one among two dilemmas of the test. This dilemma is related to an unauthorized stealing of a recorded tape by the employees of an organization which they thought was recorded without their consent and might be used against them. In euthanasia dilemma, a sick woman, who happens to be in severe pain and has no hopes of recovery, asks her doctor to give her a high dose of morphine that can potentially end her life leads to a compliance of the doctor. As this dilemma deals with life and death issue, it is considered more sensitive containing stronger

emotional content than workers' dilemma. The sample has shown more segmentation of c-scores on separate dilemmas as well, confirming the hypothesis 2. Participants significantly scored higher on workers' dilemma than on euthanasia dilemma (a mean difference of -9.27). The phenomenon of moral segmentation has been reported in several studies (Bataglia et al., 2002; Lind, 2000b; Lind, 2003; Lupu, 2009; Saeidi-Parvaneh, 2011; Schillinger, 2006) and is usually observed in people belonging to conservative and religiously dogmatic belief systems. Results associated with hypotheses 1 and 2 give us valuable insights. The findings by Greene (2009); Greene et al. (2001) show that in comparison to impersonal dilemmas (e.g. trolley dilemma in their study), moral dilemmas with more personally relevant content (e.g. footbridge dilemma in their study) are dominantly processed in those areas of the brain that are generally related to the emotional processing of information. Findings by Prehn et al. (2008) suggest that moral competence is neurologically linked with dorsolateral prefrontal cortex (DLPFC), a region of the frontal lobes associated with executive functions of selective attention and working memory (Curtis & D'Esposito, 2003). In the present study, it is generally observed that participants performed better on the milder moral dilemma and CT also showed a positive correlation with the same dilemma; this might lead to further hypothesizing that the two dilemmas might involve different brain regions or the same brain regions might differently process information for the two dilemmas. As the CCTT-Z (Urdu) showed a high difficulty of the items and participants showed overall low mean score, it is difficult to predict how would a group with very high levels of critical thinking respond to moral dilemmas. Though Hill (1995) has shown a positive relationship between Kohlberg's moral judgment interview and CCTT-Z, this relationship is difficult to establish in the present study as there might be a certain threshold of CT required above which better predictions about relationship

of CT with total c-score and c-scores on both dilemmas can be made. In a regression-mediation model, the effect of CT on moral competence is non-significant; so, the association between CT and moral competence is more interpretable considering the partial correlation coefficients.

The hypothesis 3 states that CT would predict national militarism. CT seems to have a significant positive correlation with national militarism, a significant total positive effect of critical thinking on national militarism was also noted in a mediation model. The findings suggest that critical thinking alone does not decrease militarism. Much of our thinking is culturally embedded and cannot be considered in isolation. Likes and dislikes for military power and military based systems can be understood considering cultural history of the nation. In Pakistan, there is an ongoing debate about the role of military in civilian matters and how much military should be allowed to interfere in democratic processes. There are proponents who argue in favor of a legally and constitutionally well-defined share of military within Pakistani political system. and there are proponents who totally oppose involvement of military in any kind of civil matters. The see-saw struggle for power between democratic institutions and the military makes Pakistan a special case where democratic traditions have not found their independent roots yet. In such scenario, critical thinking *per se* does not seem enough to negatively predict militarism.

Hypothesis 4 suggested that moral competence would negatively predict national militarism. A significant negative correlation was observed between c-score and national militarism. The correlation and mediation models show that c-score on only euthanasia dilemma negatively predicted national militarism. This finding is also suggestive of differential functioning of c-scores on two separate dilemmas. This might suggest that people who are competent enough to show higher scores on a stronger

dilemma have developed sufficient democratic competence to disfavor militarism, but this assumption would be a speculation or a conjecture that requires further empirical support. Overall, the finding is consistent with the previous findings by the author (Asim et al., 2014). Historically, Pakistan has gone through four martial law periods with intermittent periods of democratically elected governments. Military in Pakistan has a prime importance in almost all matters of public concern. The role of military in Pakistan is not just limited to defense of the territory, but it has deeper roots in many civilian matters. Direct or indirect influence of military in areas including industry, disaster management, basic and higher education in forms of schools, colleges and universities, infrastructural development, and media productions in forms of nationalist songs, dramas and movies cannot be ignored. Despite frequent interventions in democratic political systems, the military profession in Pakistan is still idealized as one of the best professions due to respect, security, power and privileges associated with high rank military jobs. It is natural in cultures like Pakistan with a history of military proving again and again to be one of the strongest institutions with a history of war and frequent violent engagements with neighboring country, India, that military is idealized as the panacea to many social and civic problems. There remains an ongoing debate about the role of military in civilian matters, corruption of democratically elected governments, comparison of developmental works and overall progress between democratic and martial law time periods, and a suitable and sustainable system for the future of Pakistan. The findings by Nowak and Lind (2009, 2018) provided an actual evidence of the changing patterns of moral competence during democratic and martial law periods in Poland. The democratization of Polish society enhanced moral competence scores among university students while a regression in scores occurred after and during the period of military coup. The results of this study also provide a hint

that morally and democratically competent individuals do not idealize military as a solution to many state problems and they discourage excessive role of military in the matters of public domain.

Hypothesis 5 stated that moral competence would act as a mediator between critical thinking and national militarism. Mediation analyses were performed on c-score, c-score (workers' dilemma), and c-score (euthanasia dilemma) for the effect of CT on national militarism. Simple mediation models were used with a single mediator between CT and national militarism. No mediation was observed for all three categories of c-scores. The pilot study results have indicated an indirect effect of critical thinking on national militarism through moral competence, but the value of ΔR^2 in the mediation model with the inclusion of moral competence as a mediator explains only 1% of the variance which is too small to be meaningfully interpreted. A mediation of moral competence for the effect of CT on ethnocentrism (hypothesis 8) was also not established. The model was theoretically justified as critical thinking and moral competence were assumed to be interrelated as well as related to national militarism and ethnocentrism. The study results showed, the direct relationships between critical thinking, moral competence and national militarism were established, but no mediation of moral competence was observed. Further evidence is required including samples with high moral competence, critical thinking abilities and more variability to clarify this relationship.

Hypotheses 6, 7, and 8 stated CT and moral competence would predict ethnocentrism with moral competence also acting as a mediator between CT and ethnocentrism. These relationships were not established as ethnocentrism showed no significant relationship with either CT or moral competence . The sample was collected from various ethnic groups including Punjabi, Pashtun, Saraiki, Urdu, Gilgiti, Baloch,

Kashmiri, and Hazara ethnicities. Keeping in perspective the nature of critical thinking as a logic-based rational ability and moral competence being a democratic ability to make neutral and consistent judgments on the basis of moral principles, both variables were assumed to be ideally suited for pluralistic orientations of society. As ethnocentrism consists of sometimes biased positive attribution of one's own ethnic group and sometimes denial of other groups being equal (Bennett, 1993, 2017; Neuliep & McCroskey, 1997), it was hypothesized that moral competence and CT should be related to it. The assumption did not find an empirical support in this study. Other cross-cultural studies finding out the interrelationship among these variables might further clarify these findings that would add information for the purpose of theory refinement.

Hypothesis 9 predicted that CT would have a positive correlation with postconventional orientation of moral reasoning (stages 5 and 6). This assumption was based on the opinion of Kohlberg (1975) that one's stage of general cognitive development was related to moral reasoning and also higher moral reasoning was dependent on advanced logical reasoning, and Larsson (2017) who following Cornell-Illinois model of critical thinking identified higher use of critical thinking abilities in mature ethical responses on certain ethical tasks. The results in the present study have been found to be relatable to these assumptions as significant positive, though low partial correlation between CT and postconventional moral orientations was found. Cognitive developmentalists consider postconventional moral stages as advanced stages of moral reasoning — a standing that is controversial for some other moral theorists (Blum, 1988). The conventional stages are more related to normative orientation to morality while the postconventional stages depict reasons based on democratic principles or universal ethics. A highly developed logical and abstract

reasoning abilities might help in developing mature moral orientations of stage 5 and 6 in a Kohlbergian model.

Hypothesis 10 was based on the previous findings from the studies done in Pakistan (Irfan, 2019; Liaquat, 2012), a consistent trend has been found where females have shown more moral segmentation than males. In this study, as well, females have shown significantly higher moral segmentation than males. Generally, moral segmentation is observed in cultures that are highly dogmatic and where religion has a stronger stance on certain moral issues (Lind, 2000b); this can be compared to a similar situation in Pakistan as well. Overall, moral segmentation has been observed irrespective of gender that shows lesser ability in people, in general, to think rationally about the sensitive issues like euthanasia. The significantly lower scores of females on euthanasia dilemma that has been consistently observed in Pakistani females may be explained by linking it with cultural aspects and general status of women in Pakistani society. Females in Pakistan are generally lesser involved in socio-political discourse, mostly it is the males that take part in decision making about various family matters as well as matters related to other practical relevance. Female roles are still very traditional as they are encouraged to stay at home and involve themselves in household chores. Even if the females get freedom to get higher education and enter into professional fields, they do not enjoy as much freedom as their male counterparts can. The participation of females in the local and national political system is also not encouraged. There are many barriers woven within the cultural web that do not allow females to enter into political discourse and become active participants in the country's political system (Khayyam & Tahir, 2019; Umer, 2016). This same line of reasoning led to hypothesizing that females might differ from males in national militarism and ethnocentrism (hypothesis 11). Females did show higher scores on national militarism,

though no gender differences in ethnocentrism were noticed. Lack of general political awareness and less participation in political discourse might explain higher scores of national militarism in females. Military in Pakistan has good impression-building capacities via electronic media. Inter-Services Public Relations (ISPR) is a media communication department that actively produces positive image-building content in the forms of tweets, production of songs on national holidays, military based dramas and movies having patriotic themes. Though the role of ISPR has been criticized by many liberals in Pakistan, still its influence cannot be denied (Shams, 2016). As females in Pakistan are generally more exposed to electronic media through cable television, they have greater chances to be exposed to propaganda content as well. This finding requires further evidence and more delicate study designs to verify that proposed conjecture. Another important finding showed a significant interaction between gender and moral stages (combined to constitute three Kohlbergian moral orientations). Overall, the participants got higher scores on postconventional stages of moral reasoning as compared to preconventional and conventional levels. The females have shown specifically higher preference for postconventional orientation to morality than males; along with this, no gender differences were noticed in either c-scores depicting moral competence or in CT skills. These results show that females do have high awareness and liking for postconventional moral principles and, generally, they are as equally competent in moral reasoning as males. The higher segmentation in scores for females is symptomatic of some deeper cultural hindrances that females feel more than males. We know that euthanasia dilemma contains highly sensitive, emotionally provoking, and religiously prohibitive situation. That might be the reason that both genders have shown high segmentation, but females being more sensitive to such issues as well as the restrictions they face in our culture that do not allow an open formal

debate on such topics, it becomes especially very difficult for females to be competent enough to deal with these issues just like they deal with other less arousing and less conflicting situations.

The hypothesis 12 assumed that university and college students would significantly differ in levels of CT. The findings suggest that college students have got significantly higher scores in critical thinking than university students. The finding seems counterintuitive as generally the standard of public and private sector universities in Pakistan is much better than public sector colleges. Universities have better infrastructure, more availability of library and lab facilities, access to internet, large collection of research journals and books, and have better learning environment as compared to colleges. Despite that, this study shows better performance of college students on CT. The only reasonable explanation seems to be the gradual improvement in college sector education and availability of highly qualified faculty due to relatively easier access to higher education programs including MPhil and PhD programs for the last decade or so. In the past, the colleges in Pakistan generally remained undergraduate teaching institutions, and most of the college staff had master's degrees. After the establishment of HEC in 2002, generally the standard of higher education improved in Pakistan as more opportunities for higher education were available owing to the launch of various higher education programs in different universities as well as availability of indigenous and foreign scholarships. Most of the staff in urban area colleges now have MPhil level degrees and there is an increasing number of faculty holding PhD degrees. Colleges in urban areas are also offering BS (Hons) educational programs that are equivalent to master programs that were only offered in a few postgraduate colleges in the past. The inclusion of public sector colleges to offer higher education and induction of more qualified staff might be helpful in filling the gap between college and university

sectors at least as far as pedagogy is concerned. The improvement of infrastructure and availability of facilities in colleges that match with universities seem a far cry due to many budgetary, administrative, and political reasons.

Conclusion

Following Cornell-Illinois Model, the translation and adaptation of Cornell Critical Thinking Test- Level Z (CCTT-Z) (Ennis et al, 2005) into Urdu language was carried out. Consistent with many cross-cultural studies, the Urdu language version did not find support for a theoretical structure using CFA and items were retained on the basis of point-biserial correlation. Considering various normative groups provided in the manual, the mean CT score for the present sample was quite low. Lower mean moral competence (i.e. < 20) has been consistently noticed in Pakistani studies including this one. The CT has a differential relationship with two dilemmas of the Moral Competence Test (MCT), showing a positive relationship with only a relatively milder dilemma (workers' dilemma). CT also has a positive relationship with postconventional moral orientations. Critical thinking seems generally supportive of both moral affects and morel cognitions, though the effect sizes are small. This can be due to overall lower mean scores on both measures of CT and moral competence. This is an important finding because if the link between general critical thinking skills and moral competence is established, then it might lead to policy decisions regarding implementation of programs in educational institutes to enhance students' critical thinking skills. The CT was also found to positively predict national militarism while moral competence negatively predicted national militarism. These two results somewhat complicate the findings as CT is supportive of both moral competence as well as national militarism, while moral competence is unsupportive of national militarism. Though CT and moral competence are somewhat linked to each other, there

also seems to be an independent role of moral competence for decreasing militarism. There seem to be other potential contributors alongside critical thinking that play a supportive role for the development of moral competence. Ethnocentrism was found to be unrelated to either CT or moral competence. No mediation of moral competence between CT and national militarism, and between CT and ethnocentrism was found. No significant gender differences were found in CT and levels of moral competence, though consistent with previous findings in Pakistan, females have shown greater moral segmentation than males by scoring low on euthanasia dilemma. It was also found that females had shown higher scores on postconventional arguments than males. These findings indicate that, on affective levels, females highly recognize the importance of postconventional nature of moral arguments but, on cognitive levels, their judgments are more influenced by the cultural pressures and potentially dogmatic thinking. The lack of female involvement in legal and political discourse in our culture might provide an explanation for this split in affective and cognitive judgment; this argument might also explain why females have shown significantly higher scores on national militarism than males in the present study. It is quite possible that people who are not actively engaged in political discourse might easily get influenced by the propaganda-based militarized narrative commonly found in Pakistani media through TV channels and social networking websites. Another finding suggested that college students showed better CT skills than university students. The finding is difficult to explain with a single study but it is quite possible that increasing standards of public sector colleges in terms of induction of highly qualified faculty as well as introduction of frequent higher education programs might have affected the general climate of colleges making them more conducive to learning and, in that regard, at par with universities.

Limitations and Suggestions

1. In Pakistani educational system, students are not generally familiar with high stake tests measuring personality, intelligence and aptitude. During school and college education, they have very limited exposure to such instruments and most of their assessments are based on achievement tests for the promotion to next grades. The CCTT-Z (Urdu) can be considered a very novel experience for the students, as not much research literature is available indicating use of this test in Pakistan. The test has been translated for the very first time into Urdu language. The low scores on the test might indicate difficult nature of the construct for Pakistani college and university students, or their genuine lack of ability, or some other motivation related factors as well. The test items measuring induction came out to be very inconsistent and inadequate (that were removed for the purpose of final analyses). It is difficult to make predictions about students' CT skills based on the single study. There is a need to refine the construct of critical thinking considering the indigenous needs of the population in order to reach at precise conclusions. Other indigenous instruments with varying degrees of difficulty need to be developed to fully grasp the nature and extent of critical thinking abilities in the Pakistani population.
2. The construct of critical thinking was derived from and operationalized on Cornell-Illinois model developed by Robert Ennis (Ennis, 1962, 2015a; Ennis et al., 2005). There are other instruments based on rich conceptions of critical thinking e.g. California Critical Thinking Skills Test (CCTST) which is based on Delphi expert consensus definition of critical thinking (Facione, 1990), and Watson Glaser Critical Thinking Appraisal (TalentLens, 2011); these tests are two of the widely used instruments. Interpretations based on a single instrument are invariably risky

and using different operationalizations in future research would help in clarifying the conception of critical thinking in our local population.

3. As the main interest of the study was to find out relationship between critical thinking and moral competen, both as cognitive skills. The critical thinking dispositions were not measured that, if included, could have provided more holistic understanding of the phenomenon. Future studies that include both aspects of critical thinking are recommended to make more informed judgments.
4. The conception of moral competence and moral affects was based on the dual-aspect theory of morality (Lind, 1978, 2008) which is a cognitive developmental point of view in line with Piagetian and Kohlbergian traditions (Colby et al, 1987). The cognitive developmental perspective of morality is a unique understanding that emphasizes the importance of 'rational thinking' and 'consistency of judgments' for moral situations. The other conceptions of morality are also equally important e.g. Gilligan's approach to feminine morality that is based on empathy and care (Blum, 1988; Gilligan, 1982; Jorgensen, 2006); a four component model by Rest et al. (1999) that along with moral judgment, puts an equal emphasis on moral sensitivity, moral motivation, and moral character; and Haidt's social intuitionist approach to morality (Haidt & Joseph, 2007) are important considerations for further research.
5. Lower moral competence scores have been observed consistently in studies using MCT including the present study (Irfan, 2019; Liaquat 2011; Liaquat, 2012). The lower c-scores as well as lower scores on CT might have suppressed some of the effects. More variation of scores is desirable to identify explicit relationships among variables. The samples were collected from college and university students where higher scores on CT and moral competence were the most expected. Future studies

should be designed keeping in view the difficulty in obtaining higher scores on such measures in Pakistani samples.

6. More studies of this nature along with design refinements are needed in order to make informed suggestions about policy decisions. It is crucial to establish a more explicit association between critical thinking and moral competence. If further studies get a success in establishing a link between these two constructs, then policy recommendations can be made to introduce critical thinking and ethics training courses in schools, colleges, and universities.
7. It is understandable that National Militarism Scale and Ethnocentrism Scale were relatively simpler in use of language and complexity of constructs, so it was not deemed necessary to translate those instruments into native Urdu language; though their tranlsations have provided more uniformity in the study in terms of equivalance of constructs with use of same language.

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ANNEXURES

Annexure I

An overview of the definitions of mainstream conception of critical thinking

Definitions of Mainstream Conception of Critical Thinking :		
1	Dewey, 1933	Active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends.
2	Glaser, 1941	The ability to think critically ...involves three things: (1) an attitude of being disposed to consider in a thoughtful way the problems and subjects that come within the range of one's experiences. (2) knowledge of the methods of logical inquiry and reasoning, and (3) some skill in applying those methods.
3	Scriven and Paul, 1987	Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action.
4	Ennis, 1987	Critical thinking is reasonable reflective thinking that is focused on deciding what to believe or do.
5	Siegel, 1988	A critical thinker is one who is appropriately moved by reasons.
6	Lipman, 1988	Skillful, responsible thinking that is conducive to good judgment because it is sensitive to context, relies on criteria, and is self-correcting.
7	Facione, 1990	Purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based.

(continued) An overview of the definitions of mainstream conception of critical thinking

Definitions of Mainstream Conception of Critical Thinking		
8	Kurfiss, 1988	An investigation whose purpose is to explore a situation, phenomenon, question, or problem to arrive at a hypothesis or conclusion about it that integrates all available information and that can therefore be convincingly justified.
9	Paul, 1990	Critical thinking is disciplined, self directed thinking which exemplifies the perfections of thinking appropriate to a particular mode or domain of thought. It comes in two forms. If disciplined to serve the interests of a particular individual or group, to the exclusion of other relevant persons and groups, it is sophistic or weak sense critical thinking. If disciplined to take into account the interests of diverse persons or groups, it is fair-minded or strong sense critical thinking.
10	Fisher & Scriven, 1997	Critical thinking is skilled, active interpretation and evaluation of observations, communications, information, and argumentation as a guide to thought and action.
11	Possin, 2002	The practice of identifying, having, and giving good reasons for one's beliefs, values, and actions, given one's goals of truth and avoidance of error.
12	Halpern, 2003	Critical thinking is the use of those cognitive skills or strategies that increase the probability of a desirable outcome. It is used to describe thinking that is purposeful, reasoned, and goal directed…[it is not] merely thinking about your own thinking… it is using skills that will make "desirable outcomes" more likely. Decisions as to which outcomes should be desirable are embedded in a system of values.
13	Hatcher & Spencer, 2006	Thinking that attempts to arrive at a judgment only after honestly evaluating alternatives with respect to available evidence and arguments.

(continued) An overview of the definitions of mainstream conception of critical thinking

Definitions of Mainstream Conception of Critical Thinking		
14	Bailin & Battersby, 2010	The careful examination of an issue in order to reach a reasoned judgment.
15	Moore & Parker, 2014	The careful, deliberate determination of whether we should accept, reject, or suspend judgment about a claim, and the degree of confidence with which we accept or reject it.
16	Johnson, 2014	The articulated judgment of an intellectual product arrived at on the basis of plus-minus considerations of the product in terms of appropriate standards (or criteria).
11	Kuhn, 2015	"[Reasonable] inquiry and argument.

Source *Sanders, M., & Moulenbelt, J (2011) Defining critical thinking How far have we come? Inquiry Critical Thinking Across the Disciplines, 26(1) 38-46*
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Annexure II

The Cornell-Illinois Model: Critical thinking dispositions

	Ideal critical thinkers are disposed to
1	seek and offer clear statements of the thesis or question
2	seek and offer clear reasons
3	try to be well informed
4	use credible sources and observations, and usually mention them
5	take into account the total situation
6	keep in mind the basic concern in the context
7	be alert for alternatives
8	be open-minded
	a. seriously consider other points of view
	b. withhold judgment when the evidence and reasons are insufficient
9	take a position and change a position when the evidence and reasons are sufficient
10	seek as much precision as the situation requires
11	try to "get it right" to the extent possible or feasible
12	employ their critical thinking abilities.

Source: Critical Thinking: A Streamlined Conception (Ennis, 2015)

Annexure III

The Cornell-Illinois Model: Critical thinking abilities

Ideal critical thinkers have the ability to:		
	1	Focus on a question
Basic Clarification	2	Analyze arguments
	3	Ask and answer clarification questions
	4	Understand and use elementary graphs and maths
	5	Judge the credibility of a source
Bases for a Decision	6	Observe, and judge observation reports
	7	Use existing knowledge
	a	background knowledge, including (with discretion) internet material
	b	their knowledge of the situation
	c	their previously-established conclusions
	8	Deduce, and judge deductions
	9	Make, and judge inductive inferences and arguments
Inference	a	Enumerative induction
	b	Argument and inference to best explanation
	10	Make, and judge value judgments
	11	Define terms, and judge definitions
	12	Handle equivocation appropriately
	13	Attribute and judge unstated assumptions
Advanced Clarification	14	Think suppositionally
	15	Deal with fallacy labels
	16	Be aware of, and check the quality of, their own thinking (Metacognition)
	17	Deal with things in an orderly manner
	18	Employ rhetorical strategies

Source: The Nature of Critical Thinking: Outlines of General Critical Thinking Dispositions and Abilities (Ennis, 2015)

Annexure IV

DEPARTMENT OF PSYCHOLOGY, INTERNATIONAL ISLAMIC UNIVERSITY ISLAMABAD

INFORMED CONSENT FORM

I am a Ph.D. scholar from International Islamic University, Islamabad. This research is an effort to explore the "effect of critical thinking skills on sociopolitical attitudes: a mediating role of moral competence". You are assured about confidentiality of the information provided. Your time and cooperation will be highly appreciated. You have the right to withdraw at any stage of the research. All in-formations will be used purely for purpose of the scientific research and your support will help us understand the phenomenon.

We assure you that information given by you will be treated as strictly confidential and will be used only for research purpose. Your help/ support and honest participation will be highly appreciated.

If you agree to participate in this research, kindly sign below.

Signatures: _____

Annexure V

DEMOGRAPHIC INFORMATION FORM

Kindly mention your particulars required for the purpose of research

Name (optional): _____

Age: _____ years

Gender: Male / Female

Qualification: _____

Present level of education you are studying in: _____

Area of Study/Major: _____

Institute: _____

Monthly Family Income (approx): Rs/- _____

Please mark your ethnic background

□ Punjabi	□ Sindhi	□ Balochi
□ Pakhtoon	□ Kashmiri	□ Urdu-speaking
□ Balti	□ Saraiki	

□ If any ethnicity other than the above mentioned, kindly mention here: _____

□ Any sub-category within the above mentioned ethnicity: _____

Annexure VI

CORNELL CRITICAL THINKING TEST-LEVEL Z (URDU TRANSLATION) (Ennis, Millman, & Tomko, 2005)

ہدایات

یہ ٹیسٹ اس لیے تشکیل دیا گیا ہے تاکہ معلوم ہو سکے آپ کتنا واضح اور محتاط انداز میں سوچتے ہیں۔

اس ٹیسٹ میں 52 بیانات (items) ہیں۔ آپ کو اسے 50 منٹ میں ختم کر لینا چاہیے جو کہ اس ٹیسٹ کا دورانیہ ہے۔ لیکن یہ احتیاط کریں کے وقت ضائع نہ ہو۔ بلا سوچے سمجھے اندازے لگانے سے گریز کریں۔ اگرچہ کچھ مناسب اشارے موجود ہوں تو سمجھ بوجھ کے ساتھ اندازہ لگایا جا سکتا ہے۔ ہر بیان (item) کے لیے دیے گئے جوابات میں سے ایک مناسب ترین جواب موجود ہے جس کی نشاندہی کی آپ نے کوشش کرنی ہے۔

اس ٹیسٹ میں مختلف افراد کے درمیان گفتگو، مکالمے اور کچھ دیگر تفصیلات ہیں۔ آپ کے ذاتی خیالات اور رائے کا ٹیسٹ میں دی گئی معلومات میں عمل دخل نہیں ہے۔ بلکہ آپ نے ٹیسٹ میں دیے گئے مکالموں اور دیگر معلومات کو ہی مدنظر رکھتے ہوئے جوابات دینے ہیں۔

جوابی کاپی پر اپنے جوابات کی نشاندہی کریں۔ اس کے علاوہ کسی قسم کا نشان مت لگائیں۔

حصہ اول -(ا) / (I-A)

نیچے دیے گئے بیانات میں سے پہلے پانچ بیانات میں دو افراد اٹھارہ سالہ افراد کے ووٹ دینے کے حق کے بارے میں بحث کر رہے ہیں۔ پہلے تین بیانات میں پرویز صاحب جبکہ آخری دو بیانات میں وجاہت صاحب بحث کر رہے ہیں۔ ہر بیان میں کچھ دلائل اور ان سے حاصل کردہ نتیجہ دیا گیا ہے۔ ہر بیان میں دیے گئے نتیجہ کے نیچے لکیر لگائی گئی ہے۔ آپ نے یہ نہیں دیکھنا کہ یہ دلائل اپنے طور پر ٹھیک ہیں یا غلط بلکہ نیچے دیے گئے طریقہ کار کے تحت بیان 1 سے 5 تک کی نشاندہی کرنی ہے۔

اگر نتیجہ دیے گئے دلائل سے "لازمی طور پر" مطابقت رکھتا ہے تو اس بیان کے آگے A تحریر کریں۔

اگر نتیجہ دیے گئے دلائل کے "متضاد / برعکس" ہے تو اس بیان کے آگے B تحریر کریں۔

اگر نتیجہ دیے گئے بیانات سے نہ تو "لازمی" مطابقت رکھتا ہے اور نہ ہی تضاد رکھتا ہے تو اس بیان کے آگے C تحریر کریں۔

اگر نتیجہ لازمی طور پر دلائل سے مطابقت رکھتا ہو تو ایک فرد جو ان دلائل کو تسلیم کرتا ہے لازماً ان سے حاصل کردہ نتیجہ کو بھی قبول کرے گا۔ جبکہ اگر چیزیں (یعنی دلائل اور ان سے اخذ شدہ نتائج) آپس میں تضاد رکھتی ہوں تو دونوں ایک وقت میں صحیح نہیں ہو سکتیں۔

نیچے دیے گئے بیانات کو ایک دوسرے سے علیحدہ تصور کرتے ہوئے الگ الگ پڑھ کر جوابات تحریر کریں۔ (ہر بیان کو اس سے اگلے بیان یا کسی اور بیان کا حصہ سمجھنے کی ضرورت نہیں)۔

(پرویز صاحب بات کرتے ہوئے۔۔۔)

ا۔ "وجاہت صاحب کا کہنا ہے کہ اٹھارہ سالہ افراد نے دنیا کے (عملی نوعیت کے) مسائل کا سامنا نہیں کیا ہوتا اور کوئی بھی فرد جس نے ان مسائل کا سامنا نہ کیا ہو انہیں ووٹ کا حق نہیں ہونا چاہیے۔ یہ جو بات کہہ رہے ہیں وہ ٹھیک ہے لیکن پھر بھی اٹھارہ سالہ افراد کو ووٹ دینے کی اجازت ہونی چاہیے۔ وہ کافی پختہ ذہن کے مالک ہوتے ہیں، کیا نہیں ہوتے؟"

2۔ "اس کے علاوہ اٹھارہ سالہ افراد کو ووٹ دینے کی اجازت اس لیے بھی ہونی چاہیے کہ کوئی بھی شخص جو ووٹ دینے والے دیگر افراد کے فیصلہ سے فائدہ یا نقصان اٹھاتا ہے تو اس کو اپنا ووٹ شامل کرنے کی بھی اجازت ہونی چاہیے۔ یہ بات بالکل واضح ہے کہ اٹھارہ سالہ افراد ووٹ ڈالنے والے دیگر افراد کے فیصلہ سے کسی طور پر تو فائدہ یا نقصان اٹھائیں گے۔"

3۔ "بہت سے اٹھارہ سالہ افراد ملک کی خدمت کر رہے ہیں۔ اب اس میں کوئی شبہ نہیں ہو سکتا کہ جو افراد ملک کی خدمت کر رہے ہیں انھیں ووٹ ڈالنے کی اجازت ہونی چاہیے۔ اسی وجہ سے بہت سے اٹھارہ سالہ افراد کو ووٹ ڈالنے کی اجازت ہونی چاہیے۔"

(وجاہت صاحب بات کرتے ہوئے۔۔۔)

4۔ "میں پرویز صاحب کی اس بات سے اتفاق کرتا ہوں کہ کوئی بھی شخص جو ووٹ دینے والے دیگر افراد کے فیصلے سے فائدہ یا نقصان اٹھائے گا اس کو خود بھی ووٹ دینے کی اجازت ہونی چاہیے۔ اور یہ صحیح ہے کہ اٹھارہ سالہ افراد دیگر افراد کے ووٹ کی وجہ سے فائدہ یا نقصان اٹھائیں گے۔ لیکن اس طرح تو دس سال کے بچے بھی ان فیصلوں سے متاثر ہوں گے۔ اسی وجہ سے اٹھارہ سالہ افراد کو ووٹ دینے کی اجازت نہیں ہونی چاہیے۔

5۔ اکثر اٹھارہ سالہ افراد صحیح اور غلط کا فرق نہیں جانتے۔ ووٹ دینے کا حق ایسے افراد کے پاس نہیں ہونا چاہیے جو ابھی یہ فرق نہیں سمجھ سکتے۔ اس لیے یہ بالکل واضح ہے کہ اٹھارہ سالہ افراد کے پاس ووٹ ڈالنے کا حق نہیں ہونا چاہیے۔

حصہ اول -(ب)/ (I-B)

نیچے دیے گئے پانچ بیانات میں دو افراد امیگریشن (دوسرے ممالک کی شہریت لینا) کے بارے میں بحث کر رہے ہیں۔ پہلے تین بیانات میں پرویز صاحب جبکہ آخری دو بیانات میں وجاہت صاحب دلائل دے رہے ہیں۔

جو طریقہ کار پہلے حصہ کا تھا بیانات 6 سے 10 کی نشاندہی کے لیے بھی وہی طریقہ کار استعمال کریں۔

اگر نتیجہ دیے گئے دلائل سے "لازمی طور پر" مطابقت رکھتا ہے تو اس بیان کے آگے A تحریر کریں۔

اگر نتیجہ دیے گئے دلائل کے "متضاد/برعکس" ہے تو اس بیان کے آگے B تحریر کریں۔

اگر نتیجہ دیے گئے بیانات سے نہ تو "لازمی" مطابقت رکھتا ہے اور نہ ہی متضاد رکھتا ہے تو اس بیان کے آگے C تحریر کریں۔

ہر بیان کو ایک دوسرے سے علیحدہ سمجھ کر پڑھیں۔

(پرویز صاحب بات کرتے ہوئے)

6۔ "وجاہت صاحب کا یہ کہنا ہے کہ ہم ایسے تمام غیر ملکی شہریوں کے لیے جو ہمارے محبوب وطن میں آنا چاہتے ہیں اپنے ملک کے دروازے کھول دیں۔ لیکن غیر ملکی شہریوں نے ہمیشہ مسائل کھڑے کیے ہیں اور وہ ہمیشہ کریں گے۔ ان میں سے اکثریت ہماری مقامی زبان بھی نہیں بول سکتی۔ چونکہ کوئی بھی شخص جو مسائل پیدا کرے ایک برا شخص ہوتا ہے لہٰذا غیر ملکی شہری بھی برے ہوتے ہیں"۔

7۔ آپ کو شاید یہ پتہ نہ ہو پر کوئی پچھلے دس سال سے ہمارے ملک کے کمیونسٹ (اشتراکیت پسند) غیر ملکیوں کی بلاروک ٹوک امیگریشن (ہمارے ملک کی شہریت/ملی پالیسی کی حمایت کر رہے ہیں۔ یہ بالکل واضح ہے کہ وہ غیر ملکی شہریوں پر اپنے دروازے کھولنے کی کیوں حمایت کر رہے ہیں۔ اگرچہ مجھے یہ کہنا برا لگ رہا ہے مگر وجاہت صاحب کی اس پالیسی کی حمایت ہمیں ایک ہی نتیجہ کی طرف لے کے جاتی ہے اور وہ یہ کہ وجاہت صاحب خود کمیونسٹ ہیں"۔

8۔ "وجاہت صاحب کا کہنا ہے کہ اکثر غیر ملکی شہریوں نے ہمارے ملک کی تعمیر وترقی میں مثبت حصہ ڈالا ہے۔ یہ بات درست ہے۔ میں یہ بھی تسلیم کروں گا کہ کوئی بھی گروہ برا نہیں ہوتا اگر اس کے اکثریت اراکین مثبت کردار ادا کر رہے ہوں۔ پر وجاہت صاحب کے نفیس الفاظ سے دھوکا کھانے کی ضرورت نہیں۔ غیر ملکی لوگ ایک برا گروہ ہے اور ان کو اپنے ملک میں داخلے کی اجازت نہیں ہونی چاہیے"۔

(وجاہت صاحب بات کرتے ہوئے...)

9۔ "مجھے افسوس ہے کہ پرویز صاحب اس طرح سے محسوس کرتے ہیں۔ یہ بات ٹھیک ہے کہ غیر ملکی مسائل پیدا کرتے ہیں اور ان میں سے اکثر ہماری مقامی زبان نہیں بول سکتے۔ مگر باوجود اس کے کہ یہ صحیح ہے کہ جو لوگ مسائل کھڑے کرتے ہیں ان کو داخلے کی اجازت نہیں ہونی چاہیے ہمیں پھر بھی غیر ملکی لوگوں کو اپنے ملک میں داخل ہونے دینا چاہیے۔ ہمیں خود غرض تو نہیں ہونا چاہیے۔ کیا ایسا نہیں ہے؟

10۔ آپ سب یہ رائے رکھتے ہیں کہ انیسویں صدی میں یہ بالکل صحیح تھا کہ ہم اپنے ملک کے دروازے دور دراز کی سرزمینوں سے آنے والے تمام لوگوں کے لیے کھول دیتے۔ ہر وہ شخص جو یہ سوچتا ہے کہ ایسا کرنا اس وقت صحیح تھا تو اسے اب بھی ایسا کرنے کی حمایت کرنی چاہیے۔ لہذا آپ کو اب بھی اس کی حمایت کرنی چاہیے کہ ہم اپنے ملک کے دروازے ان تمام دور دراز کی سرزمینوں پر رہنے والے افراد کے لیے کھول دیں جو ہمارے ملک میں آنے کے خواہشمند ہیں۔"

حصہ دوم / (II)

نیچے دیے گئے مباحثہ کو مختلف حصوں میں تقسیم کیا گیا ہے جو بیان نمبر 11 سے 21 پر مشتمل ہے۔ ہر حصہ میں دی گئی بحث میں سوچنے کے انداز میں غلطی یا نقص پایا جاتا ہے۔ **آپ نے اس نقص یا غلطی کی مناسب ترین وجہ کی نشاندہی کرنی ہے۔**

ٹیسٹ کے ذیل میں دیے گئے حصہ کو کرنے کے لیے آپ کو پانی کی سپلائی میں کلورین ملانے سے متعلق کسی بھی قسم کی معلومات کا ہونا ضروری نہیں۔

11۔ دانیال: میں نے سنا ہے کہ تم اور کچھ اور عجیب وغریب لوگ فتح آباد کے علاقہ کی پانی کی سپلائی میں کلورین شامل کرنے کی کوشش کر رہے ہیں۔ تمھارے خیال میں اس سے کچھ اچھا ہوگا۔ بلاشبہ دو ہی صورتیں ہیں کہ یا تو ہم پانی میں کلورین شامل کریں یا پھر نہ کریں۔ اور صرف ایک بے وقوف شخص ہی پانی میں کلورین ملانے کی حمایت کرے گا۔ اس لیے ہمیں ایسا نہیں کرنا چاہیے۔

احسان: کم از کم تمھارا اس حد تک کہنا درست ہے کہ ہم پانی میں کلورین شامل کرنے کی کوشش کر رہے ہیں۔

ان دلائل میں موجود فکری نقص کی نشاندہی کے لیے ذیل میں دی گئی وجوہات میں سے مناسب وجہ کا انتخاب کیجیے۔

A۔ دانیال غلطی سے گمان کر رہا ہے کہ یہاں پر صرف دو ہی متبادل ہیں (کلورین ملانا یا نہ ملانا)

B۔ دانیال ایک ہی لفظ کو دو طرح سے استعمال کر رہا ہے۔

C۔ دانیال جذباتی زبان کا استعمال کر رہا ہے جو اس کے دلائل کو زیادہ معقول نہیں بناتی۔

12۔ دانیال: میرے خیال سے تم یہ جانتے ہو کہ پانی میں کلورین شامل کرنے سے فتح آباد کے شہریوں کی صحت کو خطرہ لاحق ہو جائے گا۔ اور تم بھی اس کی تائید کرو گے کہ یہ برا ہو گا۔

احسان۔ تمھیں یہ بات کہنے کا کیا حق حاصل ہے کہ ہماری صحت کو خطرہ ہو گا؟

دانیال: میرے خیال میں "صحت مند رہنے" کی تعریف فطرت اور قدرت کے مطابق رہنے سے لی جا سکتی ہے۔ اور ایسا ہے کہ ہمیں قدرتی پانی میں کلورین کی ملاوٹ نظر نہیں آتی۔ اس لیے اگر پانی میں کلورین ملا دیا جائے تو سب کی صحت کو خطرہ لاحق ہو گا۔

ان دلائل میں موجود فکری نقص کی نشاندہی کے لیے ذیل میں دی گئی وجوہات میں سے مناسب وجہ کا انتخاب کیجیے۔

A۔ دانیال جذباتی زبان استعمال کر رہا ہے جو اس کی دلیل کو زیادہ معقول نہیں بناتی۔

B۔ دانیال کی سوچ غلطی پر مشتمل ہے۔

C۔ دانیال ایک ہی لفظ ... مختلف انداز میں استعمال کر رہا ہے۔

13۔ دانیال: اس کے علاوہ فتح آباد کا پانی پہلے سے ہی خالص ہے۔ یہ مجھے اس رپورٹ کی وجہ سے پتہ ہے جسے تم نے ابھی تک نہیں دیکھا اور جو جلد ہی نلکی پانی پر سروے کرنے والا ادارہ جاری کر دے گا۔

احسان: تم یہ نہیں جان سکتے کہ فتح آباد کا پانی خالص ہے کہ نہیں۔ نلکی پانی پر سروے کرنے والے ادارے نے ہمیں دستیاب تمام کے تمام پانی کو تو ٹیسٹ نہیں کیا۔ انھوں نے پانی سے چند نمونے لیے ہیں۔ اس کے علاوہ تم یہ بھی نہیں جان سکتے کہ انھوں نے پانی کے اس ٹیسٹ میں کوئی غلطی کہیں کی ہوئی۔ جبکہ یہ بات تو یقینی ہے کہ کسی بھی قسم کے ٹیسٹ میں غلطی ہونے کے امکانات ہوتے ہیں۔ اس لیے تم کبھی یہ نہیں جان سکتے کہ فتح آباد کا پانی مکمل طور پر خالص ہے۔

ان دلائل میں موجود فکری نقص کی نشاندہی کے لیے ذیل میں دی گئی وجوہات میں سے مناسب وجہ کا انتخاب کیجیے۔

A۔ احسان اپنے دلائل میں "جاننے" کو ایک عام فہم انداز میں نہیں لے رہا جبکہ وہ خود یہ چاہ رہا ہے کہ جو تناؤ دوہتا رہا ہے اس میں جاننے کو عام فہم انداز میں ہی لیا جائے۔

B۔ دانیال منصفانہ بات نہیں کر رہا چونکہ وہ ایک ایسی رپورٹ کے بارے میں بتا رہا ہے جو خفیہ ہے اور ابھی عام لوگوں کو تجزیہ کرنے کے لیے دستیاب نہیں۔

C۔ احسان نہیں جان سکتا کہ ٹیسٹ کے دوران کوئی غلطی ہوئی ہے۔

14۔ دانیال: میں سمجھ سکتا ہوں کہ تم چاہتے ہو کہ اس چیز کو ایک لیبارٹری کی طرز کے تجربہ کے طور پر کیا جائے۔ مجھے یقین ہے کہ فتح آباد کے شہری اپنے آپ کو (جانوروں کی طرح) تجربہ کے لیے پیش نہیں کرنا چاہیں گے۔

احسان: یہ تجربہ نہیں بلکہ ایک کھلا اظہار ہے۔ کسی کو بھی اس اظہار پر اعتراض نہیں کرنا چاہیے کیونکہ اظہار کا مقصد کچھ نیا دریافت کرنا نہیں بلکہ پہلے سے معلوم چیزوں کو ظاہر کرنا ہوتا ہے۔ ہاں البتہ اس اظہار کا ایک اضافی فائدہ یہ ہوگا کہ انسانی جسم پر کلورین ملے پانی کے لمبے دورانیے کے اثرات کا بھی پتہ چل جائے گا۔ اظہار کا یہ مقصد کافی اہمیت کا حامل ہے۔

ان دلائل میں موجود فکری نقص کی نشاندہی کے لیے ذیل میں دی گئی وجوہات میں سے مناسب وجہ کا انتخاب کیجیے۔

A۔ احسان نے یہ نہیں بتایا کہ پانی میں کلورین شامل کرنے سے جو طویل دورانیے کے اثرات مرتب ہوں گے ان کو جاننا کافی اہمیت کا حامل ہے۔

B۔ احسان ایک ہی لفظ کو دو مختلف انداز میں استعمال کر رہا ہے۔

C۔ اس حصہ میں سوچ کے انداز میں غلطی نظر آرہی ہے۔

15۔ احسان: سارے مغالطے سے ہمیں اب دو سچی چیزیں سمجھ آتی ہیں۔ ایک کہ ہم صاف کلورین ملا پانی استعمال کرنا چاہتے ہیں یا پھر بدبودار اور بیماریوں کا باعث پانی چاہتے ہیں۔ ظاہر ہے کہ فتح آباد کے شہری بدبودار اور بیماریوں کا باعث پانی نہیں چاہتے۔ اس لیے پانی کو کلورین زدہ کرنے کے علاوہ کیا چارہ رہ جاتا ہے؟

ان دلائل میں موجود فکری نقص کی نشاندہی کے لیے ذیل میں دی گئی وجوہات میں سے مناسب وجہ کا انتخاب کیجیے۔

A۔ احسان نے یہ واضح نہیں کیا کہ صرف دو ہی متبادل طریقے موجود ہیں (کلورین ملا یا نہ ملا ہوا)

B۔ احسان جذباتی زبان استعمال کر رہا ہے جو اس کی دلیل کو زیادہ معقول نہیں بناتی۔

C۔ احسان ایک ہی لفظ کو دو مختلف انداز میں استعمال کر رہا ہے۔

16۔ دانیال: اس بات کو ایک طرف رکھتے ہوئے کہ ادویات کا استعمال صحیح ہے یا نہیں، کیا تم خود ہی (کلورین ملے پانی کی صورت میں) علاج کے لیے ادویات کا استعمال کرنے کا منصوبہ تجویز نہیں کر رہے؟

احسان: بالکل بھی نہیں۔ کیا پانی کی سپلائی میں موجود جراثیم کو مارنا ایسا ہی ہے جیسے انسانی جسم کی کسی بیماری کا علاج کرنا؟ یقیناً ایسا نہیں ہے۔ اس لیے اسے ادویات کے ذریعے علاج کا منصوبہ نہیں کہا جا سکتا۔

دانیال: لیکن یہ ادویات کا علاج کے لیے استعمال ہی ہے۔ کیا اس منصوبے سے تمھارا ایک مقصد بیماریوں کی روک تھام نہیں ہے؟ ادویات کے استعمال کا مقصد بنیادی طور پر صحت کی بحالی اور برقراری ہے چاہے انہیں کسی بھی طریقے سے استعمال کیا جائے۔ اب اگر تمھارے اس منصوبے سے لوگوں کی صحت بہتر ہوتی ہے یا نہیں اس سے کچھ فرق نہیں پڑتا۔ اصل نکتہ یہ ہے کہ تم ایسا کرنے کی کوشش تو کرو گے جس کا مطلب لوگوں کو علاج کے لیے ادویات دینا ہی ہے۔

ان دلائل میں موجود فکری نقص کی نشاندہی کے لیے ذیل میں دی گئی وجوہات میں سے مناسب وجہ کا انتخاب کیجیے۔

A۔ اس حصہ میں سوچنے کے انداز میں کافی شدید نوعیت کی غلطی پائی جاتی ہے۔

B۔ دانیال کا نتیجہ اس کے اپنے پیش کردہ دلائل کے مطابق نہیں ہے۔

C۔ دانیال اور احسان ایک ہی لفظ کو مختلف طرح سے استعمال کر رہے ہیں۔

17۔ دانیال: کیا تم یہ ثابت کر سکتے ہو کہ پانی کو محفوظ بنانے کے لیے کلورین شامل کرنا مفید ہے؟

احسان: ہاں بالکل! فردوس پور کے رہائشی اسی جگہ سے پانی حاصل کرتے ہیں جہاں سے ہم کرتے ہیں۔ تین سال سے فردوس پور میں ٹائیفائڈ بخار کے نو کیسز دریافت ہوئے تھے۔ دو سال پہلے انھوں نے پانی میں کلورین شامل کرنا شروع کیا اور اس کے بعد سے سال ٹائیفائڈ کے صرف دو کیسز رہ گئے۔ یہ ثبوت کافی ہے۔

ان دلائل میں موجود فکری نقص کی نشاندہی کے لیے ذیل میں دی گئی وجوہات میں سے مناسب وجہ کا انتخاب کیجیے۔

A۔ احسان ایک ہی لفظ کو دو مختلف طرح سے استعمال کر رہا ہے۔

B۔ بیماری میں یہ کمی کوئی بڑی کمی نہیں۔ اگر دوسرے سال میں ٹائیفائڈ کا ایک بھی کیس نہ رہتا تو احسان اپنی بات ثابت کرنے میں زیادہ کامیاب ہوتا۔

C۔ اس طرح کا صرف ایک موازنہ پورے دعوے کو ثابت کرنے کے لیے کافی نہیں۔

18۔ دانیال: حقیقت میں کلورین گیس کی آمیزش سے تم ہمارے پانی کو زہر آلود کرنے کی ترکیب بنا رہے ہو۔ کلورین گیس کو تو انسانوں کو مارنے کے لیے جنگوں میں استعمال کی جاتی رہی ہے۔ یہ ایک مہلک زہر ہے۔ کوئی بھی نہیں چاہتا کہ اسے زہر دیا جائے۔

احسان: لیکن جب کلورین کی انتہائی قلیل مقدار یعنی 0.2 حصہ فی دس لاکھ میں ملایا جاتا ہے تو اس سے کسی کو بھی نقصان کا خطرہ نہیں ہے۔

دانیال: غلط یہ نہیں ہے۔ آپ پھر بھی پانی میں مہلک زہر ہی ملا رہے ہوں گے۔ چونکہ کلورین زہر ہے تو اس کو شامل کرنے کا مطلب دراصل زہر ملانا ہی ہے۔ اس لیے جو شخص بھی وہ پانی پیے گا وہ دراصل زہر ہی پیے گا۔

ان دلائل میں موجود فکری نقص کی نشاندہی کے لیے ذیل میں دی گئی وجوہات میں سے مناسب وجہ کا انتخاب کیجیے۔

A۔ احسان بنیادی بات کو سمجھ نہیں پا رہا۔

B۔ دانیال ایک ہی لفظ کو دو مختلف طرح سے استعمال کر رہا ہے۔

C۔ دانیال کے سوچنے کے انداز میں غلطی پائی جاتی ہے۔

19۔ دانیال: اس کے علاوہ فتح آباد کا پانی ویسے بھی کافی بہتر اور محفوظ ہے۔

احسان: یہ صحیح نہیں۔ جب تک کچھ غلط ہونے کا امکان موجود ہو تو اس وقت تک کچھ بھی محفوظ نہیں ہوتا۔ اس بات سے ہم یہ کہہ سکتے ہیں کہ فتح آباد کا پانی بھی محفوظ نہیں۔

ان دلائل میں موجود فکری نقص کی نشاندہی کے لیے ذیل میں دی گئی وجوہات میں سے مناسب وجہ کا انتخاب کیجیے۔

A۔ یہاں احسان نے لفظ "محفوظ" کو غیر اہم بنا دیا ہے۔

B۔ احسان نے یہ نہیں بتایا کہ "محفوظ" سے اس کی کیا مراد ہے۔

C۔ احسان کے سوچنے کے انداز میں نقص نظر آتا ہے۔

20۔ دانیال: فتح آباد کے شہریوں کو فیصلہ کرنا ہوگا۔ یا تو ہم انتہائی صاف اور خالص پانی چاہتے ہیں یا پھر موجودہ طرز کو ہی برقرار رکھنا ہے۔ اب کوئی بھی سمجھ سکتا ہے کہ عملی طور پر پانی کی سپلائی میں سے مکمل طور پر آلودگی اور ملاوٹ کو ختم نہیں کیا جا سکتا۔ اس لیے ہمیں اس چیز کو اس کے حال پر چھوڑ دینا چاہیے۔

ان دلائل میں موجود فکری نقص کی نشاندہی کے لیے ذیل میں دی گئی وجوہات میں سے مناسب وجہ کا انتخاب کیجیے۔

A۔ دانیال نے یہ نہیں بتایا کہ صرف دو ہی متبادل طریقے موجود ہیں۔

B۔ دانیال ایک ہی لفظ کو دو مختلف طرح سے استعمال کر رہا ہے۔

C۔ جو نتیجہ اخذ کیا گیا ہے، وہ دیے گئے دلائل سے مطابقت نہیں رکھتا۔

21۔ دانیال: کلورین ملانے کا مطلب یہ ہی ہے کہ فتح آباد کے پانی میں ڈرگ (Drug) شامل کر دی جائے۔ ظاہر ہے ہم نہیں چاہیں گے کہ ہمارے شہری پانی کی صورت میں ہر دفعہ ڈرگ استعمال کر رہے ہوں۔

احسان: تمہیں کیا اختیار حاصل ہے کہ تم کلورین کو ڈرگ کہو؟

دانیال: فیڈرل فوڈ، ڈرگ اینڈ کاسمیٹک ایکٹ کی شق 201(ج) میں ڈرگ کی تعریف کچھ یوں کی گئی ہے۔ "کوئی شے جس کا مقصد انسانوں یا جانوروں میں تشخیص، علاج یا بیماریوں کی روک تھام ہو"۔ چونکہ کلورین کا مقصد بیماریوں کی روک تھام سے متعلق ہے لہذا یہ ڈرگ ہے۔

ان دلائل میں موجود فکری نقص کی نشاندہی کے لیے ذیل میں دی گئی وجوہات میں سے مناسب وجہ کا انتخاب کیجیے۔

A۔ دانیال کے سوچنے کے انداز میں خلل ہے۔

B۔ احسان کو یہ سمجھنا چاہیے کہ کسی بھی شخص کو یہ اختیار حاصل ہے کہ وہ ایک ہی لفظ کو کسی مخصوص انداز میں استعمال کرے۔ اہم چیز یہ ہے کہ اس بات کے مفہوم کی سمجھ ہو۔

C ۔ دانیال ایک ہی لفظ کو دو مختلف انداز میں استعمال کر رہا ہے۔

حصہ سوم، چہارم اور پنجم

نیچے دیے گئے تجربہ سے متعلق ہے

دو سائنسدانوں ڈاکٹر باقر اور ڈاکٹر کامران نے وزارت زراعت و آبی حیات کے زیر انتظام چلنے والی لیبارٹری میں ایک تجربہ کیا۔ ڈاکٹر یہ جاننا چاہتے تھے کہ بطخوں کے وہ چوزے جو گوبھی میں پلنے والے کیڑے بطور خوراک کھاتے ہیں ان کے ساتھ کیا ہوتا ہے۔ بہت سے ایسے کیس رپورٹ ہوئے تھے جن میں بطخوں کے وہ چوزے پراسرار طور پر مردہ پائے گئے تھے جو ایسی اراضی میں تھے جہاں گوبھی کاشت ہوتی تھی اور گوبھی میں موجود کیڑے بھی کافی مقدار میں پائے جاتے تھے۔

اس تجربہ کے لیے تین اقسام کی بطخوں کے چوزوں کو چنا گیا (سبز سر والی بطخ، نوکیلی دم والی بطخ، سفید پشت والی بطخ)۔ اور پھر ہر قسم سے بطخ کے چوزوں کو یکساں اعتبار سے دو دو گروہوں میں تقسیم کیا گیا۔ ایک ہفتے کے دورانیہ کے لیے ان بطخ کے چوزوں کے لیے منظور شدہ خوراک کا انتخاب کیا گیا۔ ہر گروہ کی بطخ نے یہ خوراک استعمال کی پر اس میں یہ تبدیلی کی گئی کہ ہر گروہ میں سے آدھے بطخ کے چوزوں کو منظور شدہ خوراک کے علاوہ گوبھی میں پلنے والے دو دو کیڑے بھی اضافی طور پر روزانہ دیے گئے۔ بطخ کے چوزوں کی حالت کا ہفتے کے آخر میں مشاہدہ کیا گیا اور اس کو ذیل میں دیے گئے ٹیبل کی صورت میں پیش کیا گیا۔

بطخوں کی اقسام	ہر گروہ میں بطخ کے چوزوں کی اصل تعداد	مقررہ گروہ وار مل خوراک			خوراک بمعہ کیڑے		
		صحت مند	بیمار	مردہ	صحت مند	بیمار	مردہ
سبز سر والی بطخ	8	3	1			2	2
	6	3					3
نوکیلی دم والی بطخ	6	2		1			3
	8	3	1		1		3
سفید پشت والی بطخ	8	4				1	3
	8	3	1			1	3
کل تعداد	44	18	3	1	1	4	17

ڈاکٹروں نے اس تجربہ سے یہ نتیجہ اخذ کیا" گوبھی میں پلنے والے کیڑے بچے کے چوزوں کے لیے زہریلے ہیں"۔

حصہ سوم / (III)

اس تجربہ نے لوگوں کی بہت توجہ حاصل کی۔ اس تجربہ اور بچے کے چوزوں کی حفاظت سے متعلق بہت سے بیانات سامنے آنے لگے۔

بیان 22 سے 25 تک ان بیانات کو جوڑوں (A اور B) کی صورت میں پیش کیا جا رہا ہے جن کے نیچے کیپر بھی لگائی گئی ہے۔ ہر دو بیانات کو پڑھنے کے بعد فیصلہ کیجیے کے ان دو بیانات میں سے کونسا بیان زیادہ قابل یقین ہے۔

بیان 22 سے 25 تک کے بیانات کی ذیل میں دیے گئے طریقہ کار کے تحت نشاندہی کیجیے۔

اگر آپ کے خیال میں پہلا بیان زیادہ قابل یقین ہے تو A پر نشان لگائیں۔

اگر آپ کے خیال میں دوسرا بیان زیادہ قابل یقین ہے تو B پر نشان لگائیں۔

اگر دونوں میں سے کوئی بھی بیان زیادہ قابل یقین نہیں تو C پر نشان لگائیں۔

جواب دیتے ہوئے پہلے سے دی گئی معلومات اور بریکٹ میں موجود معلومات سے بھی مدد لیجیے۔

22۔ A۔ گوبھی میں پلنے والے کیڑے بچے کے چوزوں کے لیے زہریلے ہیں (ڈاکٹر کامران کا بیان)۔

B۔ تجربہ والے ہفتے کے دوران چھ عدد سفید پشت والی بطخوں کے چوزے مر گئے (ڈاکٹر کامران کا بیان)۔

C۔ دونوں میں سے کوئی بھی بیان زیادہ قابل یقین نہیں۔

23۔ A۔ تجربہ کے اختتام پر نو کیپل دم والی بطخوں کے چھ چوزے صحت مند تھے (ڈاکٹر باقر کا بیان)

B۔ گوبھی کے کیڑوں کو کھانے والے چار عدد بطخوں کے چوزے تجربہ کے آخر میں بیمار ہو گئے تھے (ڈاکٹر باقر کا بیان)۔

C۔ دونوں میں سے کوئی بھی بیان زیادہ قابل یقین نہیں۔

24۔ A۔ تجربہ ختم ہونے کے اگلے ہفتے کے دوران تمام بیمار چوزے مر گئے (یہ خبر ایک ایسے میگزین میں شائع ہوئی جو تقریباً ہر اخبار فروش کے پاس دستیاب ہوتا ہے۔ اس خبر کے بین الاقوامی شہرت یافتہ مصنف نے کہا ہے کہ اس نے یہ معلومات ڈاکٹر باقر اور ڈاکٹر کامران سے حاصل کی)۔

B۔ تجربہ ختم ہونے کے اگلے ہفتے کے دوران گوبھی کے کیڑے کھانے والے باقی ماندہ چوزے بھی مر گئے (ڈاکٹر باقر اور ڈاکٹر کامران کی رپورٹ سے)۔

C-دونوں میں سے کوئی بھی بیان زیادہ قابل یقین نہیں۔

25۔ A۔ دیگر تو اولیبارٹریوں کی تحقیق نے یہ ثابت کیا ہے کہ جن چوزوں پر 'دورزین' نامی کیمیکل کا چھڑکاؤ (اسپرے) کیا جائے گا انھیں گوبھی میں پلنے والے کیڑوں کو کھانے سے کوئی نقصان نہیں ہوگا۔ (یہ خبر دورزین بنانے والی کیمیکل کمپنی کے ایک میگزین میں شائع ہوئی)

B۔ بیٹے کے چوزوں پر گوبھی میں پلنے والے کیڑوں کے نقصان دہ اثرات کا تدارک کرنے کے لیے ابھی تک کوئی تسلی بخش طریقہ دریافت نہیں ہوا۔ (یہ بات اس میگزین میں، جس کا ذکر اوپر بیان 24 میں ہوا ہے، دورزین کمپنی کے میگزین کی خبر کے دو ماہ بعد شائع ہوئی)

C-دونوں میں سے کوئی بھی بیان زیادہ قابل یقین نہیں۔

حصہ چہارم / (IV)

اصل تجربہ سے ڈاکٹروں نے یہ نتیجہ اخذ کیا کہ "گوبھی میں پلنے والے کیڑے بیٹے کے چوزوں کے لیے زہریلے ہیں"۔

بیان 26 سے لے کر بیان 38 میں کچھ معلومات فراہم کی گئی ہیں جن کی آپ نے نیچے دیے گئے طریقہ کار کے تحت نشاندہی کرنی ہے۔

اگر یہ معلومات درست ہیں تو یہ معلومات اوپر دیے گئے نتیجہ کی تائید کرتی ہیں (اس صورت میں A پر نشان لگائیے)

اگر یہ معلومات درست ہیں تو یہ معلومات اوپر دیے گئے نتیجہ کی تردید / مخالفت کرتی ہیں (اس صورت میں B پر نشان لگائیے)۔

اگر یہ معلومات اوپر دیے گئے نتیجہ کی نہ تائید کرتی ہیں نہ ہی تردید کرتی ہیں (اس صورت میں C پر نشان لگائیے)۔

ہر بیان کو ایک دوسرے سے الگ سمجھتے ہوئے جواب دیجیے۔ (ہر اگلا بیان پچھلے بیانوں سے تعلق نہیں رکھتا)

26۔ تجربہ کو دہرایا گیا اور پہلے جیسے ہی نتائج حاصل ہوئے۔

27۔ تجربہ کو چوزوں کی تین مختلف اور اصل تجربہ کی نسبت کم عمر اقسام پر دہرایا گیا۔ ہفتے کے آخر میں نارمل خوراک ملنے والے دو چوزے مر گئے اور گوبھی کے کیڑوں والی خوراک کھانے والے بیس (20) چوزے مرے۔

28۔ اصل تجربہ کے دوران ایک ایسا سیب کا درخت بھی موجود تھا جس پر سے سیب دونوں قسم کی خوراک کھانے والے چوزوں کے پنجروں میں گر رہے تھے۔ تجربہ کار ایسا ہونے کی توقع نہیں کر رہے تھے۔ دونوں پنجروں میں تقریباً ایک ہی تعداد میں سیب گرے تھے۔ سیبوں کی یہ قسم چوزوں کی صحت پر اثر انداز نہیں ہوتی۔

29۔ اس تجربہ کو کینیڈا میں قریباً دوگنا تعداد میں چوزوں کے ساتھ دہرایا گیا۔ ایک بھی چوزہ نہیں مرا۔ ہفتہ کے اختتام پر نارمل خوراک والے چوزوں میں سے دو چوزے بیمار ہوئے جبکہ گوبھی کے کیڑے کھانے والے تین عدد چوزے بیمار ہوئے۔

30۔ اس تجربہ کو سکاٹ لینڈ میں دہرایا گیا۔ ہفتہ کے اختتام پر گوبھی کے کیڑے کھانے والے تمام چوزے مرگئے اور نارمل خوراک کھانے والے تمام چوزے صحت مند اور زندہ رہے۔ پر اس کے ساتھ یہ بھی معلوم ہوا کہ جو شخص کیڑوں کی فراہمی کا کام کر رہا تھا وہ پھلوں کے درختوں پر آرسینک کا سپرے کر رہا تھا اور اس نے بے احتیاطی سے کچھ مقدار گوبھی کے کیڑے کھانے والے چوزوں کے برتنوں میں منتقل کر دی تھی۔ آرسینک ایک مہلک زہر ہے۔

31۔ ماہرین حیاتیات کی ایک ٹیم نے بطخ کے چوزوں کی دس اقسام (جن میں تجربہ میں شامل تین اقسام بھی شامل ہیں) کے جسم کی ساخت اور افعال کا معائنہ کیا۔ ماہرین حیاتیات نے ان تمام اقسام میں رنگ کے سوا اور کوئی بھی واضح فرق دریافت نہیں کیا۔

32۔ یہ بھی معلوم ہوا کہ اصل تجربہ کے دوران گوبھی کے کیڑوں کی خوراک کھانے والے چوزوں کی نسبت نارمل خوراک کھانے والے چوزوں کو سورج کی روشنی کا کم سامنا ہوا۔ ابھی تک یہ نہیں پتہ کہ سورج کی روشنی کا فرق چوزوں کی صحت پر اثر ڈالتا ہے یا نہیں۔

33۔ بطخیں پالنے والے مشہور کینیڈین گروہ کا کہنا ہے کہ انھوں نے بہت عرصہ پہلے یہ دریافت کر لیا تھا کہ بطخ کے چوزوں کو گوبھی اگانے والی اراضی میں چھوڑ دینا خطرناک ہے

34۔ یہ بھی معلوم ہوا ہے کہ دونوں اقسام کی خوراک کھانے والے چوزے اپنے پنجروں سے باہر آئے اور ان پنجروں کے پاس ایک جوہڑ سے پانی پیا۔ جبکہ چوزوں نے اپنے پنجروں میں دیے گئے برتنوں سے پانی بالکل بھی نہیں پیا۔ جوہڑ میں موجود پانی خاص پانی ہی تھا۔

35۔ تجربہ کینیڈا میں دیگر تین مختلف اقسام کے چوزوں پر دہرایا گیا۔ تمام ہی قسم کے چوزے جو بھی خوراک کھا رہے تھے (کیڑوں والی یا نارمل) مر گئے۔

36۔ یہ تجربہ ریاست ہائے متحدہ امریکہ میں تعداد میں تقریباً دوگنا چوزوں پر دہرایا گیا۔ ہفتہ کے اختتام پر نارمل خوراک کھانے والے 44 میں سے 40 چوزے زندہ اور صحت مند رہے۔ جبکہ کیڑوں پر مشتمل خوراک کھانے والے 44 میں سے 39 چوزے بھی زندہ اور صحت مند رہے۔

37۔ یہ معلوم ہوا کہ اصل تجربہ کے وقت ایک بڑے شاہ بلوط کے درخت سے گٹھلیاں صرف کیڑے کھانے والے چوزوں کے پنجرے میں گر رہی تھیں۔ اس طرح کی گٹھلیوں کے چوزوں کی صحت پر اثرات کے بارے میں کچھ زیادہ معلومات نہیں ہیں۔

38۔ اس طرح کا ایک تجربہ کتوں پر بھی کیا گیا۔ ایک اور تجربہ کچھوؤں پر کیا گیا۔ دونوں ہی تجربات کے نتائج بطخ کے چوزوں پر کی جانے والی اصل تحقیق سے ملتے جلتے ہی نظر آئے۔

حصہ پنجم / (V)

ایک محقق نے درجہ ذیل بیان کی صداقت جانچنے کے لیے تحقیق شروع کی

اگر بطخ کا کوئی بھی چوزہ گوبھی میں پلنے والا کیڑا کھالیتا ہے تو چھ گھنٹے کے اندر اس کی موت ہو جائے گی۔

محقق نے معدہ کے ٹیسٹ کے لیے ایک قابل اعتبار، درد اور زخم دینے سے محفوظ طریقہ کار مرتب کیا جو یہ بتا سکتا تھا کہ پچھلے بارہ گھنٹوں کے دوران کسی بھی چوزے نے گوبھی کا کوئی کیڑا کھایا ہے یا نہیں۔ یہ طریقہ زندہ یا مردہ دونوں قسم کی بطخوں پر استعمال کیا جا سکتا تھا۔

اپنے تجربات کی تشکیل میں محقق نے اوپر دیے گئے بیان کو سامنے رکھتے ہوئے کچھ پیش گوئیاں کی ہیں جن میں ذیل میں دیے گئے دو اصول پیش نظر رکھے گئے ہیں۔

1۔ اگر دیا گیا بیان صحیح ہے تو اس کی بنیاد پر کی جانے والی پیش گوئی بھی صحیح ثابت ہو جائے گی۔

2۔ پیش گوئیاں کسی تجربہ کو آگے بڑھانے کے لیے رہنما اور مددگار ہونی چاہئیں۔

پیش گوئیوں سے متعلق اوپر دیے گئے اصولوں کو مدنظر رکھتے ہوئے بیان 39 سے 42 تک کے جوابات دیجیے۔ بیان نمبر 42 کے بعد سات ممکنہ پیش گوئیاں نیچے دی گئی ہیں۔

39۔ اس بیان کے لیے i، ii، iii میں سے بہترین پیش گوئی کونسی ہے؟ 'i' کی صورت میں A، 'ii' کی صورت میں B اور 'iii' کی صورت میں C تحریر کیجیے۔

40۔ اس بیان کے لیے iv، iii، ii میں سے بہترین پیش گوئی کونسی ہے؟ 'ii' کی صورت میں A، 'iii' کی صورت میں B اور 'iv' کی صورت میں C تحریر کیجیے۔

41۔ اس بیان کے لیے vi، v، iv میں سے بہترین پیش گوئی کونسی ہے؟ 'iv' کی صورت میں A، 'v' کی صورت میں B اور 'vi' کی صورت میں C تحریر کیجیے۔

42۔ اس بیان کے لیے v ii، vi، v میں سے بہترین پیش گوئی کونسی ہے؟ 'v' کی صورت میں A، 'vi' کی صورت میں B اور 'vii' کی صورت میں C تحریر کیجیے۔

ممکنہ پیش گوئیاں درج ذیل ہیں۔

i۔ اگر کوئی بھی چوزہ گوبھی میں پلنے والا کیڑا کھالیتا ہے تو اگلے چھ گھنٹے کے دوران اس کی موت واقع ہو جائے گی۔ اور اگر کیڑا کھانے کے بعد بارہ گھنٹے کے دوران معدہ کا ٹیسٹ کیا جاتا ہے تو ٹیسٹ کے نتائج یہ ظاہر کریں گے کہ چوزے نے کم از کم ایک کیڑا کھایا تھا۔

ii۔ اگر کوئی بھی چوزہ دیے گئے وقت یعنی چھ گھنٹے کے دوران نہیں مرتا تو اس کا مطلب ہے کہ اس نے اس دورانیے میں کوئی بھی کیڑا نہیں کھایا۔

iii۔ فرض کیا کہ نو کیلی دم والی بطخوں کے چھ بچھ کے چوزوں کو ایک گھنٹے کے لیے گوبھی کی اس اراضی میں رکھا گیا جہاں کیڑے بھی موجود ہیں اور پھر اس کے بعد انھیں ایک صاف پنجرے میں چھ گھنٹے کے لیے رکھا گیا۔ اگر اس دوران کوئی بھی چوزہ نہیں مرتا تو معدے کے ٹیسٹ کے نتائج یہ بتائیں گے کہ ان چوزوں نے کوئی بھی کیڑا نہیں کھایا تھا۔

iv۔ اگر بطخوں کے ہر دس مختلف گروہوں میں سے سبز سر والی بطخوں کے ایک ایک چوزے کا بلا ترتیب انتخاب کیا جائے اور تمام دس چوزوں کو بارہ گھنٹے کے لیے گوبھی کے کیڑوں سے دور رکھا جائے تو ان بارہ گھنٹوں میں سے آخری چھ گھنٹوں کے دوران کسی بھی چوزے کی موت نہیں ہوگی۔

۱۰۔ اُن بطخوں کے ہر چھ مختلف گروہوں میں سے سبز سر والی بطخوں کے ایک ایک چوزے کو چنا جائے اور ہر منتخب شدہ چوزے کو کیڑے بطور خوراک کھلائے جائیں تو چھ گھنٹوں کے دوران تمام چوزوں کی موت ہو جائے گی۔

۱۱۔ فرض کیا کہ سفید پشت والی بطخوں کے بارہ بھوکے چوزوں کو ایک گھنٹہ کے لیے کیڑوں والی گوبھی کی اراضی میں چھوڑ دیا گیا اور پھر انھیں ایک صاف ستھرے پنجرے میں چھ گھنٹے کے لیے رکھا گیا۔ اگر تمام چوزے اس وقت کے دوران مر جاتے ہیں تو معدہ کے نیست کے نتائج یہ ظاہر کریں گے کہ ہر چوزے نے کیڑا کھایا تھا۔

۱۲۔ اگر سفید پشت والی بطخوں کے چوزوں میں سے دس صحت مند چوزوں کے گروہ کا انتخاب کیا جائے اور اس گروہ کو پانچ پانچ چوزوں کے دو مزید گروہوں میں تقسیم کر دیا جائے اور دونوں چھوٹے گروہوں کو ہر لحاظ سے ایک ہی طرح رکھا جائے سوائے اس کے کہ پانچ چوزوں کے ایک گروہ کو خوراک میں گوبھی کے کیڑے دیے جائیں اور دوسرے گروہ کو نہ دیے جائیں تو کیڑے کھانے والے گروہ کے چوزے اگلے چھ گھنٹوں میں مر جائیں گے۔ جبکہ دوسرے گروہ کے پانچ چوزوں کو غالباً کچھ نہیں ہو گا۔

حصہ ششم / (VI)

بیان 43 سے 46 میں کچھ ایسے مکالمے ہیں جن میں کسی چیز کی تعریف (وضاحت) کرنے کی ضرورت ہے۔ ہر مکالمے کے نیچے تین تعریفیں دی گئی ہیں۔ ان تعریفوں (A، B اور C) میں سے کسی ایک کا انتخاب کریں جو بہترین انداز میں مطلب واضح کرتی ہو۔

43۔ "نعیم تمھارے پاس یہ ایک بہت اچھی اسٹاک کار (kcotS ra( ) ہے"۔ اس کی ماں بولی۔

"اسٹاک کار!" نعیم تعجب سے بولا "یہ اسٹاک کار نہیں ہے۔ کیا آپ نے کبھی ڈیلر کے شوروم پر ایسی کار دیکھی ہے جس کے بمپر بھاری پائپ کے بنے ہوں؟ کیا گاڑیاں بنانے والی کمپنیاں بغیر فینڈر (مڈگارڈ) کے کاریں بناتی ہیں؟ یقیناً نہیں۔"

اس پر نعیم کی ماں نے پوچھا، "یہ بتاؤ کہ 'اسٹاک کار' سے تمھاری کیا مراد ہے؟"

نیچے دی گئی تعریفوں میں سے کونسی تعریف نعیم کے خیال کے زیادہ نزدیک ہے؟

A۔ اسٹاک کار گاڑیاں بنانے والی کمپنیوں کی طرف سے بنائی گئی ایک ایسی کار ہے جس میں گاڑیوں میں عمومی طور پر استعمال ہونے والے پارٹس لگے ہوتے ہیں۔ لیکن ہو سکتا ہے کہ ان میں مڈگارڈ اور مخصوص قسم کے بمپر نہ پائے جاتے ہوں۔

B۔ اسٹاک کار وہ گاڑی ہے جس میں مڈگارڈ لگے ہوتے ہیں اور بمپر پائپوں سے نہیں بنے ہوتے۔

C۔ اسٹاک کار ایک معمولی کی گاڑی ہوتی ہے جسے کمپنی بناتی ہے اور لوگوں کو فروخت کر دی جاتی ہے۔

44۔ "یہ یقیناً اسٹاک کار ہے۔" جنید بولا "اس میں ایک عام انجن لگا ہوا ہے جو اس کار کے کمپنی میں بننے کے وقت سے تبدیل نہیں ہوا۔ یہی ایک چیز اسے اسٹاک کار بناتی ہے اور یہی بات سب سے زیادہ اہمیت کی حامل ہے۔"

نیچے دی گئی تعریفوں میں سے کونسی تعریف جنید کے خیال کے زیادہ نزدیک ہے؟

A۔ اسٹاک کار گاڑیاں بنانے والی کمپنیوں کی طرف سے بنائی گئی ایسی کار ہے جس میں گاڑیوں میں عمومی طور پر استعمال ہونے والے پارٹس لگے ہوتے ہیں لیکن ہو سکتا ہے کہ ان میں مذکورہ اور مخصوص قسم کے پرپر نہ پائے جاتے ہوں۔

B۔ اسٹاک کار ایک معمول کے معیاری انجن پر مشتمل گاڑی ہے۔

C۔ اسٹاک کار وہ ہے جہاں انجن معیار ہو۔

45۔ "تم اس گوندھے ہوئے آٹے سے کیا بنا رہی ہو؟" سارہ کے والد نے پوچھا۔

"گوندھا ہوا آٹا!" سارہ تعجب سے بولی۔ کیا آپ نے کبھی خمیر سے بنی ایسی چیز دیکھی ہے جسے ملانے کے فوراً بعد پکا دیا گیا ہو؟ یقیناً نہیں،" وہ آمیزے کو ملانے کے فوراً بعد سے اوون میں رکھتے ہوئے بولی۔ "اس لیے یہ گوندھا ہوا آٹا نہیں۔"

"گوندھے ہوئے آٹے سے تمہارا کیا مطلب ہے؟" اس کے والد نے پوچھا۔

نیچے دی گئی تعریفوں میں سے کونسی تعریف سارہ کے خیال کے زیادہ نزدیک ہے؟

A۔ گوندھا ہوا آٹا دراصل آٹے اور دیگر اجزاء کا آمیزہ ہے جس میں خمیر بھی شامل ہے۔

B۔ گوندھا ہوا آٹا دراصل آٹے اور دیگر اجزاء کا ایسا آمیزہ ہے، جسے فوراً نہ پکایا جائے۔

C۔ گوندھا ہوا آٹا دراصل آٹے اور دیگر اجزاء کا ایسا آمیزہ ہے جسے اکثر اوون میں پکایا جاتا ہے۔

46۔ "کیوں، یقیناً یہ گوندھا ہوا آٹا ہی ہے،" ندیم بولا "تم بسکٹ بنا رہی ہو، کیا ایسا نہیں؟ اگر اسے بسکٹ بنانے کے لیے استعمال نہ کیا جائے تو اسے آٹا کہا ہی نہیں جا سکتا۔"

نیچے دی گئی تعریفوں میں سے کونسی تعریف ندیم کے خیال کے زیادہ نزدیک ہے؟

A۔ گوندھا ہوا آٹا دراصل آٹے اور دیگر اجزاء کا ایسا آمیزہ ہے، جسے اگر بسکٹ بنانے کے لیے نہ استعمال کیا جائے تو فوری طور پر نہیں پکایا جاتا۔

B۔ گوندھا ہوا آٹا دراصل آٹے اور دیگر اجزاء کا ایسا آمیزہ ہے، جس کو بسکٹ بنانے کے لیے استعمال کیا جاتا ہے۔

C۔ گوندھا ہوا آٹا دراصل آٹے اور دیگر اجزاء کا ایسا آمیزہ ہے، جس کو اگر فوراً نہ پکایا جائے تو بسکٹ بنانے کے لیے استعمال ہوتا ہے۔

حصہ ہفتم / (VII)

بیان 47 سے 52 میں کوئی بھی شخص گفتگو کر رہا ہے لیکن ہر بیان میں ایک غیر بیان کردہ مفروضہ (قیاس) موجود ہے۔ یہاں مفروضے سے مراد ایسا گمان یا قیاس ہے جس کو ہم بغیر کسی خاص تصدیق کے ہی سچ تصور کر رہے ہوتے ہیں۔ ہر بیان کے نیچے جو مفروضے یا قیاس تحریر کیے گئے ہیں آپ ان میں سے (A، B یا C) ممکن ترین غیر بیان شدہ مفروضے کا انتخاب کیجیے۔ ہر بیان کو علیحدہ حیثیت میں سمجھ کر پڑھیں۔

47۔ دانیال صاحب: یہ حقیقت کہ فتح آباد کے بچوں کو زبردستی کام پر لگایا گیا ہے ان بچوں کے غیر مناسب رویے کی وضاحت کرتی ہے۔

A۔ وہ بچے جن کو کبھی بھی زبردستی کام پر نہیں لگایا گیا مناسب اور صحیح رویہ رکھتے ہیں۔

B۔ وہ بچے جو برا رویہ رکھتے ہیں ان کو زبردستی کاموں پر لگایا جاتا ہے۔

C۔ وہ بچے جن کو زبردستی کام پر لگایا جاتا ہے برا رویہ رکھتے ہیں۔

48۔ بیگم دانیال: ہمیں یہ کرنا چاہیے کہ ان سے کام نہ کروائیں اس طرح وہ سب بالکل ٹھیک رہیں گے۔ میں یہ جانتی ہوں۔

A۔ وہ بچے جنھیں زبردستی کام پر لگایا جائے گا برا رویہ اختیار کریں گے۔

B۔ وہ بچے جنھیں زبردستی کام پر نہیں لگایا جائے گا وہ مناسب رویہ اختیار کریں گے۔

C۔ وہ بچے جو مناسب رویہ رکھتے ہیں انھیں زبردستی کام پر نہیں لگایا گیا ہوتا۔

49۔ بیگم احسان: ہمیں ان سے کام کروانا چاہیے۔ یہ ہی چیز ان کا علاج کرے گی۔

A۔ وہ بچے جنھیں زبردستی کام پر نہیں لگایا جائے گا برا رویہ اختیار کریں گے۔

B۔ وہ بچے جنھیں زبردستی کام پر لگایا جائے گا مناسب رویہ اختیار کریں گے۔

C۔ جو بچے مناسب رویہ رکھتے ہیں انھیں زبردستی کام پر لگایا گیا ہوتا ہے۔

50۔ احسان صاحب: فتح آباد کی موجودہ نسل کے بچوں کے برے رویے کی وجہ بہت سادہ ہے۔ ان بچوں کو کسی نہ کسی وقت سخت سزا کا نشانہ بنایا گیا ہوتا ہے۔ یہ ہی اصل مسئلہ ہے۔

A۔ بچے جن کو سخت سزا دی گئی ہوتی ہے برے رویوں کا مظاہرہ کرتے ہیں۔

B۔ وہ بچے جو غیر مناسب رویے کا مظاہرہ کرتے ہیں انھوں نے کسی وقت سخت سزا کا سامنا کیا ہوتا ہے۔

C۔ وہ بچے جنھوں نے کسی سخت سزا کا سامنا نہیں کیا ہوتا ان کا رویہ درست ہوتا ہے۔

51۔ بیگم دانیال: ان کے رویوں کی وضاحت اسی طرح کی جا سکتی ہے کہ ہم جانتے ہیں کہ ان بچوں میں سے زیادہ تر کو کبھی بھی سزا نہیں دی گئی ہوتی۔

A۔ وہ بچے جنھیں سزا ملتی ہے مناسب رویہ رکھتے ہیں۔

B۔ وہ بچے جو نامناسب رویے کا مظاہرہ کرتے ہیں انھیں کبھی بھی سزا نہیں ملی ہوتی۔

C۔ وہ بچے جنھیں کبھی سزا نہیں ملی ہوتی وہ نامناسب رویے کا مظاہرہ کرتے ہیں۔

52۔ دانیال صاحب: ہمیں یہ کرنا چاہیے کہ ہم ان کو کبھی بھی سزا نہ دیں۔ اس سے معاملات بہتر ہوں گے۔

A۔ وہ بچے جو نامناسب رویے کا مظاہرہ کرتے ہیں ان کو کسی وقت سزا ملی ہوتی ہے۔

B۔ وہ بچے جنھیں سزا ملتی ہے وہ نامناسب رویے کا اظہار کریں گے۔

C۔ وہ بچے جو مناسب رویے رکھتے ہیں ان کو کبھی بھی سزا نہیں ملی ہوتی۔

اختتام

تسلی کر لیجیے کہ آپ نے تمام سوالات کے جوابات دے دیے ہیں۔

آپ کے وقت کا شکریہ

MORAL COMPETENCE TEST-URDU (MCT-URUD) (Liaquat, 2011; Lind,

ملازمین کی کشمکش

[illegible]

میں مکمل حمایت کرتا ہوں						میں مکمل مخالفت کرتا ہوں	
+3	+2	+1	0	-1	-2	-3	کیا آپ ملازمین کے اس عمل کی حمایت کریں گے یا مخالفت؟

[illegible]

میں مکمل طور پر ناقابل قبول								میں مکمل طور پر قابل قبول	
+4	+3	+2	+1	0	-1	-2	-3	-4	1 [illegible]
+4	+3	+2	+1	0	-1	-2	-3	-4	2 [illegible]
+4	+3	+2	+1	0	-1	-2	-3	-4	3 [illegible]
+4	+3	+2	+1	0	-1	-2	-3	-4	4 [illegible]
+4	+3	+2	+1	0	-1	-2	-3	-4	5 [illegible]
+4	+3	+2	+1	0	-1	-2	-3	-4	6 [illegible]

[illegible]

میں مکمل طور پر ناقابل قبول								میں مکمل طور پر قابل قبول	
+4	+3	+2	+1	0	-1	-2	-3	-4	7 [illegible]
+4	+3	+2	+1	0	-1	-2	-3	-4	8 [illegible]
+4	+3	+2	+1	0	-1	-2	-3	-4	9 [illegible]
+4	+3	+2	+1	0	-1	-2	-3	-4	10 [illegible]
+4	+3	+2	+1	0	-1	-2	-3	-4	11 [illegible]
+4	+3	+2	+1	0	-1	-2	-3	-4	12 [illegible]

ڈاکٹر کی کشمکش

[illegible]

[illegible]	+3	+2	+1	0	-1	-2	-3

[illegible]

1 [illegible]	-4	-3	-2	-1	0	+1	+2	+3	+4
2 [illegible]	-4	-3	-2	-1	0	+1	+2	+3	+4
3 [illegible]	-4	-3	-2	-1	0	+1	+2	+3	+4
4 [illegible]	-4	-3	-2	-1	0	+1	+2	+3	+4
5 [illegible]	-4	-3	-2	-1	0	+1	+2	+3	+4
6 [illegible]	-4	-3	-2	-1	0	+1	+2	+3	+4

[illegible]

7 [illegible]	4	3	2	1	0	+1	+2	+3	+4
8 [illegible]	-4	-3	-2	-1	0	+1	+2	+3	+4
9 [illegible]	-4	-3	-2	-1	0	+1	+2	+3	+4
10 [illegible]	-4	-3	-2	-1	0	+1	+2	+3	+4
11 [illegible]	-4	-3	-2	-1	0	+1	+2	+3	+4
12 [illegible]	-4	-3	-2	-1	0	+1	+2	+3	+4

GENE (Generalized Ethnocentrism) Scale (Neuliep & McCroskey, 2013)

Directions : The GENE Scale is composed of 22 statements, concerning your feelings about your culture and other cultures. In the space provided to the left of each item, indicate the degree to which the statement applies to you by marking whether you (5) strongly agree, (4) agree, (3) are neutral, (2) disagree, or (1) strongly disagree with the statement. There are no right or wrong answers. Some of the statements are similar. Remember, everyone experiences some degree of ethnocentrism. Work quickly and record your first response.

____ 1. Most other cultures are backward compared to my culture.
____ 2. My culture should be the role model for other cultures.
____ 3. People from other cultures act strange when they come into my culture.
____ 4. Lifestyles in other cultures are just as valid as those in my culture.
____ 5. Other cultures should try to be more like my culture.
____ 6. I'm not interested in the values and customs of other cultures.
____ 7. People in my culture could learn a lot from people of other cultures.
____ 8. Most people from other cultures just don't know what's good for them.
____ 9. I respect the values and customs of other cultures.
____ 10. Other cultures are smart to look up to our culture.
____ 11. Most people would be happier if they lived like people in my culture.
____ 12. I have many friends from other cultures.
____ 13. People in my culture have just about the best lifestyles of anywhere.
____ 14. Lifestyles in other cultures are not as valid as those in my culture.
____ 15. I'm very interested in the values and customs of other cultures.
____ 16. I apply my values when judging people who are different.
____ 17. I see people who are similar to me as virtuous.
____ 18. I do not cooperate with people who are different.
____ 19. Most people in my culture just don't know what is good for them.
____ 20. I do not trust people who are different.
____ 21. I dislike interacting with people from different cultures.
____ 22. I have little respect for the value and customs of other cultures.

Scoring: To determine your ethnocentrism score, complete the following steps:
Step 1: Add your responses to Items 4, 7, and 9.
Step 2: Add your responses to Items 1, 2, 5, 8, 10, 11, 13, 14, 18, 20, 21, and 22.
Step 3: Subtract the sum from Step 1 from 18.
Step 4: Add the results of Step 2 and Step 3. This sum is your generalized ethnocentrism score (note that not all items are used in scoring). Higher scores indicate higher ethnocentrism. Scores above 55 are considered high ethnocentrism.

Annexure IX

National Militarism Scale (McConochie, 2010)

Please indicate the degree to which you agree or disagree with each item using the following five-point scale:

Strongly Disagree= 1; Disagree= 2; Neutral = 3; Agree = 4; Strongly Agree = 5

S.No	STATEMENTS	1	2	3	4	5
1	Our nation should maintain the strongest possible military strength, even in times of peace.					
2	We should be willing to wage preemptive war against any foreign nation that we think may pose a serious threat to us.					
3	We should have a unilateral military foreign policy, going it alone, if we can find no allies among other nations.					
4	We should always maintain a stockpile of the most powerful weapons available, such as atomic weapons.					
5	We should arm allied nations with weapons and training to extend our power internationally.					
6	We should be willing to have a draft whenever we need to assure a strong supply of soldiers, sailors and pilots.					
7	Once in a war, we should stay in it until we win.					
8	Experience as a military general is excellent qualification for top government leadership positions, such as President of our nation.					
9	Parades of military equipment and personnel are very important for national holidays, such as 23rd March or 6th September.					
10	I am willing to die in war for my nation.					