CHAPTER – TWO
REVIEW OF THE LITERATURE
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2.1 PERSONALITY AND VOCATIONAL INTERESTS:

The psychological domains of abilities, aptitudes, personality and interests are considered important in selection of educational path that leads a student towards an occupation and further a career over a life-span. These aspects of a student or an individual are historically and conceptually considered as distinct & distant characteristics. Still literature in vocational psychology suggests that ability, personality and interests are considered as closely related variables affecting career choices. The theory and empirical research findings support the overlap between personality and vocational interests. The previous research reviewed in this chapter indicates substantial link between personality and vocational interests. However, the link is partial and complex and the instruments measuring personality and interests do converge at some point but they are not substitute for one another.

Viewing interest inventories as personality tests has a long history (Savickas, 1995). Personality traits have been tried to infer from interest inventories since the inception of interest inventories like Strong’s Vocational Interest Blank (SVIB). For example, Tussing (1942) investigated the possibilities of measuring personality traits with the Strong Vocational Interest Blank. Tussing has stated in his article that the idea of evaluating other factors than vocational interests with the SVIB is not new and Strong himself has used the Blank to measure masculinity and femininity and also interest maturity. Tussing tried to find relationship between SVIB scores and scores on tests such as Allport-Vernon study of values, the Bernreuter Personality Inventory, the Bell Adjustment Inventory, the Otis S-A Tests of Mental Ability. It was found that
some of the traits could be measured using SVIB in spite of the fact that the items of the SVIB were not designed to measure elements of personality traits. Findings indicated that some traits can be measured with more accuracy by SVIB than other traits. Prediction of self-confidence and sociability was possible to make with SVIB and the types of individual such as ‘theoretical’ and ‘economic’ (business man) (of Allport-Vernon Values) could be determined fairly well by SVIB. The relation of home, health & emotional adjustments was found to be non significant with SVIB. Bordin (1943) has theoretically discussed the vocational interest as dynamic phenomena in an article in respect of the Strong Vocational Interest test. According to him theories of vocational interest could be viewed as i) the static point of view ii) the dynamic view and iii) the empirical view. Further Bordin states in his article that Darley has conceptualized vocational interest as by-products of the development of personality type. Here, a link between personality and vocational interests has been suggested. According to Bordin the view that interest type as a by-product of personality may be viewed as a static or dynamic theory. If personality is viewed as a pattern of behaviour evolved, matured and fixed, then the theory is a static one. If personality is viewed as goal directed striving, then such approach could be viewed as a dynamic theory.

The results of an empirical study by Healy & Borg (1952) indicated that success in nursing school may require certain interests and personality traits (such as scientific interest, emotional stability and ability to cooperate). They found that certain personality and interest traits appear more frequently in graduate nurses and nursing students than in unselected norm group. They also found that nursing school dropouts differed from the nursing school students who successfully completed the first year in respect of nervousness, depression, cycloid tendencies, objectivity and
cooperativeness suggesting these traits to be related to success in nursing school. Differences between dropout and successful groups in interest areas related to nursing were very small. Brown (1954) found that persons whose interests resemble those of production managers tend to show following personality traits: preference for working with things rather than people; relatively poor insight into self and others; and difficulty in interpersonal relationship. Klugman (1957) studied interest profiles of a psychotic group in comparison with the normal and neurotic patients. He found no clear link between personality characteristics and interests measured by the Kuder Preference Record (KPR). Only one significant difference was observed between psychotic group and normal group in respect of Mechanical interest area (psychotics scored lower). Significant differences between psychotics and neurotics were observed in respect of mechanical, scientific, persuasive, literary and musical areas of KPR. Klugman argued that the similarity of interests between psychotics and normal would be coincidental and no definitive relationship exists between emotional status, personality traits or diagnosis and vocational interest patterns. Zak et al (1979) investigated the relationship between personality traits and vocational interests of 397 university applicants using Cattell’s CAQ part I and the Ramak Interest Inventory (Meir, 1975) based on Roe’s occupational classification system. The study confirmed that (a) the relationship exist between personality traits and vocational interests and (b) personality traits which characterize occupational profiles are arranged in circular order corresponding to the configuration of the vocational fields which represent those occupations.

The first systematic study relating personality to vocational interests using Holland’s personality typology and the Big Five model of personality was carried out by Costa, P. T.; McCrae, R. R. and Holland, J. L. (1984). They examined relations
between vocational typology developed by Holland and the neuroticism-extraversion-openness (NEO) model of personality presented by Costa & McCrae among 217 males and 144 females of 21 to 89 years of age. They found similarity in vocational interests among young and old adult groups and college students. Correlations between Self Directed Search (the measure of interests developed by Holland) and NEO inventory showed some strong associations of investigative and artistic interests with openness to experience aspect of personality. Social and enterprising interests correlated significantly with extraversion dimension of personality. Conventional interest area was found to be negatively correlated with openness to experience aspect indicating participants interested primarily in conventional occupations tended to be closed to experience. These relations were generally confirmed when spouse ratings were obtained as a non-self-report measure of personality traits in a subset of the participants. (This is based on the abstract only; the author of the present thesis tried to obtain the original paper but failed to do so). There are several studies in the research literature relating Holland’s Big Six vocational personality types (Realistic, Investigative, Artistic, Social, Enterprising and Conventional [RIASEC]) and Big Five Model of Personality (Neuroticism, Extraversion, Openness to Experience, Agreeableness and Conscientiousness). These are stated in this review in due course.

In an Indian context Saxena, R. (1987) investigated personality profiles of urban (Varanasi) High School students (boys 600 + girls 400 = 1000) in relation to their vocational interests. Age range of the students in the sample was 13 to 17 years (M = 14.60) and they came from three different educational streams: arts (n = 400), science (n = 400) and commerce (n = 200). Data was collected using 16PF Questionnaire (Form A) by Cattell and an Interest Inventory by Raghuraj Pal Singh. The seven interest areas covered were: Mechanical, Business, Scientific, Aesthetic,
Social, Clerical and Outdoor. The results showed that out of the 112 correlation coefficients only 31 were statistically significant but the magnitude of the correlations were low and negligible. The correlation coefficients ranged from -.175 to +.167 for the entire sample. To examine the role of sex in interest – personality relationship, separate correlations were reported for boys and girls. It was found that in case of boys slight to negligible correlations existed between interest and personality. Out of the 112 coefficients reported only 25 turned out to be statistically significant with range of -.333 to +.185. The highest correlation (-.333) was found between personality factor E (humble – Assertive) and outdoor interest. In case of girls also slight to negligible relationships were recorded. Correlation coefficients ranged from -.198 to +.198. Out of 112 coefficients only 25 were statistically significant. Saxena concluded that the relationship does exist between personality and vocational interests but the range of variation is extremely limited and it seems that interests are quite independent of personality traits in respect of the adolescent students in the sample.

Silver and Malone (1993) prepared a scale to measure the six personality styles designed to investigate occupational choice and leisure activities in survey research among normal populations. The instrument provides scores on six personality styles based on axis II of DSM-III-R (1987) and Shapiro’s Neurotic Styles (1965). The personalities include: Narcissistic, Paranoid, Obsessive, Hysterical, Depressive and Impulsive. The scales were validated on several independent samples. They found that the measures of personality styles satisfied several tests of internal consistency, validity, and reliability. Further they examined relationship between personality types and occupational plans of students. They found highest level of Obsession reported by civil engineering students and highest level of Paranoia was reported by accounting students. Elevated level of Narcissism was found in students
who plan to become physicians and medical students also showed high level of narcissism. Students majoring in drama and planned a career in theater displayed significantly elevated levels of Hysteria and Narcissism. Similar profiles were not observed for students of criminal law and working criminal lawyers. Though definitive pattern did not emerged, suggestive profiles indicated highest levels of Hysteria and Impulsivity for students and the highest levels of Obsession and Narcissism for working criminal lawyers. Silver & Malone also found significant associations between personality and leisure activities. They found that those with depressive personality styles do not prefer any of the leisure activities and particularly disliked physical activities. Those with Hysterical and Narcissistic personality styles showed strong association with social activities. Competitive activities were related to Impulsive and Paranoid personality styles and solitary activities (which involve detailed thought or carefully controlled behaviour) were enjoyed by those with Obsessive personality style. Another study partially related to Silver & Malone (1993) is reported by Holland et al (1994). Holland et al (1994) investigated an adult sample of 175 men and 123 women and found a replication of the correlational pattern between Self Directed Search (SDS; Holland, 1985a) and the revised NEO Personality Inventory (NEO PI/FFI; Costa & McCrae, 1989) observed in earlier study. Holland et al also explored the relationship between the SDS and the Personal Styles Inventory (PSI, Silver & Malone, 1993) developed to measure six mild personality disorders or styles from DSM-III-R. It was confirmed from the findings that the SDS is more closely related to the NEO PI/FFI than the PSI. The correlations between the SDS and PSI scales were usually small and not significant. Only three relationships were statistically significant for both men and women. The Artistic scale positively correlated with Hysteria scale indicating artistic interests to be associated
with “intuitive thinking…feel intense emotions, and respond to emotional tones rather than purely technical details…” (Silver & Malone, 1993). Enterprising interests were negatively correlated with Depression indicating entrepreneurs to be happy and cheerful people. Conventional interests correlated positively with obsessive-compulsive personality style which implies, “limited affect, narrow-mindedness, obsessive doubting, and driven activities…strive for perfection…” (Silver & Malone, 1993). The correlations between the SDS and the NEO PI/FFI replicated the relationship observed earlier by Costa, McCrae, and Holland (1984). Comparatively stronger and significant associations were recorded between SDS & NEO PI/FFI than for SDS & PSI. For both men and women, Openness is correlated (.62 & .43) with Investigative interest and with Artistic interest (.50 & .44). Extraversion correlated with Enterprising scale (.40 & .51) also with Social scale (.31 & .39). Neuroticism negatively correlated with Enterprising scale (-.34 & -.36). Some ambiguous, contradictory but plausible relations also emerged for example, Conscientiousness correlated positively with Enterprising interests (.29 & .26). Conscientiousness is expected to correlate with Conventional scale and this was observed only in case of women (.28). Holland et al. concluded that with some exceptions, interest inventories are usually weakly related to personality inventories and personality inventories are most closely related to personality inventories.

Balgopal et al. (1994) examined the simultaneous relationships among intelligence, personality and vocational interests on a sample of 874 individuals aged 14 to 83. Intelligence, personality and vocational interests were measured using Kaufman Adolescent and Adult Intelligence Test, Myers-Briggs Type Indicator and Strong Interest Inventory respectively. Overall, the results of the study indicated modest relationships among the domains of intelligence, personality and vocational
interests. The findings indicated substantial overlap with general intellectual ability, especially the kind of general ability that is associated with schooling and overall acculturation experiences. The relationship did not seem to indicate meaningful overlap with fluid ability, and to intellectual abilities that are less saturated with ‘g’, such as short-term memory and visual-spatial ability. The relationship between MBTI and SII was observed in terms of MBTI Sensing-Intuition dimension and the SII Investigative scale. The MBTI and SII General Occupational Themes shared more variance with each other than either measure did with KAIT. Balgopal et al. concluded that the result was consistent with the fact that Holland’s six-category system of classifying vocational interests may be thought of as a theory of personality.

Several studies investigating personality – vocational interest relationship has been carried out on the basis of Holland’s theory of vocational interests expressed in terms of six vocational personality types and the Big Five Model of Personality proposed by Costa & McCrae. Holland’s six personality types – Realistic, Investigative, Artistic, Social, Enterprising and Conventional could be measured with two tests: the Vocational Preference Inventory (VPI) and Self-directed Search. The Big Five model is comprised of Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness dimensions and they could be measured with two versions of NEO personality inventories: NEO-PI-R and shorter version of NEO, NEO-FFI. Many studies presented here are based on the above mentioned models. The first attempt to examine the relationship between these two popular models was carried out by the authors of the respective tests namely by Costa, P. T.; McCrae, R. R. and Holland, J. L. (1984) (Larson & Borgen, 2002) and this study has been already stated in this review. Moving further in this line of research a study by Tokar, Vaux & Swanson (1995) also examined the correspondence between Holland’s Vocational
Personality Typology and the Five-Factor Model which are considered quite comprehensive personality structures using 102 female and 91 male college Students. Separate correlation coefficients were presented for females and males between NEO-PI variables and SDS variables. Conscientiousness did not correlated significantly with any of the SDS interest areas and Conventional interests did not show significant correlations with any of the Personality factors from NEO-PI in case of females. For females significant correlations were observed for following pairs of variables: Neuroticism with Realistic (.26) & Enterprising (.22), Extraversion with Social (.36) & Enterprising (.41), Openness with Realistic (.21), Investigative (.26), Artistic (.24), Social (.30), and Enterprising (.21), Agreeableness with Social (.37). For males significant correlations were observed for following pairs of Variables: Extraversion with Realistic (.22), Artistic (.21), Social (.42) and Enterprising (.44), Openness with Investigative (.26), Artistic (.60), and Social (.38), Conscientiousness with Realistic (.23) & Artistic (-.26). Agreeableness did not correlated significantly with any of the SDS interest areas and Conventional interest area was not significantly correlated with any of the Personality variables from NEO-PI in case of males. Further the results of the canonical analyses for Females revealed that Enterprising, Social, and Artistic scale scores were positively associated with Extraversion and Openness scores and, to a lesser extent, with Agreeableness scores. Again the data indicated that scores on the Realistic and Investigative scales were positively associated with Openness scores and inversely related to Neuroticism scores. Results of the canonical analyses for Males revealed strong positive relationship between Artistic interest and Openness factor. A moderate positive relationship was also recorded between Artistic scores and Extraversion scores. Positive associations of Social and Investigative interests with Openness and Extraversion dimensions were also indicated. Again a
positive relationship emerged between scores on the Extraversion scale and the Enterprising scale. Data also indicated a positive relationship between Social interest and Extraversion. The findings indicate a significant overlap between the two models still it appears that neither personality model can account for the other in its entirety and results also suggest the correspondence of vocational interests and personality domains differ as a function of gender.

Ackerman & Heggestad (1997) reviewed theories of intelligence, personality and interest to establish potential overlap among these constructs. They evaluated the relationships among personality constructs, vocational interests and intellectual abilities and found evidence for communality across the domains of Holland’s model of vocational interests. They had done a extensive meta-analysis of personality – intellectual ability correlations and they reviewed interest – ability associations. They also present a review of the studies of relationship between personality and vocational interests and reach at the following summary of the correlations between the two variables: 1) the personality variables of Agreeableness/Psychoticism, Neuroticism/Stress Reaction did not show appreciable correlations with any of the six Holland interest types. 2) The personality dimensions of Conscientiousness, Control and traditionalism moderately correlated with Conventional Interests. Traditionalism also showed moderate negative correlation with Artistic interests. 3) The personality variables of Extraversion, Well-being, and Social Potency show moderate to substantial correlations with both Enterprising and Social interests 4) the personality dimensions of Openness to Experience and Typical Intellectual Engagement show moderate to substantial correlations with Investigative, Artistic, and Social interests. Absorption shows substantial correlations with Artistic and Realistic interests. 5) The personality aspects of Harm-Avoidance correlated negatively with Artistic, Realistic
and Investigative interest. On the basis of limited substantial correlations and communalities found in meta-analytical results and reviews of the studies linking intelligence, personality and vocational interests Ackerman & Heggestad present an integrated representation the relationships among these constructs. They have suggested four trait complexes. 1) Social: this includes Social & Enterprising interests, and Extroversion, Social Potency and Well-being personality traits. It excludes ability aspect. 2) Clerical/Conventional: it includes Perceptual Speed abilities, Conventional interests and Control, Conscientiousness and Traditionalism personality traits. 3) Science/Math: it includes Visual Perception and Math Reasoning abilities and Realistic and Investigative Interests, it does not includes any personality trait. 4) intellectual/cultural: it includes Crystallized Intelligence and Ideational Fluency aspects of ability and Absorption, Typical Intellectual Engagement and Openness to Experience personality traits; and Artistic and Investigative interests.

The correspondence between Five-Factor and RIASEC models of personality has also been suggested by Schinka et al (1997) as it was also demonstrated by Tokar & Swanson (1995), however, Schinka et al used a large sample compared to that of Tokar & Swanson. Schinka et al reported some similar findings as Tokar & Swanson; however some differences also emerged in correlations between SDS interests and NEO-PI-R personality traits. The results were obtained by performing separate canonical correlation analyses for men and women. For men, the NEO-PI-R factors of Extraversion and Conscientiousness were significantly negatively correlated with the Enterprising and Social interests of SDS suggesting that the men who are low in extraversion and Conscientiousness tend not to be enterprising or social. The NEO-PI-R factor Openness was found to be significantly associated with SDS Artistic, Investigative, and Enterprising interests suggesting that men who are more open to
new experiences are more artistic, investigative and enterprising. The Agreeableness factor of NEO-PI-R was positively related to Social and Artistic interests in men. For Women, the NEO-PI-R factors of Openness and Extraversion were associated with SDS Enterprising interest. Openness and Extraversion factors and the SDS Artistic, Enterprising and Investigative interests were also significantly correlated but the relation was not straightforward as the Openness factor loaded negatively. This indicated that women who are Enterprising but not Artistic or Investigative are Extraverted but not Open. The SDS Conventional and Investigative interests were associated with Conscientiousness and a lack of Neuroticism. Agreeableness was associated with Social interest as it was found in case of men also. From these findings Schinka et al concluded that the nature of the Five Factor model of personality and RIASEC relationship is fairly complex and there are substantive differences in the pattern of Big Five – RIASEC relations between genders.

Blake & Sackett (1999) also investigated the relationship between Holland’s typology and the Five-Factor Model of Personality. In this study raters coded the adjective descriptors of Holland’s six personality types according to their perceived reference to the dimensions of the Five-Factor Model. Ratings were tallied to provide an index of each adjective’s ‘loading’ on each of the Big-Five. The loadings for the descriptive adjectives were aggregated within each of the Holland types to yield a quantitative index of each type’s relationship to each of the Big-Five. The relationships between the Holland types and the dimensions of the Five-Factor Model that had been predicted from the adjective rating task were then compared with actual correlations obtained between Big-Five marker scales and operational measures of Holland’s typology. Results supported a pattern of empirical relationships between
Using a two-study design Carless (1999) examined the relationship between Holland’s vocational interest types, personality characteristics, and abilities. Study 1 comprised of a sample of 139 individuals (48 men, 91 women) and they completed the Self-Directed Search, the revised NEO personality Inventory, and the Wechsler Adult Intelligence Scale-Revised. Study 2 consisted of 669 men and 206 women employed in the finance industry who completed the SDS, the Myers-Briggs Type Inventory, and a measure of general abilities, the PL-PQ. The results of the Study 1 showed significant correlations between career interests and personality. This study included not only the broad Big Five dimensions but also the facet scales underlying the every big factor of the NEO inventory. Realistic interest was found to be mostly unrelated to personality except a modest relationship recorded between Realistic interest and the Openness facet of Actions (.31) and Ideas (.22) for females. It suggests that females interested in Realistic occupations are willing to try unusual activities and are open to unconventional ideas. Investigative interest was modestly related to Openness (.30) for females but not for the males. At the facet level Investigative interest was moderately related to Openness-Ideas and Openness-Aesthetics for both females and males respectively. A moderately strong relationship was found between Artistic interest and Openness (.52) for both females and males. Artistic interest correlated significantly with all the facets of Openness for females, whereas for males the strength of the relationship varied considerably. Social interest correlated significantly with Extraversion (.45 for females & .71 for Males). All the facets of Extraversion were significantly related to Social interest except Extraversion-excitement-seeking for females. For males Social interest correlated
negatively with Neuroticism (-.42), specifically with facets of Anxiety, Angry Hostility, Self-Consciousness and Vulnerability. Moderate to strong positive relationship was recorded between Social interest and Openness to Experience (.35) and its facets of Aesthetics (.36) and Actions (.51). This indicates that males interested in Social interests are relatively emotionally stable with good interpersonal skills and are open to new ideas and activities. Enterprising interest was strongly related to Extraversion for both females (.52) and males (.69). Modest relationship was observed between Enterprising interest and Conscientiousness for females (.23) and males (.40). The last interest area, Conventional was negatively associated with Openness for females (-.29) and positively related to Conscientiousness for males (.37). The results of the Study 1 for relation between interest and ability indicated that Investigative interest was strongly related to verbal, performance and general abilities. Abilities were mostly unrelated to personality except a moderate relationship between Openness and Verbal ability and total WAIS-R scores. The findings for the study 2 were consistent with study 1 in spite of using a larger sample and alternative measures of personality and abilities. The exception was the relationship between Investigative interest and personality. For males, investigative interest correlated modestly with preference for Intuition (.30) and for females a weak statistically significant relationship existed (.15). Artistic interest modestly related to preference for Intuition for females (.36) and males (.35). Moderate relationship between Social interest and Extraversion was noted for females (-.41) and for males (-.34) (a low score indicated Extraversion and a high score indicated introversion). Enterprising interest was moderately related to Extraversion for females (-.44) and for males (-.38). Conventional interest was related to Sensing & Judging aspects of MBTI personality aspects. Weak relationship between ability and interest as noted in study 2 and modest
relationship existed between personality (MBTI type) and abilities. Carless concluded that the limited overlap between interest, personality and ability suggest that the assessment of each domain is useful in career counseling and that neither form of assessment provides a dependable replacement for the other. Fuller, Holland and Johnston (1999) tried to examine the relation of profile elevation in the Self-Directed Search to personality variables using NEO Five-Factor inventory and the Personal Styles Inventory as measures of personality variables. Profile elevation was defined as the total score of the six scales on the SDS. Results indicated that higher profile elevation was associated with higher Openness to Experience, higher Extraversion and lower Depressive personality traits.

A study by De Bruin (2002) is relevant to the subject of this thesis as it has also used 16PF test to examine the relationship between personality traits and vocational interests in a South African context. De Bruin used a sample of 1503 first year university students from a South African University. The data was collected using the 16 Personality Factor Questionnaire - Form A (16PF) and 19-Field-Interest Inventory (19FII). The 19FII consists of 19 interest areas which could be expressed in terms of the Holland’s six vocational interest types. The results were based on the relationship between the five Second-Order Factors extracted from the 15 out of 16 scales of the 16PF test. The five second-order factors are: Extraversion, Tough Poise, Control, Independence and Anxiety. Results indicated meaningful relation between personality traits and vocational interests. First, the Extraversion factor was correlated significantly with following interest areas of 19FII: Sociability (.57), Public Speaking (.38), Travel (.25), Sport (.23), Law (.22), and Service (.20). These fields of interest indicate contact with other people and the high correlations of Sociability and Public Speaking with Extraversion factor clearly indicate extravert’s need for contact with
other people. Second, the low scores on the Tough Poise factor indicate tough-mindedness and a high score indicate emotional sensitivity (similar to Openness to Experience of Big Five). The Tough Poise factor correlated significantly with following 19FII interests: Welfare (.33), Language (.33), Performing Arts (.26), Numerical (-.25), Practical-Male (-.22) and Business (-.20). According to De Bruin the positive relation of language and Performing Arts with Tough Poise indicates support for the link between Holland’s Artistic interest and Openness aspect of Big Five. Further it could be seen that emotionally sensitive people are interested in Welfare of others and they are not interested in fields mostly related to ‘things’ (Business, Numerical) rather than people. Third, the second-order factor of Control denotes Conscientiousness of the Big Five. High scores on Control factor indicate perfectionism and adherence to societal norms and rules. Low scores indicate a lack of personal control and a disregard for societal norms and rules. This factor was not found to be associated meaningfully with any of the 19FII interest areas. But previous studies have suggested a link between Conscientiousness of Big Five and the Conventional interest (e.g. Blake & Sackett, 1999; Hogan & Blake, 1999). Fourth, the second-order factor of Independence showed a positive and meaningful relationship with only one interest area from 19FII, namely Creative Thinking (.24) suggesting that independent individuals generate novel ideas. (High scores on the independence factor indicate critical and domineering interpersonal style and low scores indicate group dependence and submissiveness and according to De Bruin this factor is similar to the Agreeableness factor of the Big Five Model.) Fifth, the high scores on the second-order factor of Anxiety (similar to Neuroticism of Big Five) indicates emotional instability and a lack of self-confidence and low scores indicate emotional control and high self-confidence. De Bruin found no significant correlation with any
of the 19FII interest areas with Anxiety. According to De Bruin the correlations between personality traits and interests are relatively weak, although psychologically meaningful, personality traits and vocational interests appear to be two clearly different domains of behaviour and his findings did not support Holland’s theoretical view that interest inventories are also personality inventories.

Larson & Borgen (2002) explored the convergence between vocational interests and personality in an adolescent gifted sample (N = 323). According to Larson & Borgen several studies have examined the overlap between Big Five and Holland’s hexagon on a broad level without examining the specific facet scales underlying Big Five domains and specific interests. So they set out explored the convergence between specific vocational interests as measured by Strong BISs (Basic Interest Scales) and specific dimensions of Big Five and Big Three personality models as measured by the NEO-PI-R facet scales and the MPQ (Multidimensional Personality Questionnaire, Tellegen, 1982) primary scales respectively. They believe their study was the first attempt to explore the topic with more specific measures of interests and personality. The results of the correlational analysis revealed that the Realistic, Investigative, Enterprising and Conventional GOTs (General Occupational Themes – the Broad Holland interest domains) did not correlate higher than .30 with any of the Big Five. The Artistic type correlated strongly with Openness to Experience domain of Big Five. The Social GOT correlated with Extraversion and Agreeableness. The Realistic, Enterprising and Conventional GOTs did not correlate higher than .30 with any of the Facet scales of NEO-PI-R. The Investigative GOT correlated moderately with Ideas facet of Openness. The Artistic GOT correlated moderately to strongly with four Openness facet scales namely Fantasy, Aesthetic, feelings, and Ideas. The social GOT correlated with Extraversion and Agreeableness
aspects of Big Five and it also correlated significantly with two facets of Extraversion namely Positive Emotion and Warmth and with three of the Facet scales of Agreeableness: Trust, Altruism and Tender-mindedness. The Realistic BIS Nature correlated with Excitement Seeking and Aesthetics facets. The Investigative BIS Science correlated with Ideas. The Artistic BIS correlated moderately to strongly with Fantasy, aesthetic, Feelings and Ideas facets of Openness. Writing correlated with Ideas. The Social BIS Social Service correlated moderately with Warmth, Positive Emotion, Altruism and Tender-mindedness. The Teaching BIS of Social GOT correlated with Warmth. The Enterprising BIS Law/Politics correlated moderately with Warmth and Assertiveness and Business Management correlated moderately with Assertiveness. The conventional BIS, Office Practices, did not correlated significantly with any of the facet scales. Many of the GOTs were found to be correlated significantly with higher order factors of MPQ and its primary personality dimensions. The Realistic GOT correlated meaningfully with CT’s (Constraint - a Higher order Factor) primary dimension of Harm Avoidance (-.37). The Investigative GOT correlated with PE’s (Positive emotionality – a higher order factor) primary scale Achievement. The Artistic GOT showed a strong positive relationship with Absorption primary scale. The Social GOT correlated with PE’s primary scale Well-Being. The Enterprising GOT correlated meaningfully with PE’s primary scale Social Potency. The Conventional GOT was not associated with the MPQ. In case of the BISs the Realistic BIS Adventure correlated most strongly with CT higher order factor (-.53) and with Harm Avoidance (-.62) and Control (.37) primary scales of CT. the Adventure BIS also correlated moderately with NE’s (Negative Emotionality – a higher order factor) primary scale of Aggression. The Nature BIS correlated with Absorption and the Mechanical BIS correlated -.33 with Harm Avoidance. The
Investigative BISs Science correlated significantly with Harm Avoidance (-.31) and Medical Science correlated moderately with Achievement (.31). All three Artistic BISs (Arts, Music/Dramatics and Writing) showed significant overlap with Absorption Scale, which is associated with higher order factors PE & NE. The Social BIS Social Service correlated with PE and Religious BIS correlated with CT and its primary scale Traditionalism. Five Enterprising BISs namely Public Speaking, Law/Politics, Merchandising and Business Management correlated meaningfully with Social Potency scale of MPQ. Social service also correlated with PE. The Conventional BIS scale of Office Practices did not correlated meaningfully with the MPQ. Further Larson and Borgen conducted hierarchical multiple regression analysis and found some substantial associations between personality and vocational interest in terms of the personality facets as predictor of BISs. The Science BIS was predicted by Ideas Facet of Openness. The Adventure BIS was associated to Excitement Seeking facet of Extraversion broad factor. Aesthetics aspect of Openness emerged as the significant predictor of all three Artistic BIS namely Music/Dramatics, Art and Writing. Value and agreeableness were associated with Religious activities BIS. Office Practices BIS was related to Order facet of Conscientiousness. Assertiveness (facet of Extraversion) was linked to Public Speaking BIS. Ideas predicted Mathematics BIS. In case of the MPQ variables PE and its primary scale Absorption were associated with Music/Dramatics BIS and Absorption also predicted Art BIS significantly. Social Potency primary scale predicted Law/Politics BIS and Public Speaking BIS. Social potency was also associated with Sales and Business Management BIS. The CT primary scale of Harm Avoidance predicted meaningfully the Adventure BIS and Traditionalism primary scale was meaningful in predicting
Religious Activities BIS. Achievement was related to Science BIS and social closeness was negatively related to Mechanical BIS.

To understand more deeply the nature of the relationship between personality and vocational interests Larson, Rottinghaus and Borgen (2002) conducted meta-analyses of Big Six and Big Five personality factors. They searched published and unpublished research till 2002 and examined 24 samples that revealed the overlap of the three most widely used measures of Holland’s Big Six domains of vocational interest, namely the Self-Directed Search (Holland, 1985a), the Strong Interest Inventory (Hansen & Campbell, 1985; Harmon, Hansen, Borgen & Hammer, 1994), and the Vocational Preference Inventory (Holland, 1985b), with the most widely accepted measure of the Big Five personality factors, namely the revised NEO Personality Inventory (Costa & McCrae, 1992). The results clearly showed five substantial relationships between interest and personality for both women and men and across the interest measures. They were Artistic-Openness \( r = .48 \), Enterprising-Extraversion \( r = .41 \), Social-Extraversion \( r = .31 \), Investigative-Openness \( r = .28 \) and Social-Agreeableness \( r = .19 \).

Ackerman and Beier (2003) provide evidence for the trait complexes identified by Ackerman & Heggestad (1997) on the basis of their (Ackerman & Heggastad) meta-analysis and review of the relationship among the abilities, personality and vocational interests – an integration of traits based on meaningful commonalities from cognitive, affective and conative domains. The four broad trait complexes are Social, Clerical/Conventional, Science/Math and Intellectual/Cultural. Taking data from a previous study Ackerman & Beier revealed support for three trait complexes after factor analysis of the available data. The three trait complexes were social, intellectual/cultural, and science/math. Conventional/clerical
trait complex was not assessed due to insufficient data. Further the relation between career choice and levels of trait complexes was found when the sample was separated into four broad college/university major fields, namely physical sciences, social sciences, arts/humanities and business. Participants who majored in physical sciences scored higher in science/math trait complex but slightly below average in social and intellectual/cultural trait complexes. Participants who majored in social sciences showed a flat profile and participants who majored in arts and humanities fields showed high levels of intellectual/cultural trait complex and below average science/math trait complex. Those majoring in business showed substantially high levels of the social trait complex and very low levels of science/math and intellectual/cultural trait complex scores. The correlations between trait complex scores and composite domain knowledge test scores provided further evidence for utility of proposed trait complexes. The social trait complex was negatively and negligibly correlated with knowledge in all of the assessed domains. Only the correlations with physical sciences and civics knowledge were significantly negative. Adults with high levels of science/math trait complex showed substantially high level of knowledge in the physical sciences than average. The individuals scoring higher on intellectual/cultural trait complex had acquired more knowledge than average in the humanities domain. These findings indicate that the three identified trait complexes provide indicators of the level of cognitive/intellectual investments to acquire domain knowledge.

Another meta-analytical study examining the nature and magnitude of the relationship between the Five Factor model of personality and Holland’s RIASEC occupational types is done by Barrick, Mount and Gupta (2003) which also found meaningful relations between some FFM personality dimensions and Some RIASEC
types. The strongest relationship emerged was between the RIASEC Enterprising type and FFM personality dimension of Extraversion ($\rho = .41$) and between RIASEC Artistic and FFM personality dimension Openness to Experience ($\rho = .39$). Low positive correlation recorded between RIASEC Social type and FFM Agreeableness. The Conventional type correlated moderately with FFM Conscientiousness and the Investigative type correlated moderately with Emotional Stability. The Realistic type was not related to any of the FFM personality traits. Barrick et al further performed multiple regression analysis in which each RIASEC type was regressed on the FFM scores and results revealed a multiple R of .11 for Realistic, .26 for Investigative, .42 for Artistic, .31 for Social, .47 for Enterprising and .27 for Conventional types. Barrick et al concluded that from these results that although FFM personality traits are meaningfully related to RIASEC interests, they are not merely substitutes for each other.

According to Roberti, Fox & Tunick (2003) both the traditional Five-Factor Model and Holland’s RIASEC typology has been studied and compared in various settings and support for the link between personality and interests has been recorded. Several researchers have tried to explore the link between nontraditional FFM traits and measures and Holland’s vocational interest inventories (e.g. Carless, 1999 and Silver & Malone, 1993) indicating significant overlap between personality characteristics and vocational interests. Still Roberti et al stress the need of exploring the relation between alternative personality systems such as Multidimensional personality Questionnaire Brief Form (MPQ-BF), Zuckerman-Kuhlman Personality Questionnaire (ZKPQ) and Sensation Seeking Scale (SSS-V) and vocational interests. According to them despite the existence of alternative personality inventories and multi trait personality inventories, no efforts have been made to relate these factors...
with vocational interests. So Roberti et al tried to explore the relationship between personality characteristics and vocational interests using alternative personality inventories (MPQ-BF, ZKPQ, and SSS-V) and the Vocational Preference Inventory (VPI, Holland, 1985b) using 126 undergraduate college students as sample. The results revealed that VPI subscales of Social and Enterprising were associated with various personality characteristics. Fewest personality traits correlated with Realistic and Conventional vocational preferences. Various preferences for sensation seeking were associated with certain vocational interests. The Disinhibition scores (SSS-V) correlated significantly with interests in Artistic, Social, and Enterprising vocations. The effect of gender could be seen as the results further indicated that personality characteristics related to vocational interests more frequently for men than for women. When examined for the relationship between Neuroticism-Anxiety / Negative Emotionality and vocational interests, it was found that only one interest area i.e. Realistic correlated with Neuroticism-anxiety (ZKPQ). Men and women had different associations between scores on personality characteristic and interests in certain vocations.

Staggs, Larson and Borgen (2003) investigated the convergence of specific factors in vocational interests and personality. Before Staggs et al.’s study Larson & Borgen (2002) explored the interest personality relation on the broad big six - big five dimensions as well as on the levels of specific factors underlying these broad interest - personality domains additionally they incorporated the Big Three personality model with its eleven specific factors in their analysis. Staggs et al study could be viewed as an extension to the previous research by Larson & Borgen (2002). Staggs et al.’s study further investigated the convergence of interests and personality by replicating Larson & Borgen’s (2002) study which found overlap between SII BISs and MPQ
primary scales using a sample of gifted adolescents. Stags et al.’s study was carried out on a sample of 200 college students. They found several significant relations between the Strong Interest Inventory’s (SII 1994) 6 broad General Occupational Themes (GOTs –RIASEC) and 25 specific Basic Interest Scales BISs and Three Higher Order Factors of MPQ & its 11 primary scales. The results of the bivariate correlational analysis showed that the Realistic GOT was associated strongly with the higher order personality factor Constraint followed by the Investigative GOT with higher order factor Positive Emotionality. No other personality factor correlated meaningfully with any other GOTs and the higher order factor Negative Emotionality was minimally related to the GOTs. In case of the relationship between GOTs and eleven primary scales, it was found that Realistic GOT strongly correlated with Harm Avoidance and moderately with Achievement. Artistic GOT meaningfully correlated with Absorption. Investigative GOT correlated with Achievement and negatively correlated with Harm Avoidance. The Social GOT correlated significantly with MPQ primary scales Social Closeness, Well-being, and Traditionalism. Enterprising GOT correlated with Social Potency and Social Closeness. Significant relationships between BISs and MPQ higher order factors were observed. The higher order factor of Positive Emotionality correlated with Agricultural, Athletics, Organizational Management, and Public Speaking. Higher order factor of Constraint correlated significantly with Mechanical Activities BIS. The results of the hierarchical regression analysis revealed several personality predictors of vocational interests Absorption predicted interest in Art and Music/Drama and also Writing and Applied arts BISs. Social Potency successfully predicted interest in Public Speaking and Sales. Harm Avoidance predicted interest in Mechanical Activities and Science and to a modest extent Athletics. Achievement predicted interest in Science and Mathematics.
Social Closeness did not predict any interest substantially. Traditionalism predicted interest in Religious Activities. Stress Reaction primary scale is consumed under the broader dimension of Negative Emotionality and it has been found to be minimally related to vocational interests but surprisingly Stress Reaction predicted interest in Athletics.

Gasser, Larson & Borgen (2004) used a different model of personality beyond the Big Five and interest as predictors of educational aspirations of 188 students (women 109 and men 79). The age range of the sample was 18 to 50 with mean age 20.07 (SD = 2.42). According to Gasser et al. theirs is the first study investigating personality-interest convergence by examining the revised California Personality Inventory (CPI) with the 1994 Strong Interest Inventory. The CPI measures personality traits in terms of everyday language rather than abstract or professional jargon. There are 20 scales in CPI which are called as Falk Scales as it represents the day-to-day terminology. For women, the largest relationship was the positive and moderate correlation between Investigative interest and Insightfulness followed by Artistic interest with Empathy. Realistic interest negatively correlated with Socialization and Sensitivity traits. Social interest had small positive relation with Dominance and Self-acceptance. Enterprising Interest had a small negative relation with Self-control. Conventional interest correlated moderately and negatively with interpersonal scales: Sociability, Social presence, independence, and Empathy. For men, the largest relationship was the negative and moderate correlation between Realistic interest and sensitivity trait. Investigative interest had a small relationship with Insightfulness trait. Artistic interest had a small relationship with Sensitivity. Social interests had minimal relations with the CPI scales. Further, Enterprising had small to moderate negative relations with four personality scales: Socialization, Self-
control, Good Impression, and Vector I – introversion-extraversion. Conventional interest had small negative relations with some of the more interpersonal scales: Social presence, self-acceptance, and Independence. Finally, it was found that when interests and personality combined, they predicted educational aspirations. Specific personality traits and interests were related to college student’s plan for future scholarly work. Students who aspired to graduate degrees tend to be higher on personality dimensions of Insightfulness, tolerance, and conceptual fluency and had higher interests on the SII scales for learning environment, and Investigative GOT.

A study relevant to the topic of the present thesis is done by Momberg, Christine (2005) on a sample of 770 (males 557 & females 213) individuals in age range of 15 to 60 with mean age of 31.21 years. This study used 16 Personality Factor Questionnaire-form SA92 (South African Version) to measure personality traits and a local Interest Questionnaire (INQ) to measure vocational interests. The results indicated following significant correlations: (1) Outdoor interest was correlated with personality traits of G- (expedient), Q1- (traditional) and Q2 (self-reliant). (2) Mechanical interest was correlated with personality traits of A- (reserved) and I- (utilitarian). (3) Computational interest was correlated significantly with personality factors of G+ (rule-conscious), I- (utilitarian), Q1+ (open to change), Q3+ (perfectionist), and Q4- (relaxed). (4) Scientific interest area correlated significantly with A- (reserved), I- (sensitive), and Q1+ (open to change). (5) Persuasive interest area was found to be correlated significantly with A+ (warmth), E+ (dominance), F+ (lively) and H+ (socially bold). (6) Creative interest field was correlated with G+ (expedient), Q2+ (self-reliant), and Q4+ (tense). (7) Interest in Social Sciences was correlated significantly with personality traits of A+ (warmth), and I+ (sensitive). (8) Clerical interest was correlated with personality traits of A+ (warmth), M- (practical),
and $Q_1+$ (open to change). (9) Literary interest area correlated with personality factor of $I+$ (sensitive). (10) Medical interest area did not correlated significantly with any of the personality traits. The personality factors $B$ (reasoning), $C$ (emotional stability), $L$ (vigilance), and $O$ (apprehension) did not correlated significantly with any of the interest areas. Further the results indicated that the variables of gender and race had influence on the relationship between personality traits and vocational interests.

Mount et al (2005) studied the higher-order dimensions of the Big Five personality traits in relation to the Big Six vocational interest types. Mount et al.’s study could be viewed as an update to the meta-analytical findings reported by Barrick et al. (2003) and Larson et al. (2002). Both these studies yielded similar results. For example, the five highest correlations obtained were between interest types and personality: Investigative-Openness, Artistic-Openness, Social-Extraversion, Enterprising-Extraversion, and Conventional-Conscientiousness. In Mount et al.’s study some moderate correlations were observed between personality attributes and interest attributes as follows: Extraversion-Enterprising, Openness to Experience-Artistic, Extraversion-Social, and Openness to Experience-Investigative. In general, the strength of the correlations was low indicating modest overlap between personality traits and interests.

Subramanian S. (2005) investigated the vocational preferences of the adolescents in relation to gender, urban-rural background and vocational personality types of their teachers. The sample was comprised of 1320 XIth grade boys and girls and 554 male & female teachers. Teacher’s vocational personality patterns were identified in terms of Holland’s three letter code. The vocational preference Inventory (PSG VPI, Balakrishnan, 1979) was used for data collection. The findings showed that the factor of gender had an influence on the vocational preferences of
adolescents. Rural-urban background had affected vocational preferences of adolescents. The findings also revealed that the teacher’s vocational personality had some diffuse influence on the vocational personality of the adolescent. In short, this study found that the variables of sex, rural-urban background and teacher’s vocational personality did influence the vocational preferences of the adolescents.

Logue, C.T; Lounsbury, J.W., Gupta, A. and Leong, F.T.L. (2007) examined the relationship among Holland’s Vocational Interests, Big Five and narrow personality traits and satisfaction with college major of business students (N = 164). Contrary to their hypothesis Enterprising interest theme was unrelated to major satisfaction. Investigative, Artistic, and Realistic interests were negatively related to major satisfaction. In case of personality traits Conscientiousness, emotional stability, Optimism, Extraversion and Assertiveness were positively related to major satisfaction. The combination of personality traits and vocational interest themes successfully predicted the satisfaction in college major (business) explaining 49% of variance in major satisfaction and the predictors were: Optimism, Realistic interest, Assertiveness, Conventional interest and Artistic interests. In a longitudinal study examining the variables of career interests, self-efficacy and personality as predictors of career exploration behaviour after 18 months Nauta, M.M. (2007) found that none of the predictors was associated with environmental exploration. After controlling for gender and year in school five interest types, one self-efficacy type and one personality dimensions were significantly associated with subsequent self-exploration. Realistic Artistic, and Conventional interests, Artistic self-efficacy, and Openness were positively associated with self-exploration. Investigative and Enterprising interests and Extraversion trait were negatively associated with such exploration.
Staggs, Larson and Borgen (2007) used meta-analysis to revise Ackerman & Heggestad’s (1997) identification of four trait complexes that propose personality and interest linkages. For this meta-analytical study they considered five databases that have used Strong Interest Inventory (SII) for measuring vocational interests and Multidimensional Personality Questionnaire (MPQ) for measuring personality dimensions. The personality-interest correlations ranged from |.20| to |.49|. The results indicated that within Science/Math trait complex the personality dimension of Harm Avoidance was negatively associated with Realistic and Science interests and Achievement aspect of personality was positively linked with Investigative, Math and Science interests. Within the Intellectual/Cultural trait complex the personality factor of Absorption was related to general and specific Artistic interests. Within the Social trait complex Social interests were related positively to Well-being personality dimension and negatively to Aggression aspect of personality. Enterprising interests were positively related to the personality dimension of Social Potency. Thus Social and Enterprising interests were differentiated within Social trait complex. The variable of sex did not have substantial effect on personality-interests correlations.

Personality traits in combination with vocational interests have been found to predict satisfaction with business as a major subject in college (Logue et al. 2007) and additionally, self-efficacy as predictors of career exploration behaviour (Nauta, 2007). Duffy et al. (2009) also examined the combined effect of personality and vocational interests on work values of 282 medical students using SII, NEO-PI-R and Physicians Values in Practice Scale. The results showed significant relationship between various vocational interests and personality traits. The important correlations were: Openness to Experience with Artistic interest (.59), Agreeableness with Social interest (.44), Extroversion with Social and Enterprising interests. Weak correlations were observed
between vocational interests and work values Investigative interest correlated positively with Scholarly pursuits and Social interest negatively correlated with Prestige. Similarly personality traits weakly correlated with work values with only one pair being negatively significant: Agreeableness with Prestige (-.23). Further the results of the hierarchical regression analysis revealed that personality and vocational interests in combination predict five work values out of six. The personality traits of Agreeableness and Extraversion with Social and Investigative interests predicted physician value of Prestige successfully. Extraversion and Agreeableness predicted Management value in medical students. Investigative and Conventional interest predicted Scholarly pursuits. Service and Lifestyle values were very weakly predicted by the combination of personality and interests.

The relationship between vocational choice / occupational preferences and personality traits of 735 last year high school students was examined by Garcia-Sedeno et al. (2009). This study is partially relevant to the topic of this thesis as they used 16PF to measure personality traits and professional interests or vocational interests were assessed by the Kuder-C Questionnaire. They first performed hierarchical cluster analysis on the data and identified two groups: scientific/technological careers and humanities/social sciences. Then the personality profiles were examined in relation to each of these groups. The results indicated substantial personality – interest relations. Extraversion correlated negatively with Mechanical and Arithmetical interests, and Extraversion positively correlated with Persuasive interest area. The Tough-mindedness trait negatively correlated with the Artistic interests. The Independence trait correlated negatively with Persuasive and Welfare interests.
A longitudinal study (Hirschi, 2010) examined development of Things/People (T/P) and Data/Ideas (D/I) vocational interests and career goals in relation to Big Five personality traits among 292 Swiss adolescents with a cross-lagged panel design with two measurement points over one year from seventh to eighth grade. Findings indicated that interests and goals were significantly related within time and showed significant interactions across time. Personality traits related significantly and equally to interests and goals within time and predicted their development across time except for T/P goals. Wicherts & Vorst (2010) also used a longitudinal design to study the differences in interests, personality and cognitive abilities between students majoring in the six specialties of psychology at the University of Amsterdam. Results showed that students choosing Social Psychology and Work & Organizational Psychology were on average more Extraverted than students of other specializations. Secondly, students of Psychological Methods and Psychonomics were relatively more Open to Experience. Clinical Psychology Students were on average more Neurotic. Differences in cognitive abilities were small, but significant, with students of research oriented specialties / courses scoring highest among all. With discriminant analysis on the basis of nine interest scales, 53% of the students were correctly categorized in the specialization chosen two or three years after interests were measured. Interest profiles of the specialties follow differences in interests in helping people, abstract vs. concrete topics and technical issues.

The research findings stated above indicate that personality and vocational interests are substantially related to each other. However, the relationship is quite complex. The overlap between personality traits and vocational interests is limited and vocational interest measures are not the substitute for the personality measures. Other thing to be noted here is that many of the studies described above have used
Holland’s Big Six model as vocational interests and Big Five as personality model. Very few studies used alternative personality models to investigate relation with vocational interests but the need for the same has been stressed by some authors. The present study is explorative in nature as no previous study was found in the literature in India context which used 16 PF as a measure of personality traits and Vocational Interest Record (VIR) and Career Preference Record (CPR) as measures of vocational interests. Only one study (Saxena, 1987) used 16PF to measure personality traits but vocational interests were measured using an Interest Inventory by Raghubraj Pal Singh which included interest areas different from VIR or CPR. The above stated research also indicates that most of the studies were carried out on the samples of college students and some of the studies were carried out on adult samples and few used adolescents. It is beneficial to carry out studies on different kinds of samples to clarify the relationship between personality and vocational interests. Hence this study used a sample of engineering college students. No study reported above used engineering college students.

2.2 CORRELATES OF CAREER MATURITY:

The other pair of variables included in this study is personality and career maturity. Following paragraphs present a review of some of the previous research investigating different correlates of career maturity with personality as one of the important variable related with career maturity.

Gupta, N. (1991) studied some socio-psychological variables in relation to career maturity of high school students from 8th, 10th, and 12th grades (N = 869, boys 438 & girls 431). This study was the first systematic attempt carried out in an Indian context to explore the psycho-social correlates of career maturity including
personality. The variables examined other than personality traits were Grade, Sex, Socio-economic status (SES), Intelligence (INT), Level of Vocational Aspiration (LVA), Participation in school activities (PISA), Participation in out of school activities (PIOSA). The personality traits of the students were measured using Indian adaptation (Kapoor & Mehrotra, 1967) of Cattell’s (1963) Jr. – Sr. High School Personality Questionnaire (HSPQ). It is a downward extension of the well known 16PF questionnaire and it measures fourteen distinct personality traits of normal individuals. The career maturity was assessed using an Indian adaptation (by Gupta herself) of Crites’s Career Maturity Inventory which measures Career Choice Attitudes (CCA) and five career choice competencies namely Self Appraisal (SA), Occupational Information (OI), Goal Setting (GS), Planning (PL), and Problem Solving (PS). The results of this study showed complex relations between personality and career maturity at three grades and between the sexes. Here only results obtained for 12th grade students would be discussed as they were relevant to some extent to the topic of this thesis. The factor A (sociability/warmth) correlated significantly with SA and OI for boys. For girls, none of the correlations were significant. Factor C (ego strength) was found to be correlated significantly with PL and for girls no significant relationship was observed with any of the CM variables. Factor D (excitability), for boys did not show any significant relationship with any CM variable but for girls it was negatively correlated with PL. Factor E (dominance) was associated negatively with SA, OI and PS for boys and no significant correlation was observed for girls. Next factor F (surgency) correlated significantly with SA and OI for boys and with CCA for girls. Factor G (super-ego strength) correlated significantly with GS in case of girls but for boys no relationship turned out to be significant. Next factor H (adventurousness) correlated substantially with CCA and SA for boys and for girls, it
was related to CCA and PL aspects of competency test. In case of factor I (sensitivity) no significant relationship was observed with any CM variable for boys and girls. It seems, this trait was not related to CM. Factor J (passive individualism) was not related to CM. Factor O (guilt-proneness) also showed no significant relationship with CM. The next factor Q₂ (self-sufficiency) correlated positively with CCA and negatively with SA and GS for girls only. Factor Q₃ (self control), for boys, positively correlated with SA, OI and PS and for girls it correlated negatively with SA. The last factor Q₄ (ergic tension) correlated negatively with Career choice attitudes for both boys and girls and this factor did not show any significant relation with competencies of CM (Gupta, 1991).

Further the results of step-wise multiple regression analysis revealed some important predictors of career maturity variables. For boys the significant predictors of Career Choice Attitude were SES, personality trait of I (sensitivity) & H (adventurousness) and intelligence. For girls, the best set of predictors was Level of vocational aspiration, intelligence, personality traits of H (adventurousness) & Q₂ (self-sufficiency) and SES (Gupta, 1991).

The significant predictors in case of boys for Self-appraisal competency were personality factors of A (sociability), Q₃ (self-control) and intelligence. For girls, the significant predictors were personality traits of Q₃ (self-control) and Q₂ (Self-sufficiency). For boys the important predictors identified for Occupational Information component were intelligence and two personality traits Q₃ (self-control) and F (surgency). For girls only LVA correlated significantly with OI. For the Goal Selection competency intelligence emerged as the single significant predictor for boys and with intelligence the personality factors of G (super-ego strength) and Q₂ (self-sufficiency) emerged as the significant predictors for girls. The next competency
component Planning was significantly predicted by intelligence and the personality trait C (ego-strength) for boys. For girls, with intelligence, personality trait of H (adventurousness) predicted PL competency significantly. In case of the criterion variable of Problem Solving the personality trait of Q and Intelligence emerged as the significant predictor for boys and no significant predictor was identified for girls (Gupta, 1991).

Beckman (1994) found individual with internal locus of control were more career mature in decisiveness and orientation aspect of CM for a sample of 83 welfare recipients who were eligible for job opportunities and Basic skills (JOBS) programme. Luzzo (1994) also found LOC as a substantial predictor of career decision making attitudes of college students but Self-efficacy theory was superior to LOC in predicting the CDM attitude.

Kimchick, M. (1997) studied the relationship between career maturity and locus of control (LOC) in a sample of college students. Researcher found that higher career maturity scores were more congruent with lower external score. In other words college students with an internal LOC exhibited higher levels of career maturity than those with an external LOC. The more internal the participant’s LOC, the more mature their career decision-making attitudes and the greater their career decision skills. Internal LOC facilitates college’s students’ cognitive and affective career development. The individuals with an internal LOC are more likely than those with an external LOC to take an active role in career planning and assume responsibility for career choices.

Naidoo A. V. (1998) reviewed the research on the Career Maturity [CM] construct and suggested that the emerging themes regarding the correlates of career maturity could be grouped as follows: 1) Age and Grade level differences, 2) Race,
ethnic and cultural differences, 3) Locus of Control [LOC] and Socio-economic status [SES] differences, 4) Sex or Gender differences, and 5) Work salience.

According to Naidoo age as one of the important correlates of career maturity has received a lot of attention but several researchers have found that CM could be better differentiated by educational level than age (Crites, 1974; Hall, 1963; Guthrie & Herman, 1982; etc. cited in Naidoo, 1998). This may have happened as the influence of the educational system and the fact that students need to make some grade related career decisions. Strong positive relationship has been established between high school grade levels and CM (e.g. Herr & Enderlein, 1976). These findings support the developmental nature of the career maturity construct. Similar results were obtained in cross-cultural setting (e.g. Nigeria (Achebe, 1975; India, 1987). Even in college students it was found that freshman and seniors differ significantly from graduate students in CM. Naidoo (1993) in one of his own study found monotonic increase in attitudinal career maturity for the African-American college students from freshman to senior levels.

Research findings related to sex differences in CM are far from united and could fall into three categories: i) high school females scoring higher than males, ii) males being attitudinally more mature, and iii) no sex differences in CM. Many Studies (Morganoff, 1978; Nealy & Johnson, 1981 & etc) indicate females to be more mature vocationally than males as reported by Naidoo (1998). Herr and Enderlein (1976) have found similar results cross-sectionally at various grade levels and Crites (1976, in Naidoo) observed these kinds of results longitudinally from 8th through 12th grades. Females were found to be more mature than males in respect of the cognitive aspects of career maturity.
Many studies reported opposite findings suggesting males to be more mature in cognitive as well as attitudinal components of CM (e.g. Achebe, 1975; Gupta, 1987). There are studies indicating no sex differences in attitudinal career maturity or indicating sex and cognitive CM to be unrelated. In college students also males and females were found to have similar levels of career maturity at freshman, senior and graduate levels respectively (MaCaffrey et al, 1984, in Naidoo, 1998). Naidoo reported one study by King (1989) in which sex differences were examined in a causal model of CM that can explain some of the above stated contradictory findings. King examined age, sex, parental aspirations, family cohesion, cultural participation and LOC as independent variable affecting career maturity. Findings indicated similar causal patterns for adolescent boys and girls with significant sex differences also. Age for boys and sense of family cohesion and LOC for girls were the main determinants of career maturity. Though the conclusions of this study indicated more similarities than differences for the two sexes, the overall results support the belief that development of CM differs for males and females.

While discussing the relationship between SES and CM Naidoo reports that Super considered father’s SES as starting point in one’s life and one’s educational development is affected by one’s psycho-social characteristics and by the resources provided by one’s family environment. On the contrary Super himself pointed out that there are studies which failed to find significant relationship between SES and CM. SES was found to be insignificant determinants of vocational maturity (Crites, 1978; Jordaan & Heyde, 1979, cited in Naidoo, 1998). Ansell (1970) found differences in CM between middle and lower class youths in grade ten through twelve but not in grade eight and nine. Naidoo found no significant relationship between SES and CM and surprisingly found lowest SES group scoring higher on CM than any of the SES
group. In contrast, some research findings confirm a strong positive link between SES factors and career development. Ansell and Hansen (1971 as reported by Naidoo, 1998) concluded that economic background and differences as manifested in the schools attended, played a greater role in the development of CM than racial background. He also reports the vital influence of SES on female career development as recognized by Rice (1981); McLaughlin, Hunt & Montgomery (1978); and King (1989) also found a stronger effect of SES on the CM of girls than boys. There is no uniformity in the findings regarding the relationship between SES and CM, but evidence indicates SES may have an indirect effect.

Research findings have indicated both indirect and direct relationship between locus of control [LOC] and a wide spectrum of career related variables. Gardner (1981) logically hypothesized a relationship between CM and LOC by stating that “it seems clear that the person who is more career mature would axiomatically more internal on locus of control” (Naidoo 1998). As reported by Naidoo (1998) researchers have found a significant relationship between LOC and following variables that are integral to career development and career maturity: Career decision, career commitment, career aspiration, work ethics and leisure, career exploration and occupational information – seeking behaviour. The factor of sex and sex differences in career maturity has also been found to be significantly associated with LOC. Cross-cultural investigation of LOC has yielded a support for the relationship between CM and LOC for Puerto Rican women, Canadian adolescent women from rural schools, Fijian adolescents, South African high school students and Nigerian college students. Evidence also indicates that LOC mediates the influence of sex and SES on career maturity (Naidoo, 1998).
The findings of the researches investigating racial and cultural differences in career maturity are quite complex and should be interpreted cautiously because of the confounding of race, class, ethnic and economic variables. After reviewing literature on these issues Naidoo (1998) has concluded with Greenhouse and Parasuraman’s (1989) view stressing a need for theory building, and empirical research on the career development of diverse cultural groups and Super’s (1990) view which stated the need for a study of the applicability of career maturity theory to African-American and other minority groups.

According to Naidoo (1998) the concept of work role salience which was first introduced by Masih (1967), has emerged as a major construct in career development theory (Kanungo, 1982). Greenhouse (1971, cited in Naidoo 1998) defined work salience as the perceived importance of work in occupational choice and satisfaction, refers specifically to commitment to the work role relative to other roles (student, parent, leisurite, home maker, and citizen) in the individual’s life. Work role salience has been investigated as an independent variable affecting a lot of career related variables including career maturity. Work role salience has been found to be significantly related to career exploration, career maturity, career indecision, value satisfaction, occupational congruency, value satisfaction and work values. In respect of the sex differences, initial research showed men to have greater emphasis on the work role (Masih 1967). Later studies found female students outperform males in career values, general altitude towards work, work exploration and commitment to work. Mixed results were observed for adolescent. SES and sex as correlates of work-role salience has produced contradictory results. For example Super found that career commitment is not highly correlated with SES in adolescence in general, whereas, Krau, found SES as an important determinant of Israeli and Arabian adolescents’
involvement with work values, significant cultural difference were also observed for work commitment, work participation, and value expectations of work (Naidoo, 1998).

Patton & Lokan (2001) has also reviewed research and reported age and level of education, gender, socio-economic status, vocational identity, career decision, career indecision and work role salience as major correlates of career maturity which have received considerable attention. They point out the fact that studies of CM construct lack systematic approach and that they have been carried out on small and convenient samples and emphasize construct’s further clarification. The last decade of the twentieth century saw resurgence of research into career maturity construct because of the changing nature of the world of work and the progression of human societies into an era of information and communication technology. The recognition of the cultural relevance and differences in career development also added to the renewed vigour into the research on CM (Patton & Lokan 2001). Patton & Lokan (2001) has discussed the research on CM in relation to age, gender, SES, course of study, culture, role salience, self-directedness, career indecision and paid work experience.

Theoretically it could be assumed that CM scores would increase with age or grade levels, but the empirical findings are far from united. For example, early studies (Thompson & Lindeman, 1981) reported significant differences in altitudes between grades 9 and 11, and between 9 and 10 and 9 and 12. Other studies done on school students also indicate higher graders scoring higher on CM than lower graders (e.g. Niece & Bradley, 197; post-Krammer, 1987; Serafica & Osipow, 1994; cited in Patton & Lokan, 2001). Similar finding were observed for college students. Longitudinal study also supports the notion that CM attitudes and knowledge
increases with grade levels (Levy, 1987). Contrasting observations were made in US in which ninth graders did not score lower than twelfth graders (Fouad, 1988) and Powell and Luzzo (1998) reported no relationship between age of high school students and their levels of CM (Patton & Lokan. 2001).

Patton & Lokan (2001) report similar trends regarding the impact of gender on CM as those reported by Naidoo (1998). Majority of the studies has found females having higher scores on CM measures than males (e.g. Herr & Enderlein, 1976, Rojewski, Wicklein & Schell, 1995 etc.). Some studies indicate females scoring higher on some subscales only and some studies reported males to be more mature than females (e.g. Gupta, India) other studies have reported no significant sex differences in CM.

Patton and Lokan (2001) have reported a positive link between courses of study and CM. They report a study in which Tilden (1978) has found that college students in professional programs scored significantly higher on both altitudinal and cognitive dimensions of career maturity than students from more general social science and humanities courses. In US ninth and tenth grate students in vocational/technical courses scored higher on the attitude scales than students in general and college-preparatory programs (Thompson & Lindeman, 1981). Similar observation was made by Lokan & Biggs (1982) for 11th grade Australian students intending to leave school that year to inter the workforce (cited in Patton & Lokan 2001).

According to Patton & Lokan’s (2001) review personality-variables like self-concept, self-efficacy, attributional tendencies and achievement motivation have been studied in relation to CM. The tendency to attribute success to one’s efforts has been
found to be associated with higher levels of CM. Studies indicated a strong positive relationship between interval locus of control and CM.

A positive relationship between career decidedness and CM has been established in undergraduate students. Studies have shown that students who were more mature were also more career decided (Brusoki & et al. 1993; Hartman & et al. 1983; Rogers & Westbrook, 1983). Rojewski found career indecision to be the single most important predictor of career immature young people (Patton & Lokan, 2001).

One of the most important variables discussed by Patton & Lokan (2001) in their review in relation to career maturity is paid work experience. They have reported a longitudinal study by Niles and Herr (1989) which investigated the effect of the amount of part-time work in high school students on career maturity and career certainty for grades 9 to 12. The findings were unexpected as those students who did a large amount of part-time work did not have higher levels of career maturity than those who did no part-time work during high school. A possible explanation of this result suggested by Niles & Herr indicated that the work experiences would not have been related to the students’ career aspirations. Findings supporting these results were also reported. College students who were employed in occupations congruent with their career interests were found to believe more strongly that they had personal control on their career decision making process. Luzzo, Mcwhirter, and Hutcheson’s (1997, cited in Patton & Lokan, 2001) findings imply that student will benefit from part-time employment if the job area is congruent with their career aspirations.

Optimistic or pessimistic orientation towards life is an important aspect of personality. The association of these factors with career related variables was examined by Creed, Patton & Bartrum (2002) on 504 Australian high school students. The Optimism-pessimism was measured with the Life Orientation Test - Revised
(LOR-R; Scheier, Carver, & Bridges, 1994) and career maturity was assessed with Career Development Inventory-Australia (CDI-A; Lokan, 1984) which includes four subscales: Career Planning (CP), Career Exploration (CE), World of Work information (WW) and Career Decision Making (DM) and the two composite scales are Career Development Attitude (CDA; CP & CE combined) and Career Development Knowledge (CDK; WW & DM combined). With this career decision making was assessed with the Career Decision Scale (CDS; Osipow, 1987) and a scale was used to measure the level of career-related goal setting (CGS; Mu, 1998).

For career maturity, the results indicated small to moderate significant associations between the LOT-R total and all the CDI-A variables (CDA, CDK, CP, CE, WW, and DM). The LOT-R Optimism and LOT-R Pessimism were related to career maturity aspects in a different fashion. Career Development Attitude was moderately positively correlated with LOT-R Optimism indicating higher levels of optimism being associated with more career planning and exploration, while there was no association between LOT-R Pessimism and Career Development Attitude. LOT-R Optimism did not correlated significantly with Career Development Knowledge, while LOT-R Pessimism was moderately negatively correlated with CDK. This meant that higher levels of pessimism were related to lower levels of knowledge about the world of work and decision making strategies. This pattern of relationships was also observed for CP, CE, WW and DM subscales of CDI-A. Other career related factors such as career decision-making certainty had a small positive correlation with LOT-R Total score. LOT-R Optimism was associated with career decision-making certainty but Pessimism was not. There was a moderate negative correlation between LOT-R Total and career indecision masking a moderate positive correlation with LOT-R Pessimism and no significant correlation with LOT-R Optimism. Similarly, LOT-R Total
correlated positively significantly with career goal-setting masking a moderate positive correlation with LOT-R Optimism and no significant correlation with LOT-R Pessimism. In short, the results indicated that those with high levels of optimism showed high levels of career planning and exploration, were decided about their career decisions and had more career-related goals. High level of Pessimism was related to low levels of career and decision-making knowledge and career indecision.

Savickas et al. (2002) investigated the relationship between Super’s model of career maturity and Gough’s three-dimensional model of personality on a sample of 200 college students using Super’s Career Development Inventory and Gough’s California Personality Inventory. Results showed that planful competence in career development was related to greater realization of one’s potential and a higher degree of social adjustment. Further the results indicated that more mature attitudes towards career planning and exploration were related to an adjustment style characterized by extroversion in interpersonal relationships and by a positive orientation to social norms.

One comprehensive study closely related to the topic of this thesis was done by Coertse & Schepers (2004). They examined personality and cognitive correlates of career maturity in a large sample (N = 1476) of first year students from different faculties at a South-African university. To determine the personality and other correlates of career maturity they divided the sample into three subgroups: career immature, middle group and career mature. Results of the MANOVA revealed significant differences among above groups in respect of following personality traits from 16PF Questionnaire: A (reserved - outgoing), B (intelligence), C (emotional Stability), E (humble - assertive), G (expedient - conscientious), H (shy - venturesome), M (practical - imaginative), N (forthright - astute), O (self-assured -
apprehensive), \( Q_3 \) (undisciplined self conflict - controlled) and \( Q_4 \) (relaxed - tense). Further the career mature students differed significantly from career immature students indicating career mature students to be more outgoing, had high levels of intelligence, were emotionally stable, had high levels of assertiveness, and were generally more conscientious and venturesome. Furthermore the results indicated that career mature students were practical rather than imaginative, astute, self-assured and generally more controlled and relaxed. Whenever statistically significant differences were recorded using Tukey’s HSD, effect sizes (d) were calculated and this analysis revealed practically significant differences between the means of career mature students and career immature students in respect of Personality trait C (affected by feeling vs. emotional stability, O (self–assured vs. apprehensive), G (expedient vs. conscientious), H (shy vs. venturesome), N (forthright vs. astute) and \( Q_4 \) (relaxed vs. tense). This study also reported that career mature students had a better level of adjustment than career immature students in terms of personal, home, social, and formal relations. It was found that career mature students were more self-confident, had higher levels of self-esteem, and were more self-controlled. Career mature students were generally less nervous, experience generally good health, had a high regard for family influences and enjoy personal freedom. Further results indicated that career mature students had a good moral sense, had well established formal relations and were less inclined to act in a socially desirable way. Practically significant differences were also recorded for locus of control variable between career mature and career immature students indicating higher level of Internal LOC and Autonomy in career mature group and higher level of External LOC in career immature group. Overall this study showed substantial associations between personality traits, adjustment variables and career maturity.
The variables of locus of control with dependence proneness and sex have been found to be related to career maturity in an Indian adolescent sample as observed by Hasan & Dewangan (2005). The results indicated that the main effects of LOC were significant for almost all the parts of career maturity. It was found that adolescents with internal LOC were superior in career maturity than the adolescents with external LOC. Those with internal LOC had better self-appraisal, had more occupational information, they had enough competency in goal selection, and were better at planning and problem solving aspects of career maturity. The variable of dependence proneness showed inverse relation with career maturity. Those adolescents with high dependence proneness scored lower on career maturity inventory. The main effect of sex was also significant for all the career maturity aspects. The interaction effects of all the three variables were non-significant with some exceptions indicating independence of these three factors for career maturity.

Career maturity was also found to be associated with intelligence, self-esteem and academic achievement in Sachdeva’s (2005) study carried out on a sample of 400 (200 boys & 200 girls) higher secondary students (11th & 12th Grade) of government, private and public schools from arts, commerce, science and vocational streams. Intelligence was positively and strongly related to career maturity attitude and all the aspects of competency scale. The two aspects of self-esteem namely ‘personally-perceived self’ and ‘socially-perceived self” exhibited strong positive relationship with attitudinal CM as well as five CM competencies: self-appraisal, occupational information, goal selection, planning and problem solving. Academic achievement correlated significantly with all components of CM. The findings for the subgroups in the sample were similar to the findings obtained for the entire sample.
Lounsbury et al. (2005) investigated the Big Five personality traits in relation to career decidedness among adolescents in middle and high school. The sample comprised of 248 7th grade, 321 10th grade and 282 12th grade students. The personality traits were assessed by the Adolescent Personal Style Inventory (APSI) (Lounsbury, Gibson, et al. (2003); Lounsbury, Sundstrom, et al., 2003 & Lounsbury, Tatum, et al. 2003) which measures the big five traits of Openness, Conscientiousness, Extroversion, Agreeableness, and Emotional Stability. The career decidedness was measured by The Decidedness Scale developed by Lounsbury et al. The results did not show an increase in career decidedness with increase in grade level. For the 7th grade career decidedness was significantly positively related to agreeableness, conscientiousness and openness. For 10th grade career decidedness was significantly related only to conscientiousness. For the 12th grade career decidedness was positively related to agreeableness, conscientiousness, emotional stability and openness. No significant differences were observed for the correlation coefficients across grades. For 7th grade males agreeableness was positively and significantly related to career decidedness but not for the females. For females openness was positively and significantly related to career decidedness but not for the males. In the 10th grade sample for females conscientiousness was positively and significantly related to career decidedness but non-significant for males. For the 12th grade females, emotional stability was positively and significantly to career decidedness but not for males. However, no significant differences were observed in correlation coefficients between male and females. According to Lounsbury et al. there were more significant correlations between personality traits and career decidedness at the 12th grade than at 7th or 10th grade which indicate towards more personality maturation at 12th grade.
with more association between personality and other variables, outcomes and criteria including career decidedness.

Hasan, B. (2006) empirically examined the effect of self concept, occupational aspiration and gender on career maturity variables in an Indian context on a 480 10th grade students with equal number of male and females. It was found that adolescents with higher self-concept scored higher on attitudinal CM and five competencies: self-appraisal, occupational information, goal selection, planning and problem solving. Occupational aspiration also had a significant effect on CM. Students with real occupational aspiration has shown higher levels of CM than students with idealistic occupational aspiration. Males displayed greater career maturity than females. Three way interactions were found to be significant for all the career maturity variables indicating significant combined effect of self-concept, occupational aspiration and gender on career maturity.

One’s self concept and locus of control (LOC) are important aspects of personality in relation to one’s life in general and career behaviour also. Self-concept and LOC also affect career maturity as depicted in some of the studies stated above. Kaur, S (2010) studied career maturity in relation to self-concept, locus of control and sex of 582 (boys 316 & girls 266) students of 11th grade studying in arts (187 boys + 169 girls = 356), commerce (75 boys + 60 girls = 135) and science (54 boys + 37 girls = 91) streams from government senior secondary schools of Delhi. The self-concept was measured with Self-concept Questionnaire by Saraswat, R.K. (1984), the career maturity was measured by the Indian Adaption of Crites’ Career Maturity Inventory (Gupta, N, (1989) and LOC was measured with Nowicki-Strickland Locus of Control Scale (1973) which was adapted by the researcher herself. The results of the correlational analysis indicated significant relationship between self-concept and
career maturity. Self-concept correlated significantly and positively correlated with attitudinal CM for the total sample and girls but not for the boys. Self-concept was also significantly related to Total of competencies of CM for the total sample as well as for boys and girls. The self concept dimensions of Physical, social, temperamental, intellectual and total self concept were significantly correlated with attitudinal CM but remaining two aspects namely educational self-concept and moral self-concept did not correlate significantly with attitudinal CM for total sample. For girls all the self-concept dimensions correlated significantly with attitudinal CM but for boys no self-concept dimension was related to attitudinal CM.

For total sample all the self-concept dimensions were significantly associated with all the components of competency scale namely self-appraisal, occupational information, goal selection, planning and problem solving except educational self-concept which did not correlate significantly with self-appraisal competency. In case of boys, all the self-concept dimensions correlated significantly with all the components of competency except for self-appraisal and occupational information. Self-appraisal did not correlate significantly with temperamental self-concept, educational self-concept, and intellectual self-concept and occupational information was unrelated to social self-concept. For girls all the self-concept dimensions were associated positively and significantly with all the competencies of CM except for educational self-concept which showed non-significant correlation with occupational information. Internal LOC was significantly related to attitudinal CM and all Competency aspects of CM for total sample and for boys and girls also. No significant differences were recorded for attitudinal CM and Occupational information competency between boys and girls. But for four CM competencies
namely self-appraisal, goal selection, planning and problem solving girls showed more career maturity than boys.

Further the results of the multiple regression analysis revealed that the dimensions of self-concept namely Physical, Social, Temperamental, Educational, Moral and Intellectual did not predict Attitudinal CM significantly for total sample and for boys and girls. Self-concept successfully predicted career maturity competencies for total sample as well as for boys and girls. The significant self-concept predictors identified for Self-appraisal competency for total sample were Educational, Social, and Intellectual self-concepts and for boys and girls Social and Educational self-concepts were significant predictors. The Occupational Information component of competency CM was predicted significantly for total sample and for girls by Educational and Social self-concept dimensions but not for boys. The Goal Selection competency was significantly predicted by Physical self-concept for total sample and for boys by Social self-concept but no self-concept dimension predicted goal selection competency for girls. The competency for Planning was significantly predicted by Physical self-concept for total sample and for boys but no self-concept dimension predicted Planning for girls. The significant predictors for Problem Solving competency for total sample were Moral and Physical self-concepts, for boys Physical self-concept and for girls Moral and Temperamental self-concepts. The total competency CM was successfully predicted by Physical, Social, Educational and Moral self-concepts for the whole sample and for boys by Social and Physical self-concepts and for girls by Social, Educational and Moral self-concepts.

Locus of Control (LOC) emerged as a significant predictor of attitudinal CM and five competencies of CM namely Self-appraisal, Occupational information, Goal selection, Planning and Problem solving for whole sample and for boys but not for the
girls. LOC also predicted significantly the total of competencies for whole sample and for boys but not for the girls.

It is quite clear from the above stated findings from previous research that personality variables are indeed associated with the career maturity variables but the relationship is not straightforward but it is complex and needs to be investigated further. Career maturity seems to be influenced by a lot of psycho-social factors. The above stated research was in majority of cases carried out on secondary and higher school students, particularly the Indian studies discussed above have used eighth to twelfth grade students as participants. The relationship between personality and career maturity needs to be explored in other samples also. Hence this study was carried out on the students from engineering college.