



REVIEW OF RELATED LITERATURE ON GENDER DIFFERENCES IN SIS CORRELATES OF CREATIVITY

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Abstract: Review of related literature is based on the material available in the University Library and in no way be considered exhaustive. The review is brief and presented chronologically in the following section. Carter (1985) in a study examined relationships between sex-role orientation and cognitive flexibility in 100 male and 100 female undergraduates. Specifically differences in cognitive flexibility between persons with different sex role orientations and the contributions of masculinity and femininity to the differences observed were examined. Subjects completed the Ben Sex-role Inventory and the Alternate Uses Test-Form A (AUT) a measure of cognitive flexibility. Androgynous subjects were expected to exhibit greater cognitive flexibility than traditionally typed subjects findings show that men scored significantly higher on the AUT Than Women. Androgynous subjects as predicted were cognitive flexibility flexible than were feminine or under differentiated subjects but no differences emerged between androgynous and masculine subjects Journal abstract. Arora (1986) conducted a study on college students studying in different streams of professional courses completed personality tests. Findings indicate that personality adjustment was inversely correlated with self-concept and creative potential but was positively correlated with level of aspiration creative potential was immensely correlated with self-concept.

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Introduction:

Mohan (1987) administered the Eysenck Personality Questionnaire and an alleviation scale to 100 creative writers (aged 23–83 years). Subjects appeared to be introverted high on neuroticism and psychoticism and more elevated and they also higher Lie Scale scores.

Lennon (1988) in a study investigated individual differences in cognitive complexity (CC) investigative ness in fashion (IF) and Fashion-Opinion Leadership (FOL) using questionnaire data from 50 undergraduate women. Each subject level of CC was measured by the paragraph completion method. In accordance with predictions, an immerse relationship was found between FO and CC. Fashion opinion leaders functioned at lower level of CC than non-leaders. Partial correlation analysis indicated a small positive relationship between CC and IF with FOL removed. A moderate correlation was found between FOL and IF replicating previous research.

Goff (1991) discusses the component creative activities (imaging, relaxation visualization sociodrama, and play) and how they sit together in the relationship between mental activity and physical well-being. Through play, people are free to explore

alternatives that can give them insights into their personal temperaments, emotional reactions, and unconscious motivations. Perhaps the most valuable aspect of imaginative play is that it fosters creativity. As a person grows psychologically and copes with his/her changing environment and self, creativity is called into play. Creative activities offer people the opportunities to communicate with each other and themselves. Valuing and developing one's creativity raises one's level of wellness. Wellness involves the physical and mental health of an individual, positive future images and true communication with oneself and others.

Knasko (1992) conducted a study in which 2 sessions held 1 week part 90 subjects (aged 18-35 years) completed a performance task involving creativity 4 personality test and Questionnaires concerning their mood, perceived health and perceptions of the testing environment. In one session the testing room was scented with lemon ladender or dirmetry, sulfide (OSM) in other session it was unscented.

There were 15 women and 15 men in each Odor condition. Fewer health symptoms were reported in the lemon condition on scented compared to

unscented days. Subjects in the DSM group were in a less pleasant mood than those in the lavender group on both the scented and unscented days the order in which subjects were exposed to DSM played a role in the mood findings. Differences in creativity performance were not significant but relationships emerged between personality traits and the effect to Odor on task performance. Eysenck (1993) conducted a study on 62 students scores on the Barron-Welsh Art Scale. A portion of the Welsh Figure Performance Test a measure of creativity was correlated with scores on the Eysenck Personality Questionnaire. As predicted, psychoticism correlated positively with Art Scale Scores while extraversion and neuroticism did not.

Review of Literature:

Dinca (1994) studied the role of personality traits as mediators of the expression of creativity. 54 adolescents (aged 14-18 years) completed the California Personality Inventory (CPI) and Torrance Test of Creative Thinking. Subjects categorized as creative v/s non-creative showed high CPI scores in traits related to interpersonal behaviour such sociability and flexibility.

Gryskiewicz (1995) in a study examined the relationship between Myers-Briggs Type Indicator (MBTI) Preferences and the creativity styles as measured by the Kirton Adoption Inventory (KAI) among 51 managers who attended a University professional development programme. Subjects with SIJ preferences outnumbered all other types. Correlations were found between P and N Preferences and the KAI Innovator type and between J Preference and the KAI Adaptor Type. Results supported Carne and Kirton's previous findings that N & P preferences are associated with an innovative problem-solving style. MBTI and KAI types are discussed in terms of their work attitudes.

Dockal (1996) in a study discusses creativity which unlike that of intelligence measured by classic tests can to a large extent be enhanced by the environment. Hence it can be said that creative abilities are not dependent on heredity. The author used the model of genetic limits (Dockal, 1996) to show that the trainability of creativity can be interpreted in another way as well. The author suggested that the mechanism of the environment and heredity interaction appears to be the same in the development of both the kinds of abilities. The observed data document only a different approach of contemporary civilization toward them: While the reproductive abilities are maximally supported by education in developing creativity there is great room for accidental influencing as well as influences of stimulating programs.

Gelade Garry (A (1997) administered the Revised NEO Personality Inventory - Revised (NEO-

PI - R) to 58 advertising and design creative and to a comparable group of 70 professionals and managers in occupations that were not evidently creative. The creative were substantially more neurotic and more open to experience than the non-creative somewhat more extroverted and less conscientious. Personality profiles suggesting low levels of ego control were more prevalent in the creative group but the difference was not significant. These findings are discussed in light of O-Rank's (1945) theory of creative development and the context of commercial activity. It is suggested that advertising and design creative can be characterized as individuals in the intermediate stage of Rankin Creative development.

Bindeman (1998) in a study discusses creativity through the medium of a phenomenological informed process orientation, which excludes both the idea that creativity has as its end and the idea that the personal traits of the artist somehow completely determine this product. The reciprocal nature of interdisciplinary is explored by incorporating the different perspectives and concerns of creator and audience literary and visual artist philosopher and psychologist.

Eisenman (1999) in a study examined creativity among prisoners. In a sample of 40 (16-24 years old) incarcerated felons in a state prison for youthful offenders a minority of the prisoners was nominated by raters (staff) as creative. These prisoners also were often chosen as creative in both the area of song and dance based on independent ratings of their Video taped performances. However, they did not score as creative based on results of Thematic Apperception Test stories. It is suggested that prisoners are most likely to show creativity in areas that demand little or no structure. This is seen as consistent with their dislike of any socially imposed rules and their choice of crime as a career. Implications for work with creative and non-creative people are presented.

Gragory Richard (2000) conducted a study in which the research Inkblot Test has traditionally been used for psychological assessment and diagnosing mental illness. Answers are typically classified according to whether the subject sees a fixed form movement or color. The author suggests that "reversing" the Rorschach from assessing kinds of people to kinds of patterns might show what stimulates creativity. This leads to the experimental question which kinds of patterns evoke the richest variety of perceptions and ideas? Gragory proposes that this reversed Rorschach should reveal the creative mature of the mind for generating perceptions and conceptions for art and perhaps also science. The author votes that although their clinical validity may be dubious inkblots might evoke creativity controlled ways.

Wiethrichviviana (2001) in a study examined the relationship between schizotypy and three putative explanatory markers of vulnerability to psychosis latent inhibition (LI) creativity and priming in 5417-49 years old. The five factor model dimensions and Eysenck's Psychoticism Scale were also examined. Measurement of auditory LI and schizotypy showed that LI was an inverted U function of schizotypy score. Only average levels of schizotypy were associated with undiminished LI while both low and high-Schizotypal Personality Questionnaire (SPQ) subjects showed reduced LT. No relationship was found between LI and either psychoticism. These results complement the similar complex relationship of narcoleptic drug dose effects on LI in normals and schizophrenia. A primary task and the unusual uses and pattern meanings measures of creativity were related to personality measures of schizotypy priming effects tracked the inverted-U function of SPQ scale scores shown in the LI task. It is suggested that LI is dependent on a non-linear interaction with making task load and attentional allocation modulated by schizotypy.

Hittner (2002) is a study examined the association of gender role orientation to creative accomplishments and cognitive styles. 127 college students (aged 18-35 years) completed the artistic and scientific activeness survey (Guastello, 1991) the Personal Attributes Questionnaire (Spence et al., 1974) and the Ben-Sex Role Inventory (Ben, 1974). Three different role orientations were examined: instrumentality expressiveness and androgynous. Results indicate that instrumentality was positively associated with creative accomplishments in the business venture domain and that androgynous v/s non-androgynous individuals were more creative productive in the domains of literature greater and video photography-Instrumentality was also positively associated with the 6 hats cognitive style which IS a measure of cognitive flexibility and the 6 hats style was marginally significantly associated with androgyny possible explanations for their findings are discussed and recommendations for research are considered.

Alencar (2003) conducted a study focused on personal obstacles to creativity between 385 Brazilian and 305 Mexican University students. The obstacles to personal creativity inventory designed and validated by Alencar (1999b) were administered to these students. The results indicated that lack of time/opportunity was the most frequent obstacle significant differences were observed between Brazilian and Mexican students in the cluster of obstacles named lack of motivation and between male and female students in the cluster of obstacles named inhibition/shyness. The results point to several obstacles to personal creativity which are common among University students. These obstacles should be shown by those individuals in education in

order for them to help students to be Vess susceptible to obstacle that hinders their creativity.

Barrantes (2004) conducted a study in which both scientific evidence and folklore have suggested that madness is associated with creativity, especially in the arts. Recently more rigorous studies have conformed to some extent these previous observations. The current view is that it is not severe and acute insanity that is related to heightened creativity, but the personality roots and soft man infestations of both schizophrenic and bipolar psychoses. The affective and cognitive peculiarities associated with schizotypic and hippomanic personalities may be preferentially related to different kinds of creative endeavours such as the science and arts, respectively. The connection between personality traits and creativity is produced because they share some biological cognitive personality features such as cognitive disinhibition. Additionally it has been shown that the genetic liability for both bipolar and schizophrenic psychoses is related to creativity. A prevailing hypothesis is that creativity may be one type of compensatory advantages for those carrying the genes for psychosis.

Dollinger (2005) in a study Amabile's Consensual Assessment Technique is commonly used in research on creativity products. This study evaluates a modification of that technique which may facilitate research on creative products by calibrating non-expert judges to expert judges in previous studies. University students (N = 200, 59% women M = 22.3 yrs of age, SO = 5.5) devised drawing to the test of creative thinking - Drawing production stimulus. These drawing products were rated by fine artist judges who first viewed 16 examples of the range of drawings in a previous study referred to here as the modified loaded on a single principle component and the mean ratings correlated. 91 finally the correlations of these ratings with other measures of creativity were merely identical. Thus a slight modification of the technique may be useful in programmatic research when the creativity task is not modified across studies and participants are like the present some sample rather than from groups with specialized training or artistic talent.

Schuldberg (2006) conducted a study in Pearson correlations scores on scales of the 1975 version of the Eysenck Personality Questionnaire with measures of Schizotypy hypomania and creative traits are reported for 625 undergraduates. The psychoticism scores are correlated .30 with hippomanic traits, .25 with perceptual Aberration and .20 with the how Do You Think a test of attitudes and activities related to creativity. Extraversion is also related to creativities relevant scores. Results support a broad and non-specific role for the psychoticism scale in relation to both creativity and sub clinical symptomatology.

Gender differences in the distribution of ability scores have become a research topic of interest since Ellis's pioneering thesis on the greater male variability hypothesis, which posits that men show greater interindividual variability than women do in regard to a wide range of physical and psychological attributes (Ellis, 1894/1934), including intellectual abilities (Hedges and Nowell, 1995; Johnson et al., 2008). By highlighting wider variances for men than women in score distributions, this hypothesis is insightful in terms of understanding why men may outnumber women among the highest and the lowest scoring individuals in samples that show trivial gender differences in mean scores (Hyde, 2014; Reilly et al., 2019).

More recently, research on greater male variability in creativity has also attracted the attention of an increasing number of researchers in the field, who have been puzzled by intriguing findings that showed both gender differences and similarities in creativity (He and Wong, 2011; Kapoor, 2019). Noting the paradoxical patterns of gender differences (especially greater male variability) that tended to emerge in the variability of creativity scores, whereas trivial gender differences (or gender similarities) were often observed in mean comparisons, researchers argued that an understanding of the gender-creativity link could not be complete, due to the lack of variability analyses (see He, 2018). Joining this line of research, the present study aimed to investigate whether men show greater variability than women do in the score distributions of two important constructs of creativity; namely, divergent thinking and creative problem solving.

The greater male variability hypothesis (Ellis, 1894/1934), postulating greater male variance in scores or distributions of abilities, provides an important perspective with which to enrich the discourse regarding gender differences, as an alternative to the common understanding of the issue based solely on mean comparisons (Feingold, 1992). In contrast to mean comparisons that concern gender differences in average performance or the central score tendency, the greater male variability hypothesis emphasizes gender differences in (1) the overall distribution and (2) the upper and lower extremes of the distribution, which respectively indicate superior and inferior performance (Hyde, 2014). Because gender differences in variability (despite similar mean scores) imply that the more variable gender will have a higher representation in the higher and/or lower extremes when compared with the less variable gender (Lehre et al., 2008), this line of research may have important educational and political implications, especially for the fields of gifted and special education, in which gender differences in the upper and lower extremes of trait distributions appear to be more critical than those in mean performance (He and Wong, 2014; Reilly et al., 2019).

In terms of operationalization, the greater male variability hypothesis is usually tested with two indexes in the literature. The first index is the male/female variance ratio (VR) of the overall score distribution, which is derived by dividing the male variance by the female variance with respect to a given characteristic. A VR greater than 1.0 indicates greater male variability, whereas a VR smaller than 1.0 suggests greater female variability. Furthermore, a VR that equals 1.0 represents equal variabilities in both genders (see Feingold, 1992; Hedges and Nowell, 1995). Using this operationalization, many empirical findings have shown that VRs greater than 1.0 were found in general intelligence (Deary et al., 2003; Johnson et al., 2008), as well as in specific cognitive abilities (He and Wong, 2014). For instance, Feingold (1992) found VRs greater than 1.0 in mechanical reasoning (VR = 1.28), mathematics (VR = 1.20–1.24), and spatial processing (VR = 1.21). Hedges and Nowell (1995) demonstrated VRs = 1.00–1.25 in a wide range of aptitude and achievement tests. He and Wong (2014) also observed that VRs = 1.15–1.62 in gifted characteristics, such as imaginal and intellectual overexcitability (i.e., heightened sensitivity and intensity in imaginal and intellectual ability).

The second index is the gender composition (or the male/female ratios) in particular regions of the score distribution for a given psychological characteristic. Greater male variability is represented by an excess of men (e.g., a male/female ratio greater than 1.0) at the high (indicating superior performance) and low (indicating inferior performance) extremes of the score distribution (Deary et al., 2003). For example, researchers reported greater representation of men at both the upper and lower extremes of the IQ score distribution (e.g., Deary et al., 2003; Johnson et al., 2008). Similarly, He and Wong (2014) documented greater male representation at both the upper and lower extremes of the score distribution for intellectual overexcitability (boy/girl ratios = 2.44–2.57) and imaginal overexcitability (boy/girl ratios = 2.07–7.50). Focusing on the upper extreme, Hedges and Nowell (1995) documented that men are more represented in the top 1 to 5% in multiple measures of intellectual ability. Hyde et al. (2008) reported boy/girl ratios of 1.45 and 2.06 in the top 5 and 1%, respectively, of the mathematical score distribution.

Research Into Greater Male Variability in Creativity
He and Wong (2011) pioneered research into greater male variability in creativity, which is commonly conceptualized as the capability of producing ideas or solutions to problems that are evaluated to be novel and useful (Sternberg and Lubart, 1999). Specifically, they investigated gender differences in creativity by analyzing both means and variability, and found

interesting gendered patterns. Based on mean comparisons, they found trivial gender differences in the overall performance of a creative task, as indicated by the total score of the Test for Creative Thinking–Drawing Production (TCT–DP, Urban and Jellen, 1995/2010). However, based on variability analyses, they found empirical support for the greater male variability hypothesis by showing significant gender differences in the overall distribution of the TCT–DP score ($VR = 1.62$), as well as greater male representation in the upper and lower extremes of the score distribution, in which a boy/girl ratio of 3.40 was found in the upper region. Furthermore, among the low-scoring individuals in the lower region, all of the individuals were boys.

Subsequently, numerous empirical studies have also shown greater male variance in the overall distribution of the creativity scores, as measured by the TCT–DP (e.g., $VR = 1.30$, He et al., 2013; $VR = 1.85–1.88$ [except for young children], He et al., 2015; $VR = 1.17$, Ju et al., 2015; $VR = 1.82$, Karwowski et al., 2016a; $VR = 1.21–1.89$, Karwowski et al., 2016b). A review of these studies also suggests that a greater representation of men with a male/female ratio greater than 1.0 might be observed at both or either of the high and low extreme of score distribution. Additionally, greater male variability might occur, regardless of the presence or absence of gender differences in mean scores, implying that the results of variability analyses can be related to or independent of those generated from mean analyses. Hence, researchers have advocated that both variability and mean analyses are necessary in the study of gender differences in creativity, with the aim of generating a more complete picture of the issue from different perspectives (He and Wong, 2011; Karwowski et al., 2016a; He, 2018).

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