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The Relationship Between Cognitive Flexibility and Social Intelligence among Youth

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Abstract: The current study investigated possible gender variations in these dimensions and looked at the relationship between young adults' social intelligence and cognitive flexibility. While social intelligence is the capacity to comprehend, interpret, and effectively manage social interactions, cognitive flexibility is the ability to change viewpoints and modify thinking in response to shifting circumstances. The study involved 220 young adults between the ages of 18 and 25 (104 males and 116 females). Data were gathered using the Tromsø Social Intelligence Scale (Indian version) and the Cognitive Flexibility Scale. According to reliability analyses, cognitive flexibility had high internal consistency (α =.904), whereas social intelligence had medium reliability (α =.720). According to descriptive statistics, distributions were roughly normal. Cognitive flexibility and social IQ have a statistically significant moderately positive link (r(218) =.484, p <.001), according to Pearson's correlation analysis. While there was a slight but statistically significant gender difference in social intelligence, independent samples t-tests revealed no significant gender difference in cognitive flexibility. The results imply that interpersonal competence in emerging adulthood is significantly correlated with adaptive cognitive processes. The study emphasizes the developmental significance of adaptive thinking in young people and advances our understanding of the relationship between cognitive and social performance.

Keywords: *Cognitive Flexibility, Social Intelligence, youth, Gender Differences, Adaptive Cognition, Young Adults*

1. Introduction

Youth is a time of rapid change in the cognitive, social, and affective dimensions of human development. More modern developmental science acknowledges this time as a structurally sensitive window where vulnerabilities may worsen and adaptive talents are cemented, rather than just a transitional phase. In this situation, the key to effective adjustment is the capacity to maneuver through intricate social situations and control our own thoughts and actions in reaction to transforming demands. The current study examines the intersection of cognitive and interpersonal competencies during youth by placing itself within this developmental framework.

Youth is a unique and complex developmental window that includes pre adulthood (approximately ages 15–18) and youth (about ages 18–25), all of which are transitional stages with specific social, digital, and psychological repercussions. Growing independence, shifting social roles, identity development, and mental health concerns are all things that people deal with during these phases; these processes have an impact on adaptive functioning as an adult. Importantly, this developmental stage is marked by rapid societal change in addition to the continuous evolution of the executive and sociocognitive systems. As interpersonal reasoning, perspective-taking, and cognitive control skills develop, youth is a critical period for researching how social intelligence and cognitive flexibility work in progressively complex contexts.

Increased investigation of identity, independence, and interpersonal connections is a hallmark of late adolescence and the transition to adulthood. Extended education, delayed family formation, and diverse social networks are characteristics of the emerging adulthood theory, which holds that people experience self- discovery, volatility, inner directedness, and a sentience "in-between" childhood and grown-up roles between the late teens and mid-20s. Being independent in emerging adulthood involves more than merely separating from one's parents. It's a race to establish oneself figuring out what matters most, your job, your friendships and also navigation of romantic relationships. Though confusing at times, this period feels open and full of possibilities. People have to adjust to new situations such as moving away for studies or job, relocating between friends and family, taking up various duties and roles required to be a functioning adult, changing responsibilities and expectations. Being aware of social signs and thinking creatively are essential for success in this situation. It measures a person's ability to adjust not only to new situations but also to shifting obligations and relationships.

In late adolescence and the transition to adulthood, peer interactions become more significant and have a significant impact on identity, behavior, and views. Peer support, which acts as a stress reliever and facilitates the transition into adult roles, is a reliable indicator of positive adjustment (Veenstra & Laninga-Wijnen, 2023). While peers do act as a positive force in the life of adolescents in this stage, often times peer pressure affects behaviors of adolescents such as pressuring the individual into substance use, engaging in risky behaviours and making them do any act against their will. Evidence suggest that strong peer relationships are associated with improved psychological adjustment and life satisfaction, and they have long-lasting impacts on wellbeing well into adulthood. Accurately interpreting social cues, strategically modifying reactions, and controlling behavior in a variety of relational circumstances are all necessary for navigating these peer dynamics.

Another aspect that affects how youth interacts with their peers in Digital socializing and it has altered how young people develop their social identities. Teenagers and young adults are increasingly using online platforms for identity exploration, peer interaction, and social support. This digital environment has both potential and threats. Online communication can foster peer connection and emotional support, which can avoid loneliness and enhance wellness, especially during periods of isolation like the COVID-19 pandemic (Chase et al., 2022). However, digital surroundings can raise peer judgment and societal pressures. Anxiety, depressive symptoms, and mood dysregulation are more common in adolescents who use social media problematically, particularly if their use is passive or compulsive.

Youth is a unique period of growth prominent by intense switch in communal, sentimental, and intellectual abilities. The concept of late childhood to emerging maturity is widely accepted. During this time, people evolve from dependency to greater independence, explore their identities, and interact with changing social connections in progressively complex contexts (Blakemore & Mills, 2016). Rapid demands in relationships, education, and technology also accompany this shift. To prevent maladaptive effects like social stress or disengagement, youth must adjust to new peer groups, a high volume of online social contacts, and increasing academic responsibilities. In each of these situations, social skills and flexibility are essential (Zheng et al., 2024).

According to the OECD (2024), cognitive flexibility (CF) is a fundamental executive skill that allows people to adapt their mental models, thought processes, and strategies to changing demands on their time and environment. Goal-directed behavior, efficient problem-solving, and

adaptive adjustment all depend on the capacity to modify one's beliefs and actions in response to new information, changing priorities, or unanticipated issues (OECD, 2024). CF facilitates flexible behavior adaption toward goals and allows people to quickly switch between concepts or ways of thinking when environmental demands alter.

Social intelligence (SI) is a collection of cognitive-emotional skills that allow people to effectively perceive, comprehend, and reply to social information, hence fostering constructive interpersonal relationships. In contemporary psychology, social intelligence is not seen as a single quality but rather as a complex concept that encompasses social awareness, empathy, interpersonal skills, and the capacity to resolve social issues. These abilities are particularly crucial during youth, a developmental stage marked by expanding social networks, heightened peer influence, and increasing exposure to complex offline and digital social contexts.

The notion that cognitive flexibility, which is defined as the ability to modify an individual's thinking in response to evolving facts, improves fundamental aspects of social intelligence, such as perspective taking, conflict resolution, and social cue interpretation, is supported by a strong theoretical framework. Empirical findings consistently point out that stronger cognitive flexibility is often linked with higher social reasoning, enhanced perspective taking, and improved understanding of social cues, which are the core components of social intelligence.

2. Review of Literature

Badarneh et al. (2024) used a PRISMA-guided review of 133 articles to elucidate the relationships between executive functions (EFs) and social cognition in children with standard development. The cognitive and affective aspects of social cognition, especially theory of mind, were found to be consistently correlated with core EFs. However, the need for more developmental research is highlighted by the paucity of longitudinal and intervention studies as well as the conflicting findings about causal direction.

Santander (2024) investigated how socioemotional skills and cognitive flexibility affect the regulation of psychopathological symptoms in adolescence. The objective of this research is to assess cognitive flexibility as a measure of internal cognitive systems and ascertain its correlation with psychological adjustment and socioemotional competence. The EEFCO and ECSE scores were used in the study to assess the socioemotional and cognitive flexibility of 425

teenagers between the ages of 13 and 18. The findings revealed a strong positive connection (rho =.41) between socioemotional competence and cognitive flexibility, suggesting that greater flexibility is associated with better psychological adjustment and less psychopathological tendencies. According to the results, cognitive flexibility and socioemotional abilities work together to play a crucial role in adolescent adaptability. They may also serve as a compensating mechanism in socio-affective learning environments.

Williams et al. (2023) sought to examine the relationships among 100 adolescents, ages 11 to 15, between executive functions, social cognition, and attachment state of mind. The results showed that enhanced executive control and cognitive shifting were associated with improvements in social comprehension and mentalization. Lower levels of social knowledge were linked to a rejecting attachment state of mind. The study comes to the conclusion that social-cognitive development in adolescence is influenced by both neurocognitive maturation and attachment experiences.

3. Methodology

3.1 *Aim*

This present study aims to examine the relationship amid social intelligence and cognitive flexibility in young adults (18–25 years old) and determine whether cognitive flexibility is a major indicator of social intelligence.

3.2 *Objectives*

to assess younger people's cognitive flexibility using a standardized scale.

- Using a standardized Indian version of the scale, young adults' social intelligence will be evaluated.
- In order to assess the degree and direction of the relation between social intelligence and cognitive flexibility.
- To find out if young adults' social intelligence is strongly predicted by cognitive flexibility alone.
- To investigate the disparities in social intelligence and cognitive flexibility between genders.

3.3 *Hypotheses*

Alternative Hypotheses (H_1)

H1: A notable positive link between cognitive flexibility and social intelligence will be observed among youth.

H2: There will be a marked gender dissimilarity in cognitive flexibility and social intelligence among youth.

Null Hypothesis (H_0)

H0: There will be no noteworthy relationship between cognitive flexibility and social intelligence, and no marked gender dissimilarity in these variables among youth.

3.4 *Study Design*

The study employed a cross-sectional correlational research design.

3.5 *Sampling*

Target Population

The target population approached for this study comprised of young adults between the ages of 18–25 years in India.

Demographic Details

Age: 18–25 years

Gender: Male and Female

Inclusion Criteria

Participants chosen for the study aged between 18 and 25 years and those who provided informed consent for the study.

Exclusion Criteria

Participants below 18 or above 25 years of age were not selected for the study, and incomplete or partially filled questionnaires were removed.

Sample Size

The study comprised of 220 undergraduate students, 104 of whom were male and 116 of whom were female.

Sampling Method

Convenience sampling combined with aspects of snowball sampling was used in this investigation. Peer networks and educational institutions served as offline recruitment channels for participants.

3.6 *Tools Used*

Cognitive Flexibility Scale: There are 22 items on Dennis and Vander Wal's (2010) Cognitive Flexibility Scale. The scale assesses a person's ability to enhance cognitive processing techniques in response to novel and unforeseen environmental circumstances. A seven-point Likert-type scale is used to record responses. Greater cognitive flexibility is indicated by higher total scores.

Tromso Social Intelligence Scale (Indian Version): The Tromso Social Intelligence Scale, originally created by Silvera et al., was adapted into an Indian version by Shilpa Jain and Bhavna Bajaj. The Indian version comprises of 10 items measuring various aspects of social intelligence. Items are rated on a 5 point Likert scale format, with 3 items that are reverse scored. Higher scores reflect greater social intelligence.

3.7 *Data Collection Procedure*

Data was gathered offline by giving undergraduate students paper questionnaires. Consent was acquired in writing. Questionnaires that were filled out were utilized for scholarly research.

3.8 *Statistical Analysis*

Statistics software called Jamovi was used to evaluate the data. The analyses that follow were carried out:

- Descriptive statistics: Kurtosis, Skewness, Mean, and Standard Deviation
- Analysis of reliability (Cronbach's alpha)
- Pearson product-moment correlation
- Gender-based comparison using the independent samples t-test

4. Results

Reliability Analysis

Before conducting inferential statistical analysis, it was essential to examine the internal consistency of the instruments used in this study. Reliability analysis determines how well scale items consistently measure the same underlying construct. For the Tromsø Social Intelligence Scale (Indian version) and the Cognitive Flexibility Scale, Cronbach's alpha coefficients were calculated in order to evaluate internal consistency. A substantial amount of internal consistency was demonstrated by the Cognitive Flexibility Scale ($\alpha = .904$). With item–rest correlations ranging from .278 to .719, the majority of items made good contributions to the overall construct

and were positively correlated with the scale score. The Tromsø Social Intelligence Scale (Indian version) had an acceptable internal consistency (α = .720) and sufficient coherence among the questions measuring social intelligence in the current sample.

Table 1. *Showing reliability for scales used*

Scale	Cronbach's α	Interpretation
Cognitive Flexibility Scale (22 items)	0.904	Excellent
Tromsø Social Intelligence Scale (10 items)	0.720	Acceptable

Descriptive Statistics

Descriptive statistics were computed for Cognitive Flexibility, Social Intelligence, and Age. The results are presented in Table 2.

The participants' Cognitive Flexibility scores ranged from 42 to 153, with a mean score of M = 110.00 (SD = 16.80). The distribution displayed modest positive kurtosis (0.97) and slight negative skewness (−0.67), suggesting that it was roughly normal.

Social intelligence scores ranged from 9 to 39, with a mean of M = 25.30 (SD = 5.80). A normal distribution is suggested by the distribution's low skewness (-0.15) and slight negative kurtosis (-0.40).Participants ranged in age from 18 to 25 years old, with a mean age of M = 21.00 years (SD = 1.66).Given the sample size (N = 220), the assumption of normality was deemed satisfied for parametric analyses.

Table 2. *Descriptives*

	CF_TOTAL	SI_TOTAL	Age
N	220	220	220
Missing	0	0	0
Mean	110	25.3	21.0
Standard deviation	16.8	5.80	1.66
Minimum	42.0	9.00	18
Maximum	153	39.0	25
Skewness	-0.670	-0.154	0.0255
Std. error skewness	0.164	0.164	0.164
Kurtosis	0.973	-0.401	-0.326
Std. error kurtosis	0.327	0.327	0.327

Shapiro-Wilk W	0.970	0.990	0.953
Shapiro-Wilk p	<.001	0.116	<.001

Correlation Analysis

The association between young people' social intelligence and cognitive flexibility was found using a Pearson product-moment correlation analysis. Table 3 displays the findings.

The results showed that social intelligence and cognitive flexibility had a somewhat favorable, statistically significant connection ($r(218) = .484$, $p < .001$). This suggests that social intelligence is correlated with higher degrees of cognitive flexibility.

Table 3. *Correlation Analysis*

		CF_TOTAL	SI_TOTAL
CF_TOTAL	Pearson's r	—	
	df	—	
	p-value	—	
SI_TOTAL	Pearson's r	0.484***	—
	df	218	—
	p-value	<.001	—

Note. * p < .05, ** p < .01, *** p < .001

Independent Samples t-test

An independent samples t-test was employed to evaluate gender differences in social intelligence and cognitive flexibility.

The study found no significant gender difference in cognitive flexibility ($t(218) = -0.34$, $p = .734$), with scores for males ($M = 110.00$, $SD = 15.90$) and females ($M = 109.00$, $SD = 17.60$) being nearly identical. The tiny effect size (Cohen's d = -0.05) indicates that gender had no appreciable effect on cognitive flexibility in the current sample.

Table 4. *Gender difference for Cognitive Flexibility*

		Statistic	df	p		Effect Size
CF_TOTAL	Student's t	-0.341	218	0.734	Cohen's d	-0.0460

Note. H_a $\mu_{female} \neq \mu_{male}$

Assumptions Check

Table 4.1 *Homogeneity of Variances Test (Levene's)*

	F	df	df2	p
CF_TOTAL	1.70	1	218	0.193

Note. A low p-value suggests a violation of the assumption of equal variances

Table 4.2 *Group Descriptives*

	Group	N	Mean	Median	SD	SE
CF_TOTAL	female	117	109	111	17.6	1.63
	male	103	110	111	15.9	1.57

On the other hand, social intelligence showed a statistically significant gender difference (t (218) = −1.98, p = .049), with males (M = 26.10, SD = 5.51) scoring marginally higher than girls (M = 24.50, SD = 5.97). Even though the difference is statistically significant, its practical magnitude is limited, as indicated by the tiny effect size (Cohen's d = -0.27).

Table 5. *Gender difference for Social Intelligence*

		Statistic	df	p		Effect Size
SI_TOTAL	**Student's t**	-1.98	218	0.049	Cohen's d	-0.267

Note. H_a $\mu_{female} \neq \mu_{male}$

Assumptions

Table 5.1 Homogeneity of Variances Test (Levene's)

	F	df	df2	p
SI_TOTAL	0.00230	1	218	0.962

Note. A low p-value suggests a violation of the assumption of equal variances

Table 5.2 *Group Descriptives*

	Group	N	Mean	Median	SD	SE
SI_TOTAL	**female**	117	24.5	24.0	5.97	0.552
	male	103	26.1	26.0	5.51	0.543

5. Discussion

The goal of the presented study was to investigate whether there are gender variations in the conceptions of social intelligence and cognitive flexibility among young adults. Significant theoretical and developmental ramifications result from the findings.

The study's most significant discovery was the somewhat favorable correlation between social intelligence and cognitive flexibility. This implies that those who think more creatively also typically perform in social situations more successfully.

This relationship makes theoretical sense conceptually. Cognitive flexibility is the ability to change viewpoints, reinterpret circumstances, and come up with different answers. Accurate social cue interpretation, adaptable behavior modification, and successful interpersonal problem-solving are all necessary components of social intelligence. The capacity to alter reactions in changing circumstances is a fundamental adaptive core shared by both constructs.

Young adulthood is defined by complicated interpersonal responsibilities, changing social positions, and growing autonomy, especially between the ages of 18 and 25. Better navigating social interactions, scholastic obstacles, and growing adult responsibilities may be made easier with the capacity for flexible thinking. The developmental significance of adaptive cognition for social competence at this stage may therefore be reflected in the observed correlation.

Crucially, the association was moderate rather than substantial, suggesting that social intelligence and cognitive flexibility are still separate concepts even though they are related. This implies that social intelligence may also be influenced by other elements, such as personality traits, emotional control, or environmental circumstances.

The lack of gender differences in cognitive flexibility raises the possibility that in early adulthood, males and females may use adaptive cognitive processes in similar ways. This result is consistent with recent views that, when developmental stage and educational exposure are equal, there are few differences between the sexes in higher-order cognitive abilities.

In contrast, there was a minor but statistically significant gender difference in social intelligence, with men scoring marginally higher in this sample. The effect magnitude was minor, though, suggesting that its practical significance was restricted. This implies that although gender might play a role in social intelligence disparities, it is not likely to be the main factor.

Contextual experiences, communication techniques, cultural expectations, and socialization patterns all have an impact on social intelligence. Therefore, rather than reflecting

innate gender-based differences, the slight gender difference may be the result of contextual or sample-specific effects.

The gender hypothesis was only partially validated overall, suggesting that demographic factors can have a more complex impact than first thought.

The results provide credence to the theoretical idea that social competence is influenced by cognitive flexibility. From a cognitive-developmental standpoint, flexible thinking improves adaptive communication, conflict resolution, and perspective-taking—skills necessary for socially intelligent behavior. The notion that the social and cognitive domains are related but functionally separate systems is supported by the moderate association.

According to the results, social intelligence may be indirectly strengthened by therapies meant to improve cognitive flexibility, such as problem-solving training, perspective-shifting activities, or adaptive thinking techniques. Training in cognitive adaptation may be incorporated into youth development initiatives and educational institutions to promote socioemotional functioning. Given the slight gender disparities that have been noted, interventions should concentrate on individual-level development rather than gender-specific ones.

6. Conclusion

In summary, this study investigated the complex relationship between young people' social intelligence and cognitive flexibility, seeking to ascertain if gender affects their development as well as the ways in which these two characteristics interact. The results showed a clear, somewhat strong correlation: people who thought more creatively are more adept at navigating social situations. This result makes sense because the ability to modify one's ideas and viewpoints probably improves one's ability to comprehend social dynamics, recognize social indicators, and react suitably to the constantly shifting needs of interpersonal relationships. The capacity to balance many points of view and adjust to new situations becomes especially important in early adulthood, which is a particularly dynamic time defined by transitions like beginning further education, joining the workforce, and creating new social networks.

The study's finding that gender had no discernible impact on cognitive flexibility is another important finding, indicating that young adults of all sexes share this ability. Men and women scored slightly differently on social intelligence tests, but not enough to indicate that gender is the main factor influencing social intelligence at this time of life. This result suggests that the

fundamental relationship between cognitive flexibility and social intelligence is independent of gender, even though demographic considerations may have a little impact.

Considering the wider consequences this study contributes to our knowledge of early adult psychological development by emphasizing the fundamental function of mental flexibility in promoting social competence. It emphasizes how important it is to take into account both cognitive and social-emotional factors when analyzing the development and success of young adults. The results imply that social skill-enhancing interventions or educational initiatives might benefit from focusing on cognitive flexibility as well, since gains in one area might have a favorable impact on the other. In the end, our research advances a more comprehensive understanding of young adults development, emphasizing how intertwined cognitive processes and social abilities are in shaping successful navigation of complex social environments.

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