

Before. During. After: The Impact of COVID-19 on the Psychometrics of Young Professionals

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This research presents the real psychometric impacts of the pandemic on young professionals. Human resource policies must be appropriately formulated to maintain healthy and productive employees, balancing corporate and individual needs. The changes in personality type, emotional intelligence, and locus of control were measured from before to during COVID and then again from during until after COVID. While the psychometric changes of males were minor during these periods, women experienced numerous changes during COVID-19 but subsided after the pandemic. Men and women exhibit less conscientious behavior, first manifested during the pandemic but persisted after the pandemic. This research sheds insights into the current reluctance of professionals to abandon remote working instituted during the pandemic and management's insistence that workers return to the office.

Keywords: psychometrics, psychometric measure, personality traits, emotional intelligence, locus of control, anxiety, work and social adjustment, COVID-19

INTRODUCTION

While the COVID-19 pandemic forced organizations to close their doors and allow employees to work from home, by 2023 many organizations announced plans to require employees to return to work. A study by ResumeBuilder found by the end of this year 90% of companies will return to the office and 28% will threaten to fire employees if they do not comply with the return to the office standards (Hyken, 2023). Financial firms to technology groups and media organizations require employees to return to the office three to five days a week (Lebowitz, et al., 2023). Citing increasing productivity and revenue, organizations may not fully understand the potential impact on returning or losing employees. Thus, research is needed for organizations to develop appropriate human resource policies to maintain healthy and productive employees, while balancing corporate and individual needs. Thus, this study attempts to understand the psychometric changes, including personality type, emotional intelligence, and locus of control, measured prior, during and after the COVID-19 pandemic of young professionals.

Traditional organizational theory contends that personality traits are relatively invariant as they influence what, how, and why people perform the way they do (McCrae & Costa Jr, 1999; McCrae et al., 2000), leading some academics and practitioners to suggest using psychometrics when making hiring, firing, and promotion decisions. Beyond personnel decisions, the use of psychometrics has been suggested

to create more productive and cooperative behaviors in teams, which are seen as crucial to success in the knowledge economy (e.g., Akmal, 2015; Allen & Woodley, 2016; Shalwani, Line, Delvinne, Saseendras, & Sullivan, 2019). More recently, there is a growing understanding that life experiences develop, and perhaps shape, personality traits: transitioning into a first job (Specht, Egloff, & Schmukle, 2011), becoming unemployed (Boyce, Wood, Daly, & Sedikides, 2015), retirement (Specht et al., 2011), adjusting to a promotion into a leadership position (Li, W.D., Li, S., Feng, J., Wang, M., Zhang, H., Frese, M., & Wu, C.H., 2020), as well as becoming an entrepreneur (Li, W., Feng, J. & Yu, K., 2021).

Proponents of this view express caution about the psychological impact of how such life events take time to manifest themselves (Donnellan et al., 2015; Mitchell & James, 2001). Not everyone responds to a change in the same way; and some, given the choice, may actively avoid novel environments. Thus, personality changes are often not dramatic (Roberts et al., 2008). Fortunately, perhaps, when thrust into a team tasked with achieving a goal within time and budget constraints, there is no choice, creating an opportunity to study these effects. In such an environment, an exploratory study involving 58 online MBA students working in teams found that individuals had a high psychometric score on a particular trait at the start of the class than at the course's conclusion and vice versa. Specifically, there was a statistically significant increase in extraversion and experiential curiosity as well as a statistically significant reduction in altruistic giving back; however, there was a notable decline in the self-awareness domain of emotional intelligence. These results suggest that psychometric traits are flexible and that short-term, intense virtual collaboration compels individuals to modify their psychometrics to establish a balance that is appropriate to the team's needs (Swart, W. & Siguaw, J., 2020). This data was collected during the Summer of 2019 and has been collected until Spring 2022.

A traditional scientific study consists of an a priori statement of the research hypothesis, specification of the methodology and test statistics, and then data collection to prove or disprove the research hypothesis. No one, however, could have predicted that during the Spring of 2020, the world would be engulfed in a global pandemic, leading to the opportunity to understand how COVID impacted worker psychometrics for some time. This is critical information for organizations to plan future responses to natural or manmade disruptions. Some research tells us COVID appears to have had a differential emotional and physical effect on gender and age (Brivio, E., Oliveri, S., Guiddi, P. & Pravettoni, G., 2021) as well as education levels (Qian, Y. & Fuller, S., 2020).

Using the data collected since the Summer of 2019, a pre-during-post pandemic examination of how COVID affects young professionals was conducted. More specifically, the Fall 2019 data is the pre-COVID period, Spring 2020 is the COVID period, and Spring 2022 is the post-COVID period. Spring 2022 is the post-COVID timeframe because it allowed for a sufficient period to return to what might be considered a post-COVID "normal." The subjects of this study were men and women enrolled in the same online course in a master's degree program in Business Administration (and thus possessing at least one undergraduate university degree) so the mode of instruction and course expectations were the same. Most were employed as professionals in a wide range of industries. The data used in this research encompassed Fall 2019, before COVID, when business was conducted as usual, Spring 2020, during the COVID disruption, when most employees who did not lose their jobs were forced to work from home and those who had school age children had to assume responsibility for their schooling, and Spring 2022, post COVID, when the world had returned to a semblance of normality.

Prior to COVID, the course showed psychometric changes between its start and end in students which differed by gender due to the intense virtual teamwork that it required (Swart, W. & Siguaw, J., 2020). In this study, we examine whether COVID exacerbated these changes and whether they persisted after COVID-19. This study makes significant advances by assessing the following research questions:

- What quantitative metrics of psychometrics of young male professionals versus young female professionals changed from pre-COVID to during-COVID?
- Was there a quantitative difference by gender in young professional's psychometrics during COVID?
- What is the permanent impact of COVID on psychometrics for young male professional versus young female professionals?

The pertinent literature is reviewed in the following sections, and hypotheses are proposed. Then the methodology will be presented, describing the student sample which is representative of the young professionals. Finally, the findings will be discussed with the practical implications to inform organizations what type of support could/should be offered to male and/or female employees and inform organizations on the need (or lack thereof) to institute long-term changes due to the COVID disruption.

LITERATURE REVIEW

Personality Traits

Goldberg (1990) offered a personality trait model, continuing the path already tread by Tupes and Christal (1961). Goldberg constructed a personality inventory by proposing the five-factor model of personality: extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience. According to Google Scholar, the “Big Five” concept has been referenced in academic works thousands of times. Lee and Ashton (2004) used Goldberg’s five-factor model as a starting point for the development of the HEXACO Personality Inventory, which was subsequently revised (Ashton & Lee, 2009) and retitled as the HEXACO Personality Inventory-Revised (HEXACO-PI-R). In the past 10 years, it has been widely utilized to assess people’s personalities using the following six factors: honesty-humility, extraversion, conscientiousness, openness to experience, agreeableness, and emotionality (including Bowes, Watts, Thompson, & Lilienfeld, 2019, and Kaufman, Yaden, Hyde, & Tsukayama, 2019, among at least 50 other publications). The traditional assumption in personality research is that personality traits are stable and influence professional work attitudes and conduct (Tasselli, Kilduff, & Landis, 2018). It may be attributed to the dominate, classical dispositional approach on personality (McCrae & Costa Jr, 1999; McCrae et al., 2000) which maintains that personality traits are endogenous dispositions and causality only flows from personality to life experiences (McCrae et al., 2000, p. 173).

According to current studies, there is evidence that personality traits are malleable and can adapt to new life roles (Bleidorn, Hopwood, & Lucas, 2018; Caspi, Roberts, & Shiner, 2005; Donnellan et al., 2015). Tasselli, Kilduff, and Landis (2018, p. 468) define personality transformation as a “change in the individual’s characteristic pattern of thought, emotion, or behavior as well as change to the mechanisms behind these patterns.” In a longitudinal study, Jackson, Thoemmes, Jonkmann, Lüdtke, and Trautwe’s (2012) discovered that individual personality traits are altered by military training. Li, Li, Feng, Wang, Shang, Frese & Wu (2020) found that employees transitioning into leadership roles resulted in increases in conscientiousness. Similarly, while unemployment (Boyce, Wood, Daly, & Sedikides, 2015) and retirement (Specht et al., 2011) were linked to declines in conscientiousness, transitioning to a first job increased conscientiousness (Specht, Egloff, & Schmukle, 2011). When employees transitioned into entrepreneurial roles, however, there was a decrease in agreeableness and an increase in neuroticism (e.g., less emotionally stable).

While most studies have focused on alterations in individual personality, Tasa, Sears, and Schat (2011) have found that collective efficacy, or group confidence, can elicit or repress behaviors related to personality traits. In their conceptual paper, Roberge and Huang (2019) made the case that specific personality qualities such as extraversion, conscientiousness, and openness to experiences may permeate the group and make these attributes the dominant group traits. Furthermore, Roberge and Huang (2019) also suggest that people’s personalities will adapt to the tasks of the team. In other words, when doing a social activity, the team and its members exhibit higher levels of agreeableness, extraversion, and altruism; and when performing a cognitive job, the team and its members exhibit higher levels of conscientiousness and openness to experiences. Swart & Siguaw (2020) report that individuals engaged in intense virtual teamwork experienced declines in altruism and statistically significant rises in the HEXACO-PI-R domain level scores in extraversion, and openness to experience.

Locus of Control

The psychological construct locus of control (LOC) was conceived of by Rotter (1954; 1966), as a continuum with internal and exterior endpoints. Rotter claimed that individuals who hold an internal LOC think they have some control over the course of events and attribute their achievements or failures to their own efforts and skills. Yet, individuals with an external LOC think that life outcomes are out of their control and blame outside forces (e.g., luck, other people, and fate) for their achievements or failures. However, even though Nowicki (2016) proposed that internality is typically regarded as a more desirable attribute, both internality and externality have benefits and drawbacks. According to LOC studies, people with a high internal LOC make better leaders, and people with a high external LOC make better followers (Nowicki, 2016). Similarly, Boone et al. (2005) discovered that teams with a high average internal LOC perform better when leaders are not present, and teams with a high average external LOC perform better when leaders are present.

How parents raise a child determines the LOC from a young age; however, it can be altered through intentional actions (Nowicki, 2016). According to recent neuroscience research, the adult brain is rather malleable, allowing individuals to change their electrical brain activities and, in consequence, their behaviors (Waldman, Balthazard, and Peterson, 2011). This research suggests that LOC might be influenced by training. Modifying LOC can find the right balance between internality and externality. The serenity prayer, “God, grant me the serenity to accept things I cannot change, the courage to change those I can, and the wisdom to know the difference”, captures this harmony.

Emotional Intelligence

Emotional intelligence (EI), divided into four quadrants (self-awareness, social awareness, self-management, and relationship management), is the capacity to perceive, comprehend, and control our own and others’ emotions (Goleman, Boyatzis, & McKee, 2002). The EI of teams is influenced by the EI of their leaders (Goleman, et al., 2002). Goleman expanded early research into five (5) key EI dimensions: self-awareness, self-reputation, self-motivation, social awareness, and social skills (Goleman, 1995). These dimensions can be critical to leadership development and team dynamics.

EI forecasts how the maintenance of self-managed teams will facilitate better individual and group decisions (Frye, Bennett & Caldwell, 2006) and teamwork orientation (Hess & Bacigalupo, 2011), as well as improved individual and team performance (Shalwani et al., 2019; Shalwani, et al., 2018). Cognitive intelligence is a weaker predictor of collaborative effectiveness than EI (Coetzer, 2015). While individuals are not born with Goleman’s five dimensions, Cherniss and Adler (2000) found that EI can be learned, but it is neither easy nor linear. Studies show that EI training is successful with children, teenagers, college students, and nurses (e.g., Codier, Freitas & Muneno, 2013; Motamedi, Ghobari-Bonab, Beh-pajooh, Yekta, & Afrooz, 2017; Orak, Farahani, Kelishami, Seyedfatemi, Banihashemi, & Havaei, 2016; Ulutas & Ömeroglu, 2007). Clarke (2010) discovered that one-day EI training had no effect on MBA students. However, when it is followed by extensive team-based learning, the EI dimension of relationship management dramatically increases, which is pertinent to this research.

Gender Differences

This study investigates the potential effects of gender on changes in psychometric qualities as noted in the constructs discussed. Dhani and Sharma (2017) discovered that women perform better at work and have higher EI scores. Kaifi and Noori (2010) also found evidence that the EI of female managers is higher. Concerning LOC, women are more prone to show greater externality, which is thought to partially account for the gender pay gap and slower workplace upward mobility (e.g., Semykina & Linz, 2010; Yu-Wei & Linz, 2017). Regarding personality traits (PT), Costa, Terracciano, and McCrae (2001) claimed that there are very little gender differences in PT across 26 cultures when compared to individual gender differences. Yet, other researchers have noted variations. For instance, extraversion is a stronger predictor for men, whereas conscientiousness and openness to new experiences are stronger predictors of leadership effectiveness for women (Huszcz & Endres, 2017). Laher and Croxford (2013) argue that there are significant systematic and innate differences between men and women in a variety of traits, including

neuroticism, anxiety, vulnerability, depression, self-consciousness, extraversion, warmth, activity, assertiveness, positive emotions, aesthetics, feelings, ideas, agreeableness, compliance, tendermindedness, altruism, modesty, straightforwardness, trust, conscientiousness, order, achievement striving and self-discipline among university students.

Emotional, Psychological, and Physical Impacts of COVID-19

Since the 2020 global pandemic, global researchers have examined the emotional, psychological and physical impacts on different populations worldwide. In a large Italian population sample, the most consistent risk factors for increased levels of post-traumatic stress disorder (PTSD) and generalized anxiety symptoms in the pandemic were gender and age, with women and the elderly scored significantly higher than men (Brivio, E., Oliveri, S., Guidi, P. & Pravettoni, G., 2021). Another study of the Italian population found that LOC was more external after the pandemic, while self-efficacy increased (Marotta, L., Pesce, A., & Guaaainni, A., 2020). In a study of German and Norwegian populations, individuals with an internal LOC had less stress, while those with an external LOC had exacerbated stress during the pandemic (Krampe, H., Danbolt, L., Haver, A., Stalset, G., & Schnell, T., 2021). A study by Aschwander, A., Strickhouser, J., Sesker, A., Lee, J., Stephan, Y., Sutinn, A. & Terracino, A., (2020) explores how personality may predict the behavior during future outbreaks of infectious diseases; and discovered that psychological responses to the COVID-19 pandemic are associated with neuroticism, extraversion, and conscientiousness.

A Canadian study found that factors that worsened stress during the pandemic included: being female, having children under the age of 18, drinking more alcohol, working with the public, getting less sleep, being younger, experiencing less stress prior to the outbreak, having worse COVID-related symptoms that could be linked to COVID, exhibiting less coping skills, having worse OCD symptoms related to germs and contamination, and possessing personalities that were more extraverted, conscientious, and neuroticism, aligning with left wing political views, experiencing worse family relationships, and spending less time exercising and doing artistic activities (Robillard, R., Saad, M., Edwards, J. et al., 2020).

Women express higher degrees of anguish than men due to the pandemic's disproportionate impact on mental health, which has significantly altered our everyday lives, professional paths, and sense of safety (Qiu et al., 2020). Another study of young adults after the pandemic announcement found depression and anxiety levels were greater in women, nonbinary people, and people with both physical and mental health concerns (Alonzi, S., La Torre, A. & Silverstein, M., 2020). Furthermore, in terms of employment prospects and decent work (more precarious and informal work, lower pay, greater unemployment circumstances, and exacerbated gender disparities in unpaid care and household chores), the pandemic had a worse effect on women than on males (Prati, G., Stefani, S., & Barbieri, I., 2022).

Considering the widening gender gap in educational achievement, there is evidence that families are opting to abandon the traditional prioritization of men's employment by favoring whoever in the relationship can earn the highest wage and is a catalyst for achieving greater gender equality (Qian, Y. & Hu, Y., 2021). Throughout the pandemic, Canadian women worked in construction whose work environment and hours underwent significant adjustments, including working from home and putting in longer hours than usual. Their perceptions of the negative effects of caring obligations, compensation or earnings, job stability, and career advancement and advancement on their ability to engage in paid work activities were modest (Oo, B. & Lim, B., 2021).

RESEARCH HYPOTHESES

With the sudden and unpredictable onset of the COVID-19 pandemic, traditional pre-post research designs have not assessed its impact. This research evaluates the pandemic's impact on the full suite of psychometrics that include personality traits, emotional intelligence (EI), and locus of control (LOC), including the longevity of the pandemic's impacts on young professionals. The purpose of these research is to inform organizations of the real psychometric impact of the pandemic on young professionals so that appropriate human resource policies can be formulated to maintain healthy and productive employees and

establish a time frame for these policies that balance corporate and individual needs. The following research hypotheses are advanced:

H1: *The COVID-19 pandemic induced statistically significant changes in at least one of the personality traits (personality type, emotional intelligence and locus of control) of individual young male professionals from before to during the pandemic.*

H2: *The COVID-19 pandemic induced statistically significant changes in at least one of the personality traits (personality type, emotional intelligence and locus of control) of individual young female professionals from before to during the pandemic.*

H3: *The COVID-19 pandemic had a similar impact on the psychometrics of young male professionals and young female professionals during the pandemic.*

H4: *The COVID-19 pandemic had a statistically significant impact on at least one of the psychometrics of young male professionals that persisted after the pandemic.*

H5: *The COVID-19 pandemic had a statistically significant impact on at least one of the psychometrics of young female professionals that persisted after the pandemic.*

METHOD

Swart & Siguaw (2020) reported statistically significant changes in some psychometrics between the start and the end of an online MBA five-week summer course in 2019. Beginning in the Fall 2019 semester, data was collected to follow-up on the summer study in a normal, 16-week semester. With the intervention of the COVID-19 pandemic during the Spring 2020 semester, the research refocused to examine the potential changes in the psychometrics from before (Fall 2019), during (Spring 2020), and after (Spring 2022) the pandemic. All courses during the three semesters were offered online and conducted in the same manner. None of the courses switched from face-to-face students to online offerings during the pandemic.

Participants

The study subjects were enrolled in an online MBA program in the southeastern United States, indicating they are all college graduates and, as online students, are likely to be employed. Table 1 exhibits the distribution of job levels for students enrolled during the Summer 2019 (pre), Spring 2020 (during) and Spring 2022 (post) pandemic semesters. In the table, the term “Exempt (non-supervisory)” denotes individuals holding a job title such as engineer, accountant, analyst, nurse, etc. The term “Exempt” refers to an employee exempt from the Fair Labor Standards Act (FLSA), meaning that they are typically paid a wage greater than a specific threshold and perform office work, professional or executive job duties, computing work, or external sales positions.

TABLE 1
JOB LEVELS OF STUDY SUBJECTS

	Exempt					
	(Non- supervisory)	Manager	Director	VP/CEO	FT student	Count
SUMMER 2019	21	18	6	1	9	55
SPRING 2020	29	20	6	4	7	66
SPRING 2022	31	16	5	1	11	64

Manager denotes anyone who has the title of manager or a similar term such as coordinator, lead, etc. The remaining headings are self-explanatory and all, except full-time students, hold jobs that generally require a university degree and are thus engaged in highly skilled non-manual labor type jobs. The full-time students in the “Exempt” category have a university degree and will most likely hold a professional job upon completing their MBAs. Although subjects in this study were not asked to divulge their ages, it is reasonable to assume that most subjects are in the 18-35 age range, since most students receive their bachelor’s degree when they are in their early to mid-twenties, and it typically takes three to five years to be promoted to a manager. Collectively, the participants are referred to as “young professionals”.

Measures

The measures of interest were the change in psychometrics experienced by students during a semester. The differences in their psychometrics were measured at the end of the semester minus their psychometrics at the beginning of the semester. Symbol Δ expressed the amount of change in front of the name of the particular psychometric. Thus, for personality type the measures were:

- Δ Honesty/Humility,
- Δ Emotionality,
- Δ Extraversion,
- Δ Agreeableness,
- Δ Conscientiousness,
- Δ Openness to Experience, and
- Δ Altruism.

These measures were obtained using the pre-existing (and free) HEXACO-PI-R instrument (<http://hexaco.org/hexaco-online>; Ashton & Lee, 2009). Similarly, the amount of change in the emotional intelligence quadrants were denoted as:

- Δ Self-Awareness,
- Δ Self-Management,
- Δ Social Awareness, and
- Δ Relationship Management.

These were obtained using the Global Emotional Intelligence Test (GEIT) (<https://globalleadershipfoundation.com/geit/eitest.html>20131212). The amount of change on locus of control, Δ LOC, was measured using the Rotter locus of control survey (<http://www.psych.uncc.edu/pagoolka/LC.html>) (Rotter, 1966).

ANALYSIS AND RESULTS

Table 2 exhibits the descriptive statistics for the data by gender and by whether it was collected before, during or after the pandemic. The Δ prefix in front of the psychometrics indicates that it reflects the change that occurred in the specific psychometric during the semester (ending psychometric – beginning psychometric). Thus, a negative sign indicates that the psychometric value decreased between the course’s beginning and end, and vice versa.

TABLE 2
DESCRIPTIVE STATISTICS BY GENDER AND TIME

GENDER	PSYCHOMETRIC	FALL 2019 (BEFORE COVID)			SPRING 2020 (DURING COVID)			SPRING 2022 (AFTER COVID)		
		Mean	Std. Error	N	Mean	Std. Error	N	Mean	Std. Error	N
MALE	ΔHonesty/Humility	-0.1632	0.0696	28	-0.1532	0.0588	38	-0.0704	0.0705	23
	ΔEmotionality	-0.0334	0.0675	28	-0.0458	0.0359	38	-0.0665	0.0505	23
	ΔExtraversion	0.0011	0.0665	28	-0.0526	0.0531	38	-0.0435	0.0695	23
	ΔAgreeableness	-0.0471	0.0717	28	-0.0192	0.0655	38	-0.1139	0.0556	23
	ΔConscientiousness	-0.0350	0.0623	28	-0.0939	0.0811	38	-0.1722	0.0776	23
	ΔOpenness to Experience	-0.0129	0.0619	28	-0.0134	0.0627	38	-0.0039	0.0611	23
	Δ Altruism	0.0571	0.0866	28	-0.0855	0.0814	38	-0.5130	0.2530	23
	ΔSelf-Awareness	0.2143	0.3058	28	0.3684	0.2338	38	-0.1739	0.3306	23
	ΔSelf-Management	-0.2857	0.4012	28	-0.1842	0.2869	38	-0.7391	0.3623	23
	ΔSocial Awareness	-0.1071	0.4012	28	-0.3684	0.2148	38	-0.4348	0.3491	23
	ΔRelationship Management	-0.2143	0.4094	28	0.3158	0.3376	38	-0.3478	0.4516	23
	ΔLOC	0.0714	0.2951	28	-0.0263	0.2981	38	0.2174	0.6029	23
FEMALE	ΔHonesty/Humility	-0.0334	0.0610	38	-0.2095	0.0697	22	-0.0834	0.0559	36
	ΔEmotionality	0.1366	0.0544	38	-0.1791	0.0497	22	-0.0334	0.0411	36
	ΔExtraversion	-0.1005	0.0620	38	-0.1359	0.0495	22	-0.1169	0.0686	36
	ΔAgreeableness	-0.1561	0.0578	38	-0.2105	0.0721	22	-0.1206	0.0596	36
	ΔConscientiousness	-0.0408	0.0436	38	-0.1186	0.0443	22	-0.1406	0.0526	36
	ΔOpenness to Experience	-0.0263	0.0575	38	-0.0709	0.0742	22	-0.0897	0.0676	36
	Δ Altruism	0.0132	0.0646	38	0.0227	0.0900	22	-0.2614	0.0792	36
	ΔSelf-Awareness	-0.0526	0.2098	38	-0.2273	0.3718	22	0.1714	0.2300	36
	ΔSelf-Management	-0.9737	0.2957	38	-0.6364	0.2509	22	-0.2286	0.2987	36
	ΔSocial Awareness	0.2105	0.2449	38	-0.2273	0.2074	22	-0.2857	0.2267	36
	ΔRelationship Management	-0.2632	0.2763	38	-0.7273	0.3028	22	-0.3143	0.3143	36
	ΔLOC	0.1842	0.2554	38	1.0000	0.2713	22	0.6857	0.3927	36

While there were more females than males enrolled in the course before and after COVID. Gender was self-declared with an option for “non-binary” and “prefer not to respond”, however all respondents self-declared themselves as either female or male. It was the opposite during COVID, which may reflect the increased stress that women experienced during COVID due to the gender disparities in unpaid caregiving and domestic work, including home schooling of children (Pratti, Stefani, & Barbieri, 2022). These factors might have been mitigated in dual-earning couples with small children (Shockley, Clark, Dodd & King, 2021), where couples were not aligned with the traditional gender scripts of prioritizing men’s employment to respond to the unprecedented economic strain. Thus, families had to prioritize employment to the parent who had the most earning power (Qian & Hu, 2021).

The various hypotheses postulated were tested by comparing the mean or median difference, depending on whether a parametric or non-parametric test is necessary, of each of the psychometrics before and after the end of the semester for each of the time periods (pre-during-post COVID) by gender using either:

- The parametric paired t-test if the Shapiro Wilk test fails to reject the hypothesis that the data is normally distributed,
- The non-parametric Wilcoxon’s Signed Rank test if the Shapiro Wilk tests does reject the hypothesis that the data is normally distributed and the data follows a symmetrical distribution, or
- The non-parametric Sign test if the Shapiro Wilk tests does reject the hypothesis that the data is normally distributed, and the data does not follow a symmetrical distribution.

The analysis was performed using SPSS 27. The results are exhibited by gender for the semester prior to the pandemic (Table 3), during the pandemic (Table 4) and after the pandemic (Table 5).

Results Prior to the Pandemic - Males

Table 3 exhibits the psychometric changes of male students between the course’s beginning and end during the Fall of 2019, before the pandemic. As described above, different tests were used based on the

characteristics of the data. For the personality type traits, the paired sample t-test showed a substantial decline in Δ Honesty/Humility from the beginning to the end of the semester. For emotional intelligence, neither the Δ Self-Awareness or the Δ Social Awareness traits changed significantly between the beginning and end of the semester. For Δ Self-Management and Δ Relationship Management the Wilcoxon's Signed Rank Test was used and did not show any appreciable differences in their median values. Similarly, with the Δ LOC data Wilcoxon's Signed Rank Test revealed a significant increase in Locus-of-Control between the beginning and end of the semester. In summary, before the pandemic, males exhibited a significant decrease in Δ Honesty/Humility and Δ LOC from the beginning to the end of the course.

TABLE 3
PSYCHOMETRIC IMPACTS PRIOR TO THE COVID-19 PANDEMIC

FALL 2019	Paired Differences $\Delta = (\text{End} - \text{Begin of semester})$	Shapiro Wilk Tests of Normality			Paired Samples t-test			Wilcoxon's Signed Rank Test		Sign Test
		Statistic	df	Sig.	t	df	g. (2-tailed)	Z	Asymp. Sig. (2-tailed)	Exact Sig. (2-tailed)
Males										
	Δ Honesty/Humility	0.932	28	0.069	-2.345	27	0.027			
	Δ Emotionality	0.973	28	0.657	0.667	27	0.511			
	Δ Extraversion	0.962	28	0.393	0.016	27	0.987			
	Δ Agreeableness	0.964	28	0.429	-0.657	27	0.516			
	Δ Conscientiousness	0.985	28	0.951	-0.562	27	0.579			
	Δ Openness to Experience	0.980	28	0.848	-0.208	27	0.837			
	Δ Altruism	0.939	28	0.107	0.660	27	0.515			
	Δ Self-Awareness	0.953	28	0.242	0.701	27	0.490			
	Δ Self-Management	0.902	28	0.013				-0.295	0.768	
	Δ Social Awareness	0.948	28	0.172	-0.863	27	0.396			
	Δ Relationship Management	0.915	28	0.027				-1.177	0.239	
	Δ LOC	0.911	28	0.020				-4.08	0.000	
FALL 2019										
Females										
	Δ Honesty/Humility	0.805	38	0.000				-0.165	0.869	
	Δ Emotionality	0.974	38	0.506	2.513	37	0.016			
	Δ Extraversion	0.831	38	0.000				-1.708	0.088	
	Δ Agreeableness	0.944	38	0.054	-2.698	37	0.010			
	Δ Conscientiousness	0.953	38	0.109	-0.935	37	0.356			
	Δ Openness to Experience	0.979	38	0.685	-0.457	37	0.650			
	Δ Altruism	0.875	38	0.001				Assumptions not satisfied - not sym		0.629
	Δ Self-Awareness	0.937	38	0.033				-0.189	0.850	
	Δ Self-Management	0.961	38	0.206	-3.292	37	0.002			
	Δ Social Awareness	0.914	38	0.007				Assumptions not satisfied - not sym		0.362
	Δ Relationship Management	0.920	38	0.010				Assumptions not satisfied - not sym		0.230
	Δ LOC	0.889	38	0.001				Assumptions not satisfied - not sym		0.000

Results Before the Pandemic – Females

Table 3 exhibits the psychometric changes of female students between the course's beginning and end during the Fall of 2019, prior to the pandemic. Following the same logic as detailed above, the results of the paired samples t-tests indicated that females experienced a significant increase in Δ Emotionality and a significant decrease in Δ Agreeableness between the start and the end of the course – no other personality type traits changed significantly. For Emotional Intelligence, the paired t-test revealed a significance decrease in Δ Self-Management while the Sign test revealed a significant increase in the median value of Δ LOC between the beginning and end of the course.

Results During the Pandemic - Males

During the Spring of 2020, the world was disrupted due to the COVID-19 pandemic. Those who remained employed and could work from home did so. Those whose jobs required direct contact with the public, such as healthcare workers, experienced increased stress and fear of contagion. All schools from K-12 through universities were closed, and classes were hastily converted to online learning that took place at home. However, nothing changed in courses in this study. The course remained online with the same syllabus and requirements as before the pandemic. Thus, it can be surmised that any changes in psychometrics are attributable to the pandemic.

Table 4 exhibits the psychometric changes of male students between the start and end of the course during the Spring of 2020, during the pandemic. Following the same logic as detailed earlier, Wilcoxon's Signed Rank test indicates a significant change in the median value of Δ Honesty/Humility and Δ Conscientiousness. This supports H1. No other psychometric measures were impacted during the semester.

**TABLE 4
PSYCHOMETRIC IMPACTS DURING THE COVID-19 PANDEMIC**

SPRING 2020	Paired Differences $\Delta = (\text{End} - \text{Begin of semester})$	Shapiro Wilk Tests of Normality			Paired Samples t-test			Wilcoxon's Signed Rank Test		Sign Test	
		Statistic	df	Sig.	t	df	Sig. (2-tailed)	Z	Asymp. Sig. (2-tailed)	Exact Sig. (2-tailed)	
Males	Δ Honesty/Humility	0.918	38	0.009				-2.22	0.026		
	Δ Emotionality	0.983	38	0.815	-1.276	37	0.210				
	Δ Extraversion	0.957	38	0.155	-0.992	37	0.328				
	Δ Agreeableness	0.968	38	0.344	-0.293	37	0.771				
	Δ Conscientiousness	0.841	38	0.000				-2.123	0.034		
	Δ Openness to Experience	0.921	38	0.011				-0.759	0.448		
	Δ Altruism	0.951	38	0.096	-1.051	37	0.300				
	Δ Self-Awareness	0.854	38	0.000				Does not satisfy assumptions - not		0.210	
	Δ Self-Management	0.932	38	0.023				-0.978		0.328	
	Δ Social Awareness	0.930	38	0.021				Does not satisfy assumptions - not		0.307	
	Δ Relationship Management	0.963	38	0.231	0.936	37	0.356				
	Δ LOC	0.792	38	0.000				-0.675	0.500		
	Females	Δ Honesty/Humility	0.963	22	0.542	-3.006	21	0.007			
		Δ Emotionality	0.953	22	0.357	3.603	21	0.002			
Δ Extraversion		0.873	22	0.009				-2.375	0.016		
Δ Agreeableness		0.931	22	0.127	-2.918	21	0.008				
Δ Conscientiousness		0.976	22	0.851	-2.681	21	0.014				
Δ Openness to Experience		0.944	22	0.242	-0.956	21	0.350				
Δ Altruism		0.771	22	0.000				Assumptions not satisfied - not syn		0.302	
Δ Self-Awareness		0.969	22	0.699	-0.611	21	0.548				
Δ Self-Management		0.892	22	0.021				Assumptions not satisfied - not syn		0.092	
Δ Social Awareness		0.842	22	0.002				Assumptions not satisfied - not syn		0.508	
Δ Relationship Management		0.935	22	0.154	-2.402	21	0.026				
Δ LOC		0.922	22	0.085	3.686	21	0.001				

Results During the Pandemic – Females

Table 4 also contains the results for females during the pandemic. The paired samples t-test indicated significant decreases in the mean value of the personality type traits of Δ Honesty/Humility, Δ Agreeableness and Δ Conscientiousness and a significant increase in Δ Emotionality, while the Wilcoxon's Signed Rank test showed a significant decrease in Δ Extraversion. The paired samples t-test indicated a significant decline in the Emotional Intelligence trait of Δ Relationship Management. Furthermore, the paired sample t-test indicated a significant increase in Δ LOC. This supports H2. In comparison to their male counterparts, females had more significant psychometric changes during the pandemic. This supports H3.

Results After the Pandemic - Males

By the Spring of 2022, the world returned largely to a semblance of normality. K-12 schools had the most difficulty with students learning online from home (World Bank, 2021) and resumed classes as soon as it was safe. Schools did more than just reopen their doors. After the pandemic, students required individualized and ongoing support to help them adjust and catch up (World Bank, 2021). In universities, many negative pre-conceived notions about online learning were debunked. Nevertheless, universities wasted no time re-instating face-to-face classes and the accompanying student activities that constituted "campus life." Prior to the pandemic, 23% of workers were working from home. By 2022, two years after the pandemic, 59% were teleworking from home. Thus, the pandemic has and is still reshaping how America works (Parker, K., Horowitz, J. & Minkin, R., 2022).

Prior to the pandemic, males experienced a significant decrease in Δ Honesty/Humility and a significant increase in Δ LOC. As shown in Table 5, during the Spring of 2022, two years after the pandemic, males experienced a significant change between the beginning and end of the semester in Δ Conscientiousness

which appeared to carryover from the pandemic and is consistent with other findings in the literature (Sitin, A., Stephan, Y., Luchetti, M., Aschwander, D., Lee, J., Sesker, A. & Terracciano, A., 2022). This supports H4. No other significant changes in psychometrics were found.

TABLE 5
PSYCHOMETRIC IMPACTS AFTER THE COVID-19 PANDEMIC

SPRING 2022	Paired Differences Δ = (End - Begin of semester)	Shapiro Wilk Tests of Normality			Paired Samples t-test			Wilcoxon's Signed Rank Test		Sign Test
		Statistic	df	Sig.	t	df	g. (2-tailed)	Z	Asymp. Sig. (2-tailed)	Exact Sig. (2-tailed)
Male										
	ΔHonesty/Humility	0.964	23	0.548	-0.999	22	0.329			
	ΔEmotionality	0.960	23	0.471	-1.317	22	0.201			
	ΔExtraversion	0.962	23	0.514	-0.625	22	0.538			
	ΔAgreeableness	0.964	23	0.539	-2.048	22	0.053			
	ΔConscientiousness	0.922	23	0.074	-2.217	22	0.037			
	ΔOpeness to Experience	0.931	23	0.117	-0.064	22	0.950			
	Δ Altruism	0.729	23	0.000				-1.572	0.116	
	ΔSelf-Awareness	0.883	23	0.012				-0.321	0.748	
	ΔSelf-Management	0.947	23	0.255	-2.040	22	0.054			
	ΔSocial Awareness	0.883	23	0.011				-1.169	0.242	
	ΔRelationship Management	0.817	23	0.001				-0.067	0.947	
	ΔLOC	0.921	23	0.070	0.361	22	0.722			
SPRING 2022										
Female										
	ΔHonesty/Humility	0.964	35	0.304	-1.453	35	0.155			
	ΔEmotionality	0.976	35	0.616	-0.771	35	0.446			
	ΔExtraversion	0.772	35	0.000				-0.798	0.425	
	ΔAgreeableness	0.915	35	0.010				-2.103	0.036	
	ΔConscientiousness	0.931	35	0.029				-2.52	0.012	
	ΔOpeness to Experience	0.886	35	0.002				-1.825	0.068	
	Δ Altruism	0.914	35	0.009				-2.708	0.007	
	ΔSelf-Awareness	0.919	35	0.013				-0.88	0.379	
	ΔSelf-Management	0.921	35	0.015				-0.95	0.342	
	ΔSocial Awareness	0.933	35	0.034				Assumptions not satisfied		0.210
	ΔRelationship Management	0.946	35	0.083	-0.801	35	0.429			
	ΔLOC	0.974	35	0.558	1.745	35	0.090			

Results After the Pandemic – Females

Consistent with their male counterparts, Table 5 shows that females also experienced a significant change between the beginning and end of the semester in ΔConscientiousness. They also continued to experience a significant change in ΔAgreeableness, as they had before and during the pandemic. However, after the pandemic, women experienced a decrease in ΔAltruism between the start and the end of the semester. This supports H5.

DISCUSSION

Table 6 summarizes the results. Before the pandemic, the experiences of the course induced significant changes in two psychometric traits in males (a decrease in ΔHonesty/Humility and an increase in ΔLOC), while it induced significant changes in three psychometric traits in females (an increase in ΔEmotionality and decreases in ΔAgreeableness and ΔSelf-Management).

TABLE 6
SUMMARY OF RESULTS

		FALL 2029	SPRING 2020	SPRING 2022
GENDER	PSYCHOMETRIC	(BEFORE COVID)	(DURING COVID)	(AFTER COVID)
MALE	ΔHonesty/Humility	decrease	decrease	
	ΔEmotionality			
	ΔExtraversion			
	ΔAgreeableness			
	ΔConscientiousness		decrease	decrease
	ΔOpeness to Experience			
	Δ Altruism			
	ΔSelf-Awareness			
	ΔSelf-Management			
	ΔSocial Awareness			
	ΔRelationship Management			
	ΔLOC	increase		
FEMALE	ΔHonesty/Humility		decrease	
	ΔEmotionality	increase	increase	
	ΔExtraversion		decrease	
	ΔAgreeableness	decrease	decrease	decrease
	ΔConscientiousness		decrease	decrease
	ΔOpeness to Experience			
	Δ Altruism			decrease
	ΔSelf-Awareness			
	ΔSelf-Management	decrease		
	ΔSocial Awareness			
	ΔRelationship Management		decrease	
	ΔLOC		increase	
	Indicates significant ($p < 0.05$) change during semester			

There were no changes to the course during the pandemic, as it was online. Males continued to see a decrease in ΔHonesty/Humility, as they did before the pandemic, though during the pandemic they did not experience an increase in ΔLOC as they had before the pandemic. This realization could be attributed to the loss of control or leaving responsibilities to others during the pandemic. Males also saw a significant change in ΔConscientiousness. This change can be attributed to a time of anxiety for young adults during the pandemic. Anxiety has been shown to correlate with conscientiousness (Sabu, S. & Thomas, S., 2020).

During the pandemic, females continued to experience an increase in ΔEmotionality and a decrease in ΔAgreeableness from the beginning to the end of the course, as seen before the pandemic. Interestingly, they no longer experienced a decrease in ΔSelf-Management. Self-Management, also known as self-regulation or self-control (Harvard University, 2022), is the capacity to effectively control one’s emotions, ideas, and behaviors in a variety of settings, to manage stress, and to inspire oneself to pursue personal and academic objectives. The decrease in ΔSelf-Management before the pandemic can be attributed to the intense virtual teamwork experiences associated with the course (Swart, W. & Siguaw, J., 2020). This required that individual goals mesh with team goals and brainstorming take place to arrive at a course of

action that would lead to a solution while overcoming the challenges of scheduling virtual collaboration sessions. Thus, students were no longer captains of their ship and masters of their individual fates.

The pandemic impacted women more strongly than men. Among parents of young, school age children, gender inequality affected mothers that took up a disproportionate amount of required caregiving (Qian, Y. & Fuller, S., 2020; Robillard, R., Saad, M., Adwards, J., et al., 2020; Alonzi, S., La Torre, A., & Silverstein, M., 2020; Pratti, G., Stefani, S., & Barbieri, I., 2022). These obligations overshadowed academic issues and again allowed mothers to regain control of their personal lives without coping with nuances of dealing with intense teaming experiences. This is also supported by women (as well as men) displaying a significant decrease in Δ Conscientiousness during the pandemic. This may be ascribed to the lack of structure in daily routines that was a result of learning and/or working from home during this time. Without structure and stable consistency, staying organized and fulfilling obligations could be more difficult (Sutin, A., Stephan, Y., Luchetti, M., Aschwander, D., Lee, J., Sesket, A., et al., 2022).

Women also displayed a decrease in Δ Honesty/Humility during the pandemic, which refers to the propensity to treat people fairly and genuinely, in the sense of cooperating with them even while one may take advantage of them without receiving backlash (Fang, Y., Dong, Y. & Fang, L., 2019). Attributing to the voluntary or mandated lockups that stopped the pandemic from spreading, a decrease in this trait was shared with males during the pandemic, although males also displayed it prior to the pandemic. Females also displayed a decrease in Δ Extraversion during the pandemic, presumably because of the mandated or self-imposed restrictions on social gatherings may have contributed to feeling less outgoing during the pandemic than before. During the pandemic, women also experienced a decrease in the Emotional Intelligence trait Δ Relationship Management, which is considered a social cluster in Goleman's Emotional Intelligence Model (Global Leadership Foundation, 2023). During the pandemic, social interactions were curtailed or eliminated, and interpersonal dealings with colleagues, friends and family changed both in quantity and quality (Alexander, T., Larson, N., Berge, J., & Neumark-Szainer, D., 2021). The decrease in Δ Relationship Management can attribute to these factors, since this trait had not changed in the course before or after the pandemic.

Lastly, another psychometric trait that changed significantly for women only during the pandemic was locus of control (LOC). While it is among the four most widely investigated personality traits (Krampe, H., Danbolt, L., Haver, A., Stalset, G. & Schnell, T., 202), it describes the extent to which individuals believe they control their destiny. A high LOC indicates that they feel they control their own lives, while a low LOC indicates that they believe that factors beyond their control their lives. Women experienced an increase in Δ LOC during the pandemic. With the abundance of regulations issued by international, national, and local organizations to contain the spread of COVID-19, many felt a loss of control in their lives. These included lockdowns, wearing masks, and the sanitation devices installed in most establishments, if enforced, yielded the promise of safety. As young professionals enrolled in an MBA program with the capacity to understand the rationale behind these regulations and the importance of enforcing them, it gave them a feeling that they had control of the well-being of their loved ones.

This research provides several practitioner implications. First, during COVID-19, women experienced significant changes in several psychometrics, while men's psychometrics were relatively impervious. Thus, during disruption, employers should focus on supporting female employees. However, women's psychometrics returned to pre COVID-19 levels within two years after the pandemic indicating that employer support programs for female employees need not be long term. Moreover, this research supports the notion that the post COVID-19 white collar workforce, both male and female, is not the same as the pre-COVID workforce – they are less conscientious. Employers face a challenge in finding people who want to work, and even more so in finding people who want to work according to pre COVID standards. Furthermore, many white-collar workers were forced to work at home during the pandemic. After the pandemic, some wanted to continue remote working because it gave them a greater opportunity to balance life and work. Others wanted to work back in the office because they felt that they were more productive away from home. Similarly, some companies wanted workers to come back to their work sites because they felt that the synergies attained by having people working face to face were not reproducible in a virtual environment. While there is no answer for all organizations, employees who are engaged in repetitive

occupations that require that well defined tasks be completed on time and under budget can very well accomplish such tasks at home, providing they are professional tasks. On the other hand, employees who must find answers to yet unsolved problems must work in teams and engage in brainstorming and give and take so that their collective success exceeds the sum of all their parts. Such teamwork is facilitated by physical togetherness. Thus, organizations need to consider the psychometric characteristics of their employees as they adjust work conditions and schedules.

CONCLUSION

The research results indicate that the pandemic has decreased the conscientiousness of young professionals. These workers have at least a bachelor's degree, and 65% have remote jobs. Most or all the time, these employees work from home. In the opinion of 64%, working from home makes it simpler to manage work and personal obligations. Yet, 61% of people who choose not to work from home say they are more productive (Parker, K., Horowitz, J., & 2022). "Easier to balance personal/work life" may indicate the easier shift of priorities between the two, hence the perceived less conscientious by employers, leading many to feel more productive away from home. This may be particularly true for individuals engaged in creative work that requires collective brainstorming.

Bob Iger, Disney's CEO articulated this by stating "As you've heard me say many times, creativity is the heart and soul of who we are and what we do at Disney. And in a creative business like ours, nothing can replace the ability to connect, observe, and create with peers that comes from being physically together, nor the opportunity to grow professionally by learning from leaders and mentors"(U.S. News, Jan 10, 2023). Iger's mandate was echoed by several companies that are ending or curtailing their work-from-home policies including Apple, Citigroup, Goldman Sachs, Google, JP Morgan, Salesforce, Starbucks, and Twitter (Lebowitz et al., 2023). While other companies such as McKinsey are embracing remote and hybrid work, the move to bring employees back to the office appears to be a direct response to a lack of conscientiousness in employees. As JP Morgan's CEO Jamie Diamond stated, "remote work slows down honesty and decision making" (Lebowitz et al., 2023). With the current stand-off between employees wishing to work from home versus employers wishing to return to work, no answer fits all.

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