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CONTEXTUAL INTELLIGENCE BEHAVIORS OF FEMALE HEALTHCARE MANAGERS IN THE UNITED STATES

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Regardless of the place in the world the leadership landscape within healthcare is dynamic and challenging. Many theories and assumptions appear to be inadequate in their ability to flex with the volatility and complexity of healthcare organizations which function in a fast-paced, complex knowledge economy.[1] Healthcare is recognized as one of the most challenging and complex environments to navigate for stakeholders.[2-4] Traditional theories and models of leadership are becoming progressively insufficient because they "suffer" from what Tetenbaum and Laurence[5] describe as a sole focus on either the leader, the follower (usually in a one-on-one relationship), or the context. Consequently, few leadership models adequately address the reality of a leader-follower-context nexus and the resulting complexity and volatility in organizations. Solutions are needed that provide a lens for leadership that accommodates the nuances of a leader-follower-context nexus.[6-7]

Contextual intelligence (CI) has been reported to be important and useful in a variety of industries relative to decision-making and leadership behaviors. Professionals and scholars in nursing,[8] educational research,[9] psychology,[10-12] counseling,[13] business,[14] politics,[15] athletic training,[16-17] medicine,[18] marketing,[19] teacher education,[20-21] global entrepreneurship,[22-23] and military strategy[24] have promoted contextual intelligence as a useful or even requisite skill. Each promotes CI for different reasons, but generally CI facilitates identifying external and internal influences that are not immediately obvious, helps in considering non-linear relationships, promotes a holistic perspective to resolve tensions among opposing ideas, and generates innovative outcomes. It has been reported to be particularly useful in global marketplaces and has been recommended as a model to facilitate leadership and better performance in rapidly changing, complex environments[1] and is the best predictor of success in real-life performance situations, especially when compared to Intelligence Quotient (IQ);[25] and we would add when compared to Emotional Intelligence (EQ). While similar in some respects, CI is distinguished from EQ by its application of intuitive insight and good judgment within nonlinear relationships[1,15] especially as those relationships relate to a global marketplace.

What is Contextual Intelligence?

Robert Sternberg[11] is generally recognized to have first use the term "contextual intelligence" in reference to a subtheme of practical intelligence. Contextual Intelligence has since been described as the ability to understand the limits of our knowledge, and to adapt that

knowledge to a context different from the one in which it was developed,[22] and is further explained as awareness of which variables are considered important and how those variables influence a given context and then being able to discern between several actions to select the best one to execute.[26] Hays and Brown[27] and Kutz[28] proposed strategies for developing contextual intelligence; and it was Kutz[26,28] who first proposed 12 specific contextual intelligence behaviors (Table 1).

Despite its presence in professional and scholarly literature and the apparent innate understanding of its importance and potential to be useful in complex environments, contextual intelligence has remained a relatively inconspicuous construct. Therefore, the purpose of this investigation is to explore how frequent contextual intelligence behaviors are practiced among female healthcare managers. Furthermore, to describe the characteristics of an instrument to measure the frequency of CI behaviors; and to see if there is any relationship of CI behaviors according to personality preference, based on Myers-Briggs Type Indicator (MBTI).

Methods

A non-experimental, exploratory survey design was used. 474 female managers from 13 different hospitals from a large integrated healthcare system spanning three Midwestern states participated in this investigation. The data used was analyzed from existing data collected during participation in a leadership academy corporate training program where participants participated in voluntary leadership development. The program was five weeks for each participant and consisted of classroom work, readings, group/workshop activities, and several assessments including the Myers-Briggs Type Indicator (MBTI[®)]) and an assessment of Contextual Intelligence. As existing data, collected during a voluntary training program, this study is exempt from institutional review board approval. Because of our unique interest in how women in leadership positions function in complex organizations (e.g., females in healthcare management), a purposive homogeneous sampling strategy was used.[29] Therefore, only female participants in management-level positions within healthcare were selected for this investigation. Demographic data included age, years of experience, ethnicity, and education level. For this investigation participant's MBTI[®] validated preferences were added to the demographic data for analysis.

Statistical analysis

Statistical analysis was calculated using SPSS 22.0 (SPSS, Inc., Chicago Illinois). Differences between respondents were calculated using one-way ANOVA with Tukey post-hoc comparisons and effect size (η^2), and independent samples *t*-tests. Kaiser-Myers-Olkin's (KMO) Measure of Sampling Adequacy with Bartlett's Test of Sphericity was used to determine the suitability of a factor analysis and Exploratory Factor Analysis were conducted. When appropriate frequencies and descriptive statistics (central tendency) are reported.

Instrumentation

Twelve contextual intelligence behaviors have been described in the scholarly literature[1,26,28] however, to date there is no data reported on an instrument to measure any aspect of Contextual Intelligence. Myers-Briggs Type Indicator test psychometric characteristics are well established.[30] The Contextual Intelligence Profile (CIP), a 48 question Likert scale (range 0-6, 0 = never to 6 = always), was developed to assess the frequency of practice of the 12 contextual intelligence behaviors reported in the literature (4 questions per behavior). Internal-consistency reliability of the CIP was evaluated using Cronbach coefficient alphas with item analysis. Convergent validity was evaluated by using Pearson *r* correlations between the 48-items and the aggregate scores for each of the 12 behaviors. Content validity is established since scale's behaviors are described in existing scholarship. Criterion-related concurrent validity is demonstrated by differences between respondent groups using one-way ANOVA and independent samples *t*-tests. To establish construct validity, first Kaiser-Myers-Olkin's (KMO) Measure of Sampling Adequacy with Bartlett's Test of Sphericity was conducted to determine if the 12 behaviors are factorable, followed by an Exploratory Factor Analysis (Principal Component Analysis and Promax rotation) and additional item-analysis providing acceptable KMO sampling adequacy. Reliability of the factors is estimated with coefficient alphas.

RESULTS

Data was analyzed for 474 female healthcare managers. Participants mean age was 49.6 ± 8.88, median age 50. Participant's years of experience was 19.82 ± 10.54. A majority of respondents (54%) had university degrees, 29% had bachelor's degrees and 25% had advanced degrees (23% Masters' and 2% doctorates). The majority of respondents (95%) were Caucasian, 3% were African-American, and the remaining 2% were Asian-Pacific Islander, Native American, or

other. According to participant's MBTI® ratings, a majority (55%) of respondents preferred extroversion (vs introversion); 59% preferred Sensing (vs Intuition); 55% preferred Feeling (vs. Thinking), and 71% preferred Judging (vs. Perceiving). The most common MBTI profile of these participants was ISTJ (N=52, 11%) followed by ESFJ (N=46, 10%).

Psychometric qualities of the Contextual Intelligence Profile. Cronbach alpha for the 48 item CIP was α= .92, and item-analysis if item deleted ranged from α= .914 to .918, indicating strong internal-consistency reliability. Pearson *r* correlations of the 48-items ranged from *r*=.11 to .47, *p*≤.05; for the aggregate 12 behaviors *r*=.17 to .63, *p*=.000, indicating convergent validity and also suggest factorability. Kaiser-Myers-Olkin's (KMO) Measure of Sampling Adequacy for the 12 CI behaviors was 0.93 and Bartlett's Test of Sphericity was significant (X^2=2756.63$_{(66)}$, *p*=.000) confirming that the 12 items show common variance with other items, therefore factor analysis was deemed suitable. Exploratory Factor Analysis (Principal Component Analysis with Promax rotation) organized the 12 behaviors into three factors demonstrating construct validity:

- Factor 1: (M=16.49; α=.79, item analysis range α=.72 to .77): Hindsight - 4 items (*Consensus builder, Influencer, Critical thinker, Constructive use of influence*).
- Factor 2: (M=16.18; α=.84, item analysis range α=.79 to .82): Foresight - 4 items (*Future-minded, Diagnosis context, Intentional leader, Change agent*).
- Factor 3: (M=15.16; α=.74, item analysis range α=.65 to .70): Insight - 4 items (*Embraces diverse ideas, Communitarian, Multicultural leader, Mission minded*).

Two of the CI behaviors (i.e., *Multicultural leader* and *Mission Minded*) loaded for two of the three factors. Stevens (1992) suggests using a cut-off of 0.4 for factor loadings, regardless of sample size, for general interpretative purposes. Table 2 identifies the factors, associated behaviors, factor loadings, as well as behavior means. Table 3 describes the overall psychometric characteristics of the CIP.

Frequency of Contextual Intelligence Behaviors. Three contextual intelligence behaviors are practiced with *very high* frequency (*M* ≥ 16.75, which represents the top 70% of the mean range, 0-24) by female healthcare managers, *Multicultural leadership* (*M* = 17.51 ± 2.7), *Constructive use of influence* (*M* = 16.92 ± 2.7), and *Diagnosis context* (*M* = 16.77 ± 2.8). Six other behaviors, *Future-minded, Critical thinker, Influencer, Consensus builder, Intentional leader,*

and *Change agent* had means ranging between $M=16.67\pm2.9$ and 15.61 ± 3.1, indicating *high* frequency. The only behavior practiced with *low* frequency ($M \leq 14.40$) was *Communitarian* ($M = 13.45 \pm 4.4$). See Table 4 for the practice frequency means of all behaviors.

Differences in Frequency of Contextual Intelligence Behaviors. Criterion-related concurrent validity of the CIP is demonstrated by several significant differences between respondent groups according to one-way ANOVAs and independent samples *t*-tests. One-way ANOVA's with Tukey post hoc comparisons indicated several significant differences according to participant's demographic characteristics.

ANOVA indicated significant differences between age groups, *Intentional leader* ($F=2.729_{(4, 272)}$, $p=.030$, $\eta^2=.039$), *Influencer* ($F=4.049_{(4, 272)}$, $p=.002$, $\eta^2=.056$), and *Diagnosis Context* ($F=3.776_{(4,272)}$, $p=.009$, $\eta^2=.053$). Tukey Post Hoc indicated that female healthcare managers ages 41 to 49 demonstrated *Influencer* more often than those ages 50 to 61 ($M=17.20\pm2.37$ to $M=15.91\pm2.23$, $p=.002$) and *Diagnoses Context* more frequently than those aged ≥ 60 ($M=17.64\pm2.59$ to $M=15.73\pm2.97$, $p=.009$). While significant, Tukey Post-Hoc did not indicate where the difference was with *Intentional leader*.

ANOVA indicated significant differences between ethnicities, *Multicultural Leader* ($F=2.668_{(4, 276)}$, $p=.032$, $\eta^2=.037$) and *Embraces Diverse Ideas* ($F=2.795_{(4, 276)}$, $p=.027$, $\eta^2=.039$). Tukey Post Hoc indicated that Asian-Pacific Islanders practiced *Embraces Diverse Ideas* more often than Caucasians ($M=22.00\pm0$ to $M=14.76\pm3.7$, $p=.048$). Despite being significant, Tukey Post-Hoc did not indicate where the difference was with *Multicultural leader*.

ANOVA indicated significant differences between education levels. Female healthcare managers with Bachelors' degrees practiced four contextual intelligence behaviors (42%) more frequently than those with some college/technical training; and in three cases those with Masters' degrees more frequently than those with some college/technical training, *Communitarian* ($F=7.499_{(2, 282)}$, $p=.000$, $\eta^2=.074$), *Mission minded* ($F=3.901_{(2, 282)}$, $p=.009$, $\eta^2=.040$), *Critical thinker* ($F=6.880_{(2, 282)}$, $p=.000$, $\eta^2=.068$), *Future minded* ($F=4.888_{(2,282)}$, $p=.002$, $\eta^2=.049$), and *Intentional leader* ($F=3.390_{(2,282)}$, $p=.018$, $\eta^2=.035$). Tukey Post Hoc indicated that those with a Bachelor's degree practiced *Future minded, Critical thinker, Mission minded,* and *Communitarian* more than those with some college/technical training ($M= 17.60 \pm 2.5$ to 16.22 ± 2.9, $p = .016$; $M=17.25 \pm 2.4$ to 16.7 ± 2.3, $p = .001$; $M=15.87 \pm 3.0$ to 14.63 ± 2.8, $p = .013$; $M=14.76 \pm 4.1$ to 12.58 ± 4.4, $p = .001$), respectively. Those with Masters' degrees practiced *Intentional*

leadership, Critical thinker, and *Communitarian* more often than those with some college/technical training (*M*= 16.84 ± 3.6 to 15.12 ± 3.9, *p* = .016; *M*=17.56 ± 1.9 to 16.17 ± 2.3, *p* = .005; *M*=15.21 ± 3.4 to 12.58 ± 4.3, *p* = .000), respectively.

ANOVA indicated significant differences between experience, *Influencer* (F=2.355$_{(7,355)}$, p=.024, η^2=.057) and *Diagnoses Context* (F=2.271$_{(7,271)}$, p=.029, η^2=.055). Tukey Post Hoc indicated that those with 11-15 years of experience practiced *Influencer* more often than those with more than 36 years of experience (*M*=16.96±2.6 to *M*=14.78±2.3, *p*=.011) and those with 6-10 years of experience practiced *Diagnoses context* more often than those with more than 36 years of experience (*M*=17.83±2.3 to *M*=15.35±2.7, *p*=.020).

Furthermore, independent samples *t*-tests showed several significant differences in contextual intelligence behavior frequency according to Myers-Briggs type of female healthcare managers.

Extroversion or Introversion. Female healthcare managers with a preference for extroversion demonstrated eight contextual intelligence behaviors (67%) more often than their counterparts with a preference for introversion. *Communitarian* (*t*= 3.903$_{(380)}$, 14.53±4.0 to 12.80±4.6, *p*=.000), *Diagnosis context* (*t*=3.443$_{(380)}$, 17.20±2.6 to 16.22±3.0, *p*=.001), *Mission minded* (*t*=2.994$_{(380)}$, 15.58±2.6 to 14.70±3.1, *p*=.003), *Embraces diverse ideas* (*t*=2.053$_{(380)}$, 15.06±3.4 to 14.28±4.0, *p*=.041), *Multicultural leader* (*t*=2.721$_{(380)}$, 17.850±2.5 to 17.09±2.9, *p*=.007), *Future minded* (*t*=3.191$_{(380)}$, 17.84±2.6 to 16.24±2.9, *p*=.002), *Change agent* (*t*=2.638$_{(380)}$, 16.03±2.9 to 15.20±3.3, *p*=.009), and *Intentional leader* (*t*=3.931$_{(380)}$, 16.39±3.5 to 14.89±3.9, *p*=.000) were practiced more frequently by participants who preferred extroversion, respectively. *Critical Thinker, Influencer*, *Consensus Builder,* and *Constructive use of Influence* were not significantly different between the female managers with a preference for extroversion and those with a preference for introversion (Table 5).

Intuition or Sensing. Female healthcare managers with a preference for intuition demonstrated seven contextual intelligence behaviors (58%) more often than their counterparts with a preference for sensing. *Communitarian* (*t*=-6.123$_{(375)}$, 15.35±4.0 to 12.69±4.2, *p*=.000), *Mission minded* (*t*=-2.261$_{(375)}$, 15.58±3.0 to 14.90±2.8, *p*=.024), *Embraces diverse ideas* (*t*=-2.368$_{(375)}$, 15.27±3.6 to 4.34±3.8, *p*=.018), *Influencer* (*t*=-3.251$_{(375)}$, 16.74±2.4 to 15.90±2.5, *p*=.001), *Future minded* (*t*=-2.738$_{(375)}$, 17.20±2.8 to 16.41±2.7, *p*=.006), *Change agent* (*t*=-2.702$_{(375)}$, 16.18±2.9 to 15.30±3.1, *p*=.007), and *Intentional leader* (*t*=-2.776$_{(375)}$, 16.38±3.7 to 15.29±3.8,

p=.006) were practiced more frequently by female managers with a preference for intuition rather than sensing, respectively. *Critical Thinker, Diagnosis Context*, *Multicultural leader*, *Consensus Builder,* and *Constructive use of Influence* were not significantly different between the intuition and sensing preferences. (Table 6)

Thinking or Feeling. Female healthcare manager with a preference for utilizing their thinking function demonstrated five contextual intelligence behaviors (42%) more often than their counterparts with a preference for feeling. *Diagnosis context* ($t=2.328_{(371)}$, 17.10±2.8 to 16.42±2.8, *p=.020*), *Critical thinker* ($t=2.675_{(371)}$, 17.07±2.4 to 16.41±2.3, *p=.008*), *Influencer* ($t=2.419_{(371)}$, 16.60±2.4 to 15.97±2.5, *p=.016*), *Future minded* ($t=2.158_{(371)}$, 17.05±2.8 to 16.43±2.7, *p=.032*), and *Constructive use of Influence* ($t=2.389_{(371)}$, 17.32±2.8 to 16.64±2.7, *p=.017*) were practiced more frequently by thinkers, respectively (Table 7).

There were no significant differences between the female healthcare managers with preferences for either judging or perceiving. However, participants with a preference for perceiving did demonstrate eight CI behaviors (67%) more frequently than those with a preference for judging.

Factor Differences. One-way ANOVA with Tukey Post-Hoc and independent samples *t*-tests also indicated several significant differences according to Factor Components. One-way ANOVA indicated significant differences according to age, ethnicity, and education. There were significant differences found for Factor 2: *Foresight* according to age ($F=2.931_{(4,272)}$, *p=.021*, $\eta^2=.041$). Tukey post hoc did not specify what age groups. Factor 3: *Insight* was practiced more frequently by Asians/Pacific Islanders than Caucasians ($F=3.040_{(4,296)}$, *p=.018*, $\eta^2=.042$; *M*=20.65±1.2 to 15.26±2.7). Finally, Factor 3: *Insight* was practiced more frequently by those with bachelor's degrees and Masters' degrees over those with some college/technical school ($F=5.029_{(3,282)}$, *p=.002*, $\eta^2 =.051$; *M*=15.91±2.9 and 16.03±2.5 to 14.75±2.5), respectively.

Managers with a preference for extroversion practiced Factors 2 and 3 (foresight and insight) more frequently than those with a preference for introversion ($t=4.044_{(380)}$, 16.69±2.3 to 15.63±2.8, *p=.000* and $t=3.889_{(380)}$, 15.75±2.3 to 14.71±2.9, *p=.000*), respectively. Participants with a preference for intuition practiced Factors 2 and 3 (foresight and insight) more frequently than sensing participants ($t=-2.786_{(375)}$, 16.63±2.5 to 15.91±2.6, *p=.006* and $t=-4.250_{(375)}$, 15.97±2.5 to 14.82±2.6, *p=.000*), respectively. Participants with a preference for thinking practiced Factor 1 (Hindsight) significantly more often than feeling ($t=1.746_{(371)}$, 16.83±2.1 to

16.25±2.0, p=.007. Finally, there were no significant differences in factors between participants with a preference for either judging or perceiving.

Discussion

Professional and scholarly literature from several professional domains describe the importance of contextual intelligence in the workplace.[8-24] The purpose of this investigation was to explore how frequently contextual intelligence behaviors are practiced by female healthcare managers. Our findings indicate that 75%, (N=9) of the CI behaviors were practiced with *very high* or *high* frequency, with *Multicultural leadership, Constructive use of influence*, and *Diagnoses context* being the most frequently practiced. The least practiced CI behavior was *Communitarian*. Furthermore, we wanted to describe the psychometric characteristics of an instrument (i.e., CIP) to measure the frequency of CI behaviors. Our findings indicate the CIP to be a valid and reliable measure of contextual intelligence behavior frequency. Furthermore, those behaviors organize into three factors that can be used to develop a contextual intelligence construct (Figure 1). Lastly, we wanted to explore any relationship between CI behavior frequency and MBTI® personality type preference. We found that a majority (67%) of contextual intelligence behaviors were practiced more often by respondents who reported a preference for extroversion and/or intuition.

This may be one of the first investigations to report frequency of contextual intelligence behaviors in the workplace. This may be particularly useful since contextual intelligence is reported to be useful in complex and volatile environments. The implications of these findings are twofold, 1) female healthcare managers generally demonstrate high frequency of contextual intelligence behaviors contributing to their ability to navigate the complexity and volatility of healthcare industry; and 2) we have highlighted an immediate way to improve overall contextual intelligence of female managers within healthcare by focusing on developing *Communitarian* capabilities, *Mission-mindedness,* and capabilities around *Embracing diverse ideas* (see Table 1 for description). However, we found that *Communitarian* behavior was practiced more frequently among minority participants with advanced degrees, indicating that they perceive to intentionally engage in the community (outside of work) more often.

Successfully navigating healthcare, as a manger, should be never a choice between technological or people-oriented solutions but a combination of each.[31] This combination requires a new way of thinking about the elements that contribute to the overall environment. One of the

claims of contextual intelligence is the ability to facilitate performance in these types of environments where leaders, followers, and contextual factors converge to form a nexus.[26] The leader-follower-context nexus becomes the new (and constantly shifting) reality to navigate day-to-day. The presence of higher frequency contextual intelligence behaviors may be an indication of preparedness for this type of organizational nexus.

Therefore, it is our recommendation that future leadership and development programs within healthcare include contextual intelligence construct, especially those in Factors 3 (Insight). As this is only an initial inquiry as to the role and usefulness of CI, it is important that future studies explore whether or not these behaviors are practiced with similar frequencies by males as well as non-manager healthcare professionals and their impact on patient outcomes and organizational effectiveness. Certainly, there is evidence to support that efficient decision-making and other non-clinical skills have a positive impact on patient outcomes.[32] Our findings suggest that contextual intelligence may be a plausible way to enhance some "non-clinical" skills that have a similar positive impact on patient outcomes and ultimately organizational performance.

Our findings support previous research that shows a relationship to personality and leadership behaviors. It is important to include personality preferences when studying leadership in complex environments.[33] CI has been reported to be a valuable to leaders, especially in complex and volatile situations. The MBTI has been widely used to explain the ways in which various combinations of personality traits influence an individual's leadership behaviors.[34] In fact, Carroll[35] reports that one of the most consistent findings from previous studies on leadership skills and the MBTI is that individuals with a preference for extraversion, intuition, feeling, and perceiving were more likely to see themselves as successful leaders. Furthermore, women with preferences for extraversion, intuition, and perceiving were also more likely to be viewed as transformational leaders by their managers.[35] Our finding that female healthcare managers with preferences for extroversion and intuition practiced CI behaviors more often than participants with the comparative preferences; and, while we did not find significant differences, we did see a trend in female healthcare managers with preference for perceiving to practice eight CI behaviors with higher frequency than judging preferences, this supports those findings and contributes support that CI is a valuable leadership construct. Therefore, based on these findings it is possible that females with preferences for extroversion, intuitive, and perceiving may, in fact, demonstrate

leadership in complex and dynamic environments more frequently than women with other personality preferences. It is our recommendation that future leadership development programs consider the developmental needs of the leaders may differ in ways that are related to personality. Helping leadership development participants understand the value of contextual intelligence and then coaching them in how to demonstrate these practices, based on their personality preferences, may have substantial benefits to both the individual and the organization.

One unanticipated finding was the difference between the practice frequency of *multicultural leadership* and *embraces diverse ideas*. In fact, *multicultural leadership* is the most frequently reported behavior and *embraces diverse ideas* was second to last. One reason for this may be the hiring practices of healthcare organizations. While many healthcare organizations look to hire employees with a multicultural background there may be a selection bias to hire those who have similar or at least familiar experiences and beliefs as those doing the hiring or providing hiring recommendations. This may lead to a false positive belief in healthcare organizations that they are diverse, based on cultural and ethnic identity, but in fact may not be diverse if basing diversity on differences or tolerance between ideas or experiences. Therefore, these findings also have implications for diversity initiatives within healthcare and provide evidence that hiring criteria and training should include working with people who think differently and have different professional experiences, regardless of minority status.

It is also noteworthy that the differences between respondent groups had small effect sizes (η^2). According to Cohen[36] a small effect size is one in which there is a real effect, but which you can only see through careful study. In contrast, Cohen says a 'large' effect size is an effect which is big enough, and/or consistent enough that it is obvious to any observer. The fact that our investigation had smaller effect sizes indicates that contextual intelligence is a viable and 'real' construct with subtle nuances requiring close investigation. This adds significant legitimacy to the claims that contextual intelligence is a nuanced, but significant construct, not apparent to the 'naked eye', which may require expert-level instruction to identify and facilitate. Therefore, our recommendation is for training programs in healthcare (and perhaps others – assuming other samples have small effect size) consist of contextual intelligence training. Future investigations must, therefore, explore effect sizes in other industries to see of contextual intelligence is as nuanced or obvious in other settings or with other samples. It may be possible that other industries have larger effect sizes indicating an obvious or glaring defect in the contextual intelligence behaviors of their members. These findings seem to indicate that female healthcare

managers are not aware that they do not display contextual intelligence behaviors as much as others, but nonetheless may be impacting the organizational culture.

Limitations and future recommendations

The goal of any exploratory investigation is to raise awareness and questions for future scholarly inquiry. As one of the first empirical investigations on contextual intelligence in the workplace, this is no exception. Findings of this investigation raise many other important and critical questions as to the relevance, significance, and presence of contextual intelligence. Therefore, it is our recommendation that academics and practitioner-scholars critically appraise these findings to facilitate the development of research questions concerning contextual intelligence. Relative to findings of this investigation we recommend that future inquiry should explore the impact that practicing contextual intelligence has on individual and organizational performance and organizational culture. It is possible, given the nature of several of the CI behaviors that the wholesale practice of contextual intelligence within an organization may have an impact on organizational culture, morale and team engagement, but to date that remains unknown. This study found that contextual intelligence behaviors are perceived to be practiced by female healthcare managers with some frequency, however, it is necessary to establish that contextual intelligence is indeed being practiced according to stakeholders and that its practice has positive outcomes. The major limitation of this study is threatened external validity (generalizability). Despite the intentional absence of men in the participant pool, it remains a limitation of this study, given the number of males in healthcare management. For CI to be truly identified as a viable construct future investigations must include males, larger samples, a larger proportion of diverse ethnicities, and differentiate between organizational leadership level, job type, physician leaders versus non-physician leaders, and clinical managers versus non-clinical managers. Furthermore, there are several factors unique to healthcare, not the least of which is reimbursement, managed care, the heavy burden of regulation and policy, and the level of complexity that make healthcare a unique workplace environment. Therefore, future investigations should also include industries outside of healthcare.

Conclusion

Contextual intelligence is generally practiced with high frequency, however several factors remain at lower frequencies and therefore need to be introduced and developed to ensure holistic integration of the CI construct. Female healthcare managers seem to be well suited for handing the complexity and volatility of fast-paced healthcare environment. CI behaviors seem to be practiced more frequently by those with a preference for extroversion and intuition. Female mangers with higher levels of education and minority status may be more prone to practice these behaviors at higher frequencies. Organizations can include these in hiring, evaluative, and leadership development initiatives to help their organizations attract and retain a contextually intelligent managerial workforce.

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TABLE 1: CONTEXTUAL INTELLIGENCE BEHAVIORS*

CI BEHAVIOR NAME	BRIEF DESCRIPTION
1. Change Agent	Raises difficult and challenging questions that others may perceive as a threat to the status quo.
2. Communitarian	Expresses concern about social trends and issues, and participates in civic and community activities
3. Consensus Builder	Convinces other people to see the common good or a different point of view.
4. Constructive use of Influence	Appropriately uses different types of power to create a desired image and influence.
5. Critical Thinker	Makes connections, integrates, and makes practical application of different actions, opinions, outcomes, and information.
6. Diagnoses Context	Knows how to appropriately interpret and react to shifts or changes in one's surroundings.
7. Embraces Diverse Ideas & People	Works to provide opportunities for diverse members to interact in a nondiscriminatory manner.
8. Future-Minded	Having a forward-looking mentality and sense of direction and concern for where to be in the future. Sees beyond present contradictions.
9. Influencer	Uses interpersonal skills to non-coercively affect the actions and decisions of others.
10. Intentional Leadership	Is aware and proactive concerning their own strengths and weaknesses and has delineated goals for achieving personal best and influencing others.
11. Mission Minded	Communicates how the performance of others affects the mission. Is aware of how their own attitude affects people's perception of who they represent.
12. Multicultural Leader	Can influence the behaviors and attitudes of ethnically diverse people or groups.

*adopted from Kutz, 2017

TABLE 2 FACTOR LOADING WITH ITEM ANALYSIS AND BEHAVIOR MEANS

CIP Factor Name	Factor Loading			Factor Alpha (α)	Corrected Item-Total Correlation	Cronbach Alpha if Item Deleted	Factor Mean	Behavior Mean (SD)
	Factor 1	Factor 2	Factor 3					
FACTOR 1 (HINDSIGHT)				**.79**			**16.49**	
Consensus builder	.813				.55	.77		16.13 ± 2.7
Influencer	.763				.63	.73		16.25 ± 2.4
Constructive use of influence	.751				.64	.72		16.96 ± 2.8
Critical thinker	.699				.60	.75		16.64 ± 2.4
FACTOR 2 (FORESIGHT)				**.84**			**16.18**	
Future minded		.832			.70	.79		16.67 ± 2.9
Diagnosis context		.815			.71	.79		16.77 ± 2.8
Change agent		.803			.68	.80		15.61 ± 3.1
Intentional leader		.798			.66	.82		15.69 ± 3.7
FACTOR 3 (INSIGHT)				**.74**			**15.16**	
Embraces diverse ideas			.822		.58	.65		14.61 ± 3.7
Communitarian			.859		.54	.70		13.45 ± 4.4
Multicultural leader	.738		.472*		.53	.70		17.51 ± 2.7
Mission minded		.777	.563*		.57	.67		15.09 ± 2.9

*Despite loading higher these items were placed in Factor 3 due to acceptable factor loading score of ≥ 4.0 and ≥ 3.0 for sample sizes ≥ 350.[37-38]

TABLE 3 - PSYCHOMETRIC QUALITIES OF CONTEXTUAL INTELLIGENCE PROFILE

	Reliability		Validity			
	Internal Consistency	Cronbach's Alpha item analysis	Content Validity	Convergent Validity	Criterion Related: Concurrent Validity	Construct validity
CIP (48 Item)	$\alpha = .92$	α if item deleted range .914 to .918	Items based on literature review	Pearson correlations $r = .11$ to 47, $p \leq .05$	Significant differences found with one-way ANOVA's and independent samples t-tests	N/A
CIP Behaviors (12 item aggregate)	$\alpha = .90$	α if item deleted range .89 to .91		Pearson correlations $r = .17$ to .63; $p = .000$		KMO = 0.93; with Bartlett's ($X^2 = 2756.63_{(66)}$, $p = .000$) CIP organized into 3 Factors ($\alpha = .74$ to .84)

TABLE 4 – RANKED CI BEHAVIOR FREQUENCIES

CI Behavior	Mean	SD	Practice Frequency (range 0-24)*			
			Very High= $M≥16.75$ (Top 70%)	High $M=15.50 – 16.74$	Moderate M=14.41-15.49	Low = $M≤ 14.40$ (Bottom 60%)
Multicultural leader	17.51	2.679	X			
Constructive use of influence	16.92	2.661	X			
Diagnoses context	16.77	2.827	X			
Future minded	16.67	2.898		X		
Critical thinker	16.64	2.434		X		
Influencer	16.25	2.472		X		
Consensus builder	16.13	2.740		X		
Intentional leader	15.69	3.740		X		
Change agent	15.61	3.091		X		
Mission minded	15.09	2.857			X	
Embraces diverse ideas and people	14.61	3.706			X	
Communitarian	13.45	4.400				X

*Frequency ranges determined *a priori*

TABLE 5 - INDEPENDENT T-TESTS OF CI BEHAVIORS ACCORDING TO MBTI (EXTROVERSION/INTROVERSION).

CI Behavior	MBTI Personality (Mean±SD)		t*	df	p
	Extroversion	Introversion			
Intentional Leader	16.39±3.5	14.89±3.9	3.931	380	.000
Change Agent	16.03±2.9	15.20±3.3	2.638	380	.009
Future Minded	17.14±2.6	16.24±2.9	3.191	380	.002
Multicultural Leader	17.85±2.5	17.09±2.9	2.721	380	.007
Embraces Diverse Ideas & People	15.06±3.4	14.28±4.0	2.053	380	.041
Mission Minded	15.58±2.6	14.70±3.1	2.994	380	.003
Diagnosis Context	17.20±2.6	16.22±3.0	3.443	380	.001
Communitarian	14.53±4.0	12.80±4.6	3.903	380	.000

* All significant at $p≤.05$

TABLE 6 - INDEPENDENT T-TESTS OF CI BEHAVIORS ACCORDING TO MBTI (SENSING/INTUITIVE).

CI Behavior	MBTI Personality (Mean±SD)		t^*	df	p
	Intuitive	**Sensing**			
Intentional Leader	16.38±3.7	15.29±3.8	-2.776	375	.006
Change Agent	16.18±2.9	15.30±3.1	-2.702	375	.007
Future Minded	17.20±2.8	16.41±2.7	-2.738	375	.006
Influencer	16.74±2.4	15.90±2.5	-3.251	375	.001
Embraces Diverse Ideas & People	15.27±3.6	14.34±3.8	-2.368	375	.018
Mission Minded	15.58±3.0	14.90±2.8	-2.261	375	.024
Communitarian	15.35±4.0	12.69±4.2	-6.123	375	.000

* All significant at $p \leq .05$

TABLE 7 - INDEPENDENT T-TESTS OF CI BEHAVIORS ACCORDING TO MBTI (THINKING/FEELING).

CI Behavior	MBTI Personality (Mean±SD)		t^*	df	p
	Thinking	**Feeling**			
Constructive use of Influence	17.32±2.8	16.64±2.7	2.389	371	.017
Future Minded	17.05±2.8	16.43±2.7	2.158	371	.032
Influencer	16.60±2.4	15.97±2.5	2.419	371	.016
Critical Thinker	17.07±2.4	16.41±2.3	2.675	371	.008
Diagnoses Context	17.10±2.8	16.42±2.8	2.328	371	.020

* All significant at $p \leq .05$

Figure 1: Contextual Intelligence Circumplex