FourSight Research Supplement

Updated Evidence of Reliability and Validity

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Contents

Overview & Purpose

The first technical manual for FourSight was published in 2002. Since that time a range of research investigations have added much to our understanding of the psychometric properties of FourSight and to the evidence that supports the validity of this measure. Moreover, such studies have made significant contributions to the expansion of FourSight as a theory of human creativity. All of this work has value both for the science of creativity and to the practical implications of both the FourSight theory and measure.

As a company, FourSight takes pride in the fact that our work is grounded in science. The purpose of this research supplement is to provide an up-to-date summary of the existing research that further supports the reliability and validity of the FourSight measure. It is our hope that this research supplement will support those who wish to use FourSight as a research tool. And we hope that new knowledge generated through the research summarized herein will enhance the impact FourSight practitioners have on the individuals and organizations they serve. A sound measure supports good research, and good research builds a body of knowledge that supports applied work.

This research supplement is broken into three sections. The first section briefly reviews the descriptive statistics associated with the four FourSight scales, Clarifier, Ideator, Developer, and Implementer. This section also compares males and females across these four scales and age. The next section examines the reliability indices for FourSight. And then the third, and much longer section, reviews the studies that have contributed to the evidence for FourSight's validity.

We invite, and actively support, future researchers who might wish to use FourSight in their studies. Interested parties can send enquiries to Sarah Thurber (Sarah@FourSightonline.com).

Section One: Descriptive Statistics

Descriptive statistics provide a summary of information useful in understanding the basic results generated by a measure. Here mean scores (i.e., averages) and standard deviation (i.e., variability in scores) are generally used to give a sense for how a large sample of people responds to a measure. During a debrief session of FourSight results participants may be curious about average scores for the FourSight scales, and whether these average scores vary across gender and age. The means and standard deviations for FourSight version 8.0 for a sample of 7,211 are as follows: Clarifier mean = 32.86 and standard deviation = 4.58; Ideator mean = 31.80 and standard deviation = 5.52; Developer mean = 31.70 and standard deviation = 5.51; and Implementer mean = 34.11 and standard deviation = 5.12. Male and female participants were compared on the FourSight scales. Across two versions of FourSight (version 6.1 and 8.0), males had higher scores than females on Clarifier, Ideator, and Developer scales but not for the Implementer preference. A team of FourSight researchers is currently carrying out a more detailed analysis of gender differences on FourSight, including an examination of differences in light of placement within the organizational hierarchy. The question to be answered through this study is whether FourSight preferences follow a similar pattern between men and women across six different organizational levels, from non-management positions to senior executive positions.

Mean FourSight Score (FourSight version 8.0, n=7211)
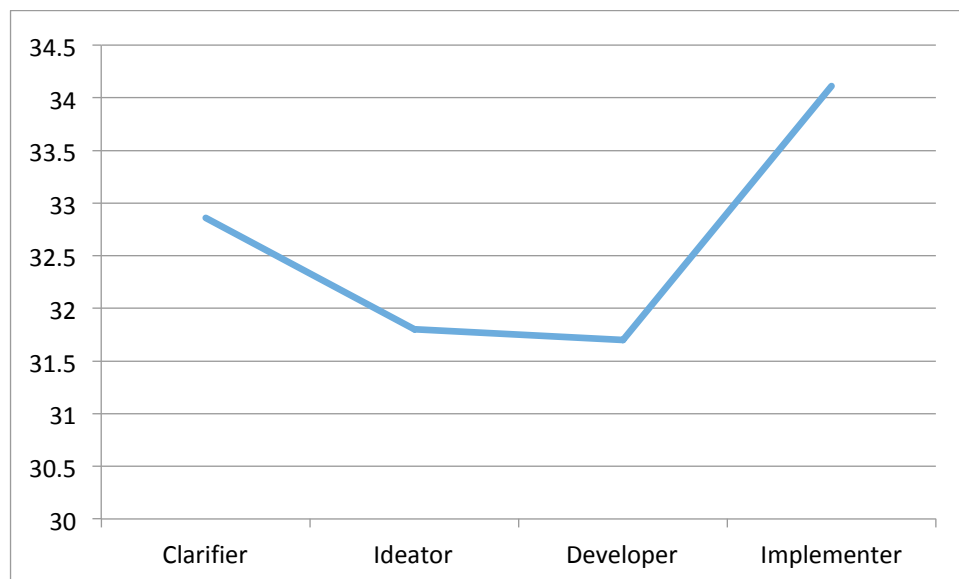
Table 1.

FourSight Average Scores compared across Males and Females.

Version 6.1		N	M	SD
Clarifier	Females	4744	32.93	4.71
	Males	4737	33.70	4.70
Ideator	Females	4744	31.42	5.88
	Males	4737	32.97	5.51
Developer	Females	4744	31.28	5.13
	Males	4737	32.09	5.06
Implementer	Females	4744	30.36	4.86
	Males	4737	30.25	4.72
Version 8.0		N	M	SD
Clarifier	Females	3005	32.52	4.60
	Males	3176	33.13	4.52
Ideator	Females	3005	31.05	5.59
	Males	3176	32.57	5.31
Developer	Females	3005	31.16	5.59
	Males	3176	32.17	5.39
Implementer	Females	3005	34.13	5.08
	Males	3176	34.19	5.08

Mean FourSight Scores By Gender
Females (n = 3,005)   Males (n=3,176)
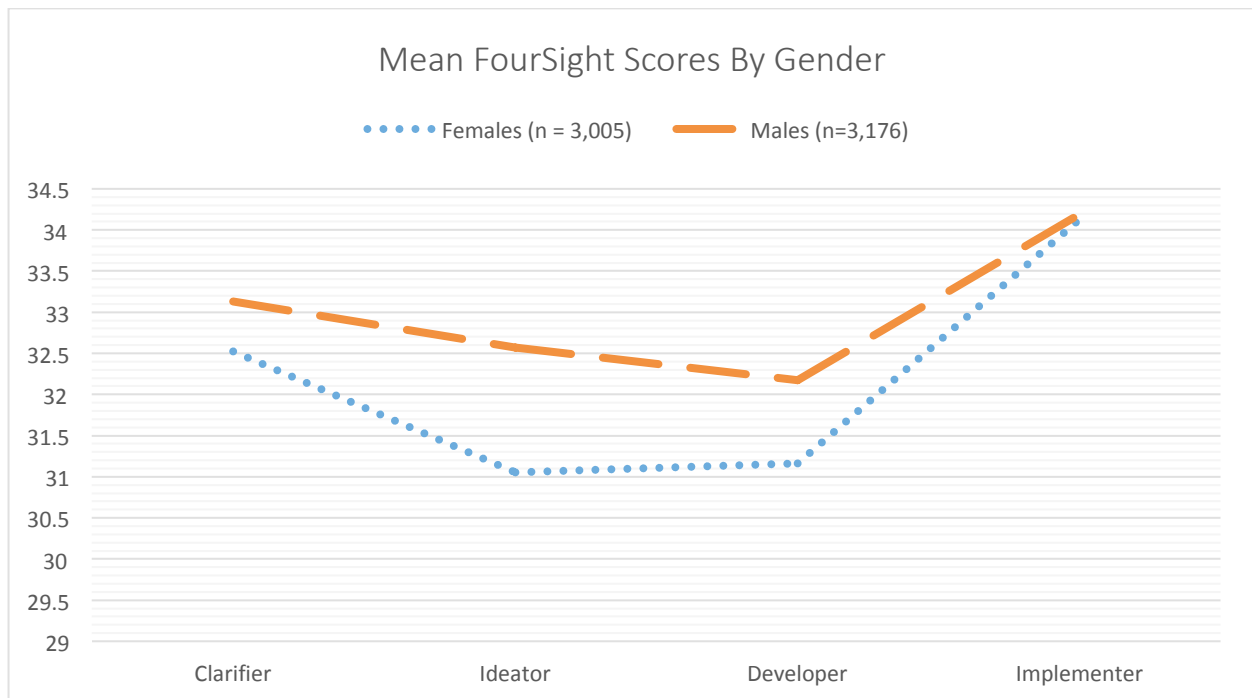
Table 2 presented mean scores for age groups. Ideator scores did not change with age ($r = .00$, $p = .99$). Clarifier and Developer scales had a small negative relationship with age ($rs = -.05$, $p < .00$) whereas Implementer scale had a small positive correlation ($r = .07$, $p = .00$).

Table 2.

FourSight Average Scores Compared across Age Groups.

	Age	N	M	SD
Clarifier	<19	99	33.11	5.33
	20-29	1379	33.17	4.41
	30-39	1568	32.85	4.56
	40-49	1549	32.62	4.59
	>50	1337	32.51	4.60
	Total	5932	32.79	4.56
Ideator	<19	99	32.64	4.97
	20-29	1379	31.55	5.42
	30-39	1568	32.00	5.43
	40-49	1549	31.82	5.50
	>50	1337	31.85	5.71
	Total	5932	31.82	5.51
Developer	<19	99	31.91	6.44
	20-29	1379	32.29	5.49
	30-39	1568	31.81	5.45
	40-49	1549	31.36	5.40
	>50	1337	31.04	5.54
	Total	5932	31.63	5.50
Implementer	<19	99	32.41	5.30
	20-29	1379	33.13	5.20
	30-39	1568	34.34	5.04
	40-49	1549	34.66	4.97
	>50	1337	34.40	5.00
	Total	5932	34.13	5.09

Section Two: Reliability Evidence for FourSight

Reliability is basic quality of a psychometric instrument that indicates its consistency. Consistency of a scale can be approached in different ways such as across time (test-retest reliability), across raters or judges (inter-rater reliability), across different versions of the scale (parallel form reliability) and across items (internal reliability). Quite a few studies reported internal reliability for the four scales that make up FourSight. Table 3 summarizes evidence from previous research using FourSight. Cronbach's alpha is most often used as the index of internal reliability. For new measures .60 is considered acceptable and for established measures .70 or greater is considered good.

Table 3.

Internal reliability (Cronbach's alpha) of FourSight.

Version / Study	N	Clarifier	Ideator	Developer	Implementer
6.0	293 to 296	.78	.81	.79	.81
6.1 (Richards, 2006)	69	.72	.68	.68	.71
6.1 (McLean, 2004)	143	.80	.75	.86	.62
Uribe Larach, 2009	65	.68	.72	.79	.75
Puccio & Schwagler, 2009	60	.74	.82	.78	.73
6.1 (Puccio & Acar, 2015)	7280	.78	.82	.78	.75
6.1 (Miller, Puccio, Acar, & Thurber, under review)	20784	.79	.81	.81	.73
6.1 (Miller, Puccio, Acar, & Thurber, under review)	32879	.79	.81	.81	.73
8.0	1392	.70	.79	.80	.75

As seen in Table 3, FourSight has strong internal reliability based on Cronbach's alpha coefficient values. It is hoped that future studies will explore other forms of reliability, in particular test-retest reliability. While anecdotal reports show good test-retest reliability, that is FourSight respondents generally report that their scores remain consistent over time, no empirical investigation has statistically tested FourSight for consistency over time. FourSight's research teams invites, and would be willing to support, such studies.

Section Three: Validation Evidence for FourSight

Psychological measures must show evidence of their validity. Validity is concerned with whether a measure truly assesses what it says it measures. Without validity, a measure's usefulness is seriously compromised. In fact, a measure without validity is psychologically dangerous. Why? Measures are often used to draw meaning and make certain conclusions about people. If there is no evidence to support such assertions, then users are likely to give undue credence to the results. To use a medical analogy, the use of unsubstantiated diagnostic tools is akin to malpractice.

Validity can be assessed in a number of ways. The weakest form of validity, but perhaps the one that is most often used by lay people, is 'face validity.' Face validity refers to whether a test looks like it measures its target construct (Hogan, 2004). There are much more scientific and meaningful ways of establishing validity. These approaches include: examining related literature to analyze whether the design of the measure represents the main constructs identified in the literature (i.e., content validity); the degree to which the test measures the target construct (i.e., construct validity), comparing a newly developed measure against well-established measures to see if expected relationships appear (i.e., concurrent validity), and using the scores derived from a measure to predict a predetermined criteria or future performance or behavior (i.e., predictive validity). The purpose of this section is to summarize the evidence collected so far that supports the construct, concurrent and predictive validity of FourSight.

Unlike reliability, which can be summarized in a single statistic, validity is much more complex and is established across a series of studies. The purpose of this extensive review is to explore the mounting evidence for the validity of FourSight. From a practical standpoint this has value in several ways. First, validity helps to establish confidence that the measure is indeed psychological meaningful (i.e., there is accuracy in what it tells you about yourself and others). Second, the results from these studies have been incorporated into the content used to interpret the results generated by FourSight. Third, such studies are crucial in helping to expand FourSight theory.

Concurrent Validity

FourSight and Personality Measures

As FourSight is about creative problem-solving preferences, the individual scales (i.e., Clarifier, Ideator, Developer, and Implementer) should naturally reflect certain personality traits. Researchers explored the connections between FourSight and several well-known personality measures and framework, namely Adjective Checklist (ACL; Domino, 1970; Gough, 1979; Gough & Heilbrun, 1983), Big-Five Personality Traits as measured by International Personality Item Pool (IPIP, 1999), DISC Personal Profile and Myers-Briggs Type Indicator (MBTI). The following section discusses the research focused on each of these personality measures, respectively.

Adjective Checklist

To develop a deeper understanding of the personality make-up of the four preferences measured by FourSight, Rife (2001) compared this measure to the Adjective Check List (ACL; Gough & Heilbrun, 1983). The ACL was developed as part of the studies into the creative personality conducted at the Institute of Personality Assessment and Research (IPAR). Thus the origins of the ACL go back to 1949. The ACL contains 300 adjectives. Respondents are asked simply to check the adjectives they feel are descriptive of themselves. ACL, a 300-item measure consisting of adjectives, was a useful instrument to use for a validation study because it is an established measure of creative personality (Kaduson & Schaefer, 1991) along with other related traits such as change, achievement, endurance, and self-confidence measured by the same instrument. Although ACL can measure 37 different traits, in Rife's analysis, only the scales that appeared to be useful in developing further insights into the four FourSight preferences were used. Others, for example, military leadership, counseling readiness, critical parent, etc., were excluded.

A total of 134 (65 male and 69 female) participants took part in this study. Average age of the participants was 40.29. Table 4 shows the correlations that were produced by comparing the 25 ACL scales to the four FourSight preferences. Version 6.1 was used in this study. The four FourSight preferences were also compared to age and gender, and no significant relationships were found.

Forty-nine of the correlations between FourSight and the ACL were significant (see Table 4). To interpret these results, we begin with the ACL scales that were related significantly to all four FourSight preferences. Afterwards each FourSight preference is taken in turn and examined in light of its relationships with various ACL scales. ACL scales that significantly correlated with all four FourSight preferences were: Favorable, Achievement, Creative Personality, Self-Confidence, and Succorance. Individuals with high scores across all four preferences can be described as follows: adaptable; aware of own strengths; strive to be outstanding in all pursuits; highly creative; confident in their ability to achieve goals; and not dependent upon emotional support from others. Taking these characteristics together it would seem that high scores across all four FourSight preferences would be a good indicator of well-being. High scorers may reflect a problem-solving and creative-thinking orientation to the world.

These individuals may therefore have greater coping skills and may be in a better position to respond to life's challenges. As a result of their strong problem-solving preferences, they may possess an internal locus of control, feeling that success does not result from chance and that opportunities are created through one's own efforts.

From a creativity research perspective, what is most notable among the scales that related across all four preferences was the relationship with the Creative Personality scale. This scale emerged out of studies conducted at IPAR. The adjectives on this scale were able to discriminate between groups of individuals who were socially recognized as being highly creative from groups that were judged to be less creative. The good news here for FourSight is that all four preferences were related to high levels of creative ability. This makes theoretical sense as in order to achieve high levels of creative productivity, one would need to master the mental operations and attitudes found across the creative process.

The Clarifier preference correlated significantly with Endurance, Intraception, and Order. Endurance refers to the ability to persist in any task undertaken. This scale is also related to Developer and Implementer scales. It would seem that the parts of the process that require persistence would be the energy required to analyze the problem space (Clarifier), the effort necessary to refine an idea into a workable solution (Developer), and the dedication to see a solution through to fruition (Implementer). It is interesting to note that Ideator was the only one of the preferences not correlated with Endurance, which may indicate that this is not within their area of strength. A potential point of awareness for someone who enjoys ideation is the importance of seeing one idea through to conclusion. Intraception refers to attempts to understand one's own behavior or the behavior of others. This scale also correlated significantly with Ideator and Developer. Order refers to a focus on neatness, organization and planning. This ACL scale also correlated significantly with the Developer and Implementer preferences.

Five of the ACL scales yielded significant relationships with the Ideator preference alone. They were Total, A1 Scale (High Origence, Low Intellectence), A2 Scale (High Origence, High Intellectence), Affiliation, and Exhibition. The A1 and A2 scale relationships appear to be driven by the creativity component found within both scales. Here creativity refers to a capacity to think imaginatively, to bring ideas into being, to influence one's environment through aesthetic criteria, to discern the underlying elements of order in disorder, and to make sense out of nonsense. Given this definition of creativity it would seem as though the Ideator preference would more clearly embody these characteristics than the other three preferences. Affiliation refers to a person who seeks to maintain numerous personal friendships. Higher scorers on this scale can be described as people who are comfortable in social situations, like to be with others, adapt easily to the changing demands of group process, gloss over inner complexities, and take people at face value. Exhibition refers to a person who behaves in a way that draws immediate attention. Some of the adjectives associated with this scale are active, adventurous, aggressive, assertive, daring, energetic, forceful, humorous, headstrong, impatient, impulsive, restless, spontaneous, and versatile. High scorers on the Masculine scale are described as taking initiative, being forceful and stretching the limits. These traits seem to fit readily with the Ideator.

Six of the ACL scales yielded significant relationships for both the Ideator and Implementer preferences, indicating that these two FourSight preferences share some common characteristics. ACL scales that related to both Ideator and Implementer were Abasement, Autonomy, Change, Dominance, Masculine and Self-Control. Abasement and Self-Control were correlated negatively with the two FourSight preferences. Therefore, high scorers on the Ideator

and Implementer preferences could be described as people who are not likely to express feelings of inferiority through self-criticism and whose narcissistic claims often lead to broken rules and altercations. Adjectives that appear to be descriptive of the high Ideator and Implementer are adventuresome, aggressive, ambitious, demanding, determined, dominant, opportunistic, mischievous, rebellious, self-seeking, stubborn, tough, and uninhibited.

The remaining relationship that has not been explored yet is the relationship between A4 scale (Low Origence, High Intellectence) and FourSight. The A4 scale correlated with Clarifier, Ideator, and Developer. High scorers are drawn to intellectual activity either through generating many ideas or solutions (Ideator) and solutions or analyzing, synthesizing, and refining the situations, solutions, or ideas (Clarifier and Developer). Perhaps the Implementer did not significantly correlate with this scale given this preference's orientation towards action, and as such may have less tolerance for intellectual concerns.

Table 4.

Correlations Between FourSight Scales and ACL Dimensions (N = 134).

ACL Dimensions	Clarifier	Ideator	Developer	Implementer
Total	.06	.26**	.08	.02
Favorable	.20*	.44**	.23*	.17
Unfavorable	-.05	-.01	-.09	-.10
Feminine	-.08	.15	-.05	-.10
Masculine	.12	.30**	.11	.18*
A1 Scale	.08	.29**	.10	.04
A2 Scale	-.05	.37**	.02	-.01
A3 Scale	.00	.10	.02	-.01
A4 Scale	.19*	.25**	.24**	.13
Abasement	-.11	-.34**	-.06	-.31**
Achievement	.18*	.44**	.25**	.35**
Affiliation	.09	.28**	.10	.04
Aggression	-.06	.13	-.11	.14
Autonomy	.01	.36**	-.03	.21
Change	-.02	.49**	-.03	.17*
Creative personality	.23**	.69**	.28**	.27**
Dominance	.11	.40**	.10	.33**
Endurance	.21*	.14	.30**	.23**
Exhibition	.05	.37**	.00	.15
Intraception	.25**	.39**	.31**	.16
Nurturance	.01	.06	.05	-.03
Order	.23**	.03	.31**	.18*
Self-confidence	.20*	.53**	.22**	.29**
Self-control	-.03	-.34**	-.00	-.18*
Succorance	-.24**	-.36**	-.26**	-.31**

*p < .05; ** p < .01

Big-Five Personality Traits

Contemporary psychological research often uses Big-Five Personality Traits framework in research on human personality (John & Srivastava, 1999). This framework was developed based on factor analytic studies that revealed five major personality traits represented by the acronym OCEAN: **o**penness to experience, **c**onscientiousness, **e**xtraversion, **a**greeabless, and **n**euroticism. Campos, Rubio, Atondo, and Chorres (2015) investigated the relationship between FourSight and Big-Five personality traits as measured by International Personality Item Pool

(IPIP, 1999). Analyses with 183 entrepreneurs (64 females and 118 males) indicated interesting connections between the two measures, which are presented in Table 5.

The highest correlation was between Ideator and openness to experience but openness to experience was significantly related to Clarifier and Developer styles, as well. These findings are important because openness to experience is the strongest correlate of creativity among all personality traits (Kaufman, 2013; Silvia, Nusbaum, Berg, Martin, & O'Connor, 2009) and FourSight as a model of creativity styles seems to confirm that for the most part. Non-significant relationship with Implementer scale may be because of kinesthetic and action-oriented nature of this particular style that does not call for deeper cognitive engagement during the processes of solution generation, refinement, and improvement.

Neuroticism was negatively related to Clarifier and Developer scales and positively related to Implementer scales. These negative relationships are not surprising because of the negative attributes of neuroticism such as anxiety, jealousy, moodiness, worry, frustration, and loneliness. Positive relationship with Implementer scale may stem from the possibility that those with neurotic inclination may seek relief through taking action and getting involved in different things. Getting things done may provide psychological comfort. Conversely, incomplete tasks or too much thinking and planning without action may lead to some of the above symptoms.

Extraversion was also significantly related to Clarifier, Ideator and Developer preferences. The positive relationship with Ideator was expected as Ideators tend to be outgoing and open to sharing and receiving ideas from others. Agreeableness was related to both Clarifier and Implementer styles. These two styles are more likely to take constraints and limitations into consideration because Clarifiers collect data and develop awareness about potential issues to face and Implementers are those who are likely to confront issues while executing the plan or idea. Therefore, people with these two preferences are more likely to find a midway and negotiate reflecting their higher agreeableness.

Table 5.

Relationship Between FourSight and Big-Five Personality Traits (N = 183; Adapted from Campos, Rubio, Atondo, & Chorres, 2015)

FourSight	Neuroticism	Extraversion	Openness to experience	Agreeableness	Conscientiousness
Clarifier	-.25*	.12*	.24**	.14*	.22**
Ideator	-.15*	.18**	.41**	-.07	-.29**
Developer	.04	.16*	.28**	.04	.10
Implementer	.11*	-.08	-.09	.16*	.16

Conscientiousness had a positive relationship with Clarifier and negative relationship with Ideator scales. Considering their nature as thorough, efficient, orderly, organized and vigilant, the overlap between Clarifiers and highly conscientious people is understandable. Given the negative correlation with conscientiousness, the very same characteristics can be the blind spots for Ideators because they may not pay attention to details and approach problems from idealistic rather than realistic perspective.

DISC Personal Profile

Another commonly used personality measure is DISC Personal Profile. DISC was developed based on framework presented by Martson (1928) and is used more often in organizational context. It aims to reveal "those behaviors readily seen and reported" (Inscape Publishing, 1996, p. 4) rather than stable traits. The DISC stands for Dominance, Influence, Steadiness, and Conscientiousness. Puccio and Grivas (2009) administered DISC and FourSight to 137 (51 male and 96 female) participants. Average age of the participants was 42.

There are two major dimensions or points of distinction among the DISC components: a) perceived power relative to the environment, and b) level of favorableness about environment. Those with Dominance and Influence traits reflect relative power over the situation whereas those with Steadiness and Conscientiousness traits see their environment as more powerful than oneself. As a result, those with Dominance and Influence are more comfortable with change and those with Steadiness and Conscientiousness are inclined to adapt to their environment.

Regarding the favorableness, those with Dominance and Conscientious traits are related to unfavorable perspective towards their environment, whereas those with Influence and Steadiness traits view their environment as more favorable. An important implication of this distinction is that the former values people over the tasks and the latter values tasks over people.

Table 6.

Relationship Between FourSight and the DISC (N = 137)

	DISC Scales			
FourSight preferences	Dominance	Influence	Steadiness	Conscientiousness
Clarifier	.12	-.19*	-.13	.29**
Ideator	.30**	.10	-.40**	-.14
Developer	.10	-.12	-.12	.24**
Implementer	.26**	.08	-.23**	-.07

As presented on Table 6, interesting patterns of relationship were observed with the pairs of Ideator-Implementer and Clarifier-Developer scales. The pair of Ideator-Implementer was positively related to Dominance and negatively related to Steadiness. These findings confirm the expectation that Ideators and Implementers are more likely to dominate others in a group with their strong will and determination. The way they dominate others may be different based on their style. For example, Ideators may push for their ideas to be accepted by others whereas Implementers may push for action. The negative relationship with Steadiness indicates relaxed, patient, predictable, deliberate and steady personality is less likely to be observed among Ideators and Implementers. More specifically, Ideators are expected to be less predictable and steady whereas Implementers tend to be less patient and deliberate.

The pair of Clarifier-Developer was positively related to Conscientiousness. This finding converges with Campos et al. (2015) who also found significant relationship between Conscientiousness and Clarifier. Clarifiers are often respectful to the rules and structure and pay attention to details. This is what would be expected from those with high Conscientiousness. Clarifier scale was also negatively related to Influence. Clarifiers' tendency to focus on details,

facts, and data may prevent them from seeing the big picture and potential ways of making an influence.

Myers-Briggs Type Indicator (MBTI)

One of the most popular measures of personality is the Myers-Briggs Type Indicator (MBTI; Myers & McCaulley, 1985). The MBTI is based on the work of Carl Jung and is a measure of psychological type. There are four dimensions that are assessed by the MBTI. Extraversion-Introversion looks at a person's orientation to either the outer world (extraversion) or the inner world (introversion). Sensing-Intuition examines how people prefer to take in information. Sensing types like to work hands-on while Intuitives prefer to work with impressions. The third dimension, Thinking-Feeling refers to the way in which people make decisions, either in an objective (Thinking) or in a subjective manner (Feeling). The final dimension Perceiving-Judging examines how people structure their lives. Perceiving types live a more open life style, going with the flow, while Judging types prefer order and structure.

Versions 5.0 and 7.0 of FourSight were compared to the MBTI (Form G) in two different samples. Correlation coefficients appear in Table 7. When the correlations are analyzed together in these two samples, the Ideator – Intuition link is the most obvious association (rs = .58 and .48), which indicates that Intuition relates strongly to the Ideator preference. Intuitive types are described as future focused, concerned with possibilities, innovative, imaginative, and drawn to change. These characteristics seem to be quite descriptive of an individual whose preference within the creative process is to play with ideas.

Second, JP dimension had similar patterns with the FourSight scales. Ideator was positively related to Perceiving style (rs = .33 and .26). This would indicate that the Perceiving type is more likely to report a preference for ideation. Perceiving types live a flexible life style and enjoy exploring opportunities without limits. Perceiving types are described as spontaneous, curious, and flexible. These qualities seem to coincide with the function of ideation within the creative process.

Perceiving was negatively related to the other three scales (Clarifier, Developer, and Implementer), which, in turn, imply their positive association with Judging style. Some of the correlations were not significant but they had a consistent direction across the two samples. This indicates that the high Clarifiers, Developers, and Implementers tend to express a preference for the Judging type measured by the MBTI. Judging types enjoy being decisive: they like to establish closure, have clear limits, and plan in advance. These qualities would seem to fit the Clarifier and Developer preferences.

FourSight 7.0 was investigated with MBTI's Form M. Results were presented in Table 7. Analyses with 139 participants confirmed the Intuition – Ideator link (r = .30). Additionally, Introversion was negatively related to Implementer scale (thus, positively related to Extraversion). Clarifier was positively related to Introversion and negatively related to Feeling (thus positively related to Thinking). Perceiving style was positively related to Ideator scale, which is consistent with the results from Form G. Contrary to Form G, correlation between Developer scale and Perceiving was positive.

Table 7.

Relationship Between FourSight and the MBTI (Form G) in two different samples

Sample 1 = 53 Version 5.0	E-I	S-N	T-F	J-P
Clarifier	.20	-.26	-.16	-.52**
Ideator	-.04	.68**	.21	.33
Developer	.22	-.17	-.22	-.54**
Implementer	-.21	-.03	-.05	-.11
Sample 2 = 81 Version 7.0				
Clarifier	-.03	.09	-.12	-.15
Ideator	-.14	.48**	-.04	.26*
Developer	.01	.01	-.15	-.19
Implementer	-.21	-.03	-.07	-.27*

Table 8.

Relationship Between FourSight and the MBTI (Form M)

N = 171	E-I	S-N	T-F	J-P
Clarifier	.20*	.08	-.18*	-.16
Ideator	-.05	.30**	.10	.27*
Developer	.16	.04	.11	-.22**
Implementer	-.32**	-.02	.09	-.07

Perino (2005) also investigated the relationship between FourSight and MBTI (Form Q) with 171 participants who have had over 20 years of military or civil service. As seen on Table 9, he also found those three significant correlations between JP and Clarifier and Developer scales as well as SN and Ideator scales. Additionally, EI had a negative relationship with Ideator and Implementer scales and SN had a negative relationship with Implementer scale.

Table 9.

Relationship Between FourSight and the MBTI (N = 171)

FourSight	E-I	S-N	T-F	J-P
Clarifier	-.13	-.09	-.02	-.27**
Ideator	-.24**	.46**	.09	.19
Developer	-.15*	.08	-.05	-.23**
Implementer	-.28**	-.20**	.04	-.22

Those findings showed that connections between intuition (N) and Ideator scales as well as Judging (J) and Clarifier and Developer scales are clear, whereas others are dubious and require more research with larger samples.

In summary, it seems that the relationships that emerged between the MBTI and FourSight are quite easily interpreted and appear to be theoretically expected.

Jackson Personality Inventory-Revised

Puccio and Schwagler (2008) examined the relationship between FourSight and dimensions from Jackson Personality Inventory-Revised (JPI-R). As seen in Table 10, Clarifiers tend to demonstrate higher organization and lower anxiety and sociability. Ideators are associated with higher complexity, breadth of interest, innovation, tolerance, risk-taking and lower organization and traditional values. Developer was also positively related to innovation and negatively related to traditional values, revealing the points of overlap between Developer and Ideator scales. Implementer was also positively related to social confidence and organization.

Table 10.

Relationship Between FourSight and the Jackson Personality Inventory-Revised (N = 60)

	Clarifier	Ideator	Developer	Implementer
Complexity	.06	.61**	.19	.01
Breadth of interest	.08	.55**	.12	.14
Innovation	-.02	.74**	.26*	.11
Tolerance	.03	.30*	-.11	-.08
Empathy	-.08	.21	.06	-.12
Anxiety	-.30*	-.13	-.08	-.05
Cooperativeness	.07	-.12	.04	-.17
Sociability	-.36**	.02	-.22	.08
Social confidence	-.10	.12	-.12	.31*
Energy level	.00	-.09	-.17	.23
Social Astuteness	.03	-.10	-.12	.21
Risk-taking	-.18	.39**	-.16	.16
Organization	.27*	-.29*	.13	.27*
Traditional values	-.19	-.38**	-.28*	.08
Responsibility	.14	.19	-.01	-.11

FourSight and Cognitive Style Measures: KAI & CPSP

The field of psychology and individual differences is rich in terms of different models of cognitive styles and preferences. Although they have quite different perspectives on individual differences, there is some overlap between different models. Researchers examined possible overlaps between FourSight and Kirton Adaptation-Innovation Inventory (KAI) and Creative Problem Solving Profiling Inventory. This section summarizes the findings and highlights implications of the findings.

Kirton-Adaptation-Innovation Inventory (KAI)

The Kirton Adaption Innovation Inventory (KAI; Kirton, 1976) is a measure of creativity style. Introduced in 1976 by a British researcher named Michael Kirton, the KAI has been widely researched and used in applied settings. The KAI measures the way in which people express their creativity, known as creativity style, not their capacity or potential to be creative. Total scores on the KAI, which range from 32 to 160, place respondents on a continuum that runs from an adaptive orientation to an innovative one. Adaptors express their creativity by working within the system. They find ways to continuously improve the existing paradigm. Innovators by contrast create in a more radical and threatening manner as their ideas tend to challenge existing paradigms. Their creativity can be said to be discontinuous as it breaks with the past. Both styles are creative, they simply represent different ways of being creative.

The KAI total score is comprised of three distinct sub-traits. The first is called Sufficiency of Originality (SO) and is concerned with the degree to which an individual prefers to proliferate original ideas. Adaptors tend to produce a small number of original responses to problems and then focus on moving the ideas forward. Innovators, on the other hand, prefer to toy with ideas and generate many possibilities. The second sub-trait is called Efficiency (EFF). This sub-trait focuses on individuals' preferences to be methodical, systematic, and thorough. Adaptors show these tendencies while innovators find it more challenging to focus on the details. The final sub-trait is Rule/Group Conformity, which relates to the extent to which an individual respects authority, seeks to follow the rules, and conforms to prevailing thought. Adaptors prefer to conform to rules and authority. Innovators resist conforming and are therefore more independent minded. On all three KAI subscales innovators receive higher scores than adaptors (just as with the total score).

Given its focus on creativity style and its well-established research record, the KAI was used as a continuous point of comparison throughout the development of FourSight. Table 11 provides a summary of the correlations yielded through comparisons of various versions of FourSight against the KAI.

In reviewing the correlations between the KAI and different versions of FourSight, several consistent results are apparent. First, it is clear that the Ideator scale has a strong positive relationship with total score on the KAI. This positive relationship indicates that, as preferences for Ideator increase, the respondents also show an increased preference for Kirton's innovative style. This relationship cuts across all subscales, but is most prominent for the Sufficiency of Originality subscale. This would be expected as both measures describe a person who enjoys generating ideas. Second, on three of the four FourSight versions tested against the KAI, Clarifier produced a moderate negative relationship with Kirton's Efficiency scale. This negative relationship indicates that as scores for Clarifier go up, scores for the Efficiency subscale go down (lower scores indicate a preference to be efficient). This makes theoretical sense as clarifying the problem would seem to be related to a focus on being thorough, methodical, and precise. Third, on the most recent three versions, Developer produced a moderate negative relationship with the Efficiency scale. As with Clarifier, it would seem reasonable to expect that for ideas to be evaluated and refined into workable solutions, there would be an increased preference to be thorough and methodical.

Table 11.

Relationship Between Four FourSight and Creative Problem Solving Profiling Inventory

Variables	Total	SO	EFF	RGC
		FourSight Version 3.0		
Clarifier (*n* = 138)	.03	.28***	-.20**	-.11
Ideator (*n* = 141)	.36**	.50***	.04	.20*
Developer (*n* = 138)	.09	.30***	-.16	-.03
Implementer (*n* = 138)	.21*	.35***	-.03	.10
		FourSight Version 4.1		
Collector (*n* = 57)	.10	.37**	-.09	-.11
Clarifier (*n* = 57)	-.13	.22	-.24	-.29*
Ideator (*n* = 57)	.44***	.76***	-.09	.06
Developer (*n* = 57)	-.11	.23	-.32*	-.27*
Implementer (*n* = 57)	.12	.40**	-.11	.11
		FourSight Version 5.0		
Collector (*n* = 146)	-.05	.12	-.12	-.06
Clarifier (*n* = 146)	-.22**	-.07	-.23**	-.06
Ideator (*n* = 147)	.42***	.43***	.18*	.42***
Developer (*n* = 145)	-.28***	-.03	-.36***	-.11
Implementer (*n* = 145)	-.06	.12	-.19*	.01
		FourSight Version 6.0		
Clarifier (*n* = 86)	-.14	.02	-.37***	-.08
Ideator (*n* = 86)	.53***	.64***	.18	.27*
Developer (*n* = 87)	-.03	.12	-.32**	-.07
Implementer (*n* = 87)	.08	.21 (p < .055)	.15	.08
		FourSight Version 6.0 (Campos et al., 2015)		
Clarifier (*n* = 183)		.22*	.12*	-.09
Ideator (*n* = 183)		.33**	-.24*	-.14
Developer (*n* = 183)		-.08	-.11*	.23*
Implementer (*n* = 183)		-.09	-.06	.21*
		FourSight Version 6.0 (Richards, 2006)		
Clarifier (*n* = 69)	-.06	-.01	-.10	-.06
Ideator (*n* = 69)	.24**	.37**	-.02	.11
Developer (*n* = 69)	-10	.14	-.27**	-.16
Implementer (*n* = 69)	.29**	.43**	.02	.17*
		FourSight Version 7.0		
Clarifier (*n* = 157)	-.08	.05	-.33**	-.08
Ideator (*n* = 157)	.50**	.53**	.22**	.43**
Developer (*n* = 157)	-.24*	-.11	-.40**	-.10
Implementer (*n* = 157)	-.03	.05	-.12	-.02

*p < .05; ** p < .01; *** p < .001

In summary, comparisons between FourSight and the KAI revealed three consistent results. These results show that FourSight is not biased towards one of Kirton's creativity styles (i.e., neither adaptor nor innovator style) to the exclusion of the other. This is critically important

as both the adaptive and innovative styles are equally valuable ways of expressing creative ability; therefore, FourSight must be sensitive to both. Furthermore, if one believes that all people have the capacity to engage in the creative process, then, both styles should have a home in the preferences measured by FourSight. What is interesting to note is that different aspects of the creative process appear to be more natural to either the adaptor or the innovator. Again, innovators appear to be drawn to ideation, while adaptors seem to have more energy for clarifying problems and refining solutions.

Creative Problem Solving Profiling Inventory

Basadur, Graen, and Wakabayashi (1990) developed a paper-and pencil inventory that assesses different preferences for Basadur's eight-stage version of the CPS process. Thus, their measure, called the Creative Problem Solving Inventory (CPSP), has a similar purpose as to FourSight. However, the similarities stop there. Where FourSight uses statements that describe specific activities associated with the four preferences, the CPSP has respondents rank sets of words (i.e., four words ranked within each set). Where FourSight is based on the theoretical assumption that the CPS process represents a series of mental activities and that people will express different preferences for these mental activities, the CPSP takes quite a different approach.

The CPSP is based on the assumption that two information processing dimensions relate to progression through Basadur's version of the CPS process, called SIMPLEX. The first dimension is focused on how people gain knowledge, either through direct concrete thinking or through detached abstract thinking. The second dimension relates to how people use knowledge. Knowledge can be used for ideation or for evaluation. Basadur asserts that these two dimensions are perpendicular and when they cross they form four quadrants. Quadrant I, concrete experience with ideation, is referred to as the Generator style. The Generator is said to prefer the Problem Finding and Fact Finding stages of CPS. Quadrant II, abstract thinking and ideation, is called the Conceptualizer. The Conceptualizer is hypothesized to enjoy the Problem Definition and Idea Finding stages. Quadrant III, abstract thinking and evaluation, is referred to as Optimizer. The Optimizer is said to prefer Evaluation and Selection, as well as the stage Basadur refers to as Plan. Quadrant IV, concrete thinking with evaluation, is known as Implementor. Implementor relates to the Gain Acceptance and Action stages of the Basadur's version of the CPS process.

Table 12 shows the correlation matrix produced by FourSight and CPSP. Three of the comparisons were significant. FourSight's Ideator produced two significant correlations, one positive the other negative. Ideator was significantly related to Conceptualizer, which makes sense as Basadur suggests that Conceptualizer enjoys the Idea-Finding stage of CPS. Ideator produced a negative relationship with Basadur's Implementor style. This seems quite reasonable as an individual caught up in producing ideas and constantly toying with options may find it difficult to commit to a single course of action. The third significant coefficient was produced by the Implementer preference and Basadur's Optimizer style. According to Basadur the Optimizer style enjoys evaluating solutions and putting together a plan of action. There seems to be a conceptual link between these two variables, particularly the focus on developing a plan to carry a solution forward.

Table 12.

Relationship Between Four FourSight and Creative Problem Solving Profiling Inventory (N = 36)

FourSight preferences	Generator	Conceptualizer	Optimizer	Implementor
		FourSight Version 4.1		
Clarifier	-.21	-.14	.08	.09
Ideator	-.08	.37*	.12	-.46**
Developer	-.26	-.03	.05	-.13
Implementer	.08	-.28	-.40*	-.06

*$p < .05$, ** $p < .01$

Despite the small sample size ($n = 36$) the analysis yielded results that reflect conceptual connection between Basadur's CPSP and FourSight. However, given the size of the sample replication with a larger number of research participants is necessary.

FourSight and Torrance Tests of Creative Thinking (TTCT)

Previous analyses focused on personality and style related measures, which are all self-report instruments. Creativity is also measured through performance measures such as divergent thinking (DT) tests, in which people have the freedom to respond to a stimulus in as many different ways as possible. Torrance Tests of Creative Thinking (TTCT) is built upon the DT framework and has added features that go beyond DT. In the present study, TTCT figural was used. In addition to traditional divergent thinking indices such as fluency, originality and elaboration, TTCT also involves abstractness of titles and resistance to premature closure. Fluency refers to the number of responses generated. Originality refers to the size of unusual ideas and elaboration is about the detail and elegance in the responses generated. Abstractness of titles is the level of abstraction in thinking demonstrated while naming the responses. Resistance to premature closure is the degree to which one resists the urge to reach a conclusion without further exploration of options.

Table 13.

Relationship Between Four FourSight and Torrance Tests of Creative Thinking - Figural (N = 204)

FourSight preferences	Fluency	Originality	Abstractness of title	Elaboration	Resistance to premature closure	TTCT Composite
Clarifier	-.06	-.04	-.07	-.10	-.02	-.08
Ideator	.06	.06	.07	.05	.10	.09
Developer	-.11	-.11	-.08	-.17*	-.07	-.14
Implementer	.02	.03	.04	-.06	.08	.03

*$p < .05$

As seen on Table 13, FourSight seems to be unrelated to most skills assessed by TTCT. The only exception was Developer scale, which was negatively related to elaboration. Reliability of TTCT subscales was .75. Composite score had no significant correlation with any of the FourSight scale. People who like to deal with details seem to be weaker in Developer style. Surprisingly, fluency and originality are not related to Ideator scale. It should be noted that participants were individuals with a strong creativity training who are well equipped with technique and strategies that help boost performance in divergent thinking tasks. We know from other studies, that even basic training in divergent thinking will significantly affect individual performance. Thus, future work should investigate the relationship between FourSight and divergent-thinking ability for those individuals who have not undergone training in divergent thinking.

FourSight and Divergent Thinking Attitudes

TTCT uses some divergent thinking tasks, which are seen as a core quality of creative thinking (Guilford, 1967; Runco & Acar, 2012;). Therefore, FourSight's relationship with divergent thinking and related attitudes are important. Basadur and Finkbeiner (1985) developed an attitude scale based on divergent thinking framework. This scale measures two basic attitudes: preference for ideation and preference for premature judgment. The former is often considered an important asset for creativity because the presence of more ideas is believed to enhance the opportunity to produced a successful breakthrough idea or creative solution to a problem. Premature judgment, however, is an undesirable quality as it refers to an attitude that does not tolerate ambiguity favoring quick and easy solutions without sufficient exploration. Generally, speaking a creativity measure should be positively related to the former and negatively related to the latter.

Wright (2017) examined the relationship between FourSight and two divergent-thinking attitudes. As seen on Table 14, correlational analyses indicated that all four FourSight scales are significantly and positively related to Preference for Ideation whereas only Ideator scale is negatively related to Preference for Premature Evaluation.

Wright (2017) also conducted regression analyses with Preference for Ideation and Premature Evaluation as the dependent variables and FourSight scales are predictors. When shared variance is controlled among the predictors, only Ideator and Implementer scales were significantly related to Preference for Ideation and again Ideator scale was a negative predictor of Premature Evaluation (i.e., high Ideators are less likely to express an attitude associated with premature judgment). The findings were presented on Table 15.

Table 14.
Correlations between FourSight and Divergent Thinking Attitudes.

Variable	1	2	3	4	5
1. Clarifier					
2. Ideator	.46*				
3. Developer	.76*	.52*			
4. Implementer	.34*	.46*	.36*		
5. Preference for Ideation	.17*	.23*	.19*	.20*	
6. Premature Evaluation	−.02	−.18*	−.03	−.09	−.23*

*Note. N = 374; *p < .01*

Table 15.

Regression Analyses for Preference for Ideation and Preference for Premature Evaluation.

Predictors	Preference for ideation				
	B	SE	ß	t	P
Clarifier	0.02	0.12	0.01	0.17	.86
Ideator	0.18	0.09	0.14	2.05	.04
Developer	0.06	0.11	0.05	0.52	.60
Implementer	0.20	0.08	0.14	2.34	.02
Preference for premature evaluation					
Clarifier	−0.06	0.19	−0.03	−0.31	.76
Ideator	−0.45	0.14	−0.22	−3.24	.001
Developer	0.26	0.18	0.13	1.45	.15
Implementer	−0.07	0.13	−0.03	−0.50	.61

Note. Model: F (4, 330) = 6.52, p = .000, Adj. R^2 = .06

Those findings indicated that the distinguishing quality of Ideators is that they tend to defer judgment and avoid from premature evaluation. The positive relationship of Preference for Ideation and negative relationship with Premature Evaluation across all four scales are consistent with the expected pattern from the perspective of the research on creative person.

FourSight and Problem Construction Task

FourSight measures a range of cognition required in problem solving and skills needed vary based on the problem type and stage of problem-solving process. One crucial step is problem construction. The construction and framing of the problem is an early and critical step that determines the direction to take in the subsequent steps of the creative process. Therefore, as FourSight purports to cover the major mental operations associated with the creative process, assessment of the skills associated with problem construction should show up relative to the FourSight scales.

With the above in mind, Richards (2006) examined FourSight and its relationship to a problem-construction task developed by Mumford et al. (1996). This task involved four scenarios about a situation and each statement was presented along with 16 alternative restatements and participants were asked to choose four most useful problem statements to deal with the presented situation. Each alternative problem statement was associated with one of four representational elements (i.e., key diagnostic information, alternative goals, alternative procedures, and restrictions) and combination of originality/quality rating (i.e., high quality-high originality, high quality-low originality, low quality-high originality, low quality-low originality).

Table 16.
Correlations between FourSight scales and problem construction task.

	Information				
	HQ	LQ	HO	LO	Total
Clarifier	.21*	-.06	.19*	.07	.18*
Ideator	.02	.13	.10	-.10	.04
Developer	.13	-.01	.26**	-.13	.11
Implementer	-.11	.14	-.06	-.12	-.08
	Restriction				
	HQ	LQ	HO	LO	Total
Clarifier	-.04	-.05	-.10	.00	-.05
Ideator	.13	.05	.13	.06	.14
Developer	.05	.07	-.06	.14	.09
Implementer	-.02	.01	.04	-.01	.00
	Alternative Goals				
	HQ	LQ	HO	LO	Total
Clarifier	-.13	-.07	-.14	-.10	-.14
Ideator	-.08	-.15	.01	-.22*	-.12
Developer	-.11	-.02	-.08	-.10	-.13
Implementer	.01	.01	.05	-.04	.00
	Alternative Procedures				
	HQ	LQ	HO	LO	Total
Clarifier	.05	-.01	-.06	.08	.01
Ideator	.05	-.16	-.07	-.02	-.09
Developer	.01	-.12	-.12	.00	-.07
Implementer	.11	-.05	.07	.03	.03

$* p < .05, ** p < .01$

A seen in Table 16, Clarifiers are more likely to select statements with high quality and high originality problem statements that emphasize the key diagnostic information. Clarifiers in general tend to select statements that emphasize information. Developers are more likely to select statements with high originality that emphasizes key diagnostic information. Ideators are less likely to select statements with low originality that emphasizes alternative goals.

Those findings are in line with the FourSight theory in that Clarifiers are more interested in data collection and information gathering and Ideators dislike the routine and usual. What this study shows in particular is that Clarifier and Developers can also embrace originality when it is expressed in problem construction that emphasizes key diagnostic information.

Summary of Concurrent Validity Studies

Concurrent validity studies reviewed above revealed the connections between FourSight and other psychological measures and indicated points of intersection and distinctions among them. These studies also provided insights about specific strengths and areas of growth for each of the FourSight styles.

The studies reviewed in this section confirmed that Clarifiers tend to be more factual, conscientious, diligent, dutiful, considerate of social harmony, organized, analytical, conventional, judgmental, and less sociable and exerting less influential over the situation, less anxious and worrisome in general yet more concerned about the negative outcomes of change.

Ideators were most representative of traditionally recognized characteristics of creative individuals such as strong imagination, intuition, autonomy, spontaneity, tolerance, preference for (or openness to) change, new experiences, novelty, originality, and influence. Ideators can also be described as restless, possess a tendency to take risks, have a variety of interests, more perceiving than judging, and dislike of order, structure and traditional values. Finally, Ideators have a tendency to demonstrate dominant and masculine tendencies.

Developers tend to be more efficient, methodical, well-versed in using the existing systems, analytical, persistent, lack of respect toward traditional values and preference for change and improvement.

Implementers tend to be socially confident, self-starting, take initiative, acte toward change, less tolerant for theoretical talk without action, more controlling, masculine and dominant.

Of course, FourSight styles contain more characteristics than those listed above, but qualities summarized in the previous paragraphs were confirmed by concurrent validity studies. Those findings indicated that FourSight serves as blueprint of larger map of personal and social tendencies involved in problem solving.

Predictive Validity

Teachers' FourSight Styles and "Ideal" Student Characteristics

The power of FourSight model primarily comes from its ability to predict human behaviors, reactions, or attitudes in day-to-day situations. This aspect of the instrument makes it more relatable and understandable to people because they see clear overlap between their FourSight profiles and natural behaviors in life and work. In addition to such anecdotal evidence, research provided empirical evidence generalizing these individual experiences.

Gurak-Ozdemir (2016) administered FourSight and Torrance Ideal Child Checklist (TICC) to 275 teachers. TICC is a list of 66 adjectives that contain a wide range of characteristics. Adults (e.g., teachers, parents) are asked to indicate the characteristics that they believe are important to encourage or discourage in order for a child to reach his or her fullest potential. The list of characteristics they wanted to encourage revealed their image of an ideal child or student. TICC includes creativity characteristics and some of these characteristics also overlap with specific FourSight styles. Because there was a larger number of adjectives ($n =18$) reflecting the Ideator style (e.g., intuitive, independent in thinking, curious, searching etc.), Gurak-Ozdemir created TICC-Ideator (TICC-ID) subscale to observe the variations across the FourSight scores. This was not possible for other three scales because of smaller number of items leading to low alpha. As expected, TICC-ID had the highest correlation with Ideator scale. Relationship with Developer and Implementer scales were also significant but Clarifier was not. The regression analysis with four scales as independent variables and TICC-ID as the dependent variable showed that Ideator was the only significant predictor in the regression model. These findings demonstrated that Ideator teachers are more favorable of Ideator characteristics for their students. Gurak-Ozdemir created another scale that brought socially acceptable/desirable characteristics together. Correlations indicated that all FourSight scales except Ideator was significantly related to socially acceptable items from TICC (aka TICC-SA). All of the correlations were provided in Table 17.

Table 17.

Relationship Between Four FourSight and Ideator and Socially Acceptable Characteristics from Torrance Ideal Child Checklist (N = 275).

Variables	Clarifier	Ideator	Developer	Implementer
TICC-ID	.115	.241**	.119*	.160**
TICC-SA	.154*	.052	.150*	.136*

Note**:** ** p < .01 level (2-tailed), * p < .05 level (2-tailed). TICC-ID = Ideator characteristics from Torrance Ideal Child Checklist; TICC-SA = Socially-acceptable characteristics from Torrance Ideal Child Checklist

Besides, composite scale scores obtained from TICC, Gurak-Ozdemir also focused on individual TICC items. Ratings of each adjective from TICC were compared between high versus low Clarifiers, Ideators, Developers, and Implementers, respectively. High versus low groups were determined based on z-scores (High = z > .50; Low = z < .50). Group means are presented in Table 17. Independent samples t-test analyses indicated that high Clarifier teachers

rated the following characteristics significantly higher than the low Clarifier teachers: doing work on time (t(177) = -2.16, p = .032, d = .19); feeling emotions strongly (t(177) = -2.04, p = .042, d = .09); refined, free of coarseness (t(177) = -2.81, p = .005, d = .16); remembering well (t(177) = -2.71, p = .032, d = .24); thorough (t(177) = -2.04, p = .043, d = .33); and willing to accept judgment of authorities (t(177) = -2.16, p = .032, d = .66). Clarifiers' characteristics such as the need and appreciation of order, thoroughness, and information make these significant differences quite meaningful.

The same analysis was repeated for the Ideator scale and high Ideator teachers rated the following characteristics more highly than the low Ideators: courageous in convictions (t(177) = -2.62, p = .010, d = .42); critical of others (t(177) = -2.30, p = .023, d = .37), curious, searching (t(177) = -4.04, p = .000, d = .63); guessing, hypothesizing (t(177) = -2.78, p = .006, d = .45); independent in judgment (t(177) = -1.97, p = .05, d = .31); intuitive (t(177) = -4.35, p = .000, d = .68); unwilling to accept things on mere say-so (t(177) = -3.27, p = .001, d = .52); and visionary, idealistic (t(177) = -3.65, p = .000, d = .59). Additionally, the following adjectives had marginally significant differences: altruistic, working for good of others (t(177) = -1.90, p = .058, d = .29); asking questions about puzzling things (t(177) = -1.81, p = .072, d = .30); energetic, vigorous (t(177) = -1.76, p = .079, d = .27); independent in thinking (t(177) = -1.84, p = .067, d = .30); and never bored, always interested (t(177) = -1.84, p = .067, d = .30). Most of the above characteristics (e.g., idealist, visionary, independence, intuition) have already been listed in the FourSight manual as the descriptors of Ideators and thus provides reinforcement for the FourSight theory.

For high versus low Developer teachers, the following adjectives were significantly different: sincere, earnest (t(177) = -2.07, p = .039, d = .32); thorough (t(177) = -2.20, p = .029, d = .33); and willing to accept judgment of authorities (t(177) = -1.99, p = .047, d = .29). These findings also point to some commonality in the reactions of Clarifiers and Developers as thoroughness and willingness to accept judgment of authorities were significantly related to both of these FourSight preferences.

The comparisons between high and low Implementer teachers revealed significant differences in the following characteristics: considerate of others (t(177) = -2.23, p = .027, d = .26); self-starting, initiating (t(177) = -1.90, p = .039, d = .37); domineering, controlling (t(177) = -2.33, p = .021, d = .30); and truthful, even when it hurts (t(177) = -2.15, p = .032, d = .16). As Implementers are action-oriented, characteristics such as self-starting-initiating are not a surprise. Domineering-controlling and truthfulness were also observed characteristics in prior research findings.

The above findings are important because it indicates how one's preference impact the way he or she views others. It also reveals a cognitive style bias that is the tendency to evaluate others more or less favorable on the basis of evaluator's personal cognitive style. Psychologists use the term self-serving bias (Heider, 1958) to describe people's tendency to view themselves in overly positive manner. Cognitive style bias is related but different from self-serving bias in that such bias is externalized and reflected on others on the basis of cognitive style.

When cognitive style bias is applied to FourSight framework in educational context, a teacher with a Clarifier tendency would be expected to encourage or support characteristics related to the Clarifier style. Likewise, a teacher with an Ideator tendency is more likely to find Ideator student characteristics more appealing and important. This applies to Developer and Implementer styles, as well. Put differently, knowing one's personal FourSight preference helps us predict which characteristics would be more attractive and favorable. This is powerful

evidence allowing FourSight practitioners to better understand the dynamics of conflict and harmony among individuals in a group or team. It also helps recognize potential bias in perception of others and the reasons for this bias.

Table 18.
Individual Item Analysis for each TICC item with FourSight Scales.

TICC Items	Clarifier				Ideator				Developer				Implementer			
	High Clarifier		Low Clarifier		High Ideator		Low Ideator		High Developer		Low Developer		High Implementer		Low Implementer	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
1.Adventurous, testing limits	.85	.92	.70	.77	1.00	.77	.56	.82	.86	.85	.68	.78	.89	.78	.67	.76
2.Affectionate, loving	.92	61	.77	.60	1.33	.50	1.14	.62	1.25	.56	1.16	.56	1.23	.61	1.18	.59
3.Altruistic, working for good of others	1.31	.50	1.13	.52	1.59	.49	1.44	.55	1.53	.54	1.52	.52	1.57	.52	1.51	.55
4.Asking questions about puzzling things	.61	.49	.60	.50	1.66	.48	1.51	.53	1.58	.52	1.55	.50	1.58	.50	1.47	.53
5.Attempting difficult tasks	1.53	.48	1.49	54	1.68	.47	1.56	.52	1.62	.51	1.55	.52	1.65	.48	1.54	.50
6.Becoming preoccupied with tasks	.50	.97	.52	.93	-.20	.99	-.26	.93	-.22	.96	-.25	.95	-.33	.95	-.39	.87
7.Competitive, trying to win	1.60	.93	1.57	.82	.58	.93	.54	.82	.66	.85	.46	.87	.54	.91	.53	.86
8.Conforming	.50	1.07	.50	.98	-.18	1.01	-.17	1.00	.00	1.02	-.23	.97	-.14	1.02	-.09	.99
9.Considerate of others	1.65	.40	1.57	.46	1.82	.38	1.70	.49	1.81	.42	1.69	.47	1.82	.39	1.67	.50
10.Courageous in convictions	.48	.52	.54	.55	1.32	.59	1.08	.55	1.25	.50	1.15	.51	1.23	.51	1.18	.53
11.Courteous, polite	-.36	.50	-.25	.49	1.58	.50	1.67	.50	1.63	.48	1.60	.49	1.69	.46	1.58	.50
12.Critical of others	.97	.90	.93	.79	-.32	.97	-.63	.70	-.51	.86	-.60	.78	-.44	.90	-.63	.75
13.Curious, searching	.53	.59	.47	.52	1.63	.49	1.29	.56	1.48	.54	1.38	.53	1.49	.56	1.41	.57
14.Desirous of excellence	.93	.51	.82	.74	1.46	.50	1.29	.63	1.43	.54	1.29	.64	1.44	.50	1.15	.68
15.Determined, unflinching	-.02	.76	-.09	.71	1.13	.79	1.09	.70	1.20	.65	1.05	.68	1.14	.69	1.03	.68
16.Disturbing procedures and organization of the group	1.07	.58	.98	.49	-.85	.53	-.80	.54	-.79	.63	-.88	.41	-.82	.56	-.77	.62
17.Doing work on time	1.81	.50	1.70	.61	1.41	.49	1.38	.59	1.46	.50	1.31	.55	1.43	.56	1.34	.48
18.Domineering, controlling	.40	.67	.46	.68	-.61	.77	-.76	.63	-.68	.70	-.80	.58	-.65	.75	-.87	.40
19.Emotionally sensitive	1.27	.95	1.14	.91	.68	.83	.22	.92	.62	.87	.17	.93	.47	.93	.34	.92
20.Energetic, vigorous	.52	.63	.55	.58	1.16	.65	1.00	.51	1.13	.69	1.05	.52	1.13	.70	1.00	.55
21.Fault-finding, objecting	1.65	.97	1.59	.85	-.27	1.01	-.40	.92	-.42	.95	-.57	.79	-.39	.96	-.44	.87
22.Fearful, apprehensive	.50	.59	.49	.74	-.77	.60	-.71	.67	-.66	.72	-.73	.65	-.74	.62	-.73	.65
23.Feeling, emotions strongly	-.50	.75	-.57	.79	.70	.79	.51	.83	.78	.73	.59	.77	.74	.76	.66	.71

	Clarifier				Ideator				Developer				Implementer			
	High Clarifier		Low Clarifier		High Ideator		Low Ideator		High Developer		Low Developer		High Implementer		Low Implementer	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
24.Guessing, hypothesizing	.90	.70	.79	.58	1.31	.69	1.03	.56	1.16	.71928	1.02	.63	1.16	.70	.94	.69
25.Haughty and self-satisfied	1.53	1.01	1.42	.93	-.30	.99	-.18	1.02	-.19	1.04	-.35	.92	-.13	1.05	-.37	.92
26.Healthy	.59	.52	.52	.56	1.63	.62	1.41	.63	1.55	.66	1.55	.50	1.66	.61	1.48	.50
27.Independent in judgment	1.39	.75	1.25	.60	1.33	.73	1.12	.62	1.22	.73	1.23	.47	1.24	.70	1.18	.59
28.Independent in thinking	.51	.63	.74	.50	1.57	.50	1.42	.50	1.49	.56	1.37	.55	1.52	.50	1.39	.49
29.Industrious, busy	1.13	.57	1.04	.78	1.25	.57	.85	.67	1.15	.50	.87	.73	1.13	.59	.84	.74
30.Intuitive	.76	.50	.71	1.16	1.40	.49	1.08	.45	1.31	.51	1.24	1.12	1.40	.51	1.04	.47
31.Liking to work alone	-.82	.88	-.85	.87	.52	.86	.29	.94	.42	.93	.28	.93	.53	.87	.33	.90
32.Neat and orderly	.58	.63	.49	.55	1.15	.56	1.19	.51	1.13	.61	1.11	.54	1.17	.63	1.14	.47
33.Negativistic, resistant	1.50	.62	1.32	.55	-.80	.61	-.77	.62	-.84	.51	-.86	.46	-.74	.72	-.87	.43
34.Never bored, always interested	.50	.63	.61	.72	1.18	.73	.95	.82	1.13	.64	1.10	.71	1.09	.77	1.01	.76
35.Obedient, submissive to authority	-.73	1.05	-.74	.92	.37	1.01	.42	.99	.52	.98	.38	.93	.49	1.02	.49	.89
36.Persistent, persevering	.67	.57	.68	.54	1.56	.64	1.45	.55	1.52	.56	1.46	.54	1.51	.63	1.48	.50
37.Physically strong	.56	.95	.23	.91	.53	.87	.44	.93	.52	.89	.47	.87	.51	.92	.47	.89
38.Popular, well-liked	.95	.90	.91	.90	.34	.93	.35	.89	.42	.90	.40	.87	.34	.93	.39	.90
39.Preferring complex tasks	1.20	.53	1.04	.67	1.14	.61	.79	.65	1.08	.56	.92	.65	1.07	.59	.87	.63
40.Quiet, not talkative	.63	1.05	.58	.97	-.05	1.02	.03	.98	.03	1.01	-.04	.98	-.05	.99	.05	.97
41.Receptive to ideas of others	-.44	.56	-.47	.56	1.59	.59	1.45	.64	1.63	.51	1.35	.54	1.64	.48	1.41	.63
42.Refined, free of coarseness	.97	.64	.85	.83	.75	.69	.55	.83	.77	.71	.68	.74	.79	.68	.66	.80
43.Regressing occasionally, playful	-.80	.99	-.62	.88	.61	.82	.22	1.00	.35	.97	.35	.92	.48	.91	.30	.97
44.Remembering well	.59	.61	.74	.63	1.19	.51	1.03	.68	1.22	.53	.99	.67	1.22	.55	1.03	.68
45.Reserved	.80	.96	.56	.84	.30	.94	.38	.90	.35	.92	.33	.88	.16	.97	.39	.85
46.Self-assertive	.75	.69	.79	.45	1.10	.74	1.21	.47	1.12	.68	1.16	.42	1.12	.67	1.13	.46
47.Self-confident	1.22	.50	1.08	.50	1.47	.50	1.51	.50	1.49	.50	1.40	.55	1.54	.50	1.46	.50
48.Self-starting, initiating	.70	.55	.58	.54	1.51	.53	1.44	.59	1.54	.54	1.39	.55	1.54	.52	1.38	.56
49.Self-sufficient	-.33	.50	-.27	.48	1.43	.50	1.40	.52	1.37	.57	1.35	.48	1.45	.50	1.30	.49
50.Sense of beauty	1.01	.99	.93	.84	.61	.99	.44	.91	.56	.98	.57	.85	.60	.96	.54	.90

| | Clarifier | | | | Ideator | | | | Developer | | | | Implementer | | | |
| | High Clarifier | | Low Clarifier | | High Ideator | | Low Ideator | | High Developer | | Low Developer | | High Implementer | | Low Implementer | |
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
51.Sense of humor	1.66	.60	1.53	.51	1.25	.65	1.19	.54	1.20	.61	1.19	.49	1.31	.60	1.22	.52
52.Sincere, earnest	.52	.52	.56	.59	1.47	.53	1.40	.59	1.51	.54	1.34	.52	1.48	.52	1.33	.59
53.Socially well-adjusted	1.32	.50	1.2	.53	1.38	.51	1.37	.51	1.38	.51	1.41	.49	1.42	.50	1.46	.50
54.Spirited in disagreement	.75	.89	.60	.80	.80	.77	.56	.89	.72	.81	.65	.76	.67	.89	.59	.79
55.Striving for distant goals	1.51	.52	1.43	.55	1.41	.52	1.13	.63	1.36	.54	1.20	.48	1.38	.53	1.15	.56
56.Stubborn, obstinate	.63	.73	.50	.58	-.61	.79	-.79	.57	-.69	.72	-.78	.57	-.73	.68	-.71	.66
57.Talkative	1.16	.94	.86	.97	.38	.90	.22	1.00	.39	.90	.27	.95	.35	.91	.27	.97
58.Thorough	.57	.58	.78	.66	1.33	.57	1.33	.60	1.39	.57	1.20	.58	1.38	.57	1.19	.58
59.Timid, shy, bashful	1.35	.88	1.25	.80	-.32	.88	1.37	.85	-.36	.89	-.39	.85	-.43	.85	-.42	.84
60.Truthful, even when it hurts	.50	.79	1.16	.86	1.25	.69	1.10	.82	1.09	.83	.97	.51	1.26	.80	1.37	.51
61.Unsophisticated, artless	.51	.66	.40	.68	-.67	.67	-.71	.65	1.49	.72	-.67	.70	-.71	.65	-.62	.72
62.Unwilling to accept things on mere say- so	.88	1.09	.87	.97	.62	.90	.13	.99	.33	.50	.33	.99	.40	.99	.39	1.04
63.Versatile, well-rounded	1.22	.50	1.11	62	1.51	.50	1.46	.66	1.47	.52	1.51	.60	1.48	.52	1.53	.62
64.Visionary, idealistic	.63	.48	.55	.54	1.33	.50	1.00	.62	1.24	.48	1.12	.53	1.22	.55	1.06	.46
65.Willing to accept judgement of authorities	-.82	.64	-.82	.69	1.54	.68	.95	.68	1.15	.60	.97	.63	1.14	.59	.96	.65
66. Willing to take risks	.62	.52	.55	.54	1.05	.50	-.45	.61	-.63	1.03	1.40	.83	1.54	.50	1.00	.80

FourSight Styles as a Predictor of Vocations

A successful model of cognitive style would predict our natural behaviors in life and work. Thus, FourSight styles could be congruent with our occupations either because people choose the occupations that fit their styles or people adapt to the expectations of their jobs. Based on this premise, Puccio, Miller, and Acar (in press) explored those links on data collected from 20,784 participants (average age is 40.26) representing a wide range of occupations. The analysis of FourSight (version 6.1) and occupation generated results mainly in the expected direction.

Analyses compared four FourSight scores for 17 different major occupations including sales, marketing, operations, human resources, customer relations, communication/public relations, purchasing, information technology, quality, finance, engineering, consulting, advertisement, research and development, design, higher education, K-12 education, and social services. FourSight researchers developed hypotheses based on the demands of the occupations and characteristics of each FourSight style, that is for each occupation the research team hypothesized a leading FourSight preference for that occupation (see Table 19 for these hypothesized relationships between FourSight and occupation). Repeated measures analyses based on standardized z-scores showed clear patterns between occupations and the FourSight profiles. Table 19 presents the descriptive and test statistics for all such analyses.

Based on these hypotheses, Clarifier scores were expected to be high among finance, quality, and operations because of their tendency to collect data, give attention to details, and examine the situation from multiple perspectives as well as being focused, methodical, orderly, and organized. Analyses indicated significantly different scores and Clarifier was the highest for finance and quality and second highest after Implementer for operations. Figures 2 and 3 indicate the profiles of the occupations with a strong Clarifier preference.
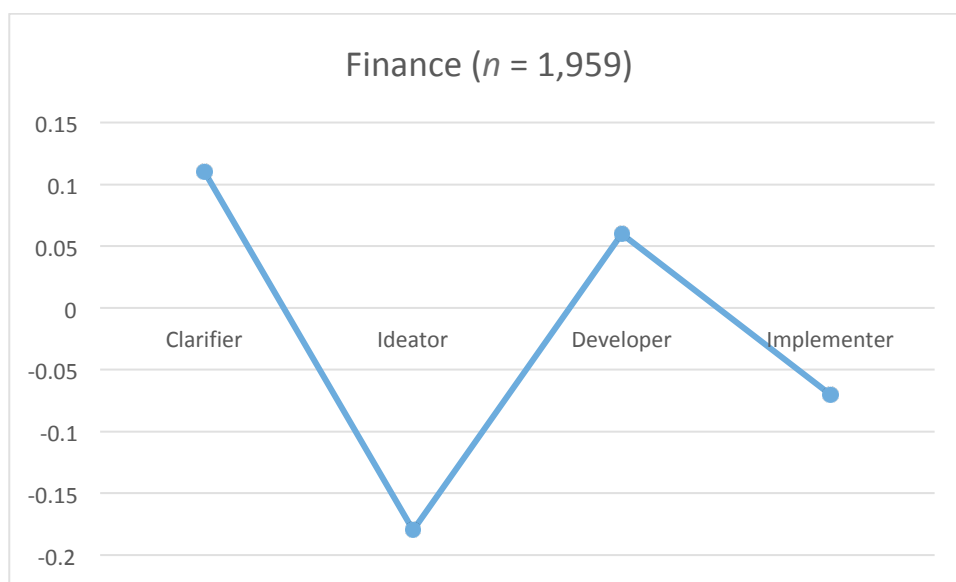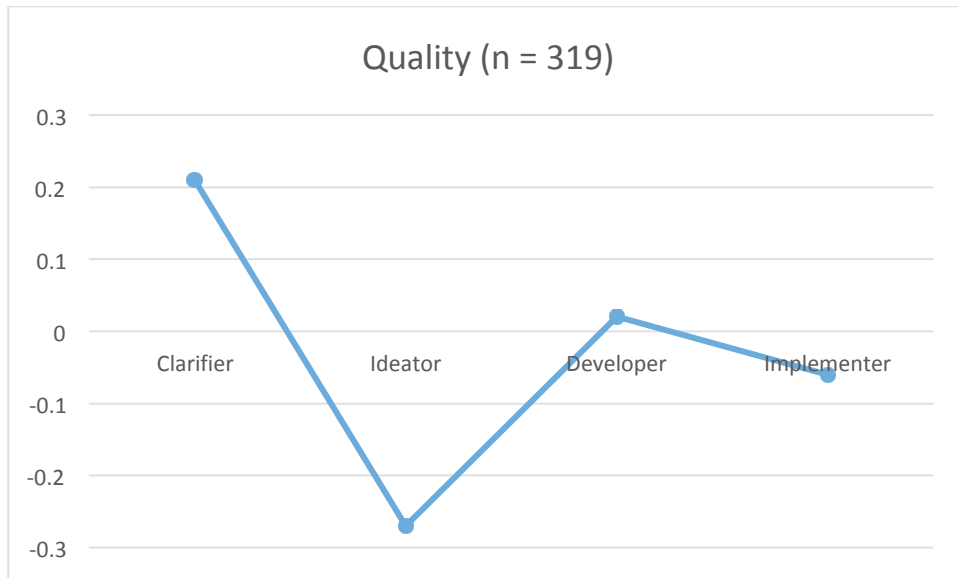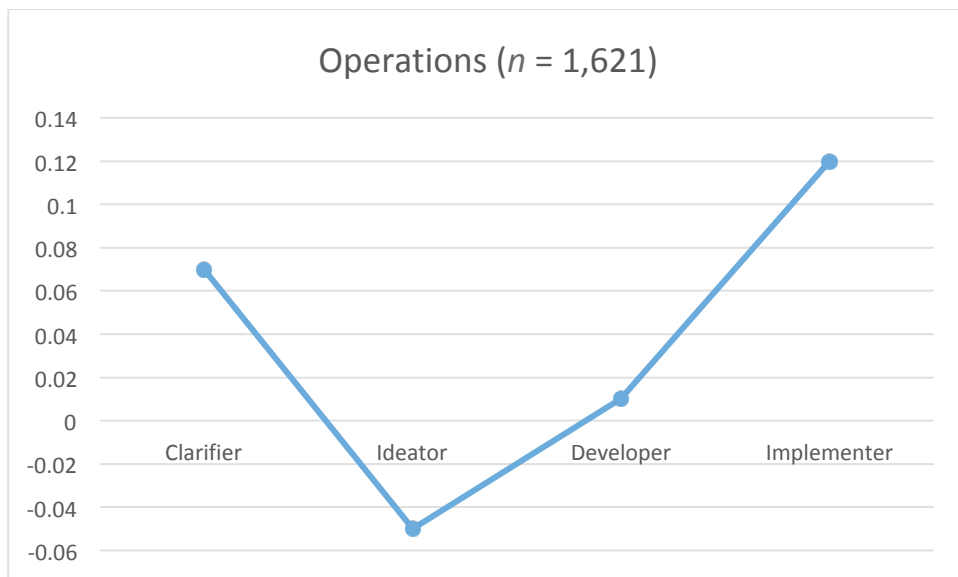

Figure 2. FourSight profile of Finance.
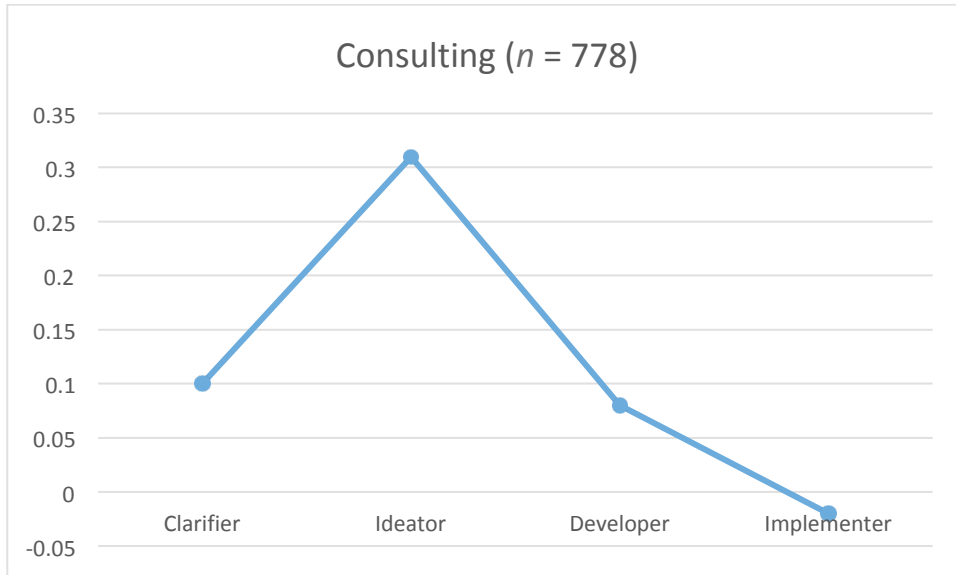
Figure 3. FourSight profile of Quality.

As seen in Figure 4, Clarifier was the second most dominant preference after Implementer scale for Operations.
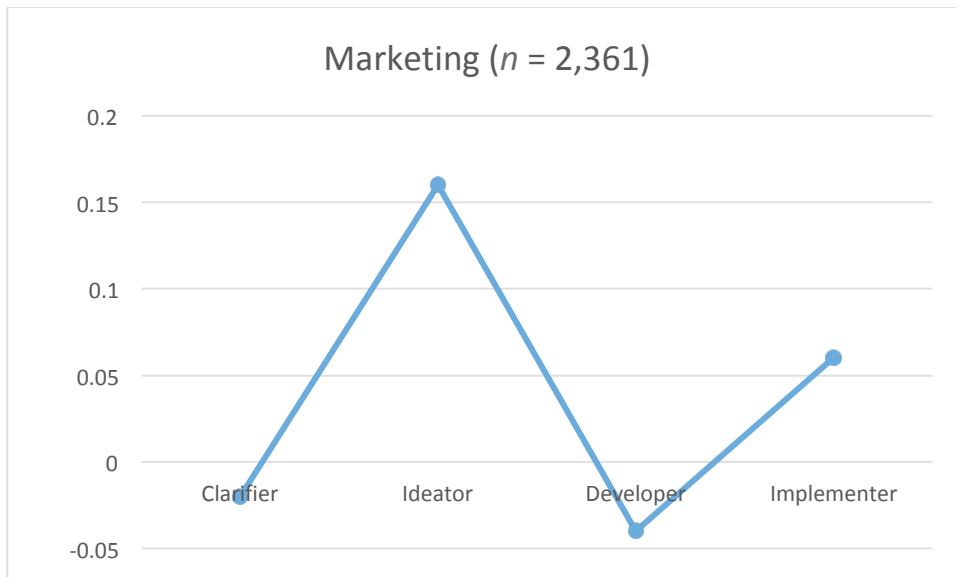

Figure 4. FourSight profile of Operations.

Same analyses were repeated for marketing, consulting, advertisement, and design. Here the highest scores were expected for the Ideator scale. These occupations require higher capacity for generating original and unusual ideas, bringing big picture thinking into perspective, taking idealistic viewpoint, and consideration of alternative solutions. Consistent with these hypotheses, significant differences were observed across the FourSight scales, with the Ideator score showing
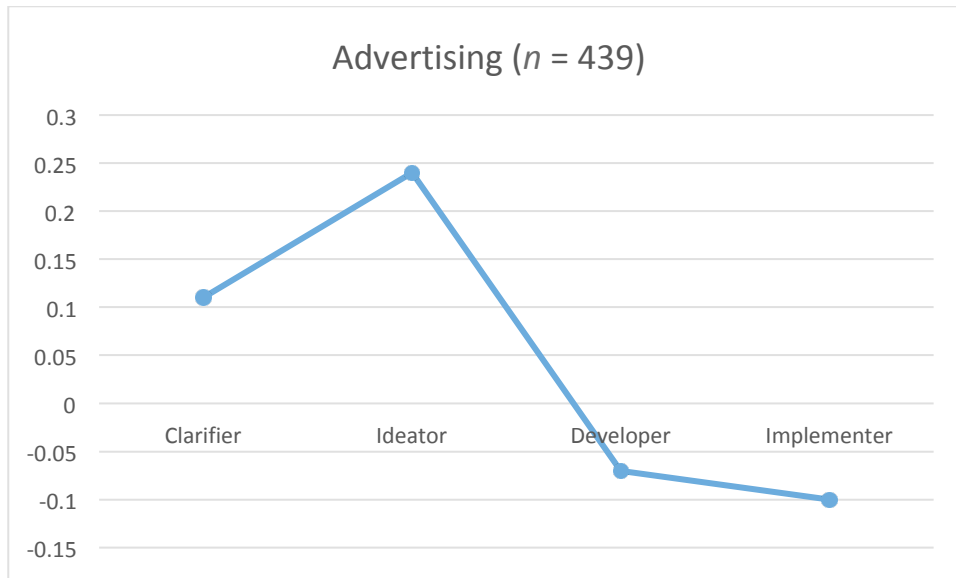
the greatest cognitive style tendency for these occupations. Figures 5-8 demonstrated occupations with a clear Ideator preferences.
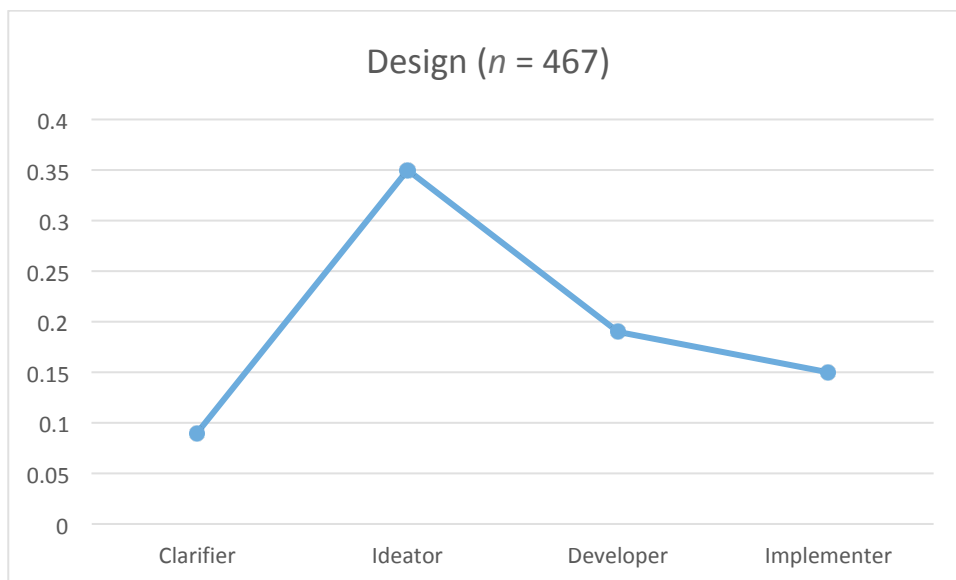

Figure 5. FourSight profile of Consulting.

*Figure 6*. FourSight profile of Marketing.

Figure 7. FourSight profile of Advertisement.

Figure 8. FourSight profile of Design.

Occupations such as information technology, engineering, research and development, and higher education are more likely to require Developer type thinking, namely, refining and improving the existing ideas, solutions or products, evaluating different possibilities, comparing the advantages and disadvantages of potential solutions. Developers are known as planful, pragmatic, structured, and reflective. Analyses confirmed the association between Developer style and information technology and engineers, whereas Ideator scores were the highest for those in higher education than other scores. Analyses partially supported the hypothesis for Research & Development because both Ideator and Developer scores were significantly higher

than the other scores and the difference between the Ideator and Developer scores was not significant. Figures 9 and 10 are two examples of strong Developer preference.
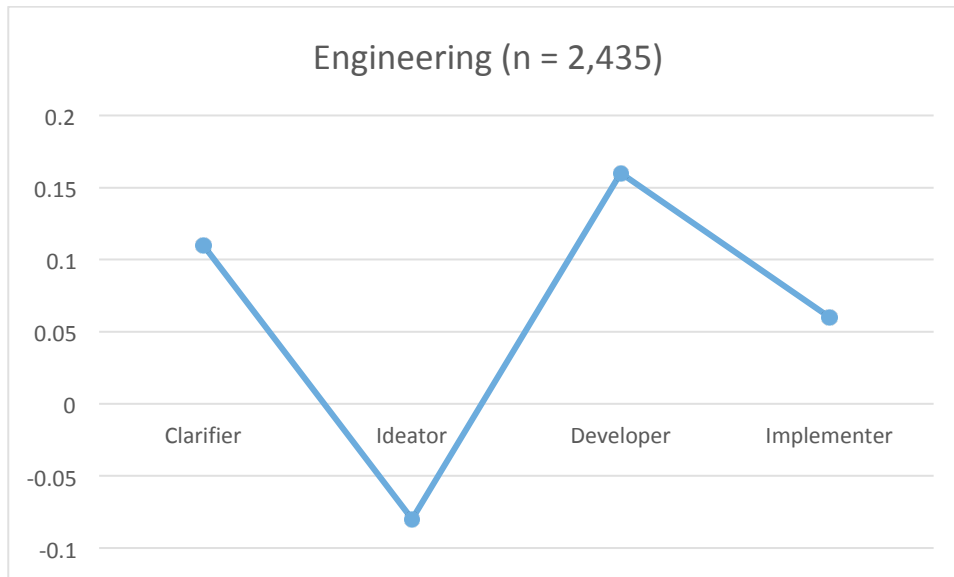
Figure 9. FourSight profile of Engineering.
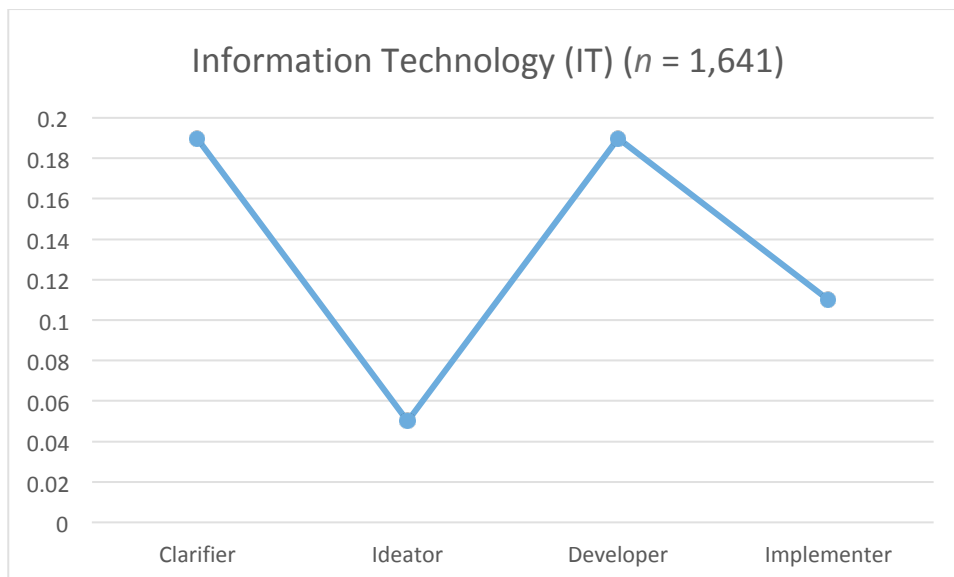
Figure 10. FourSight profile of Information Technology.

Sales, human resources, communications/public relations, and purchasing were expected to relate to Implementer style because of their tendency to act quickly and completing the tasks as well as a likely penchant for risk-taking. Results confirmed that Implementer style was associated with sales, human resources, and purchasing. For communications/public relations, Implementer score was the highest followed by Ideator scores and the difference was not significant. Figures 11 through 13 demonstrate the occupations with a strong Implementer style.
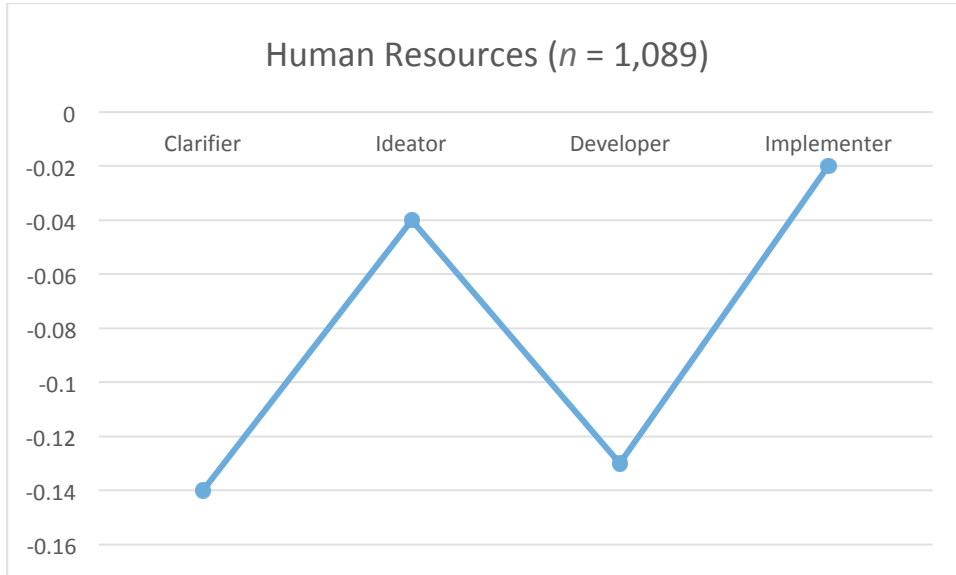
Figure 11. FourSight profile of Human Resources.
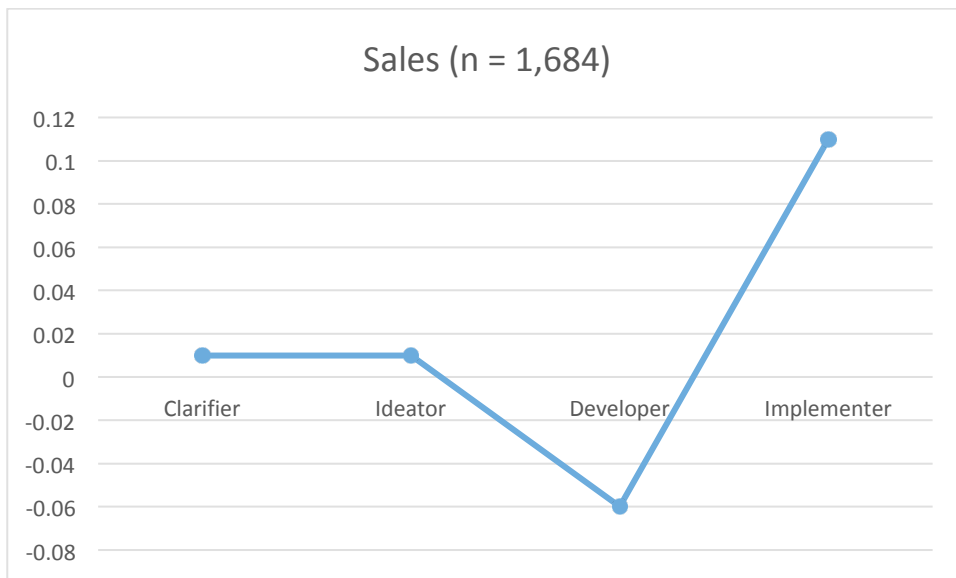
Figure 12. FourSight profile of Sales.
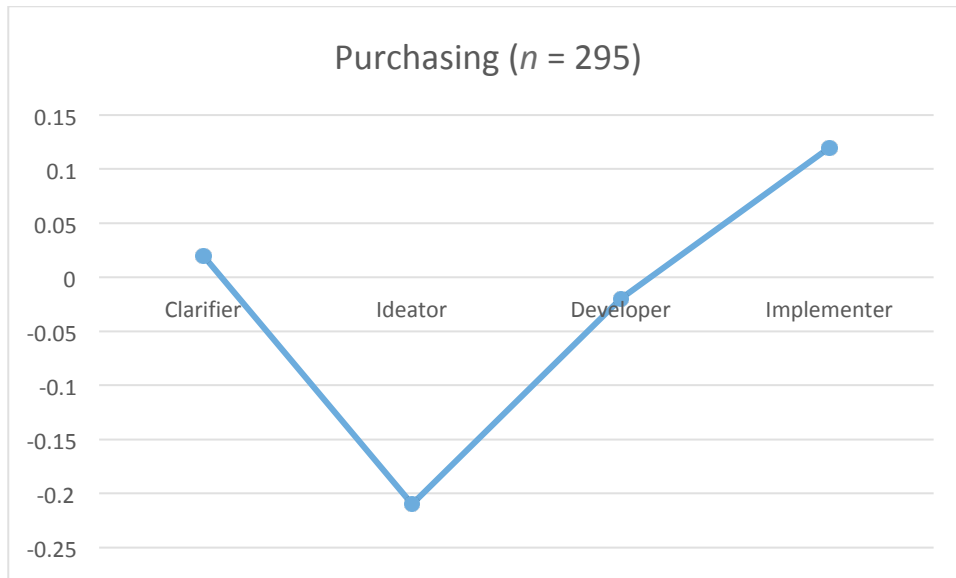
Figure 13. FourSight profile of Purchasing.

Although not hypothesized, Implementer scores were also associated with K-12 educators. As predicted, no significant differences were found for social services. For the case of social services, it was predicted that an Integrator style would be most prevalent. Those in social services interact with a general population and are engaged in service work. Past research shows that Integrators are concerned with people. Given this theoretical position it was hypothesized that those in social services would show an Integrator preference, that is no significant differences across the four FourSight scales, and this was the case.

Table 19.

Standardized FourSight z-Scores for Occupations

Occupations	n	Hypothesized FourSight style	Result	Clarifier		Ideator		Developer		Implementer*		F	η^2_p
				M	SD	M	SD	M	SD	M	SD		
Finance	1,959	Clarifier	Supported	.11	.92	-.18	1.01	.06	.97	-.07	1.01	69.33**	.034
Operations	1,621	Clarifier	Partially	.07	1.00	-.05	1.00	.01	1.03	.12	.98	18.11**	.011
Quality	319	Clarifier	Supported	.21	.92	-.27	1.03	.02	.96	-.06	1.00	23.86**	.070
Consulting	778	Ideator	Supported	.10	1.09	.31	1.00	.08	1.00	-.02	1.06	21.77**	.027
Marketing	2,362	Ideator	Supported	-.02	.99	.16	.97	-.04	.97	.06	.98	33.43**	.014
Advertising	439	Ideator	Supported	.11	.91	.24	.93	-.07	.93	-.10	1.10	16.54**	.036
Design	467	Ideator	Supported	.09	1.07	.35	.96	.19	1.02	.15	1.04	10.89**	.023
Engineering	2,435	Developer	Supported	.11	.92	-.08	.98	.16	.92	.06	.93	61.87**	.025
IT	1,641	Developer	Supported	.19	.96	.05	1.00	.19	.97	.11	.97	15.43**	.009
R&D	1,855	Developer	Partially	.12	1.00	.14	1.06	.09	1.00	.04	1.01	5.00*	.003
Higher education	2,085	Developer	Not supported	-.03	1.05	.33	.99	.04	1.03	.02	1.08	80.37**	.037
HR	1,089	Implementer	Supported	-.14	1.00	-.04	1.06	-.13	1.01	-.02	1.01	5.76**	.005
Sales	1,684	Implementer	Supported	.01	.99	.01	.95	-.06	1.02	.11	.91	16.64**	.010
Communication & PR	388	Implementer	Partially	-.08	1.08	.19	.95	-.14	1.01	.10	.99	14.63**	.036
Purchasing	295	Implementer	Supported	.02	.97	-.21	1.05	-.02	1.00	.12	.97	12.57**	.041
K-12 Education	890	Integrator	Not supported	-.12	1.02	-.13	1.08	-.12	1.09	-.00	1.03	5.46*	.006
Social services	477	Integrator	Supported	-.03	1.06	.11	.94	.02	1.02	-.01	1.09	2.80	.006
Total	20,784												

Convergent and Discriminant validity

Correlations FourSight with Social Desirability, Self-esteem, Problem Solving Inventory

An important form of validation is convergent and discriminant validity. They are typically tested together to examine if the target measure (i.e., FourSight) is correlated with other theoretically related constructs (providing the evidence of convergent validity) while showing weak or no correlation with theoretically unrelated constructs (discriminant validity). To this end, Cabra, Burnett, and Acar (in progress) explored the relationship between FourSight and Marlowe-Crowne (1960) Social Desirability Scale, Rosenberg Self-Esteem Scale (Rosenberg, 1965), Creative Self-Efficacy Scale (Tierney & Farmer, 2002), and Heppner and Petersen's (1982) Problem-Solving Inventory (PSI). We expected at least some of the FourSight scales to be related to problem-solving and creative self-efficacy scales and unrelated to social desirability scale. Absence of the significant correlation with social desirability would imply that people who score higher or lower do not do so because they aim to project their ideal self rather than perceived self. In other words, their scores are independent of an urge to manipulate their responses in a manner that presents themselves in a socially acceptable way. Correlations with self-esteem could be significant because superior self-perception on FourSight scales imply better problem-solving skills, which may lead to higher self-esteem.

Table 20.

Correlations between FourSight and social desirability, self-esteem, creative self-efficacy, and problem-solving

	Social desirability	Self-esteem	Creative self-efficacy	Problem-solving
Clarifier	.15	.28**	.21*	.35**
Ideator	.08	.14	.30**	.36**
Developer	.03	.18*	.18	.33**
Implementer	.17	.29**	.29**	.29**

Bivariate correlations were presented in Table 20. All FourSight scales were significantly related to problem-solving and none was related to social desirability. Creative self-efficacy and self-esteem also had significant correlations with most scales but because the correlation values were close to each other, multiple regression analyses were conducted to control for shared variance among the independent variables predicting each of the FourSight scales, respectively.

Regression analyses using each FourSight scale as the dependent variable explored the relationship between each FourSight scale and social desirability, self-esteem, creative self-efficacy, and problem-solving. Table 20 provides the detailed results for the regression analyses. As these analyses indicated, problem-solving skills are the best predictors of FourSight. This finding indicated that all components of FourSight except Implementer scale can potentially

support problem–solving. Heppner and Petersen (1982) developed PSI "to examine the dimensions underlying the real-life, personal problem-solving process" (p. 67). The instrument was developed for counseling purposes and intended to help clients understand their personal problem-solving and decision-making skills. Exploratory factor analysis of the 35 items categorized 32 items under three factors: problem–solving confidence, approach–avoidance style, and personal control. Higher score imply superior problem-solving skills. The present analyses used the total score for brevity purposes.

Table 21.

Regression results of the four FourSight scales.

Clarifier		B	SE	β	t	p
	Constant	18.72	3.25		5.76	.00
	Social desirability	-0.02	0.17	-0.01	-0.11	.91
	Self-esteem	0.13	0.09	0.15	1.52	.13
	Creative self-efficacy	0.09	0.14	0.06	0.64	.52
	Problem-solving	0.07	0.03	0.26	2.44	.02
	$R^2 = .14$					
Ideator		B	SE	β	t	p
	Constant	15.85	3.75		4.23	.00
	Social desirability	-0.16	0.20	-0.08	-0.83	.41
	Self-esteem	-0.03	0.10	-0.03	-0.28	.78
	Creative self-efficacy	0.33	0.16	0.19	2.01	.05
	Problem-solving	0.10	0.03	0.32	3.09	.00
	$R^2 = .14$					
		B	SE	β	t	p
Developer	Constant	16.24	4.26		3.81	.00
	Social desirability	-0.11	0.22	-0.05	-0.47	.64
	Self-esteem	0.06	0.11	0.05	0.49	.63
	Creative self-efficacy	0.10	0.19	0.05	0.51	.61
	Problem-solving	0.10	0.04	0.30	2.81	.01
	$R^2 = .11$					
Implementer		B	SE	β	t	p
	Constant	17.58	3.51		5.01	.00
	Social desirability	0.03	0.18	0.01	0.15	.88
	Self-esteem	0.17	0.09	0.18	1.87	.06
	Creative self-efficacy	0.31	0.15	0.20	2.03	.04
	Problem-solving	0.03	0.03	0.12	1.13	.26
	$R^2 = .15$					

Creative self-efficacy, which strength of belief in one's own creativity, was significantly related to Ideator and Implementer scales. Here note concurrent validity studies showing the connection between Ideator and Implementer scales and dominance and masculinity. Those traits may explain why Ideators and Implementers have higher belief in their personal creativity. Self-esteem, a general belief in one's own abilities, was a significant predictor of Implementer scale. A distinguishing quality of Implementers is their social confidence, which makes this finding understandable.

In summary, the correlations described above provide evidence of convergent validity as higher FourSight scores imply higher problem-solving skills, creative self-efficacy, and self-esteem. None of the FourSight scales were related to social desirability scale, providing evidence of discriminant validity.

Section Four: Research Using the FourSight Framework

Besides research on reliability and validity, recent studies using FourSight provides useful guidelines for understanding the dynamics behind FourSight theory and interpreting possible implications of the profiles. In this section, we summarize several such studies.

FourSight and CAT-based evaluation of products.

McLean (2004) investigated the relationship between creativity styles and creative products. After taking FourSight, 143 participants (47 male and 96 female undergraduate students) designed a collage using a number of materials presented to them. Ten artists (2 males and 8 females) who served as expert judges evaluated the final products on 20 different dimensions following the consensual assessment technique (CAT) guidelines. CAT is a well-established method of creativity assessment in which expert judges independently rate the creativity of a product along with other criteria based on their personal notion of creativity. In McLean's study, 10 expert judges evaluated products in terms of creativity, novel idea, novel use of materials, liking, overall aesthetic appeal, pleasing placement of shapes, pleasing use of color, technical goodness, overall organization, neatness, effort evident, balance, variation of shapes, degree of representationalism, degree of symmetry, expression, happiness, detail, spontaneity, and complexity. Bivariate correlations between these 20 dimensions and four FourSight scores, as presented in Table 22, indicated that the Ideator scores were consistently positive and significantly related to most of the dimensions including creativity whereas Implementer scores were positive but for only three collage characteristics (i.e., aesthetic, liking, pleasing use of color) were significant. Developer and Clarifier scales were not significantly related to any of the 20 dimensions but there was a consistent pattern of negative associations (except in 3 dimensions: happiness, representationalism, and expression) with Clarifier scale, whereas most correlations were positive (but were still non-significant) with the Developer scale.

The relationship between FourSight scores and creativity ratings were particularly important. Creativity ratings were regressed on four FourSight scores (i.e., Clarifier, Ideator, Developer, and Implementer) and this model explained 30% of the variance. Ideator scores were positively related (β = .42, p < .01) to creativity ratings of the designs whereas Clarifier was negatively related (β = -.47, p < .01). These findings are particularly important from the perspective of perceptions of the styles. First, Ideators' creativity may be most easily expressed and recognized in the domain of arts and design, which was the domain of focus in McLean's (2004) thesis study. Second, Clarifiers may be perceived as least creative among all four styles when the performance domain is arts and design. These findings also seem to provide some explanation for why Ideators may be seen as more creative than others because the target domain of creative performance was design, in which Ideators perform highly (Puccio, Miller, & Acar, in press) than others. This study needs to be replicated with a different type of task such as solving a real-life problem in which other facets of problem solving may be tapped more often and directly.

Table 22.

Relationship Between Products Ratings and Four FourSight scales (Adapted from McLean, 2004)

Variables	Clarifier	Ideator	Developer	Implementer
Creativity	-.11	.34**	.03	.18
Novelty	-.04	.35**	.11	.21
Novel use of materials	-.04	.33**	.08	.22*
Aesthetic appeal	-.03	.31**	.05	.22*
Technical goodness	-.12	.30**	.02	.21
Organization	-.04	.24**	-.01	.15
Neatness	-.12	.18	-.01	.17
Balance	-.05	.21	-.01	.16
Symmetry	-.02	.19	-.03	.09
Happiness	.01	.30**	.01	.22
Spontaneity	-.08	.29**	.10	.14
Liking	-.03	.31**	.07	.22*
Pleasing placement of shapes	-.04	.27*	.03	.19
Pleasing use of colors	-.01	.33**	.07	.24*
Effort	-.08	.30**	.09	.20
Variation of shapes	-.09	.21	.07	.08
Degree of representationalism	.06	.25*	.02	.20
Expression	.11	.32**	-.03	.18
Detail	-.11	.32**	.07	.21
Complexity	.21	.21	.01	.10

$*p < .05, **p < .01$

Uribe Larach (2009) also investigated the relationship between FourSight scores and product creativity using the Consensual Assessment Technique (CAT) in terms of 18 different criteria. The criteria for which the products were evaluated included creativity, novel use of materials, novel ideas, effort evident, variation in the use of shapes, level of detail, level of complexity, technical goodness, overall organization, neatness, balance, pleasing use of color, pleasing use of shapes, symmetry, expression of meaning, overall liking, aesthetic appeal, emotional evocativeness. Differently from McLean's study, he manipulated instructions to observe the impact of emotional and factual narrative on the creative performance over the standard instructions, which did not include emotional or factual narrative. Additionally, participants completed a task reflection questionnaire. He expected that emotion-laden instructions would enhance creativity of the designed products and may be more effective than the factual instructions. The groups consisted of 20 undergraduates (13 females and 7 males) for the control group, 23 (19 females and 4 males) for the emotional experimental group, and 22 (19 females and 3 males) for the factual experimental group. No significant difference was found between the three groups on creativity score. Besides group comparisons tested, Uribe Larach also investigated the relationship between 18 criteria and the FourSight scores. Results are

presented in Table 23. Although no significant relationship was found probably due to small sample size, the pattern was similar to the findings of McLean (2004) in that Ideator scale had positive relationship with most of the rated criteria of the products including creativity, whereas Clarifier scores were negatively related for all of the criteria. Differently from McLean's results, correlations for the Developer and Implementer scales with the product criteria were mainly negative.

Table 23.

Relationship Between Products Ratings and Four FourSight Scales (Adapted from Uribe Larach, 2009)

Variables	Clarifier	Ideator	Developer	Implementer
Creativity	-.21	.06	.00	-.04
Novel use of materials	-.17	.11	.08	.06
Novel ideas	-.14	.14	.12	.05
Effort evident	-.12	.09	-.10	-.08
Variation in the use of shapes	-.19	-.04	-.01	-.03
Level of detail	-.22	-.03	-.17	-.26
Level of complexity	-.21	.01	-.06	-.18
Technical goodness	-.24	-.04	-.17	-.18
Overall organization	-.04	.02	-.04	-.07
Neatness	-.08	-.10	-.17	-.14
Balance	-.14	-.05	-.06	-.01
Pleasing use of colors	-.14	.03	-.08	-.08
Pleasing use of shapes	-.13	.01	-.10	-.19
Symmetry	-.13	.02	-.07	-.04
Expression of meaning	-.03	.24	.12	-.04
Overall liking	-.21	.12	-.04	-.12
Overall aesthetic appeal	-.20	.11	-.04	-.07
Emotional evocativeness	-.03	.24	.08	-.17

*$p < .05$, **$p < .01$

Both McLean (2004) and Uribe-Larach (2009) found a positive relationship between CAT-based creativity ratings and Ideator scores and a negative relationship with Clarifier scores. These findings point out to the possibility of raters' inclination to define creativity more as an Ideator style in contrast to the other FourSight preferences. From a different perspective, Ideators' work is perceived most creative whereas Clarifiers' work was most likely to be perceived as least creative or even uncreative.

The ADHD – Creativity link through the lenses of FourSight.

Some creativity researchers (e.g., Cramond, 1994; Healey & Rucklidge, 2005; Weiss, 1997) linked Attention Deficit Hyperactivity Disorder (ADHD) to creativity and argued that

some behaviors and traits that are defined or perceived as ADHD symptoms are actually characteristics of creative individuals. FourSight defines different types of creative behavior and it is most likely to see a stronger connection between ADHD and Ideator style because of Ideators' tendency to think divergently and without constraints (Abraham, Windmann, Siefen, Daum, & Gunturkun, 2006; White & Shah, 2006). White and Shah (2011) investigated the relationship between ADHD and FourSight scores. They administered FourSight and Conners' adult ADHD rating scale (CAARS) to 60 undergraduate students. Table 24 provides a summary of their findings. They found that ADHD group had higher Ideator scores than non-ADHD group whereas non-ADHD group had higher scores on Clarifier and Developer scores than ADHD group. No difference was found in the Implementer scores. These findings indicate that people with ADHD are more likely to demonstrate Ideator characteristics and less likely to embody Clarifier and Developer characteristics. Differently than the typical use, White and Shah (2011) used weighted sum score rather than raw scale scores.

Table 24.

Descriptive and Test Statistics Comparing ADHD and non-ADHD Groups for Four FourSight Scores

	ADHD Group		Non-ADHD Group				
	M	*SD*	*M*	*SD*	*F*	*p*	η_p^2
Clarifier	.244	.024	.263	.022	10.15	.002	.149
Ideator	.275	.043	.241	.028	12.90	.001	.181
Developer	.219	.032	.243	.019	12.35	.001	.176
Implementer	.265	.026	.256	.034		.233	

White and Shah are not the only researchers who have documented a link between Ideators and ADHD. Issa (2015) compared FourSight profiles of 49 participants with ADHD to the average FourSight scores from a non-ADHD sample ($n = 586$). Similarly, Issa found stronger Ideator tendency, $t(584) = 2.55, p < .01, d = .21$), with weaker demonstration of Clarifier, $t(584) = 2.11, p < .03, d =. 17$, Developer, $t(584)=2.78, p < .02, d =. 23$, and Implementer scores, $t(584) = 4.82, p < .001, d =. 40$, among the ADHD participants compared to the norm group (representing non-ADHD group). Mean values are presented for all FourSight scores in Table 25. Issa conducted comparisons for different forms of ADHD such as combined and inattentive types. The sample allowed comparisons for the primarily inattentive and combined types (i.e., inattentive *and* hyperactive-impulsive) only. Issa found that compared to the norm group, Ideator scores were significantly higher, $t(554) = 2.23, p < .03, d = .19$), whereas Clarifier and Developer scores were significantly lower among the combined type of ADHD but not among primarily inattentive type, $t(554) = 1.42, p < .16, d = .12$). For Implementer scores, both combined, $t(555) = 2.33, p < .02, d =. 20$, and inattentive types, $t(554) = 2.78, p < .001, d =. 24$, were significantly lower than the norm sample.

Table 25.

FourSight Scores for ADHD Group and General Population.

		Clarifier		*Ideator*		*Developer*		*Implementer*	
	n	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Total ADHD	49	29.84	8.26	35.14	6.42	28.04	8.62	27.98	5.89
Primarily Hyperactive-Impulsive Type	5	28.40	4.16	31.80	5.59	31.60	6.88	25.20	1.30
Primarily Inattentive Type	19	31.68	7.66	34.84	7.24	28.79	8.38	27.63	6.36
Combined Type	20	27.10	8.62	36.00	6.21	25.40	8.39	29.10	5.63
Subtype Unspecified	5	38.75	6.40	35.75	5.68	34.75	10.72	29.25	8.30
General Population	537	31.88	6.30	32.77	6.20	30.82	6.50	32.22	5.90

The relationships found between FourSight and ADD/ADHD are important for a number of reasons. First, these findings are important from the perspective of positive psychology that underscores the importance of emphasizing human strengths rather than human weaknesses. A positive psychologist who interprets these findings would view a mild expression of ADHD as an opportunity to foster ideational capacity of innovation and problem solving groups whereas presence of Clarifiers and Developers offer the evaluative and analytical aspect of team creative process. Such findings offer a more positive and optimistic perspective for understanding and viewing people with ADHD by using a non-pathological, normative terminology. Also, these findings inform practitioners about possible ways to offer outlets for people with ADHD to express their creative potential. Additionally, in social settings these findings may help to create a greater level appreciation, and perhaps reduce stereotypical judgments, of those who are diagnosed with ADHD.

Second, while there has been a generalized relationship between creativity and ADD/ADHD, the use of FourSight highlights the fact that past studies may have had a narrow, biased, stereotypical, or global view of creativity. That is, the link between the Ideator thinking preference and ADD/ADHD indicates that it is not creativity in general that is related to ADD/ADHD, but a specific thinking preference within the creative process that is related to ADD/ADHD. In other words, where it had been concluded previously that those with ADD/ADHD were more creative, in light of the findings described above, it may be more accurate to say that ADD/ADHD is more prevalent among those who possess a preference for the Ideator way of thinking. It's not that those with ADD/ADHD are more creative. Rather, they are more likely to express one aspect of the creative process that is greater ideational tendencies.

Finally, the results from the studies relating ADD/ADHD to the FourSight preferences may give insight into potential dysfunctions associated with each mode of thinking within the creative process and, conversely, the need to learn to self-manage oneself through the four creative-thinking preferences. That is, it might be hypothesized that success and well-being

depends on the balanced used of all four modes of thinking within the FourSight framework of the creative process. Meta-cognition, the ability to direct and facilitate one's thinking, underscores the importance of matching one's thinking to the needs and demands of the situation or task. Extending the earlier hypothesis, and in light of the importance of meta-cognition, it could be hypothesized that the rigid expression of the various FourSight preferences might correlate with specific mental health challenges. As ADD/ADHD was shown to relate to the Ideator preference, perhaps other issues of well-being might be related to the Clarifier, Developer and Implementer preferences. There are a number of benefits that might be derived from illuminating such relationships. First, it would be nice to replace or expand negative labels or diagnoses, such as ADD/ADHD with more positive labels, terms, and diagnoses. Second, such discoveries might promote different approaches and strategies to promote personal well-being. ADD/ADHD is often treated with medication. Perhaps cognitive training in the full range of creative-thinking skills might enhance meta-cognition in a way that results in greater coping skills, resiliency, and self-management abilities. To that end, it will be necessary for future research to examine whether specific issues that threaten well-being are indeed related to the specific FourSight scales.

FourSight profile across Organizational Levels.

Similar to vocations, FourSight profiles could vary across different levels of leadership in organizations. Expected or assumed roles, adopted decision-making processes, and problem-solving approaches can naturally differ at different levels, so may FourSight profiles. Puccio and Acar (2015) expected higher Ideator scores at upper-level leadership, as they need to be visionary, see the big picture, and think of various possibilities for the organization to keep up with change. As seen in Table 26 and Figure 14, data collected from 7280 participants in the workforce representing a wide variety of organizations in the private and public sectors and different industries showed that Ideator preference increases with levels within the organizational hierarchy. This increase was even sharper in the private sector than public sector. Likewise, Implementer preference tends to also increase among high-level leadership. In other words, upper-level leaders are more likely to demonstrate Ideator and Implementer characteristics than lower-level leaders.

In the person-environment fit literature it is said that a match between the individual and his or her job is most closely related to two dimensions. One dimension relates to the match between individuals' preferences and the provisions found in the work environment. The second dimension is focused on the degree of fit between individuals' abilities and the demands associated with the tasks and responsibilities found in the job. Taking this into consideration, it should not be concluded that senior organizational positions are suited only for Ideators and Implementers. Rather, these results indicate that the mindset associated with Ideators and Implementers seems to be a good fit and aligns with these two thinking preferences. That is, the nature of the work conducted by senior leaders pulls a bit more heavily on the kind of thinking associated with Ideators, big picture, original, conceptual, etc., and Implementers, action oriented, driven, persistent, etc. While this may be advantageous to those who are inclined

towards these preferences, this does not mean that only Ideators and Implementers are found in senior leadership positions. Humans are adaptable and thinking is trainable. Therefore, while the Ideator and Implementer preferences may not be the natural inclination for some people, everyone can learn to engage in these modes of thinking. And such flexibility in thought would seem to be necessary for those who aspire to be in strategic leadership roles.

Table 26.
Descriptive Statistics of FourSight Scales Across Organizational Levels

		Clarifier		Ideator		Developer		Implementer	
	N	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Non-management	2170	33.32	4.73	31.32	5.77	31.74	5.15	30.28	4.84
Supervisor / Dept. Head	678	33.31	4.56	31.46	5.58	31.74	4.94	30.65	4.56
Middle management	1418	33.35	4.57	32.33	5.66	31.65	5.01	30.90	4.72
Director	974	33.53	4.72	33.26	5.64	31.46	5.16	31.38	4.74
Vice president	288	33.27	5.00	33.99	5.56	31.45	5.20	31.76	4.71
Executive	454	33.73	5.16	34.04	5.75	31.45	5.57	31.41	4.94
Lower organizational levels	4266	33.33	4.65	31.68	5.72	31.71	5.07	30.55	4.76
Higher organizational levels	1716	33.54	4.89	33.59	5.67	31.46	5.28	31.45	4.79

Note: Lower organizational levels = non-management, supervisor / department head, and middle management; Higher organizational levels = director, vice president, and executive
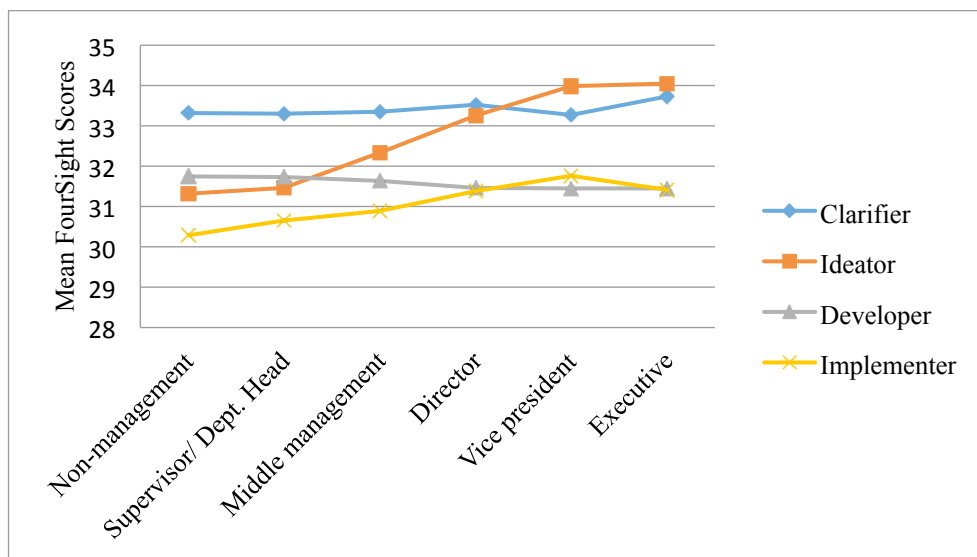

Figure 14. Changes in FourSight preferences across organizational levels.

Puccio and Acar (2015) found that high-level leadership is associated with Ideator and Implementer style of thinking. How about the educational programs that aim to develop those who wish to attain upper-level leadership positions? MBA programs are designed to support those interested in top-level leadership positions. Therefore, one would expect the students in these programs to share a similar creative-thinking profiles as those in top-level leadership positions.

Miller, Puccio, Acar, and Thurber (under review) tested this MBA cognitive gap by comparing the profiles of MBA students to those in lower and upper level leadership positions. Comparison of these three groups (i.e., MBA students, lower-level leaders, upper-level leaders) is presented on Table 27. MBA students had significantly lower Ideator and Implementer scores and higher Developer scores than upper-level leadership. They also had significantly higher Clarifier scores than those in lower-level leadership positions.

As seen in Figure 15, there seems to be clear cognitive gap between MBA students and upper-level leadership in that MBA students tend be remarkably lower in Ideator and Implementer scales.

Table 27.

Descriptive statistics of the MBA, high, and low organizational level groups on the four FourSight scales.

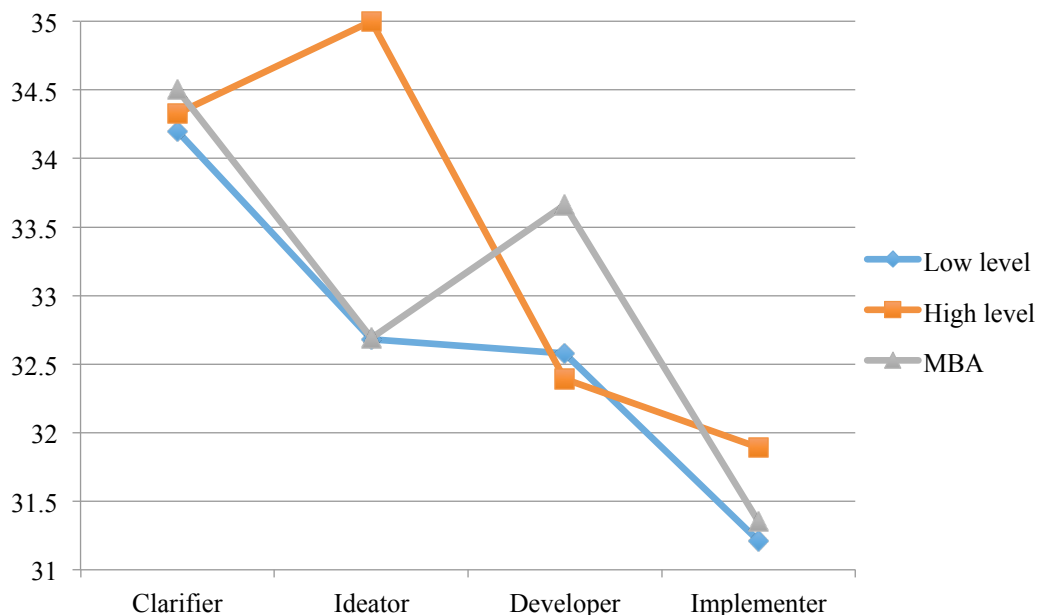|		Clarifier		Ideator		Developer		Implementer	
Groups	*N*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Low level	19,945	34.20	5.20	32.68	6.04	32.58	5.69	31.21	4.99
High level	10,782	34.33	5.53	35.00	5.94	32.39	6.02	31.89	5.06
MBA	2,152	34.50	5.11	32.69	5.98	33.66	5.82	31.35	5.09
Total	32,879	34.26	5.30	33.44	6.10	32.59	5.82	31.44	5.03

Figure 15. Comparison of MBA students' FourSight scores to upper and lower leadership.

Given these results, there may be a cognitive mismatch between the kind of thinking favored in MBA programs and the kind of thinking required in senior-level leadership positions in organizations. The nature of the courses and curricula found in MBA programs seems to attract, emphasize, and demand thinking that reflects greater levels of analysis (i.e., clarifying and developing). Whereas, leadership positions in industry, and specifically senior-level leadership positions, appear to demand flexible, visionary, original thinking that is balanced with a proclivity towards action and impulsivity. It might be wise, therefore, for MBA programs to examine how to broaden their curricula in a way that promotes the kind of thinking associated with FourSight's Ideator and Implementer scales. Elsewhere, Datar, Garvin, and Cullen (2010) have argued that MBA programs have largely ignored the benefits of creative thinking, as such they argue that much more needs to be done to promote originality in thought among MBA students. These results for FourSight preferences among those in MBA programs lend support to Datar and his colleagues' thesis.

CPS Training as Viewed through FourSight Preferences

FourSight was created to identify how people interact with the creative process, particularly as this process is defined through the CPS framework. Given this proposition, it would seem as though FourSight would be useful in helping us to understand how individuals respond to CPS training. Wheeler (2001; Puccio, Wheeler & Cassandro, 2004) set out to examine if FourSight preferences would distinguish how students responded to a course in CPS. At the end of the course Wheeler asked students, both undergraduate ($n =$11) and graduate ($n =$ 73), to evaluate the course by identifying how much they enjoyed learning aspects of CPS and how valuable they believed the various aspects of CPS would be for them in the future. Wheeler's analysis showed that people with different FourSight preferences responded quite differently to the same course content. For example, in general Wheeler found that learning

divergent thinking was the most enjoyable and valuable aspect of the course; however, when examined through FourSight lens what he found was that Ideators considered certain aspects of divergent thinking to be the least enjoyable and least valuable parts of CPS.

Tables 28 through 31 summarize the key differences among the four FourSight preferences. Nonparametric analysis (e.g., Kruskal-Wallis, one-way ANOVA, Mann-Whitney U) was used to identify statistically significant differences. Only statistically significant differences are reported here.

Table 28.

CPS training and Clarifiers

Enjoyed	Did Not Enjoy
FourSight Preference	
High Clarifiers	
Explore the Challenge Components	Check Your Objectives Principles
Defer Judgment Principle	Stick 'em Up Brainstorming Tool
Ladder of Abstraction Tool	
Low Clarifiers	
Plan for Action Stage	ID Goal, Wish, Challenge Stage

Found Valuable	Did Not Find Valuable
High Clarifier	
Identify Goal, Wish, Challenge Stage	Brainwriting Tool
	Visual Connections Tool

High Clarifiers said they enjoyed the Ladder of Abstraction, which is a tool that helps to systematically analyze the problem space. This would seem to make sense since the Clarifiers have a preference for exploring problems. It is interesting to note that they believed that the Identify Goal, Wish Challenge Stage would be useful for them in the future. This stage falls within the Exploring the Challenge component of CPS. However, it specifically calls the problem solver to look at the bigger picture and more global issues. Therefore, this stage might help prevent Clarifiers from getting lost in the details of the problem.

Table 29.

CPS training and Ideators

Enjoyed	Did Not Enjoy
FourSight Preference	
High Ideators	
Itemize Evaluation Tools (i.e., PPCO)	
Word Dance Tool	
Affirmative Judgment Principle	
Low Ideators	
Select & Strengthen Solution Stage	
Identify Goal, Wish, Challenge Stage	

Found Valuable	Did Not Find Valuable
High Ideators	
Itemized Evaluation Tools (i.e., PPCO)	Generate Ideas Component
Affirmative Judgment Principle	Generating Ideas Stage
	Strive for Quantity Principle
	Seek Wild & Unusual Ideas Principle
	Brainstorming Tool
	Brainwriting Tool
Low Ideators	
	Visual Connections Tool

What is striking about the Ideator results is that four of the five elements they enjoyed least were related to divergent thinking. It may be that Ideators don't enjoy learning formal methods for divergent thinking as this already comes naturally to them. Not surprising all six items that they believed would not be useful for them in the future were related to divergent thinking. Another intriguing finding for Ideators relates to evaluation tools. They enjoyed the more intuitive itemized evaluation tools (i.e., POINt, PPCO, LCOb, etc.), but not the more analytically oriented evaluation matrix.

Table 30.

CPS training and Developers

Enjoyed	Did Not Enjoy
FourSight Preference	
High Developers	
Explore the Challenge Component	Seek Wild & Unusual Ideas Principle
Identify Goal, Wish, Challenge Stage	Brainstorming Tool
Affirmative Judgment Principle	Stick 'em up Brainstorming Tool
	Brainwriting Tool
	Forced Connections Tool
	Evaluation Matrix Tool
Low Developers	
Select & Strengthen Solution Stage	Clarify The Problem Stage

Found Valuable	Did Not Find Valuable
High Developers	
Ladder of Abstraction Tool	Generate Ideas Component
Itemized Evaluation Tool (i.e., PPCO)	Stick 'em up Brainstorming Tool
Affirmative Judgment Principle	Brainwriting Tool
	Strive for Quantity Principle
	Seek Wild & Unusual Ideas Principle
	Build on Ideas Principle
Low Developers	
	Defer Judgment

      Developers seemed to enjoy and find more value in the more analytical elements of CPS, such as the Exploring the Challenge component and the Ladder of Abstraction tool. Like Ideators, they did not enjoy learning the divergent elements of CPS and saw less value there, though perhaps for different reasons. It is interesting to note that high Developers identified one of the fundamental CPS principles, Affirmative Judgment, to be both enjoyable and valuable. According to FourSight theory, Developers' have a tendency to critically evaluate situations and solutions. It may be the case that training in CPS helped high Developers recognize the need to soften this tendency by adopting a more affirmative approach when judging ideas and others.

Table 31.

CPS training and Implementers

Enjoyed	Did Not Enjoy
FourSight Preference	
High Implementers	
Plan for Action Stage	Forced Connections Tool

Found Valuable	Did Not Find Valuable
Low Developers	
	Defer Judgment Principle

       Implementers were the only group who found learning the Planning for Action stage to be enjoyable. Interestingly, few of the CPS elements stood out for the Implementers. In some ways this is not surprising since the Implementers have less patience for the creative process. Process takes too long. They wish to get to action. This may be reflected in the results as they process content of these college courses may have not resonated strongly for the Implementers.

Summary and Future Research

As summarized in this section, FourSight is a well-studied measure and as a consequence this research has done much to validate and extend the FourSight theory. Psychometric evidence indicates that FourSight is useful measure that helps individuals with valuable personal, relational and professional information and insights. It is based on a theory, and its usefulness has been extensively documented by research. That said, there is a strong desire to continue this research and the FourSight team hopes that this review might serve as a springboard for future work. To that end, building on the research findings reviewed in this research supplement, the following list is offered as a starting point for those interested in using FourSight in future research studies. All of the following research questions are considered to be pre-approved and therefore the FourSight company is willing to provide the FourSight measure free of charge to those interested in taking up any of these research topics.

- In what ways is FourSight related to measures of well-being (i.e., coping skills, resiliency, etc.) and mental health (e.g., anxiety, impulse control, obsessive behavior, etc.)?
- To what degree does FourSight predict job satisfaction?
- To what extent does FourSight predict attrition from certain occupations and degree programs?
- What are the connections and relationships between FourSight and emotional intelligence?
- How does FourSight impact perceptions and relationships between leaders and their direct reports?
- What are the implicit views, such as perceptions and judgments, of people with different FourSight preferences as they view those with similar and different preferences from their own?
- To what extent are their cultural differences with respect to the four FourSight scales?
- How stable are FourSight results over time?
- What are the relationships between FourSight and other measures of creativity?
- What other occupations show trends that favor particular FourSight preferences?
- To what degree does the cognitive gap found between MBA students and senior-level leaders apply to executive MBA programs?
- How might correlational studies between FourSight and various measures of personality further expand our understanding of the four creative-thinking preferences assessed by FourSight?

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