TALENTSORTER® TECHNICAL MANUAL

JANUARY 2023

INTRODUCTION

The TalentSorter Assessment System (TalentSorter®) is essentially a bank of hundreds of psychometric behavioral and cognitive items intended to measure an individual's characteristics for the purpose of determining the applicants who are best suited (fit) for employment in a specific position. Assessments administered for particular jobs are customized based upon extensive locally validated job analysis procedures and analysis of traits of existing employees who have been successful in the position. The items used are grouped into 25 personality constructs, or scales, and 1 cognitive reasoning scale. The specific scales measured are selected based on the results of the job analyses. This unique scale selection process improves the efficiency and relevance of each assessment and reduces administration time when compared to assessment systems which subject candidates to examination of all scales regardless of the correlation of the scales to the job in question.

TalentSorter includes a Critical Thinking and Reasoning section which also may or may not be administered depending upon the findings of the job analysis procedures. The items used to measure cognitive reasoning are based upon extensive research into the types of cognitive tasks individuals should be able to successfully complete at various levels of ability (Aldous, 2001). While cognitive ability has been shown to be a good predictor of success in a job, there are certain positions for which ability level may be gleaned from other sources such as education level or other extant test scores. The cognitive reasoning portion of the assessment is provided as an option, but may not be administered to all job candidates, especially if those candidates have other proof of cognitive ability level.

TALENTSORTER SCALES

The Scales that TalentSorter measures were selected based upon a meta-analysis of the literature related to individual behavioral traits most commonly investigated by employers during the hiring process. Each scale is assessed as it relates to the particular job for which an individual is applying. Therefore, depending on the benchmark (or Ideal Candidate Profile) created to describe a successful employee in that job, desirable scores may fall anywhere within the range from low to high. Simply put, attaining high scores on all scales is not always the desired outcome. Note that only those scales deemed relevant to the job, based on the job benchmark, will be assessed.

Scale	Definition
Extraversion	Degree to which one requires social interaction and authority. High scoring individuals will be gregarious, outspoken, and assertive. Lower scorers may be timid and are more apt to work in the background and follow group consensus.
Agreeableness	Tendency to be friendly, approachable, and easy to get along with. High scoring individuals will usually be trusting of others and will follow rules so as not to cause conflict. Lower scorers are more reserved and aloof and may act against the group's wishes to accomplish a personal goal.
Conscientiousness	Tendency to strive for perfection, sometimes at all costs. High scoring individuals will generally act based on a comprehensive plan and will tend to analyze all relevant information before proceeding. Lower scorers are typically spontaneous and quick to act. While they will get things done, the results may not be as expected.
Stability	Degree to which one reacts positively to negative or stressful situations. High scoring individuals (low neuroticism) will usually maintain a positive outlook and will rely on logic and organization when dealing with stress. Lower scorers may seem overly emotional and will generally act on instinct in times of stress.
Openness	Willingness to try new ways of doing things. High scoring individuals will generally be adventurous, curious, and able to personally accept a high degree of risk. Lower scorers will usually prefer to maintain the status quo and will opt for tried and proven methods.
Intensity	Level of drive and/or restlessness one exhibits. High scorers will always be looking for new challenges, sometimes before completing previously initiated projects. Lower scorers tend to be more patient and methodical, preferring to finish one task before starting a new one.
Control	Tendency to take charge of people and situations. Leads more than follows. It is often associated with expressing confidence. High Control is often found with a focus on achievement and the need for being in control of situations. Lower scorers suggest a minimal need to control the actions of others. Such an individual may be perceived by coworkers as a compliant follower.
Compliance	The degree to which an individual is willing to follow policies, external controls and supervision, and to work within the rules. High Compliance is often associated with being comfortable with authority, conformity, and with being conventional. Lower scorers may reflect a working style that emphasizes individualized thinking and a willingness to question inefficient practices.
Decisiveness	Reflects how confident someone is for accepting the risk of making a decision in a timely fashion using what information is available at the time. A person with a high Decisiveness score will make decisions with the information currently available so processes do not become too mired in deliberation. This also reflects their willingness to risk failure or misjudgment for the sake of timeliness. A person with a low Decisiveness score requires as much information as possible before making a decision.
Optimism	Tendency to have a positive attitude regarding people and outcomes. A positive and accepting outlook regarding people and outcomes is common among those with high Optimism scores. Lower scorers are willing to question the intentions of others and the feasibility of outcomes.

Sociability	Tendency to be outgoing and people-oriented. High scoring individuals maintain interpersonal contacts and seek out group activities. Low scoring individuals are less likely to seek out such experiences and are more comfortable working on their own.
Acumen	Tendency to use logic and objective information in decision-making process. High scoring individuals generally act on the basis of proven facts and analysis. Lower scorers rely more heavily on intuition and feeling when making decisions or taking action.
Cooperativeness	Tendency to be friendly, agreeable, and to be a team person. High scores in Cooperativeness display a willingness to consider the needs and ideas of others. The low Cooperativeness scoring individual is willing to express disagreement and defend priorities without compromise when necessary.
Autonomy	Tendency to be self-reliant, self-directed, and to take independent action, making own decisions. High scores in Autonomy define the manner in which an individual prefers to be directed by others and one's orientation for accomplishing tasks with minimal supervision. Someone with low Autonomy prefers to turn to others to guide their actions and set their goals.
Tact	Tendency to consider the feelings of others when communicating. High scoring individuals will be more measured in their communication and may tend to withhold information if they believe it will cause conflict. Lower scorers are generally franker and more direct in their communication, being more interested in full disclosure.
Influence	Tendency to focus activities on persuading others to follow or work with them in attaining objectives. High scoring individuals will generally be friendly, outgoing, and will maintain a wide network of contacts. Lower scorers are more cautious when seeking assistance or support from others and tend to be more reserved and less sociable.
Assurance	Tendency to rely on and be confident in the integrity and ability of others. High scoring individuals generally believe in the inherent good intentions of others and are not likely to be suspicious. Lower scorers will evaluate others' actions over time and make judgments about their trustworthiness only after careful consideration.
Compassion	Willingness and ability to identify with, or vicariously experience, the feelings and emotions of others. High scoring individuals tend to be sensitive to how their own actions impact others. Lower scorers usually have little or no regard for the experiences of others and may lack the background to understand others' personal situations.
Work Ethic	Willingness to work for the intrinsic benefit of work and its ability to enhance character. High scoring individuals tend to be reliable, have initiative, and pursue new skills. Lower scorers may be regarded as failing to provide fair value for the wage the employer is paying them and will usually display irresponsible workplace habits.
Integrity	Tendency to behave in an uncompromising and consistently honest, moral, and ethical manner. High scoring individuals tend to be trustworthy and consistently accurate in their actions. Lower scorers may show tendencies for being inaccurate in their representations and could have a more accepting attitude toward theft and other dishonest behaviors.
Teamwork	Willingness to work as a group member toward the attainment of a common objective. A high scorer will typically be sensitive to the needs of the group above their own and will place an emphasis on equal participation toward reaching the stated goal. Those with low scores are more likely to follow group wishes, if and only if, the team's objectives match their own.

Happiness	Tendency to maintain a mental or emotional state of wellbeing characterized by positive or pleasant emotions ranging from contentment to intense joy. High scoring individuals are usually easy to get along with and work in close harmony with their environments. Lower scorers have a propensity for complaining and may seem difficult to please.
Creativity	Degree to which an individual uses imagination and intellect to produce novel and original products, ideas, or task solutions. Higher scorers are those individuals who often arrive at seemingly strange solutions to problems which ultimately succeed in solving the problem. Low scoring individuals tend to follow established routes toward problem solution regardless of their success.
Ambition	Willingness to do whatever it takes to attain a personal goal, often even at the expense of others. High scoring individuals will typically be those who are not content to stay in one job very long if there is a higher level to be achieved. Lower scorers are usually satisfied with staying where they are as long as the position or environment is meeting their needs.
Adventurousness	Tendency to have a need for exciting or unusual experiences which may be bold and risky undertakings with uncertain outcomes. Higher scorers will aggressively seek out risky tasks and projects which allow them to do something different and uncertain. Low scoring individuals will consistently gravitate toward those activities which have a proven record and very little risk.
Critical Thinking and Reasoning	Determines the individual's ability to process various forms of data and information, both verbal and numeric.

Social Desirability

TalentSorter includes a scale and process for helping determine the viability of assessment results as a valid means of informing the applicant selection and placement function. The Social Desirability scale measures the forthrightness of the respondent and the statistical consistency of responses on the assessment. When respondents intentionally try to misrepresent themselves, have difficulty reading, or simply select item responses randomly the resulting inconsistency of responses can lead to a warning in the report to employers stating that the assessment results may not be representative of the individual and should be used with caution. This scale does not determine whether or not a person is lying, but rather refers to the validity of responses and the confidence which may be placed on results based upon the individual's response patterns. This scale cannot be used as a basis for benchmarking or selection.

Benchmarking

The key to the effectiveness of any assessment system used for selection and placement is local validation. That is, the assessment and resulting information must be relevant to the specific job for which the system is being used. To accomplish this, the TalentSorter uses a comprehensive Position Analysis Survey (PAS) along with concurrent study capabilities to identify the behavioral and cognitive factors which most greatly influence the potential success of a candidate in a specific job. The PAS process is unique for TalentSorter in that it is patented technology that not only identifies relevant scales for benchmarking, but also identifies the scales which should be included in the assessment for a particular job. While other assessment systems require candidates to respond to all questions in all scales regardless of their relevance to the job in question, TalentSorter only requires candidates to respond to items in those scales which have proven to be associated with success on the job based on the results of the position analysis functions. The PAS also establishes a range of scores within those scales which have shown to be correlated with success on the job. This may be accomplished by having a person familiar with the demands of the job complete the PAS, which contains a proprietary algorithm for determining score ranges, or by assessing incumbents in the job and determining the range of scores most often reported for those who are or have been successful in the position. The score ranges for the scales assessed become the benchmark against which all future candidates will be compared to help determine their potential for successful performance in the job.

Administration and Scoring

The TalentSorter is an internet-based assessment which, as explained earlier, is customized for each job within a given organization. There is no time limit for the assessment, however most people should be able to complete it within 30-35 minutes. Personality items offer brief descriptions of behavioral tendencies and attributes which are responded to on a 5-point Likert-type scale asking respondents to identify the degree to which they believe they display the behavior or attribute. Cognitive Reasoning items are formatted with multiple-choice responses.

Each domain or scale in the assessment is scored separately on a percentile scale which has been normed on the working population of North America. Percentile scores are then compared to score ranges identified in the benchmarking process and a Gap is reported if a candidate's scores fall outside that range. The larger the gap, the further away from the desired score range the

candidate is on a particular scale. A proprietary algorithm is used to calculate a Fit Score® which provides an overall look at how closely a candidate matches the overall benchmark.

TALENTSORTER PSYCHOMETRICS

Norming Sample

The initial norming sample (2016) for the TalentSorter was comprised of 14,693 individuals. Table 1 shows the demographics of this sample, reflecting their gender, ethnicity, and age groups. Table 2 provides the TalentSorter raw score descriptive statistics for this sample. Tables 3.1 and 3.2 provide the latest descriptive statistics for the TalentSorter, gathered between 2020-2022 from various samples of working individuals who have completed TalentSorter in actual selection processes.

Table 1: TalentSorter Norming Sample Demographics			
(2016 Sample)		N	%
Gender	Male	2526	17.19
	Female	4813	32.75
	No Response	7283	49.56
Race	Asian / Pacific Islander	878	5.97
	Hispanic	210	1.43
	African American	436	2.97
	White / Caucasian	5143	35.00
	Other	682	4.64
	No Response	7344	49.98
Age	16 to 25	2565	17.46
	26 to 35	2099	14.29
	36 to 45	1338	9.11
	46 to 55	1064	7.24
	56 to 65	373	2.54
	Over 65	26	0.18
	No Response	7228	49.19

Table 2: TalentSorter Raw Score Descriptive Statistics				
(2016 Sample)	**N**	**Mean***	**Std. Error**	**SD**
Extraversion	14614	38.02	.04	5.20
Agreeableness	14610	41.63	.04	4.32
Conscientiousness	14609	42.00	.04	5.12
Stability	14614	40.15	.05	5.56
Openness	14621	38.29	.04	4.87
Intensity	14615	36.54	.05	5.80
Control	14602	33.61	.03	3.77
Compliance	14602	34.24	.03	3.95
Decisiveness	14613	31.92	.03	3.68
Optimism	14603	24.11	.03	3.53
Sociability	14608	40.60	.04	4.44
Acumen	14607	33.05	.04	5.19
Cooperativeness	14601	40.13	.03	4.00
Autonomy	14611	35.72	.03	3.70
Tact	14616	30.68	.03	3.46
Influence	14596	38.56	.03	4.20
Assurance	14614	38.99	.04	4.29
Compassion	14607	37.10	.03	3.72
Work Ethic	14606	42.28	.04	4.34
Integrity	14611	42.54	.04	4.33
Teamwork	14599	43.26	.03	4.20
Happiness	14595	39.01	.03	3.58
Creativity	14607	39.80	.04	5.16
Ambition	14605	36.92	.04	4.39
Adventurousness	14606	41.83	.04	4.34
Cognitive	12103	11.50	.02	2.08

*Raw Score Range: 10 to 50 except Cognitive (Range 0 to 15)

Table 3.1: TalentSorter Raw Score Descriptive Statistics				
(Current Sample)	N	Mean	Std. Error	Std. Deviation
Extraversion	1509	37.43	.12	4.84
Agreeableness	1417	41.42	.12	4.41
Conscientiousness	1513	41.13	.12	4.57
Stability	1464	40.45	.14	5.32
Openness	1514	38.78	.12	4.63
Intensity*	5153	35.63	.06	4.31
Control	521	38.14	.21	4.68
Compliance*	5928	33.21	.06	4.69
Decisiveness	792	13.51	.11	3.11
Optimism	863	40.94	.15	4.53
Sociability	770	32.35	.17	4.78
Acumen	805	40.54	.14	4.04
Cooperativeness*	658	38.98	.18	4.67
Autonomy*	786	31.82	.16	4.60
Tact*	771	38.43	.17	4.64
Influence	879	39.33	.15	4.41
Assurance	842	37.45	.15	4.42
Compassion	763	41.99	.16	4.44
Work Ethic	1502	43.27	.11	4.08
Integrity	1471	43.86	.11	4.08
Teamwork	754	36.93	.13	3.50
Happiness	848	39.72	.17	5.05
Creativity	820	36.89	.15	4.23
Ambition	785	42.85	.16	4.39
Adventurousness	778	37.41	.16	4.48

* Most of these scales were reviewed in 2020. The Autonomy scale was updated significantly in 2021. Intensity, Compliance, Cooperativeness & Tact were updated in 2022.

Table 3.1 provides the current means (raw score averages) for each scale. The standard deviations are also provided, which suggest how broadly each scale's raw scores distribute above and below their respective means, with thinly distributed scores (close to the mean) suggesting homogeneity, more conformity, within the sample and widely distributed scores (ranging further from the mean) suggesting heterogeneity, more diversity, within the sample. When it comes to interpreting such data, a mean from one scale is not typically compared to other scale means, as that does not add any relevant understanding of the scales, though a current mean may be compared to prior means of the same scale over time to learn about the ever-growing sample of test takers.

When we compare the prior (2016) to the current (2020-2022) means and standard deviations (see Tables 2 and 3.1) for each scale we see the scales are essentially unchanged in their means and standard deviations. Three notable exceptions include the lower mean for Decisiveness, the higher mean for Optimism, and the wider standard deviation for Happiness. Test takers seem to be scoring lower or higher on these scales than first observed, possibly due to increasing diversity within the full test taker sample. However, no changes have been implemented in the normed scoring for Decisiveness, Optimism or Happiness, while more data is being gathered to confirm whether these trends hold up over time.

VALIDITY

Validity is the extent to which an assessment measures what it is designed to measure. The concept of validity refers to the appropriateness, or accuracy, of inferences or decisions made about individuals based on assessment results. It is important from both a business and legal perspective that organizations answer the question regarding the validity of the inference underlying the selection process. If the inference is not valid, organizations stand to waste their business investment on selection assessments and risk legal challenges to their hiring and placement decisions. That inference almost always involves measurements of performance which are measurable, objective, and relevant to success on the job. Assessment validation refers to the process of gathering evidence to support the inferences being made by an assessment.

Construct Validity

Construct validity refers to the extent to which an assessment and its scales are a relevant measure of a particular construct or trait. Construct validity addresses the question, "How well does the assessment measure what it was designed to measure?" Although there are different methods for evaluating construct validity, two of the most informative methods include examining the correlation coefficients (1) among the scales within the new instrument, and (2) between the new instrument and other psychological measures which have been shown to measure the same or similar constructs in a valid fashion. The pattern of correlations should be consistent with expectations based on what these scales were intended to measure. Scales that measure related personality constructs should be highly correlated whereas scales that measure unrelated constructs should not correlate highly.

Interscale Correlations

Prior to 2021, TalentSorter assessments were administered to over 1800 individuals in a wide range of occupations. Tables 4 and 5 show the interscale correlations while Table 6 shows the number of test takers in each correlation sample. Unlike most selection tests, TalentSorter has different sample sizes for each and every correlational pair of scales. This is because of TalentSorter's unique administration methods that tailor the test taking process to the candidate's job match situation, as described in the administration section above.

Correlations which are positively related exemplify characteristics which are typically seen together as normal personality traits in the population. As well, those traits with negative correlations provide further evidence of the separation and uniqueness of the scales being measured.

While this is a relatively high correlation rate for separately measured scales, it should be noted that in the TalentSorter scale selection process, it is unlikely that any individual job candidate will be administered all the scales at once, as described in the administration section above. As mentioned previously, 5 scales were rewritten in 2021-2022, so we see their pre-revision data in the following tables. The changes made to each scale did not alter what each scale measures but did help improve the quality of how we measure each construct.

TABLE 4: Interscale Correlations

Pearson Correlation	EXTR	AGRE	CONS	STAB	OPEN	INTE	CONT	COMP	DECI	OPTI	SOCI	ACUM
Extraversion	1.00	.565	.454	.497	.581	.450	.610	.107	-.385	.568	.622	.441
Agreeableness	.565	1.00	.495	.438	.584	.436	.450	.134	-.531	.578	.270	.583
Conscientiousness	.454	.495	1.00	.645	.528	.549	.437	.266	-.618	.667	.208	.518
Stability	.497	.438	.645	1.00	.544	.499	.441	.221	-.612	.709	.288	.498
Openness	.581	.584	.528	.544	1.00	.489	.619	-.055	-.538	.631	.271	.646
Intensity	.450	.436	.549	.499	.489	1.00	.491	.124	-.427	.506	.227	.452
Control	.610	.450	.437	.441	.619	.491	1.00	-.098	-.416	.563	.344	.532
Compliance	.107	.134	.266	.221	-.055	.124	-.098	1.00	-.233	.142	.066	.114
Decisiveness	-.385	-.531	-.618	-.612	-.538	-.427	-.416	-.233	1.00	-.573	-.140	-.663
Optimism	.568	.578	.667	.709	.631	.506	.563	.142	-.573	1.00	.316	.593
Sociability	.622	.270	.208	.288	.271	.227	.344	.066	-.140	.316	1.00	.186
Acumen	.441	.583	.518	.498	.646	.452	.532	.114	-.663	.593	.186	1.00
Cooperativeness	.198	.494	.529	.515	.352	.330	.110	.194	-.566	.488	.029	.422
Tact	.270	.538	.554	.578	.435	.354	.201	.258	-.604	.530	.073	.472
Influence	.699	.666	.489	.521	.655	.448	.634	.108	-.491	.607	.397	.614
Assurance	.466	.544	.507	.545	.480	.392	.338	.145	-.485	.602	.322	.483
Compassion	.447	.651	.623	.676	.544	.448	.386	.121	-.621	.669	.222	.595
Work Ethic	.503	.612	.647	.524	.571	.550	.557	.255	-.614	.640	.241	.655
Integrity	.478	.624	.663	.617	.562	.525	.505	.209	-.663	.655	.191	.667
Teamwork	.420	.599	.472	.483	.435	.317	.374	.292	-.571	.548	.223	.574
Happiness	.540	.494	.629	.726	.550	.501	.530	.168	-.550	.781	.322	.513
Creativity	.515	.505	.314	.380	.715	.413	.620	-.130	-.393	.463	.227	.593
Ambition	.548	.626	.658	.605	.667	.610	.651	.138	-.607	.715	.262	.690
Adventurousness	.671	.439	.481	.633	.621	.513	.678	.013	-.473	.638	.424	.499

Correlations <.073 are not significant to .05 level or higher

TABLE 5: Interscale Correlations continued

Pearson Correlation	COOP	TACT	INFL	ASSU	COMP	WETH	INTG	TEAM	HAPP	CREA	AMBI	ADVE
Tact	.637	1.00	.411	.483	.641	.549	.596	.504	.496	.238	.519	.346
Influence	.260	.411	1.00	.440	.533	.652	.579	.505	.564	.624	.655	.618
Assurance	.493	.483	.440	1.00	.605	.491	.532	.484	.534	.342	.523	.420
Compassion	.636	.641	.533	.605	1.00	.626	.724	.574	.605	.426	.623	.509
Work Ethic	.435	.549	.652	.491	.626	1.00	.726	.583	.561	.483	.817	.527
Integrity	.571	.596	.579	.532	.724	.726	1.00	.630	.593	.443	.770	.542
Teamwork	.491	.504	.505	.484	.574	.583	.630	1.00	.445	.307	.597	.395
Happiness	.453	.496	.564	.534	.605	.561	.593	.445	1.00	.408	.646	.648
Creativity	.160	.238	.624	.342	.426	.483	.443	.307	.408	1.00	.561	.563
Ambition	.449	.519	.655	.523	.623	.817	.770	.597	.646	.561	1.00	.607
Adventurousness	.301	.346	.618	.420	.509	.527	.542	.395	.648	.563	.607	1.00

Correlations <.073 are not significant to .05 level or higher

TABLE 6: Interscale Correlation Sample Sizes

	EXTR	AGRE	CONS	STAB	OPEN	INTE	CONT	COMP	DECI	OPTI	SOCI	ACUM
Extraversion	1814	1681	1804	1742	1803	633	633	639	966	1050	943	982
Agreeableness	1681	1703	1691	1632	1692	633	633	623	967	1047	943	963
Conscientiousness	1804	1691	1824	1751	1810	633	633	640	967	1049	943	990
Stability	1742	1632	1751	1757	1750	633	633	639	965	986	941	989
Openness	1803	1692	1810	1750	1821	633	633	640	967	1047	943	989
Intensity	633	633	633	633	633	633	632	618	619	632	608	608
Control	633	633	633	633	633	632	633	618	619	632	609	607
Compliance	639	623	640	639	640	618	618	642	618	617	610	615
Decisiveness	966	967	967	965	967	619	619	618	968	961	938	931
Optimism	1050	1047	1049	986	1047	632	632	617	961	1051	938	929
Sociability	943	943	943	941	943	608	609	610	938	938	946	925
Acumen	982	963	990	989	989	608	607	615	931	929	925	993
Cooperativeness	999	997	999	936	999	607	607	609	925	994	929	925
Tact	1031	1029	1031	969	1028	623	623	612	932	1011	930	918
Influence	1074	978	1075	1072	1073	632	632	628	951	966	931	918
Assurance	1026	1027	1027	964	1026	618	618	619	961	1023	940	927
Compassion	939	940	940	939	939	608	608	607	931	936	930	920
Work Ethic	1787	1677	1800	1738	1797	633	633	638	966	1043	944	990
Integrity	1746	1662	1756	1697	1754	632	632	633	951	1026	929	960
Teamwork	924	924	924	924	924	607	607	609	916	921	918	914
Happiness	1033	1034	1035	974	1033	618	618	617	960	1025	939	932
Creativity	1002	1002	1003	940	1003	609	609	610	932	996	934	921
Ambition	959	961	959	959	961	621	622	607	940	952	939	932
Adventurousness	952	953	952	952	952	618	619	618	950	948	930	914

TABLE 6: Interscale Correlation Sample Sizes continued

	COOP	TACT	INFL	ASSU	COMP	RESO	RELI	TEAM	HAPP	CREA	AMBI	ADVE
Extraversion	999	1031	1074	1026	939	1787	1746	924	1033	1002	959	952
Agreeableness	997	1029	978	1027	940	1677	1662	924	1034	1002	961	953
Conscientiousness	999	1031	1075	1027	940	1800	1756	924	1035	1003	959	952
Stability	936	969	1072	964	939	1738	1697	924	974	940	959	952
Openness	999	1028	1073	1026	939	1797	1754	924	1033	1003	961	952
Intensity	607	623	632	618	608	633	632	607	618	609	621	618
Control	607	623	632	618	608	633	632	607	618	609	622	619
Compliance	609	612	628	619	607	638	633	609	617	610	607	618
Decisiveness	925	932	951	961	931	966	951	916	960	932	940	950
Optimism	994	1011	966	1023	936	1043	1026	921	1025	996	952	948
Sociability	929	930	931	940	930	944	929	918	939	934	939	930
Acumen	925	918	918	927	920	990	960	914	932	921	932	914
Cooperativeness	1003	980	918	990	922	993	989	923	990	981	927	918
Tact	980	1032	956	993	932	1019	1001	919	998	996	942	932
Influence	918	956	1077	951	933	1064	1050	916	955	934	942	950
Assurance	990	993	951	1031	933	1027	1009	918	1023	996	936	948
Compassion	922	932	933	933	941	935	917	921	934	935	928	929
Work Ethic	993	1019	1064	1027	935	1809	1755	919	1034	1002	959	951
Integrity	989	1001	1050	1009	917	1755	1768	914	1017	983	949	940
Teamwork	923	919	916	918	921	919	914	926	916	918	915	916
Happiness	990	998	955	1023	934	1034	1017	916	1037	998	938	951
Creativity	981	996	934	996	935	1002	983	918	998	1008	929	930
Ambition	927	942	942	936	928	959	949	915	938	929	963	929
Adventurousness	918	932	950	948	929	951	940	916	951	930	929	954

Correlation with Other Assessments

This section of the TalentSorter Technical Manual examines the statistical relationships between the 2016 TalentSorter scales and the ProfileXT. The ProfileXT (PXT) measures normal personality traits using nine scales. The PXT has been in use for over 25 years and has been determined to be a valid measure of personality by numerous external reviews and validation studies. The nine PXT scales are defined in Table 7.

TABLE 7: PXT Scale Definitions	
Energy Level	tendency toward restlessness, activity and drive. This scale deals with issues such as efficiency and time utilization.
Assertiveness	measure of generalized influence. It is often associated with expressing confidence.
Sociability	measure of social presence. It directly relates to one's desire for group associations. This trait relates to maintaining interpersonal contacts and group activities.
Manageability	measure of how one reacts to the limits placed by authority and the acceptance of established procedures.
Attitude	measures the degree one is willing to demonstrate trust toward others. It relates to the tendency to suspend judgments about others.
Decisiveness	reflects how confident one is in accepting the risk of making a decision in a timely fashion, using what information is available at the time.
Accommodating	often associated with a concern for group accountability. A willingness to consider the needs of all group members is typical.
Independence	defines the manner in which an individual prefers to be directed by others, and one's potential to accomplish tasks with minimal supervision.
Objective Judgment	reflects a willingness to use either reason and logic or intuition. This is often referred to as the balance between thinking through the details of a situation and going with one's feelings and instincts

Both the TalentSorter and the PXT provide measures of factor-derived personality dimensions and include a number of scales that are similarly themed. Therefore, a comparison of these two measures was conducted in 2016 for the purposes of demonstrating the construct validity of TalentSorter. According to Table 8, the correlations between the TalentSorter and the PXT scales are highly consistent with what TalentSorter scales measure.

For example, all but one TalentSorter scale correlate with similarly themed PXT scales. Sociability correlates well with Sociability, Extraversion correlates well Assertiveness. Cooperation highly correlates, in an inverse (or negative) direction with Objective Judgment, suggesting cooperative individuals do not generally let cold, objective judgments dictate their

willingness to collaborate with others; they are apparently motivated by other incentives. The one scale that does not have a correlate among the PXT scales is Ambition and no PXT scale overtly encompasses this personality trait, thus no correlations should be expected for Ambition.

TABLE 8: 2016 TalentSorter / Profile XT Scale Correlations									
TalentSorter Scales	**Energy**	**Assert**	**Socia**	**Mana**	**Attit**	**Decis**	**Accom**	**Indep**	**Judge**
Extraversion	.104	.527	.621	.157	.323	.226	.234	.112	.170
Agreeableness	.091	.010	.196	-.184	.098	.002	.183	.196	-.317
Conscientiousness	-.310	-.054	-.062	.318	.164	-.155	.453	-.252	.131
Stability	-.401	.263	.098	.467	.341	-.094	.352	-.137	.606
Openness	.018	.195	.048	-.109	.228	.041	.158	.392	.019
Intensity (2016)	.332	.371	.192	.095	-.002	.297	.068	.184	-.001
Control	.060	.555	.223	.218	.507	.287	-.139	.198	.235
Compliance (2016)	-.090	-.231	.147	.200	-.266	-.038	.113	-.559	-.176
Decisiveness	.345	.299	.138	.109	.004	.252	-.198	.020	.101
Optimism	-.049	.409	.240	.154	.409	.113	.283	.124	.283
Sociability	-.016	.208	.605	.221	.173	.029	.256	-.221	.232
Acumen	.043	-.029	-.112	.334	.205	-.027	.260	-.075	.450
Cooperation (2016)	-.460	-.646	-.190	.424	.301	-.567	.555	-.370	.220
Autonomy (2016)	.226	.089	-.090	-.230	-.132	.216	-.205	.334	.126
Tact (2016)	-.430	-.569	-.381	.493	.217	-.552	.466	-.340	.363
Influence	.155	.297	.386	-.031	.126	.312	-.093	-.005	.111
Assurance	-.072	-.060	.193	.247	.428	-.053	.150	-.106	.376
Compassion	-.476	-.287	-.048	.422	.363	-.417	.444	-.273	.451
Work Ethic	.068	-.136	-.073	.253	.051	.026	.177	-.131	.347
Integrity	-.189	-.236	-.172	.267	.145	-.183	.250	-.185	.369
Teamwork	-.246	-.257	-.151	.337	.210	-.267	.369	-.346	.195
Happiness	-.116	-.047	-.046	.205	.319	-.059	.342	.054	.506
Creativity	.113	.091	.361	-.050	.111	.141	-.072	.075	-.067
Ambition	.066	-.102	-.085	.116	.033	.063	.067	.008	.112
Adventurousness	.050	.306	.397	-.032	.038	.178	-.105	.019	.235

Note that items in the Autonomy, Intensity, Compliance, Cooperativeness & Tact scales were revised between 2020 and 2022, so their correlations above reflect the older item sets; however, the themes of those scales remain consistent in the current version.

Table 9 provides a verbal summary of the results.

TABLE 9: TalentSorter Profile XT Scale Correlations Summary	
TalentSorter Scale	**PXT Scale**
Extraversion	Assertiveness
	Sociability
Agreeableness	Low Objective Judgment
Conscientiousness	Accommodating
	Low Energy
Stability	Manageability
	Objective Judgment
	Low Energy
Openness	Independence
Intensity (2016)	Energy
	Assertiveness
Control	Assertiveness
	Attitude
Compliance (2016)	Low Independence
Decisiveness	Energy
	Assertiveness
Optimism	Assertiveness
	Attitude
Sociability	Sociability
Acumen	Manageability
	Objective Judgment
Cooperation (2016)	Manageability
	Accommodating
	Low Assertiveness
	Low Decisiveness
Autonomy (2016)	Independence
Tact (2016)	Manageability
	Accommodating
	Low Energy
Influence	Sociability
	Decisiveness
Assurance	Attitude
Compassion	Manageability
	Accommodating
	Objective Judgment
	Low Energy

	Low Decisiveness
Work Ethic	Objective Judgment
Integrity	Objective Judgment
Teamwork	Accommodating
	Manageability
	Low Independence
Happiness	Attitude
	Accommodating
	Objective Judgment
Creativity	Sociability
Adventurousness	Assertiveness
	Sociability

RELIABILITY

No measure or assessment can be of much value unless it measures what it purports to measure in a reliable or consistent manner. Reliability refers to the consistency of measurement over time and within an assessment based on various analyses.

Coefficient Alpha

Internal consistency was measured by the product of a Cronbach's alpha analysis which indicates the consistency of responses to individual test questions. The alpha coefficient is a type of interitem correlation and ranges from 0.00 to 1.00. The higher a set of items' coefficient alpha, the more consistent the questions or assessment items are for that scale or factor. An assessment with a low coefficient alpha could produce uncharacteristic and meaningless scores in reference to what the assessment claims to measure. A high coefficient alpha, however, indicates the assessment items elicit consistent responses from the subjects in the sample, and thus, scores are more representative of the factor being measured.

In 2020, each scale of the TalentSorter was subjected to analysis to determine the alpha coefficient as a means of establishing reliability or internal item consistency of each scale. An alpha coefficient of .70 or greater is considered to be a strong indication of reliability. All scales of the TalentSorter meet or exceed this standard. One of those scales, Autonomy was rebuilt with a majority of new items and achieved a coefficient alpha of .70 in an analysis conducted in 2021. The four remaining scales were published with five non-scoring experimental items each and

analyzed in the Summer of 2022; some of the new items were retained and now score while some older items were removed, resulting in satisfactory reliability coefficients in each case. The alpha coefficients for TalentSorter scales are shown in Table 10.

TABLE 10: 2020 TalentSorter Reliability		
Scale	**Alpha**	**N**
Extraversion	.80	1509
Agreeableness	.80	1417
Conscientiousness	.78	1513
Stability	.87	1464
Openness	.77	1514
Intensity*	.79	5153
Control	.82	521
Compliance*	.76	5927
Decisiveness	.72	796
Optimism	.80	863
Sociability	.73	770
Acumen	.74	805
Cooperativeness*	.75	658
Autonomy*	.70	786
Tact*	.75	771
Influence	.81	879
Assurance	.77	842
Compassion	.78	763
Work Ethic	.80	1502
Integrity	.78	1471
Teamwork	.75	754
Happiness	.82	848
Creativity	.71	820
Ambition	.84	785
Adventurousness	.71	778
Overall	**.77**	

*The Autonomy scale was updated significantly in 2021. Intensity, Compliance, Cooperativeness & Tact were updated in 2022.

Split-halves Reliability

Another form of reliability review conducted on TalentSorter was conducted in 2016, a Split-Half reliability analysis, in which scores are generated for two halves of the set of items in each section of the survey. This is often useful when retesting a sample over time is impractical. Each half of the assessment is treated as a separate administration and the associated scores correlated

just as two scores are correlated in the test-retest method. The Spearman-Brown Prophecy formula is used to predict reliability after changing the length of the assessment.

The TalentSorter was divided into two equivalent halves of odd and even numbered items. A split-half reliability correlation coefficient was calculated to provide a measure of consistency with regard to the content of the assessment items. That is, the split-half reliability coefficient would indicate how consistently the TalentSorter items measure the dimensions for which they were developed to measure, namely personality constructs. As with the alpha coefficient, a split half correlation of 0.70 or higher indicates good reliability. Table 11 shows that the TalentSorter exhibits good split-halves reliability. Autonomy was completely rewritten in 2021, so it is not included in this study.

Table 11: 2016 Split-Halves Reliability Coefficients	
Scales (2016)	Spearman-Brown Coefficient
Extraversion	.85
Agreeableness	.70
Conscientiousness	.71
Stability	.70
Openness	.73
Intensity	.70
Control	.84
Compliance	.70
Decisiveness	.72
Optimism	.74
Sociability	.86
Acumen	.93
Cooperativeness	.93
Tact	.87
Influence	.91
Assurance	.93
Compassion	.96
Work Ethic	.94
Integrity	.93
Teamwork	.94
Happiness	.94
Creativity	.91
Ambition	.94
Adventurousness	.92

REASONING ABILITY

An investigation into the distribution of scores on the scale was conducted in 2016. Figure 1 shows the distribution of cognitive raw scores for the TalentSorter. The graph indicates the scores approximate a normal distribution for the sample and therefore represent a distribution typical of a normal sample. Mean and standard deviation are listed.

Figure 1

Cognitive Raw Score Distribution

Mean = 11.50
Std. Dev. = 2.081
N = 12,103
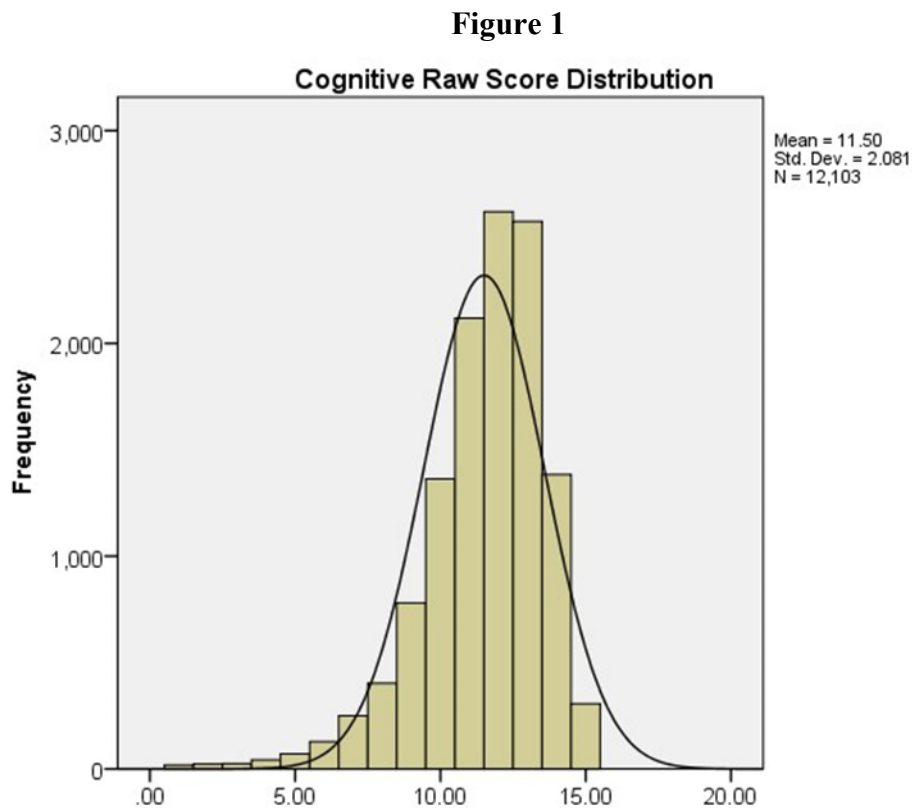
ADVERSE IMPACT

The objective of analyzing the differences between population subgroups in a testing situation is to determine whether or not bias exists in the assessment, intentionally or otherwise. The final outcome of the assessment (the selection decision and all data that influence that decision) can be sensitive to bias. In the case of the TalentSorter, the final score is a job fit coefficient calculated from the deviations an individual's scores exhibit regarding a pre-determined job benchmark. This FitScore contributes to the decision-making process to help hiring personnel determine the next step in the job application process. If analysis results show a significant difference in

FitScores between population subgroups (defined by age, gender, and ethnicity), it may be inferred that the assessment process could have an adverse impact on members of these subgroups. Guidelines in the US recently added sexual orientation and gender identity to be covered by Constitutional protections, but this identifying data is not available in our samples at this time, so it has not been included in the analysis.

The US Equal Employment Opportunity Commission (EEOC) has set clear guidelines for determining what legally constitutes adverse impact in selection rates through the Four-Fifths Rule, wherein the selection rates for historically advantaged groups are compared to those of historically disadvantaged groups. If the latter attain a selection rate at best 4/5ths that of the former, adverse impact is present. Therefore, if an assessment score (like TalentSorter's FitScore) is used to influence results in a selection process (using a cutoff score as a pass/fail condition) the pass/fail ratio must avoid adverse impact. Note that an assessment score, even if it lacks adverse impact, should never be the sole determinate for selection decisions.

TalentSorter does not create a cutoff or recommend pass/fail conditions. That is the responsibility of the assessment user, a hiring manager, HR director, etc. and should be based on many factors, including not only adverse impact initiatives but also performance-based criterion validations, the richness of the talent pool from which they are selecting, the historical evidence for successful cutoffs, and many other factors. However, we have conducted an adverse impact analysis with our norming sample, scoring them against a sample job match pattern to achieve Fitscores; we then tested several hypothetical cutoff scores for the presence of adverse impact. By setting several cutoff scores, we were able to determine which were effective at avoiding adverse impact and whether any were unacceptably disadvantageous to any protected group by failing the four-fifths rule. The results follow.

The results of this analysis demonstrate that none of the five cutoffs introduced adverse impact against any demographic group when compared to the pass rates of the historically advantaged groups. The table lists each "4/5ths threshold" or the pass rate that would be considered too impactful compared to the pass rate of the historically advantaged group. For instance, the pass rate of White participants was .95 or 95% against the cutoff score of 50 (FIT50). The 4/5ths

threshold of .95 is .76, so any other group passing at a rate of .76 or less would be impacted adversely at that point.

We found no pass rates that low for the other ethnic groups, so the test was successful at that cutoff. This was continued throughout all cutoffs and with all demographic groups and in no case at any cutoff was adverse impact revealed. In fact, in some cases, historically disadvantaged groups attained pass rates higher than their historically advantaged counterparts.

TABLE 12: Adverse Impact of the TalentSorter Fitscore under Hypothetical Cutoff Settings

	FIT50		FIT60		FIT70		FIT80		FIT90	
GENDER	PASS RATE	N	PASS RATE	N	PASS RATE	N	PASS RATE	N	PASS RATE	N
Female	0.96	11615	0.88	11615	0.70	11615	0.38	11615	0.09	11615
Male	0.90	10364	0.78	10364	0.58	10364	0.35	10364	0.08	10364
4/5ths threshold	**0.72**		**0.63**		**0.46**		**0.28**		**0.06**	

	FIT50		FIT60		FIT70		FIT80		FIT90	
AGE	PASS RATE	N	PASS RATE	N	PASS RATE	N	PASS RATE	N	PASS RATE	N
<46	0.93	18029	0.83	18029	0.63	18029	0.37	18029	0.08	18029
46+	0.94	4017	0.86	4017	0.68	4017	0.36	4017	0.09	4017
4/5ths threshold	**0.74**		**0.66**		**0.51**		**0.29**		**0.07**	

	FIT50		FIT60		FIT70		FIT80		FIT90	
ETHNICITY	PASS RATE	N	PASS RATE	N	PASS RATE	N	PASS RATE	N	PASS RATE	N
Asian	0.89	3112	0.78	3112	0.56	3112	0.35	3112	0.07	3112
Black	0.93	2359	0.85	2359	0.70	2359	0.35	2359	0.08	2359
Hispanic	0.93	2356	0.81	2356	0.60	2356	0.33	2356	0.08	2356
White	0.95	11463	0.86	11463	0.67	11463	0.39	11463	0.09	11463
4/5ths threshold	**0.76**		**0.69**		**0.53**		**0.31**		**0.07**	

Age groups data were collected in intervals from 15 to 25, 26 to 35 etc. so the typical EEOC cutoff at age 40 was not determinable. A compromise was reached by setting the line between 45 and 46, rather than the younger 35 and 36.

In actual practice, once the adverse impact of each cutoff score is determined, the user can then compare the relationship between performance ratings and FitScores in a criterion related validation study, correlating performance scores with pass/fail membership at each cutoff and identify where the best balance is achieved of predictability (the validity study correlation coefficients) and low adverse impact (the pass rate vs 4/5ths).