THE "INTENTIONALITY MEASUREMENT INSTRUMENT" [OR "IMI"]: A COMPREHENSIVE PSYCHOMETRIC INSTRUMENT BASED UPON THE DUAL QUADRANT SCALAR MODEL OF INTENTIONALITY THAT IS DESIGNED TO MEASURE INTENT, MOTIVE TYPE, AND DISPOSITION

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ABSTRACT

The overall aim of this paper is to provide an epistemological rational for the measurement of intentionality. The purpose of this narrative is to identify "Intentionality" as an arena of action in the dispositional learning domain can be measured using an "Intentionality Measurement Instrument" [also referred by the acronym "IMI"] based upon a dual scalar model similar to the measurement of the correlation coefficient. The methodology of the "IMI" is to statistically test intentionality via specific psychometric instruments. The IMI as an educational science statistical metric has universal applicability and is ideally suited for measurement of purposive content (the subject matter area), purposive capability (the psychomotor domain), and purposive knowledge (the cognitive domain) based directly upon disposition (the affective domain-which determines the will, purpose, and reason behind the identified event). This methodology is a novel approach to much needed dispositional statistical data analysis. It adds considerable value to the methods designed to assess rationale and reason through specific instrument validity and reliability. A sequential computational methodology for IMI statistical analysis through a model is provided to clarity the metrics that are procedurally used in a step by step fashion that illustrates the entire process of intentionality inquiry.

Keywords: Analysis, Educational Science, Intentionality, IMI, Outcomes, Psychometrics, Research, Statistical Test, Statistics, Triostatistics, Validation.

INTRODUCTION

1. Field of Educational Science and Intentionality

The field of "Education Science" is also represented by the term "Eduscience" which is a portmanteau of the two terms "Education" and "Science" (Osler, 2012a). Similar to the field of "Bioscience", Eduscience is the study of education wherein applicable sciences (such as ergonomics, statistics, technology, etc.) are applied to enhance and improve learning. The primary purpose of the field of Eduscience is the study and application of solutions to improve and enhance the learning environment and learning in general. Eduscience is solution–driven and is actively concerned with the transfer and dissemination of knowledge. Education Science is a broad field and its professionals are directly involved in the field. Those who are actively involved in Eduscience can be referred to as "Education or Educational Scientists". Educational Scientists or "Eduscientists" are multifaceted professionals who have a variety of areas of expertise. They can assume multiple roles in an educational environment and can serve in a variety of offices and in a multitude of capacities. The primary positions that Eduscientists assume are in the following areas: Administration (as Leaders, Organizational Heads, and Organizational Management Professionals), Instruction (as Teachers, Professors, and Facilitators), Practice (as Practitioners in a variety Specified Areas and Arenas), and Technology (as Educational Technologists, Instructional Technologists, and Information Technologists). In these positions Eduscientists effectively use, analyze, study, and deploy novel instructional learning theories, methodologies, strategies, solutions, tools, and

techniques in both traditional or virtual (pedagogical and andragogical) settings to bring about learning (Osler & Waden, 2012b).

Intentionality is in the philosophy of the human mind and in the discipline of "Cognitive Science" and "Folk Psychology" (which is more commonly known as "Commonsense Psychology"), "Intention" is defined as, "the human capacity to explain and predict the behavior and the mental state of other people" (Bratman, 1987). Educational Scientists need to develop inquiry into the arena of intentionality to determine the overall efficacy of their solutions from a measurement of the following:

1. "Purposive Content" (the subject matter area);

2."Purposive Capability" (the psychomotor domain); and lastly,

3. "Purposive Knowledge" (the cognitive domain) based directly upon disposition (the affective domain-which determines the will, purpose, and reason behind the identified event).

2. Need for the Study: Identifying the Rationale for Intentionality Inquiry in the Field of Educational Science

In terms of need, the field of "Educational Science" requires a scalar measurement tool in the arena of intention that provides the Eduscientist with an ability to measure the overall efficacy of their espoused solution from the population that has experienced it. This innovative and novel methodology will provide invaluable information to the researcher (i.e. "Eduscientist') who is conducting inquiry in any variety of educational environments and arenas to improve the overall situation of the learner who is experiencing any manner of educational solutions and/or interventions. Thus, "Intentional Inquiry" is needed by the educational researcher to gather rich in-depth information regarding the learner in regards to their assertions in regards to the Eduscientist's purposive: content, capability, and knowledge.

3. Review of the Literature: Psychologically defining Intentionality and Intentional Actions

As stated in the introduction section of this paper "in the philosophy of the human mind and in the discipline of "Cognitive Science" and"Folk Psychology" (which is more commonly known as "Commonsense Psychology"), "Intention" is defined as, "the human capacity to explain and predict the behavior and the mental state of other people (Bratman, 1987)". As a brain-based cognitive science, "Folk Psychology", therefore explains human behavior on the basis of mental states, including beliefs, desires, and intentions (Astington, 1993), and (Perner, 1991). It is important to note that "Intentional Actions" (also referred to as "Intentionality") is a "Mental Mechanism". Mental mechanisms, including intention, explain behavior in that individuals are seen as actors who have desires and who attempt to achieve goals that are directed by beliefs. Thus, an intentional action is a function to accomplish a desired goal and is based on the belief that the course of action will satisfy a desire (Malle & Knobe, 1997).

There is also a theoretical distinction between "Intentionality" (also called "Intentional Actions"), and a mental state of intention for the future (Searle, 1983). Psychological researcher Searle (1983) labeled these as "intention-in-action" and "prior intention" respectively. Prior intentions reflect forethought about intentions-in-action; prior intentions do not need to be carried out to be considered intentions. An unfulfilled intention is a prior intention that has no action associated with it (Searle, 1983). The research of Astington (1993) further outlined the connections between mental states (as the trifold connection between the three mental states of "desires", "beliefs", and "intentions") and actions carried out by an individual in order to reach a goal; these connections are referred to as the "Intentional Chain". The proposed connective chain is that desire causes intention, which causes action, which causes outcome. The Intentional Chain maps the linking of a desire to the satisfaction of a goal via the intermediary intention (Astington, 1993).

The development of a deeper understanding of intention provides a filter for the groundbreaking research that led to the development of the "Intentionality Measurement Instrument" as a means of measuring intentionality. Psychological research suggests that understanding intentions of others may be a prerequisite for a higher-

level understanding of other people's minds or theory of mind (Blakemore & Decety, 2001). Theory of mind research attempts to map how children come to understand the mind as a representational device for the world (Lee, 1995). This research has focused on the development of knowledge that others have beliefs, desires, and intentions that are different from one's own. This is the primary concept that grounds the event-based perspective scale of involvement that forms the basis for the IMI measurement scale. A basic ability of comprehension other people's intentions based on their actions is critical to the development of theory of mind (Lee, 1995) and this is also essential to the measurement of intentionality (Blakemore & Decety, 2001). The understanding of intention is thought to be pivotal in understanding social contexts in numerous ways. First, acquiring an understanding of intention is important for early childhood development, in that it helps children conceptualize how people and animals differ from objects. Much of behavior is caused by intentions, and understanding intentions helps to interpret these behaviors (Feinfield, Lee, Flavell, Green & Flavell, 1999). Intentions are integral to the development of an understanding of morality (Shantz, 1983).

4. Theoretical Framework of Intentionality that is the Foundation of the Intentionality Measurement Instrument

The theoretical framework that forms the foundation for "Intentional Measurement" as discussed in this narrative can be found in the research of Bertram F. Malle conducted in 1999. Malle states the following in regards to intentionality, "Reason Explanations are people's explanations of an intentional behavior that cite the agent's reasons for acting that way; Cause Explanations are people's explanations of an unintentional behavior that cite the causes that brought about the behavior (Malle, 1999). Malle goes on to further state the following, "Schematically, Reasons → Intention → Intentional Action" (Malle, 1999) [illustrated in Figure 1]. Malle's 1999 research was supported by the work he conducted with Knobe in 1997 that formulated the subsequent Theoretical framework that would appear in Malle's 1999 seminal work entitled, "The Folk Concept of Intentionality" where he cites the work they conducted in 1997 with the following assertion, "provided such an empirical test by examining in detail which conditions need to be fulfilled for people to regard a behavior as intentional. In several studies, they supported a model of the folk concept of intentionality that has five conditions: For people to judge an agent's behavior as intentional, the agent must have (a) a desire for an outcome, (b) beliefs about a behavior leading to that outcome, (c) a resulting intention to perform that behavior, (d) the skill to perform the behavior, and (e) awareness of fulfilling the intention while performing the behavior" (Malle & Knobe, 1997). This forms the gamut of the foundation for theoretical framework for this narrative and is illustrated in Figure 1.

Figure 1 Illustrates the "Folk Concept of Intentionality" from the perspective of the originator of the intentional action first having a "justifiable reason" for the doing of a prescribed action that directly leads to "Intentional Behavior". It is upon this "Theoretical Framework Intentionality Reason Explanation Model" that the author constructs the Intentionality Measurement Instrument and its associated statistical scalar model designed to measure intention and the outcomes of intentional behavior from the participant examination of a given Event/Experience/Interaction/Assessment and/or Outcome.

5. Validating and Defining the Objective of Intentionality Measurement via Psychometrics and the Affective Learning Domain

One of the most challenging areas of research in education involves the construction of specific instruments that are designed to measure qualitative outcomes and data. Although there are a great many measurement tools that analyze the cognitive and psychomotor domains, there remains a vacuum in the number of instruments, especially designed to accurately measure the affective domain (the learning domain that

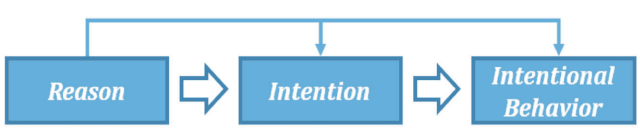

Figure 1. The Theoretical Framework Intentionality Reason Explanation Model

contains attitudes, opinions, emotions, perception, and perspectives). This void is further expanded when the specific event under investigation is unique, specialized, has specific characteristics, serious legal constrictions, and issues regarding time. This often requires the research investigator to design an instrument that ideally measures the variables under investigation (Osler, 2013). The process of designing instruments for the purposes of assessment and evaluation is universally called "Psychometrics". Psychometrics is broadly defined as the science of psychological assessment (Rust, and Golombok, 1989). Psychometrics is the field of testing essential to determine the validity and viability of a system in socio–behavioral and traditional sciences. Based upon the aforementioned theoretical framework, "Intentionality" as an arena of action in the disposition learning domain can be measured using a specifically defined "Intentionality Measurement Instrument" [also referred by the acronym "IMI"]. The IMI is based upon a dual scalar model that is extracted from the fourth Cartesian quadrant. The IMI as a statistical methodology is quite similar to the metrics designed to measure correlation coefficient in that the range of intentionality falls between –1.00 zero and +1.00. This scoring range is defined on a specified "Intentionality Scale" and is measured via intentionality measuring psychometric instruments.

This form of inquiry is ideal for determining the outcomes of actions from a participant perspective that provides a deeper insight into the outcome of an event or action from the effect it has had on those who were directly involved in said action or event. The plausibility of such measurement is undeniable. A researcher will now be able to have specific information on the overall outcome of an action or event based upon the outcome that will yield the scalar data on the initial rationale for the identified action or event. Intentionality measurement is an in–depth statistical procedural process for conducting the internal and external testing of dispositional measurement of a action or event by sample or population. The IMI as a metric has universal applicability and is ideally suited for mathematical measurement of purposive content (the subject matter area), purposive capability (the psychomotor domain), and purposive knowledge (the cognitive domain) based directly upon disposition (the affective domain-which determines the will and reason behind the identified event).

This novel methodology is a new approach to much needed dispositional statistical data analysis. It adds considerable value to the methods designed to assess rationale and reason through specific instrument scalar measurement. A sequential computational methodology for IMI analysis is provided in the next section that illustrates the entire process of intentionality inquiry. The next section provides the IMI metric guidelines; the Intentionality Scalar Model; a sample IMI, and the computational methodology that is associated along with it.

6. The Osler Intentionality Measurement Instrument©: The [IMI] for Comprehensive and Holistic Quantifiable Assessment

The following IMI Ten Item Guidelines in detail explain how the IMI is constructed based on ten different meta-analytical arenas of intentionality measurement that are:

1. Mentality (or Cognition);
2. Disposition (or the "Affective Domain");
3. Physical Action (or "Psychomotor Activity");
4. Interaction (or "Social Activity");
5. Safety (or "Security");
6. Preemptive Activity (or "Proactive Action");
7. Response (or "Reactive Action");
8. Contentment (or "Fulfillment");
9. Direction (or "Purposive Fulfillment"); and lastly,
10. Self-Growth (or "Development and Growth").

Appendix - I shows the Osler Intentionality Measurement Instrument©. The IMI Mathematical Measurement Scale follows in the next section.

6.1 The Osler IMI© Computational Measurement Scale for Intentionality Assessment

Table 1 shows the Osler IMI© Computational Measurement Scale for Intentionality Assessment. Intent is measured through activity and response. A more holistic definition or model of "measured intent" would be: "doing a

Intentionality Integer Value [Rounded to the Nearest Whole Number]	Intentionality Identical To Therefore Equal to	Intentionality Scale Comprehensive Definition	Intentionality Scale Overall Meaning	Intentionality Score Range [ISR]	Intentionality Level
–10 = [ISR]×10	≡∴=	Lethal	Life Threatening	–.91 to –1.00	
–9 = [ISR]×10	≡∴=	Dangerous	Exceptional Harm	–.81 to –.90	
–8 = [ISR]×10	≡∴=	Extremely Stressful	Approaching Danger	–.71 to –.80	Level of Maliciousness
–7 = [ISR]×10	≡∴=	Moderately Stressful	Strong Stress	–.61 to –.70	
–6 = [ISR]×10	≡∴=	Slightly Stressful	Growing Stress	–.51 to –.60	
–5 = [ISR]×10	≡∴=	Initially Stressful	Exhibiting Signs of Stress	–.41 to –.50	
–4 = [ISR]×10	≡∴=	Extremely Harmful	Strong Harm	–.31 to –.40	
–3 = [ISR]×10	≡∴=	Moderately Harmful	Growing More Harmful	–.21 to –.30	
–2 = [ISR]×10	≡∴=	Slightly Harmful	Becoming Harmful	–.11 to –.20	
–1 = [ISR]×10	≡∴=	Initially Harmful	Start of Harm	–.01 to –.10	
0 = [ISR]×10	≡∴=	Neutral	Neither Harmful nor Helpful	0.00	Level at Zero
+1 = [ISR]×10	≡∴=	Initially Helpful	Start of Help	+.01 to +.10	
+2 = [ISR]×10	≡∴=	Slightly Helpful	Becoming Helpful	+.11 to +.20	
+3 = [ISR]×10	≡∴=	Moderately Helpful	Growing More Helpful	+.21 to +.30	Level of Beneficence
+4 = [ISR]×10	≡∴=	Extremely Helpful	Strong Help	+.31 to +.40	
+5 = [ISR]×10	≡∴=	Initially Rewarding	Exhibiting Signs of Reward	+.41 to +.50	
+6 = [ISR]×10	≡∴=	Slightly Rewarding	Becoming Rewarding	+.51 to +.60	
+7 = [ISR]×10	≡∴=	Moderately Rewarding	Strong Reward	+.61 to +.70	
+8 = [ISR]×10	≡∴=	Extremely Rewarding	Approaching Gratification	+.71 to +.80	
+9 = [ISR]×10	≡∴=	Gratifying	Very Satisfactory	+.81 to +.90	
+10 = [ISR]×10	≡∴=	Valuable	Exceptionally Gainful	+.91 to +1.00	

Table 1. The Osler IMI© Computational Measurement Scale for Intentionality Assessment

designated task or completing an explicit event for a specific purpose". In terms of an intentionality measurement scale this can be more accurately described as "the comprehensive measurement of the intentionality of a given "event", "experience", "exercise", "interaction", "assessment", and/or "outcome"in terms of "disposition" using the aforementioned "Intentionality Scale" (in the "Affective Learning Domain" measuring perspective based off of interaction) requires the use of the "Total Intentionality Operation" = "The Intentionality Integer Value" (which is the first value on the Osler IMI Computational Measurement Scale for Intentionality Assessment listed above). "The Intentionality Integer Value" is mathematically calculated as follows:

$$\left[\overset{n}{\underset{i=1}{+}}\right]\left[(-1.00)\ldots\longrightarrow\ldots(+1.00)\right]_{10}\times 10^{1}$$

This intentionality mathematical formula is used to derive the final calculated intentionality scale score from the in–depth "Intentionality Measurement Instrument" (or [IMI]). The Total Intentionality Operation is constructed from the following elements and components:

- n = "The Limit of Intentionality" which is equal to "The Total Number of Intentionality Instruments" that are used in a given research investigation;
- "i = 1" = "The Index of Intentionality starting with the First Intentionality Instrument";
- [+] = "The Concentrated Total of Intentionality Arithmetic Operation" (which is the arithmetic total of the identified range contained within the "Intentionality Scale)";
- 10 = "The Total Number of Intentionality Measurement Instrument" items;
- $\overset{n}{\underset{i=1}{[+]}}$ = "The Computational Concentrated Total of Intentionality Operation Notation";
- $[(-1.00)\ldots\rightarrow\ldots(+1.00)]_{10}$= The "Intentand" a novel term that is the specified intention measurement calculation as the "Concentrated Measurement Scale of Intentionality" per each of the ten IMI items sequentially totaled per IMI (as indicated by the sub 10 indicator);
- "→" = The logical symbol used to denote "continues on toward", in this case it indicates the continuation of an

outcome that must fall between (–1.00) and (+1.00), this particular outcome (in terms of final IMI results) can be represented by an "Intentand" that represents either a positive or a negative outcome that is of the form: $[(-1.00)\ldots\text{or}\ldots(+1.00)]_{10}$; (note the "or" that replaces the "→" indicating "either");

- × = "Multiplied by"; and
- 10^1 = "The Base Power Integer of Intentionality" (where 10 is the number of "Intentionality Items" and the power of 1 is per each individual "IMI").

Similar to this the "[ISR]" or the concentrated "Intentionality Score Range" (located in the fifth column of the "Osler IMI Computational Measurement Scale for Intentionality Assessment" above) is calculated using the following mathematical formula:

$$[\text{"ISR"}] = \sum_{i=1}^{n}[+]\left[(-1.00)\ldots\longrightarrow\ldots(+1.00)\right]_{10} \div 10^1$$

6.2 The Intentionality Measurement Scalar Model

The "Osler Scalar Model of the Measurement of Intentionality" follows and illustrates exactly how intent is measured using a dual linear model (Figure 2) that has either a positive or a negative resulting outcome (that carefully measures the amount of intent as either positive or negative and low, mid-point or high, and identifies type of motive [on the high scale of intent displaying purpose driven intent]).

As reported in the aforementioned "The Computational Measurement Scale for Intentionality Assessment" the model of the "The Scalar Model of the Measurement of Intentionality" is equal to the mathematical operation: $[(-1.00)\ldots\rightarrow\ldots(+1.00)]_{10}$, on the Scalar Model of the Measurement of Intentionality as: $[(-1.00)\ldots\text{or}\ldots(+1.00)]_{10}$. Thus, the model resembles the fourth quadrant of the Cartesian coordinate graph which has the abscissa = the "x" Cartesian coordinate as a (+) or a positive vector (that begins at 0.00 and ends at +1.00) and the ordinate = "y" Cartesian coordinate as (–) or a negative vector (that begins at 0.00 and ends at –1.00). This model does not have true graphic coordinate

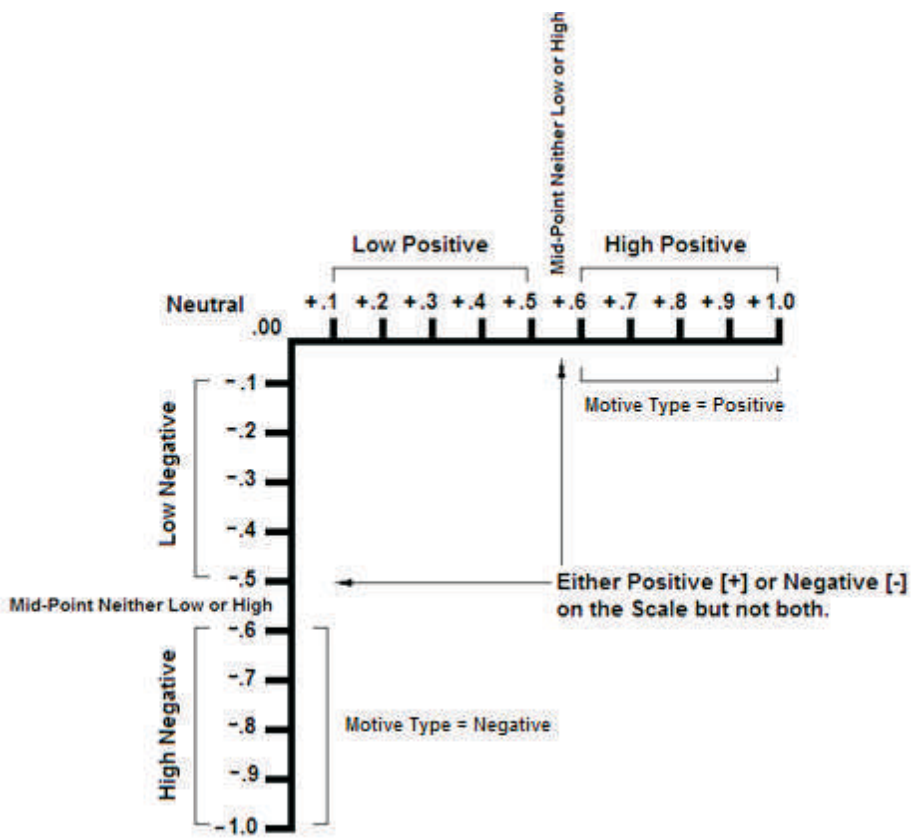

Figure 2. The Intentionality Measurement Scalar Model

because the respective x and y vectors (though measurable) are considered independent and "mutually exclusive". This means that the calculated "Intention" or "Resulting Intentionality Measurement" as an outcome is either "Positive" or "Negative" but never considered to be a dual Cartesian coordinate graph of the form (x, y). Therefore, a specific point in space cannot and is not plotted because this is not a Cartesian graph. Instead, it is a dual selection model that has a singular selected outcome based on the final results of the IMI. As such the "The Scalar Model of the Measurement of Intentionality" reports final IMI outcomes as either positive or negative with intent measured as follows:

- Neutral (0.00) or " No "Intent";
- "Low Positive Intent" (ranging from +0.01 to +0.49);
- "Mid-Point Positive Intent" (ranging from + 0.50 to +0.59, indicating neither a "Low or a High Positive Intent" but rather a "Mid-Range Positive Level of Intent" literally meaning that although positive intent has been established it is fixed at negative center point that is neither low or high in range of intentionality);
- "High Positive Intent" (ranging from +6.0 to +1.00 indicating a high level of intent that is "motivated or purposeful" that is indicated by a "Positive Motive Type" meaning intent was motivated and put into action by positive thoughts that resulted in positive actions that led to corresponding negative outcomes);
- "Low Negative Intent" (ranging from –0.01 to –0.49);
- "Mid-Point Negative Intent" (ranging from –0.50 to –0.59, indicating neither a "Low or a High Negative Intent" but rather a "Mid-Range Negative Level of Intent" literally meaning that although negative intent has been established it is fixed at negative center point that is neither low or high in range of intentionality); and
- "High Negative Intent" (ranging from –6.0 to –1.00 indicating a high level of intent that is "motivated or purposeful" that is indicated by a "Negative Motive Type" meaning intent was motivated and put into action by negative thoughts that resulted in negative actions that led to corresponding negative outcomes).

A Sample Intentionality Measurement Instrument© [IMI©] used for Assessment is shown in Appendix - I.

7. The Mathematical Statistical Validation of the Intentionality Measurement Methodology: Measurement Scales Similar to the Quantitative Measurement of Statistical Correlation

The IMI is exactly explained in terms of the IMI itemized psychometric test items as an analytic validated by the "IMI Cluster Axiom for Manifold Consistency". The "IMI Cluster Axiom for Manifold Consistency" (and thereby "research reliability") is a measurable logical–mathematical statistical procedure that is designed for measuring the efficacy of psychometric research instrument items and has the following content–area specifications: (a) "Similarity of Content"; (b) "Directly Applicable Utility and Purpose"; and lastly (c) "An Exhaustive Placement of Researchable Items that have a Specified and Holistic Meaning".

The IMI Cluster Axiom is constructed from the threefold [Manifold] notion that: (1) The "Psychometric Research Instrument" (identified by the acronym "psyri") items are grouped together based on relevance information; (2) Each and every "Psychometric Research Instrument" item has timely and relevant subject matter aligned to the initial research–design method of inquiry (i.e., research hypotheses and/or research questions); and (3) All "Psychometric Research Instrument" items exhaustively belong to some particular categorical cluster based on similarity of content, measurement, and data gathering procedure.

Mathematically, the "Intentional Measurement Index" which is also a "modus metric" is both indicated and represented in the following manner:

(1) Index of Intentionality = "$\underline{\underline{I}}$"

(2) Index of Intentionality Notation = "$\underline{\underline{\frac{n}{i}}}_{10}$"

Where, the IMI Index of Intentionality is mathematically defined as follows:

(1) $\underline{\underline{I}}$ = The "Focus on the Index of Intentionality";where,

(2) $\underline{\underline{\ }}$ = "Focus on" which is an indicator of a "specified concentration on";and

[3] i = Total number of intentional "psychometric research instrument items"; and the maximum number of

psychometric intentionality research instrument items contained within each instrument (this may differentiate from instrument to instrument per research design (each design containing the same research instrument). This thereby creates unique qualities from research design to and thusly creates "Specialized Instrumentation Variation" this type of specialized variation is very similar to a statistical "Manifold of Unequal Groups" used in "Accumulative Manifold Validation Analysis").

[4] $\overset{n}{\underset{10}{I}}$ = The nomenclature specific to the "Index of Intentionality" that is very similar to mathematical summation notation, where the "n" = indicates the number of intentionality items used on a specific intentionality instrument and the integer 10 = the number of Intentionality Instruments used in the specified research investigation. Thus, a research investigation with 25 intentionality metrics with and instrument index that has ten intentionality items would have a specific "Index of Intentionality Notation" that is written in the following manner:

[5] $$\overset{10}{\underset{25}{I}} = \overset{n}{\underset{i=1}{[+]}}\left[(-1.00)\ldots\longrightarrow\ldots(+1.00)\right]_{10} \div 10^{1}$$

Where, "[ISR]" or the concentrated "Intentionality Score Range" is defined as:

[6] $$\text{["ISR"]} = \overset{n}{\underset{i=1}{[+]}}\left[(-1.00)\ldots\longrightarrow\ldots(+1.00)\right]_{10} \div 10^{1}$$

This specific computational calculation for the "[ISR]" or the concentrated "Intentionality Score Range" is defined in the following manner:

- n = "The Limit of Intentionality" which is equal to "The Total Number of Intentionality Instruments" that are used in a given research investigation;
- "i = 1" = "The Index of Intentionality starting with the First Intentionality Instrument";
- [+] = "The Concentrated Total of Intentionality Arithmetic Operation" (which is the arithmetic total of the identified range contained within the "Intentionality Scale)";
- 10 = "The Total Number of Intentionality Measurement Instrument" items;
- $\overset{n}{\underset{i=1}{[+]}}$ = "The Computational Concentrated Total of Intentionality Operation Notation";
- $[(-1.00)\ldots\rightarrow\ldots(+1.00)]_{10}$ = The "Intentand" a novel term that is the specified intention measurement calculation as the "Concentrated Measurement Scale of Intentionality" per each of the ten IMI items sequentially totaled per IMI (as indicated by the sub 10 indicator);
- "$\rightarrow$" = The logical symbol used to denote "continues on toward", in this case it indicates the continuation of an outcome that must fall between (–1.00) and (+1.00), this particular outcome (in terms of final IMI results) can be represented by an "Intentand" that represents either a positive or a negative outcome that is of the form: $[(-1.00)\ldots\text{or}\ldots(+1.00)]_{10}$; (note the "or" that replaces the "$\rightarrow$" indicating "either");
- $\div$ = "Divided by"; and
- 10^{1} = "The Base Power Integer of Intentionality" (where 10 is the number of "Intentionality Items" and the power of 1 is per each individual "IMI").

8. Results and Discussion of the IMI© as a Valid Triostatistical Test – Adding the Field of Triostatistics

The IMI instrumentation and associated statistical (or more specifically "triostatistical") methodology aligns to the field of Triostatistics in terms of its foundational characteristics which can more readily transitioned into more trichotomous measurement data. As such, the IMI instrumentation and statistical methodology are directly derived from Triostatistical measures and metrics (such as the adaptation of the "Triple–I" which the IMI is an adaptation of). Triostatistics (or more simply "Triostat") is the application of Post Hoc measures to the outcomes of the Trichotomous Squared Test. As a statistical discipline Triostat concerns the development and application of specific and uniquely designed advanced Post Hoc statistical tests, methodologies, and techniques. Triostat is used to further investigate the research outcomes from initially statistically significant Tri–Squared Tests. Research studies that analyze data through the use of the Trichotomous Squared Test are the foundation for Triostatistics. Thus, Triostatistics is the further investigation and precise in–depth study of the dynamic data that is

the statistically significant Tri–Squared Test results (Osler, 2014).

The word "Triostatistics" is a portmanteau of the terms: "Triochotomous" and "Statistics"; that can also be referred to as "Triostat", "Advanced Trichometrics" or "The Science of Trichometry". More definitively Triostatistics is a branch of the science statistics that is the specific application of statistical methods, techniques, and strategies to a wide range of topics that concern the Tri–Squared Test. At the heart of this statistical discipline is the application of the mathematical "Law of Trichometry". The science of Triostatistics encompasses the design of Tri–Squared experiments, especially in education and social behavioral settings. However, the utility and flexibility of Triostat as a body statistical metrics allows it to be applied to a variety of sciences (through the use and application of the mathematical "Law of Trichotomy"). Triostatistics as a discipline is the collection, summarization, and analysis of data from Tri–Squared experiments; and the interpretation of, and inference from, statistically significant Tri–Squared Test results (Osler, 2014).

In terms of justifying the data output from the future use of the IMI, the author states in 2014 in regards to the field of Triostatistics, "There are a number of Triostatistical metrics and tests that can provide additional information on statistically significant Tri–Squared research investigations that can greatly enhance the understanding of initial research results. The Post Hoc use of Triostatistics on statistically significant Tri–Squared Test data provides a plausible statistical measure that allows investigators to further interpret the in–depth and rich complexities of Tri–Squared research data. The wide spread use of these measures will push the body of knowledge in research fields and make the field of statistics more approachable and plausible (Osler, 2014)". The IMI adds to this diverse and readily available body of knowledge by providing an in-depth measure of the efficacy of an Educational Scientist's solution in terms of the measurement of purposive content (the subject matter area), purposive capability (the psychomotor domain), and purposive knowledge (the cognitive domain) based directly upon disposition (the affective domain – which determines the will, purpose, and reason behind the identified event).

9. Summary

The sample methodology previously illustrated as a sequential IMI structure provides a methodology of intentionality assessment that can be used in a variety of settings to determine the overall intent of a specified action or event. In terms of psychometric instrument testing, this is a methodology that can be applied in a variety of disciplines. The utility of the model is applicable rapidly due to its overall similarity to the concepts used in the correlation coefficient that has been universally applied in many fields and disciplines. As such, the intentionality metric can be immediately put use as needed.

10. Recommendations

The psychometric efficacy of the IMI as a statistical test will ultimately be determined and confirmed via the data and results presented in the detailed accounts of future research investigations. Thus, the author recommends the following:

- That research investigations be conducted to substantiate its applicability;
- An assortment of psychometric research test instruments that use the IMI as model in a variety of research approaches and research disciplines need to be created to see if the methodology yields new arenas of application beyond the base use of the model; and
- That the researchable applications and discoveries regarding this particular methodology and test are documented so that the novel research innovations can be readily applied by researchers in the field.

Conclusion

The IMI itemized psychometric test efficacy increases the viability of research investigations into intentionality. The design of the research instrumentation by specifically determining the authenticity of participant results by those who were directly involved in an event or action under investigation will ultimately yield very timely and intrinsically valid research results (directly based upon specific psychometric instrumentation on intentional research outcomes). As such, this makes the IMI test and

its associated statistics a very valuable resource for the researcher who is now able to directly determine intentional rationale based upon instrument efficacy (using an item by item method based upon the research instrument design). A researcher of intent now has a research method grounded in the precise use of a scalar model of intentionality. This novel method of inquiry (and its related intentionality statistic) aids the investigator by making the development of research into intentionality more viable, technically precise, and very rigorous. This ultimately insures that intentionality psychometric instrumentation and its research results are carefully analyzed, studied, and considered before the research is presented or reported. As such, the IMI is a dynamic and effective addition to the world of statistical research designs.

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Appendix - I

The Osler Intentionality Measurement Instrument©

1. The _____ lead me to have acceptable and satisfactory thoughts. [Event/Experience/Interaction/Assessment and/or Outcome]

Select only one answer (check one):

☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Completely Disagree	Often Disagree	Moderately Disagree	Slightly Disagree	Sometimes Disagree	Somewhat Disagree	Occasionally Disagree	Randomly Disagree	Rarely Disagree	Barely Disagree	Not Applicable	Barely Agree	Rarely Agree	Randomly Agree	Occasionally Agree	Somewhat Agree	Sometimes Agree	Slightly Agree	Moderately Agree	Often Agree	Completely Agree
-1.0	-.90	-.80	-.70	-.60	-.50	-.40	-.30	-.20	-.10	.00	+.10	+.20	+.30	+.40	+.50	+.60	+.70	+.80	+.90	+1.0

2. The _____ made me feel satisfied, content, and pleased [Event/Experience/Interaction/Assessment and/or Outcome]

Select only one answer (check one):

☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Completely Disagree	Often Disagree	Moderately Disagree	Slightly Disagree	Sometimes Disagree	Somewhat Disagree	Occasionally Disagree	Randomly Disagree	Rarely Disagree	Barely Disagree	Not Applicable	Barely Agree	Rarely Agree	Randomly Agree	Occasionally Agree	Somewhat Agree	Sometimes Agree	Slightly Agree	Moderately Agree	Often Agree	Completely Agree
-1.0	-.90	-.80	-.70	-.60	-.50	-.40	-.30	-.20	-.10	.00	+.10	+.20	+.30	+.40	+.50	+.60	+.70	+.80	+.90	+1.0

3. The _____ lead me to put into action the thoughts and ideas that I have had. [Event/Experience /Interaction/Assessment and/or Outcome]

Select only one answer (check one):

☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Completely Disagree	Often Disagree	Moderately Disagree	Slightly Disagree	Sometimes Disagree	Somewhat Disagree	Occasionally Disagree	Randomly Disagree	Rarely Disagree	Barely Disagree	Not Applicable	Barely Agree	Rarely Agree	Randomly Agree	Occasionally Agree	Somewhat Agree	Sometimes Agree	Slightly Agree	Moderately Agree	Often Agree	Completely Agree
-1.0	-.90	-.80	-.70	-.60	-.50	-.40	-.30	-.20	-.10	.00	+.10	+.20	+.30	+.40	+.50	+.60	+.70	+.80	+.90	+1.0

4. The _____ encouraged me to become more social and interact with others [Event/Experience/Interaction/Assessment and/or Outcome]

Select only one answer (check one):

☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Completely Disagree	Often Disagree	Moderately Disagree	Slightly Disagree	Sometimes Disagree	Somewhat Disagree	Occasionally Disagree	Randomly Disagree	Rarely Disagree	Barely Disagree	Not Applicable	Barely Agree	Rarely Agree	Randomly Agree	Occasionally Agree	Somewhat Agree	Sometimes Agree	Slightly Agree	Moderately Agree	Often Agree	Completely Agree
-1.0	-.90	-.80	-.70	-.60	-.50	-.40	-.30	-.20	-.10	.00	+.10	+.20	+.30	+.40	+.50	+.60	+.70	+.80	+.90	+1.0

5. The _____ made me feel safe, secure, and protected [Event/Experience/Interaction/Assessment and/or Outcome]

Select only one answer (check one):

☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Completely Disagree	Often Disagree	Moderately Disagree	Slightly Disagree	Sometimes Disagree	Somewhat Disagree	Occasionally Disagree	Randomly Disagree	Rarely Disagree	Barely Disagree	Not Applicable	Barely Agree	Rarely Agree	Randomly Agree	Occasionally Agree	Somewhat Agree	Sometimes Agree	Slightly Agree	Moderately Agree	Often Agree	Completely Agree
-1.0	-.90	-.80	-.70	-.60	-.50	-.40	-.30	-.20	-.10	.00	+.10	+.20	+.30	+.40	+.50	+.60	+.70	+.80	+.90	+1.0

6. The _____ guided me in becoming more observant and immediately active. [Event/Experience/Interaction/Assessment and/or Outcome]

Select only one answer (check one):

☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Completely Disagree	Often Disagree	Moderately Disagree	Slightly Disagree	Sometimes Disagree	Somewhat Disagree	Occasionally Disagree	Randomly Disagree	Rarely Disagree	Barely Disagree	Not Applicable	Barely Agree	Rarely Agree	Randomly Agree	Occasionally Agree	Somewhat Agree	Sometimes Agree	Slightly Agree	Moderately Agree	Often Agree	Completely Agree
-1.0	-.90	-.80	-.70	-.60	-.50	-.40	-.30	-.20	-.10	.00	+.10	+.20	+.30	+.40	+.50	+.60	+.70	+.80	+.90	+1.0

7. The _____ caused me to react and immediately respond. [Event/Experience/Interaction/Assessment and/or Outcome]

Select only one answer (check one):

☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Completely Disagree	Often Disagree	Moderately Disagree	Slightly Disagree	Sometimes Disagree	Somewhat Disagree	Occasionally Disagree	Randomly Disagree	Rarely Disagree	Barely Disagree	Not Applicable	Barely Agree	Rarely Agree	Randomly Agree	Occasionally Agree	Somewhat Agree	Sometimes Agree	Slightly Agree	Moderately Agree	Often Agree	Completely Agree
-1.0	-.90	-.80	-.70	-.60	-.50	-.40	-.30	-.20	-.10	.00	+.10	+.20	+.30	+.40	+.50	+.60	+.70	+.80	+.90	+1.0

8. The _____ made me feel whole and content.[Event/Experience/Interaction/Assessment and /or Outcome]

Select only one answer (check one):

☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Completely Disagree	Often Disagree	Moderately Disagree	Slightly Disagree	Sometimes Disagree	Somewhat Disagree	Occasionally Disagree	Randomly Disagree	Rarely Disagree	Barely Disagree	Not Applicable	Barely Agree	Rarely Agree	Randomly Agree	Occasionally Agree	Somewhat Agree	Sometimes Agree	Slightly Agree	Moderately Agree	Often Agree	Completely Agree
-1.0	-.90	-.80	-.70	-.60	-.50	-.40	-.30	-.20	-.10	.00	+.10	+.20	+.30	+.40	+.50	+.60	+.70	+.80	+.90	+1.0

9. The _____ aided me in finding and fulfilling my purpose [Event/Experience/Interaction/Assessment and/or Outcome]

Select only one answer (check one):

☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Completely Disagree	Often Disagree	Moderately Disagree	Slightly Disagree	Sometimes Disagree	Somewhat Disagree	Occasionally Disagree	Randomly Disagree	Rarely Disagree	Barely Disagree	Not Applicable	Barely Agree	Rarely Agree	Randomly Agree	Occasionally Agree	Somewhat Agree	Sometimes Agree	Slightly Agree	Moderately Agree	Often Agree	Completely Agree
-1.0	-.90	-.80	-.70	-.60	-.50	-.40	-.30	-.20	-.10	.00	+.10	+.20	+.30	+.40	+.50	+.60	+.70	+.80	+.90	+1.0

10. The _____ aided me in my development and growth.[Event/Experience/Interaction/Assessment and/or Outcome]

Select only one answer (check one):

☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Completely Disagree	Often Disagree	Moderately Disagree	Slightly Disagree	Sometimes Disagree	Somewhat Disagree	Occasionally Disagree	Randomly Disagree	Rarely Disagree	Barely Disagree	Not Applicable	Barely Agree	Rarely Agree	Randomly Agree	Occasionally Agree	Somewhat Agree	Sometimes Agree	Slightly Agree	Moderately Agree	Often Agree	Completely Agree
-1.0	-.90	-.80	-.70	-.60	-.50	-.40	-.30	-.20	-.10	.00	+.10	+.20	+.30	+.40	+.50	+.60	+.70	+.80	+.90	+1.0

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Dr. James E. Osler II is an artist, has been a K-12 teacher, is an active researcher, an innovative technologist, and is currently a Faculty Member in the School of Education (SOE) at North Carolina Central University (NCCU), North Carolina, USA. Osler is also the author of many influential refereed Journal articles, books, and papers on topics as diverse as Education, Instructional Design, Inventive Ideation, Mathematics, Neuroscience, Online Learning, Statistics, Science, and Technology. He is a licensed K-12 Art Educator as well as a licensed Instructional Technology Specialist with a Technology Endorsement. His present research foci are: (1) Authoring Novel Statistical Metrics for Innovative Inquiry; and (2) Quantifying Instructional Systems Design Informatics for Problem-Solving. He has published a number of research articles, books, and multimedia on a variety of topics designed to encourage the development of education as a science. Osler's additional interests include: Ministry; Biblical Christian Education; The Mathematical Foundations of Research; Interactive Courseware Design; Educational Gamification; Cartooning and Illustration; and Novel Statistical Metrics. He devotes the vast majority of his time towards teaching; mentoring the next generation of educational researchers; consulting entrepreneurial and innovative endeavors; and conducting service-based initiatives. He has served on multiple refereed Journal review boards and has authored a graduate-level program (in the SOE) with a certificate in E-Learning Instruction. He has received three of the highest and most respected honors at NCCU: "The Employee Recognition Award for Outstanding Service", "The University Award for Teaching Excellence", and the first "Chancellor's Award for Innovation".