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**VSAIEEDC - A Cognition-Based Generic Model for
Qualitative Data Analysis in Giftedness and Talent Research**

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Abstract

Qualitative research is not yet generally accepted in the study of giftedness and talent. Psychometrically oriented research tends to dominate. Critics raise concern that in qualitative research analytical models are often vague and therefore replication nigh-impossible. The fact that there are many epistemological schools of thought, each proposing its own analytical tradition, adds to the confusion keeping controversy alive and well through philosophical debates. The aim of this article is to bridge the chasm between critics and proponents of qualitative research as valid science in its own right by outlining a generic and explicit model for the analysis of qualitative data, namely the VSAIEEDC Model. It is based on cognitive function rather than philosophical tenets and therefore also on the assumption that all models for qualitative analysis have a common basis quite irrespective of epistemological tradition. A distinction is made between unaware analytical behavior as a necessity for everyday-living and formal analytical behavior as intentional, explicit, and applied in Science. In conclusion the need for stringent qualitative research into the socioemotional issues of the gifted and talented is discussed.

Introduction

It is relatively rare that research methodological issues are addressed in research focusing on the various aspects of high ability. For example, only one researcher makes such a contribution during the ten years that, for example, *High Ability Studies* has existed, namely Freeman (1996). She argues for more use of Self-reports in the further study of high ability, which often are considered unreliable (eg. Harrel, 1985). However, on the premise that particularly gifted individuals usually are highly Self-aware, they are often also very able to provide insightful, rich and *reliable* qualitative accounts. Needless to say, such accounts are much needed. They contain a type of information eluding psychometrically oriented approaches. I strongly agree with Freeman on this, and there seems to exist a small but significant awakening to the need for extending the array of methodological tools in the research field to further the understanding of the gifted and talented.

To continue using *High Ability Studies* as a representative basis of the research field for comparison in this respect, the distribution of research methodological orientations from 7(1) of 1996 to 16(1) of 2006 is as follows (Table 1):

Table 1 about here

There is no need to develop a specific methodology for studying giftedness, and perhaps not even possible since its subject matter does not deviate from other research fields in nature. It has been argued in Feminist research, for example, that the male norm in deciding what Science is and how it should be pursued would necessitate developing a specific and new feminist research methodology to counter the alleged male bias in traditional methods (Hartstock, 1983). Above all, it is the general scientific understanding of subjectivity against which feminist research turns (Fox-Keller, 1985). But, feminist critics also conclude that there is little difference between feminist and non-feminist researchers in terms of their use of research methodology in spite of the proclaimed wish for a new and specialised methodology. Both use mainly the traditional means of Science (Harding 1989).

It is fair to argue, however, that much giftedness research is psychometrically oriented since identification models almost exclusively rely on the assessment of psychological constructs such as IQ, Self-esteem, various aspects of motivation, and creativity, to mention a mere few. This kind of study makes up most of the 57% of all quantitatively oriented studies accounted for above (Table 1). However valuable quantification for the purpose of generalization on and for large groups of people is, we cannot ignore what participants in research have to say of their experiences and understandings *individually* and in their own words, which is a given for a psychologist or psychiatrist in clinical practice. Remarkably not so for research. Even if a combination of different methods is not unusual in large-scale projects, the qualitative data in these are often seen as complimentary and supportive of what the quantitative data may conclude. I have yet to see a large-scale study where the opposite applies: where qualitative and quantitative data exist on equal terms and

simply achieving different objectives in a project where different aspects together provide a fuller understanding of the issue under study.

I do not intend to involve in the philosophical debate on the ontology and epistemology of Science here. It is not necessary for the purpose of this article. Suffice to say, it is probably true that all things can be measured in one way or another, but it can certainly be questioned whether it indeed is meaningful to measure *everything* and at all times. Qualitative methods are not yet generally accepted in the research field of high ability. If tolerated, they are often seen as a form of "lesser Science". Needless to say, if so, this is a gross misunderstanding. Different kinds of data and their analysis, treated according to suitable safeguards of research quality, perform different tasks and allow for different understandings of any given behavioral phenomenon. On the other hand, even if I myself am a proponent of methodological eclecticism, I tend to agree with the critics of qualitative research on one significant issue: it is often difficult to know how such research actually reached its conclusions, by what means and why. In other words, if a model of analysis is mentioned in a qualitatively oriented research project, analytical procedures are all too often vaguely outlined and will only rarely allow for replication by other researchers. While replication is not always neither desirable nor a necessity, it is probably a good rule to aspire to, at least in social research where relationships and possible causality are sought rather than mere description and inventory. If so, an explicit model of analysis is needed indeed.

While Education research has been more accepting of qualitative approaches General Psychology has rather been reluctant, much depending on what has been perceived as lack of scientific rigor (Henwood & Pidgeon, 1992). The first alternative qualitative methodology reaching relative acceptance is the so-called *Grounded*

Theory (Glaser & Strauss, 1967). It is a very structured and systematic (and time-consuming) manner outlining, step by step, how a researcher should handle and reinforce data as well as validate possible conclusions made in a research setting. The rigor in the Grounded Theory framework is tangible. It can be verbalized and demonstrated. Therefore, according to critics, it also potentially provides better credibility.

However, a Grounded Theory approach is not always practical or appropriate. Not all qualitative research involves local social theory building, which is the prime aim of this particular method. There exists a need to find simpler but just as rigorous models of analysis for qualitative interview data, document data, observational data and so on, allowing for a systematic and explicit analysis model that does not necessarily entail the reconstruction of a specific social environment in a new light and through extremely complicated procedures. There is a need for a model, which also allows for going beyond mere inventory of data, making possible valid deductions and outline potential relationships in any suitable qualitative data material.

This is then the aim of this article: To propose and outline such an explicit qualitative model of analysis, namely the so-called VSAIEEDC Model (Persson, 2006).

Comparing a few traditional analysis models

For many years I have found it hard to accept, when Constructivists seek to understand the social world by discourse analysis (Focault, 1969); Hermeneuticians seek meaningfulness and understanding from the principle of the Hermeneutic Circle (or Spiral) the parameters of which are decided by the studied text or person (Ricoeur,

1981) and Phenomenologists as well as Phenomenographers seek descriptions, not interpretations, of phenomena in as an unbiased way as possible (Spinelli, 1989; Larsson, 1986), that they analyze data in fundamentally different ways. The proponent of each tradition would inevitably argue they were representing something quite unique—which is always, of course, explained and defended on highly abstract philosophical grounds, and outlined with terminologies differing greatly. Unique in background and origin certainly, also often in chosen fields and types of research questions, but I do not think they are unique as far as the underlying cognitive functions go.

Compare the following, and bear in mind that the comparison is not by any means exhaustive. There are several schools of thought subdividing each epistemology and methodological tradition. This is a mere selection for exemplification (Table 2):

Table 2 about here

While it is perhaps somewhat controversial to argue that analytical procedures have a common basis, I still find it an unavoidable conclusion if comparing the different traditions. Taking a more pragmatic view of Science and the analysis of qualitative

data, it is easier to see the commonalities in making the comparison. Patton (1990), for example, writes that

... there is a very practical side to qualitative methods that simply involves asking open-ended questions of people and observing matters of interest in real-world settings in order to solve problems, improve programs, or develop policies. In short, in real-world practice, methods can be separated from the epistemology out of which they have emerged (pp. 89-90).

In other words, if qualitative analytical methods can be separated from their epistemological context, then they also must have something in common, namely the cognitive functions which make analysis humanly possible at all.

The foundations of analytical behavior

The human species is genetically imprinted to be analytical. Had we not been the likelihood is we had since long been extinct. Intelligence in view of evolution is best defined as the ability to, aware or unaware, and in a variety of ways adapt to environment, or indeed adapt the environment—all in the interest of survival of the species. This necessitates learning, and learning, by and large, necessitates being able to assess previous experience; taking advantage of what happened before, thereby predicting what the results will be given that certain known criteria are fulfilled. Few have expressed this more clearly than Kelly (1963) who in proposing his Personal Construct Theory viewed any individual as a type of scientist ceaselessly posing hypotheses, making predictions and being able to deduct and conclude in daily life; all as based on previous learnt experience.

Furthermore, all analytical behavior is based on *pattern recognition*. It is by comparison we automatically—for we are thus hardwired—evaluate new information with already stored information in order to “make sense” of what we see, hear or experience. Especially the Gestalt Principles of cognition make this very obvious. Given that cognitive functions are unimpaired, we seek meaning in all perceived patterns rather than limit ourselves to the separate parts making up the pattern. We see and understand meaning as based on cues from the context where patterns occur and,

of course, also in comparison to previously stored knowledge structures (cf. Andersson, 1990, for an overview). That is not to say, however, we are always accurate in interpreting perceived patterns. Perceptual illusions are not infrequent and partly culturally determined (Segall, Campbell & Herskovits, 1966). Also stereotyping, which inevitably is social pattern recognition, may lead us to a flawed understanding of an individual or a group of individuals, since the stored information by which we are able to categorize, deduct and conclude, may be wrong and/or biased (Lee, Jussim & McCauley, 1995).

Inevitably, we analyze incoming information in the sense that we recognize (or believe we recognize) patterns in words, in visual or auditive cues and in social contexts in order to understand and make the greatest possible sense of an event, an experience, an impression, of text, of music, of a painting and so on. Applied intentionally in the context of a qualitative analysis the researcher is looking to see “what things are like each other? What things go together and which do not?” (LeCompte & Goetz, 1983).

Why then, is it often quite difficult to produce an explicit model of analysis when it comes to qualitative research? Anyone who has taught qualitative research methods to students will know, that most of them certainly can analyze various texts, observational data or data from interviews fairly well and without providing clues how they went about the analysis. It is only when they have to explain how they reached conclusions most run into trouble because they argue they simply do not know how they did it. However, they *do* know. They have applied the very same procedures *automatically* which they use constantly in everyday life. But, since these are automatic and therefore unaware behaviors prompted by cognition and the human genetical makeup, we rarely have a need to bring into awareness and verbalize what we do; not until being introduced into the World of Science, which in most cases demands explicit and formal procedures.

In search of a generic model of analysis

Suspending epistemological positions for the time being, and accepting the premise that analysis is a very basic cognitive function, I and a number of psychology, sociology and education students, who were more or less untrained in the skills of

Science, over the last few years decided to meticulously monitor our own analytical procedure as a simple research question like “how do men present themselves when endeavouring to attract women in ads posted under ‘Personal Ads’ was answered. The Personal Ad section for daily newspapers was chosen because it offers verbal data easily accessible as well as data with clearly identifiable patterns. The data and further details on this process are available in Persson (2006), but need not be repeated here. The following is a condensed version of the resulting protocol:

1. In overviewing the data a first time we spontaneously started looking for *similarities* and *differences* between relevant parts of the data. We also took preliminary notes to be able to remember immediate impressions and ideas, which sprang to mind as the text was read (that is, cognition is always active. The system compares, associates and assesses with a certain degree of fluency, no doubt dependent on IQ-level, previous relevant knowledge, experience, your physiological state of alertness and so on)

2. In reading the data again we took more stringently note of the research question at hand and asked “what is it in the different sections of data *that separates it from other parts?*”

3. We made notes of which descriptions, words or expressions that made each section in the data unique and abstracted them; that is, we *transformed* them by reduction into a more generally applicable and conceptual level. “Average body” and “tired of being single”, for example, were changed into “Body Awareness” and “Frustration”. Some students preferred other terms and sometimes made additional observations, but over all each and everyone independently of oneanother did it much the same way.

4. All the while a critical attitude was maintained and there were continuous negotiations with Self whether these transformations were feasible and real or the result of mere biased reasoning. There is rarely one single solution to solving a problem in a qualitative analysis. Feasibility is strived for. Labelling a category means you make a choice, ignoring certain aspects perhaps, but still convinced that the choice made is the best and most likely—at least for the time being.

5. Choices were automatically compared to professional (and theoretical) knowledge of course, and equally important: with already published research. When uncertain we sought support in other research to accept or discard—or possibly leave

to one side for the time being. By what *principle* did we transform the data? The research question guided us, but feasibility and the comparison with other research made us decide. So, the guiding principle for naming a category, therefore, is *the effort of corroborating a decision*, which can be done internally (does it fit into the logic of the data context?) or externally (is there other research vouching for a certain decision, or indeed another researcher who may have been consulted?)

6. Having reduced data into a conceptual form, which had also been corroborated in terms of feasibility, I, but not all students, felt a need to see a visual overview of the conceptualized characteristics of contact-seeking men as culled from the data so far. Since the research question could be understood as implying quantity: is there one or several types of contact-seeking male roles? I needed to seek patterns as based on frequency of the conceptualized characteristics and constructed a simple matrix for this purpose (see matrix model in Figure 1). I could easily see that Categories 1 and 2 in the matrix were the most frequent and may well represent sample typicality.

Figure 1 about here

7. We were finally in a position to be able to conclude, as based on the data and with conclusions validated internally and externally, that there are indeed a few stereotypical ways for men to present themselves under Personal Ads in a newspaper.

Note that the analytical process is not necessarily linear, which is something that for example Grounded Theory points out as well as many other more pragmatically oriented outlines of analysis (eg. Burgess, 1984; Lofland & Lofland, 1984; Miles & Huberman, 1994; Silverman, 1993). Data and conclusions are considered in many ways and at different junctions in the process. The process is reiterative, which aims at reliability and validity and to fully exhaust the data of information but without allowing reification.

The protocol above, however, would suggest that this is how the human mind tends to deal with a qualitative data material. Note again that no student being part of this exercise had been previously trained in analysis as proposed by various schools of

thought. Students simply went about the analysis in the only way they knew how: relying on their faculties.

Increasing the validity of a *generic* model of qualitative analysis is also the fact that various research traditions as based on different epistemologies and ontologies go through much the same procedure when analysing data. In fact, they have to for how could they possibly by-pass basic cognitive functions such as pattern recognition and all other aspects of cognition involved in information processing? The engine that propels most analyses in the various epistemologies is a comparison of what is alike and what is different?

Therefore, in more formal terms this generic analytical and cognition-based process could be outlined as the VSAIEEDC-model; an acronym made out of the first letter of each identified step of the analytical process (Figure 2): Variation, Specification, Abstraction, Internal verification, External verification, Demonstration, Conclusion.

Figure 2 about here

The data material used for exploring and demonstrating the VSAIEEDC-model did not allow for a more extensive analysis, nor did the research question involve issues such as cause and effect or relationships between variables (or perhaps better termed in a qualitative context as phenomena, categories, groups, levels and so on).

However, you can certainly repeat the generic model at higher levels of analysis termed Second and Third Level Analysis in Figure 2. How far you push your analysis “up the abstraction ladder”, to use Miles and Huberman’s (1994) expression, depends on three aspects of your research: 1) the research questions; 2) the size and quality of the data and 3) how far it is meaningful to push the reduction process without risking reification.

Often relationships and causality are not an issue if the analysis never is pursued beyond the First Level. However, in a data material opening up to hierarchies

of found patterns, then the relationship between them may well become of interest and has to be analyzed, assessed and corroborated as suggested in the generic model of analysis.

From everyday-analytical behavior to explicit formal analysis

The important distinction between analytical behavior in everyday-life as automated and unaware behavior and analytical behavior as a formal, explicit and more or less *aware* application lies in the acquired skill on how to apply available safeguards of research quality. These are of course much the same for all science. There are dangers of “Type I” and “Type II” errors in all research be a study either quantitatively or qualitatively oriented. In qualitative research Type I errors could be understood as “have data been overlooked or ignored in the analysis which might have yielded a different outcome?” and Type II errors as “has a reality been reconstructed after analysis with no actual basis in the data?” The Type II error: to reject a hypothesis although it is correct, equals reification. Your results are flawed because you ignored certain essential data or interpreted data wrongly.

There have been produced several strict frameworks for securing stringency in qualitatively oriented research aiming at eliminating Type I and Type II errors. One excellent, and nigh-exhaustive account of suggestions is provided by Miles and Huberman (1994), who go to considerable length in suggesting tactics and making practical suggestions on the following issues:

- Checking for representativeness
- Checking for researcher effects
- Triangulation
- Weighting the evidence
- Making contrasts and comparisons
- Checking the meaning of outliers
- Using extreme cases
- Ruling out spurious relations
- Replicating a finding
- Checking out rival explanations

- Looking for negative evidence
- Getting feedback from informants

However, a better known, more widely spread framework with the same purpose, is the so-called Naturalistic Paradigm (Guba & Lincoln, 1988, pp. 103-104), which outlines its concerns like this:

There must exist *truth value* (in statistical terms internal validity). How can one establish confidence in the “truth” of the findings of a particular inquiry for the subjects with which – and the context within which – the inquiry was carried out?

There must exist *applicability* (in statistical terms external validity). How can one determine the degree to which the findings of a particular inquiry may have applicability in other contexts or with other research participants?

There must exist *consistency* (in statistical terms reliability). How can one determine whether the findings would be consistently repeated in the study were replicated with the same (or similar) participants in the same (or a similar) context?

There must exist *neutrality* (in traditional terms objectivity). How can one establish the degree to which the findings are a function solely of the participants and the conditions of the study and not biases, motives, interests, perspectives and so on of the researcher?

These concerns in turn are in Naturalistic terms operationalized as credibility, fittingness, auditability and confirmability.

Concluding remarks

Thus, in no way, is it true that “anything goes;” that qualitative research should intrinsically be lacking in rigor, or that analysis follows a random pattern. Whether or not stringency is always applied is altogether a different matter. Quality *lies with the researcher* and not with a chosen type of data, or as rendered by Silverman (1993): “The worst thing that contemporary qualitative research can imply is that, in this post-modern age, anything goes. The trick is to produce, intelligent, disciplined work on the very edge of the abyss” (p. 211).

A very likely factor contributing to the many myths surrounding qualitatively oriented research is, I believe, the difficulty in transforming and verbalizing everyday-

analytical behavior into a formal kind of analysis for communicating procedures in Science. It has therefore been the purpose of this article to show that analytical behavior is normal human behavior based on cognitive function, and that therefore all schools of thought as expressed in the many existing epistemologies and their analytical traditions have a basically common procedure—even if terminologies, choice of study and perhaps also study purpose differ greatly.

I propose a generic model of analysis for qualitative data, namely the VSAIEEDC Model, to bridge the gap between traditional psychometrically oriented research in the study of giftedness and talent and the need for researching the more individual aspects of giftedness also, where the experience of being gifted is in focus. I think it is far too easy for researchers in the field to view “being gifted” as something “wonderful, promising and only positive” (Persson, 2004), when in fact some published studies and/or accounts point towards being gifted as a life of problems, trouble and sometimes misery for different reasons and at different times during a life-span (eg. Fiedler, 1999; Kelly-Streznewski; 1999; Redfield-Jamison, 1993; Shekerjian, 1990). To study socio-emotional aspects of giftedness, a qualitative approach is inevitable for depth and richness of information and understanding, which is not to say of course it is the only approach.

I also think pragmatism has an added advantage. For the sake of learning more about the gifted and the talented we cannot afford to always be dogmatic in research style. Campbell, Daft and Hulin (1982), for example, argue that successful research having an impact usually develops from

- 1) *Activity and involvement*. Good and frequent contacts in the field (with research participants!) and other colleagues.
- 2) *Convergence*. Impressions or inspiration from contexts or areas other than the researcher usually works within.
- 3) *Intuition*. Following a “feeling” that something is much needed, important and timely, rather than a logical analysis.
- 4) *Theory*. Research is pursued with a concern for theoretical understanding.
- 5) *Real world value*. Problems arising in the field and leading to practical and useful ideas.

In other words, there is often a need, I think, in giftedness and talent research to widen the horizon. How, is by necessity another paper. But a step in the appropriate direction is the acknowledgement of stringent qualitative research.

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Table1. *The methodological orientations of high ability research as published in High Ability Studies between 1996 to 2006. Observe that only articles relating to research are accounted for therefore N = 112.*

Methodological orientation	<i>f</i>	<i>%</i>
Statistical models from descriptive, univariate to multivariate	63	57
Theory (most commonly on identification, but also on constructs)	34	30
Qualitative frameworks	15	13
<ul style="list-style-type: none"> - <i>Thematic Analysis (one study)</i> - <i>Grounded Theory (one study)</i> - <i>Narratives (one study)</i> - <i>Constant comparative method (one study)</i> - <i>Biographical analysis (four studies)</i> - <i>Computer-assisted analysis (one study)</i> - <i>Phenomenography (one study)</i> - <i>General (Pragmatic) content analysis (three studies)</i> - <i>Phenomenology (one study)</i> - <i>Action Research (one study)</i> 		

Table 2. *A comparison of analytical procedures in different qualitative paradigms.*

Discourse Analysis (Banister *et al.*, 1994)

- Establish purpose of text
- Identify, systemize, categorize “objects” indicative of text purpose
- Critically discuss found discourses and compare to establish validity
- Name found discourses in explanatory terms and compare with other texts

Phenomenological analysis (Van Kam, 1969; Polkinghorne, 1989)

- Categorization. Sort according to “similar” or “dissimilar”
- Reduction and transformation. Change expressions into concepts
- Elimination. Evaluate formed categories recategorize if needed
- Hypothetical identification. A first description of the studied phenomenon
- Validation. Random comparison with data. Description should fit all.

Grounded Theory (Strauss, 1987)

- Coding depending on function:
 - Open* (tentative, first effort),
 - Axial* (for data implying direction),
 - Selective* (only for data relating to Core Categories)
- Core Categories are the derived groups of data believed more essential
- Theoretical sampling: to gather more data where particularly needed
- Constant comparisons following the principle of “similar” or “dissimilar”
- Theoretical saturation: when more data cannot change reached conclusions
- Theoretical integration adds hierarchies and relationships to the data
- Theoretical sorting: a return to basic data for comparison and validation

Phenomenographical analysis (Larsson, 1986; Kroksmark, 1986)

- Reading texts multiple times, reflection, re-reading, further reflection
 - Searching for patterns (categories) to describe *not* interpret
 - Saturation: when analyzing further data does not add further patterns
 - Validating credibility
 - Internally* (do categories make sense in its own context?)
 - Externally* (do categories agree with other research?)
-

Resulting categories	Groups of compared data									Frequency (f)
	1	2	4	5	6	7	8	9	10	
Category 1			X			X		X	x	4
Category 2	X	X		X			X			4
Category 3	X						X			2
Category 4							X			1
Category 5	X				x					2
Category 6		X			x					2

Figure 1. Example of matrix for establishing a frequency pattern in qualitative data

First level analysis

- ↕↗ **Variation** Identify tentatively general variation in the material through the principle of “similarities – dissimilarities”
- ↕↗ **Specification** Identify more thoroughly and specifically the identifying characteristics of the data suitably subdivided in manageable sections
- ↕↗ **Abstraction** Transformation through conceptualization and reduction
- ↕↗ **Internal verification** Comparisons within the data, checking for logic and feasibility.
- ↕↗ **External verification** Comparisons to establish logic and feasibility with other materials other than the data like established theories, published research and /or other researches
- ↕↗ **Exploration** A visual overview of the reduced data in search of frequency-related regularities or irregularities
- ↕↗ **Demonstration** A more formal demonstration of possibly found frequency-related regularities or irregularities in for example a matrix format.
- ↕↗ **Conclusion** A concluding, though still tentative, full assessment of the analysis and its result. At some point the researcher will have to decide that the data cannot yield more information.



Second level analysis

Seeking patterns in patterns, same process as above but analyzing the transformed first-level data



Third level analysis

Seeking patterns again. Same process as above, but analyzing the transformed second-level data

Figure 2. *An overview of the possible steps to take in analyzing qualitative data.*

Arrows indicate there is no particular order established.

Biographical note

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