

Open university of the Netherlands

The Innovative Work Behaviour of Gifted Adults

A Multiple Case Study

Master thesis

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July, 2017

Abstract

Strong similarities are present between the personal and environmental factors of innovative work behaviour and the characteristics and workplace expectations of gifted employees. A conceptual framework was constructed containing the features of innovative work behaviour, the personal characteristics of gifted employees and environmental factors; propositions were formulated about the relationships between these factors. The model was tested using qualitative data from interviews and documents discussing six gifted adults in various jobs and industries, their innovative work behaviour, their work environment and the proposed relationships. Based on this study gifted people like to innovate, and their intelligence and rapid, complex thinking may add value to all phases of the innovation process. Team climate and leadership guidance and support are major environmental influences. The strategies that gifted people use to influence their environment vary. Social abilities and the will to develop them enhance collaboration and innovative success. Further research can be conducted into the specifics of the proposed relationships, the development of measures of giftedness and the actual observation of innovative behaviour. Future studies can also experiment with the strategies that seem most successful. Recommendations for gifted adults, their managers, HR-professionals, governments and policymakers are enumerated.

Samenvatting

In deze studie is onderzoek gedaan naar het innovatieve werkgedrag van hoogbegaafden. Innovatie is voor hedendaagse organisaties van grote waarde voor het creëren en behouden van strategische voordelen en is te definiëren als het 'initiëren en adopteren van vernieuwing in producten, markten, methoden en systemen in economische en sociale contexten'. Innovatie wordt gestimuleerd door de persoonlijke factoren en omgevingsfactoren. Van hoogbegaafdheid bestaan verschillende definities en modellen. Volgens een door hoogbegaafde experts ontwikkelde definitie is een hoogbegaafde 'een snelle en slimme denker, die complexe zaken aankan. Autonom, nieuwsgierig en gedreven van aard. Een sensitief en emotioneel mens, intens levend. Hij of zij scheidt plezier in creëren.' De persoonlijke factoren en omgevingsfactoren van innovatief werkgedrag enerzijds en de kenmerken van hoogbegaafden en hun verwachtingen van hun werk anderzijds hebben grote overeenkomsten. Er zijn verschillende theorieën ontwikkeld over de mogelijke connectie tussen hoogbegaafdheid en innovatie, maar in de literatuur is hiervoor geen empirisch bewijs gevonden.

In dit onderzoek is de verbinding gemaakt tussen eerder onderzoek naar innovatie en dat naar hoogbegaafdheid, door te kijken naar het innovatieve werkgedrag, de persoonlijke factoren en de omgeving van hoogbegaafde volwassenen en naar de wisselwerking daartussen. Om gemeenschappelijke kenmerken te verkennen is het onderzoek opgezet als een multiple case study van zes cases van elk één hoogbegaafde in zijn of haar werkomgeving. Data is verzameld door interviews met de hoogbegaafden en hun directe leidinggevende of – bij zelfstandigen en ondernemers – een collega of zakenpartner en door middel van het bestuderen van documenten.

De bevindingen waren grotendeels consistent met die uit eerdere studies naar innovatie en naar hoogbegaafdheid. Hoogbegaafden werden beschreven in soortgelijke woorden als de gehanteerde definitie, schatten hun innovatieve werkgedrag relatief hoog in en dankten dat aan hun intelligentie, nieuwsgierigheid, passie, gevoeligheid en plezier in het creëren van iets nieuws. Ook in deze studie werden verschillende soorten innovators gevonden. De hoge intrinsieke motivatie is consistent met de verwachte behoefte aan autonomie, nieuwsgierigheid, gedrevenheid en het idealisme en moreel kompas; de externe met informeren en ondersteunen als positieve factor. Voor de meeste hoogbegaafden bleek kennis nodig om te innoveren, voor alle is het verkrijgen van kennis er als intrinsieke motivator onlosmakelijk mee verbonden. De hoogbegaafden in deze studie innoveren vooral alleen of in paren. Dat is consistent met de notie dat innovatieve personen niet goed in hun omgeving passen, hoewel andere innovatieonderzoekers geloven dat innovatie een 'teamsport' is. Alle hoogbegaafden in deze studie ervoeren uitdagingen in de omgang met anderen. Zij die deze uitdagingen het meest accepteerden en bewust ontwikkelden om bewust hun omgeving te kiezen en te vormen naar wat voor hen belangrijk is, rapporteerden het meest tevreden en succesvol te zijn.

De sterke invloed van de omgeving (organisatieklimaat, teamklimaat, psychologische veiligheid, leiderschap, systemen en structuren) op innovatief werkgedrag is enerzijds consistent met de innovatieliteratuur en anderzijds met het ontwikkelen van talenten en prestatiegebieden vanuit intelligenties. Enige uitzondering zijn de functiekenmerken, mogelijk omdat de hoogbegaafden meer dan anderen hun werk vergaand naar hun wens vormden. Het onderzoek leverde ook ondersteuning voor de cruciale rol van leiders in het geven van ondersteuning en richting en het creëren van condities voor innovatie. De invloed van hoogbegaafden op hun omgeving is consistent met die

theorie van succesvolle intelligentie, hoewel de mix van strategieën (het kiezen van, het vormen van en het aanpassen aan de omgeving) voor elke casus uniek was. Succesvolle intelligentie lijkt op basis van dit onderzoek vooral een vaardigheid, waarin intrapersonlijke intelligentie ('de eigen sterkte en zwakten kennen en binnen dat patroon effectief zijn') en de interpersoonlijke intelligentie (effectief communiceren leidt tot meer invloed op de omgeving) belangrijk zijn. De hoogbegaafden in dit onderzoek rapporteerden als persoon nooit veranderd door hun omgeving. De motivatie van de meesten was in hoge mate intrinsiek en werd niet extern beïnvloed. Dat situaties op hun werk in het verleden leidden tot sterke emoties en (over)sensitiviteit is consistent met eerder onderzoek.

Het onderzoek is praktisch relevant voor hoogbegaafden, managers, HR-professionals en overheden. Hoogbegaafden kunnen een groot innovatiepotentieel hebben. Zij doen er vooral goed aan hun werkomgeving met zorg uit te kiezen en aan te passen aan hun behoeften. Zelf een onderneming starten, werken als zelfstandig professional of in een managementfunctie biedt meer vrijheid en variatie. Innovatie is een 'teamsport'. Het is van belang sociale vaardigheden te gebruiken en indien nodig te ontwikkelen. De begeleiding en ondersteuning door managers is essentieel voor een innovatief werkklimaat. Om het potentieel van hoogbegaafde werknemers te benutten, is het nodig te weten wie zij zijn en wat zij nodig hebben en daarin te voorzien. HR-beleid en instrumenten kunnen dit ondersteunen. Naast het bereiken van strategische doelen, kan dat leiden tot gelukkiger werknemers en minder verzuim. Overheden kunnen bijdragen door voorlichting te geven; door onderzoek, kennisoverdracht en private initiatieven te financieren; en door wetgeving gericht op innovatie en diversiteit. Wellicht kunnen ze ook hoogbegaafden gericht inzetten bij het vinden en invoeren van oplossingen voor maatschappelijke uitdagingen.

Deze studie draagt bij aan de wetenschappelijk theorie door op basis van verzamelde data onderzoek naar innovatie en dat naar hoogbegaafdheid te verbinden. Verder onderzoek kan worden gedaan naar (1) hoogbegaafdheid bij volwassenen en zo mogelijk het integreren van modellen en definities; (2) het innovatieve werkgedrag van hoogbegaafden door bestaande meetmethoden uit de innovatieliteratuur te gebruiken en data te vergelijken met een controlegroep; (3) de specifieke kenmerken van de relaties in het conceptuele raamwerk; (4) andere samples (buitenlandse hoogbegaafden, actief geselecteerde hoogbegaafden) om de bevindingen te bekrachtigen of te verrijken; (5) het feitelijke innovatieve werkgedrag, bijvoorbeeld door observatie; (6) de door sommige participanten veronderstelde causale verbanden tussen persoonlijke ontwikkeling en succesvol innovatief werkgedrag, bijvoorbeeld door een methode als action research te gebruiken.

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1. Introduction

1.1. Positioning and research question

Contemporary organizations operate in an increasingly changing and globalized business environment. Innovation can contribute to creating and retaining competitive advantages (Anderson, De Dreu, & Nijstad, 2004; Crossan & Apaydin, 2010). Innovation is the process and the outcome of 'initiating and adopting value-added novelty to enhance products, markets, methods and systems in economic and social spheres' (Crossan & Apaydin, 2010). Though the study of innovation at the individual level is disputed (Anderson et al., 2004; Crossan & Apaydin, 2010), it is individuals who generate ideas and turn them into reality (De Spiegelare, Van Gyes, & Van Hootegeem, 2014; Hammond, Neff, Farr, Schwall, & Zhao, 2011). Internal individual factors, such as knowledge, personality, motivation, intelligence and cognitive ability (Anderson et al., 2004; Batey, Chamorro-Premuzic, & Furnham, 2010; Glynn, 1996; Hammond et al., 2011; Patterson, 2002; Shavinina, 2011), as well as environmental factors such as job characteristics, leadership, structure, diversity and psychological safety (Anderson et al., 2004; Glynn, 1996; Hammond et al., 2011; Leavy, 2005) facilitate innovation.

Giftedness is mainly described as a combination of extraordinary intelligence and cognition, perception, emotion, motivation and drive (Heylighen, 2007; Kooijman, 2008; Rinn & Bishop, 2015). However, this conception of giftedness is one of many (Mayer, 2005). Other scholars point out that giftedness may depend on societal norms and manifests itself only through actions or success (Rinn & Bishop, 2015; Sternberg, 2005; Ziegler, 2005). The difference between the position that giftedness is based on inborn characteristics and the position that giftedness only presents in achievement is sometimes referred to as the performance controversy. An IQ of 130 or higher is a common and reliable criterion for discerning giftedness, but this measure leads to incomplete results, as IQ tests only measure parts of human intelligence and do not assess other (Heylighen, 2007). Cognitive ability relates to occupational success (Rinn & Bishop, 2015). In some studies gifted people rate their job satisfaction higher than the comparison group (Reijseger, Peeters, & Taris, 2013, 2014; Rinn & Bishop, 2015; Siekańska & Sękowski, 2006). Other studies suggest that gifted adults may experience difficulties when their work environments do not fit their characteristics and needs: autonomy, clear boundaries, psychological safety and a people-oriented managers (Nauta & Corten, 2002; Nauta, Ronner, & Brasseur, 2012; Ronner, Nauta, & Brasseur, 2012; Waal, Nauta, & Lindhout, 2013). This study builds on the definition of giftedness describing a gifted person as 'A quick and intelligent thinker who can handle complex cases; Autonomous, curious and passionate by nature; A sensitive and emotional person, intensely alive; He or she enjoys being creative' (Kooijman, 2008; Waal, Nauta, & Lindhout, 2013).

Strong similarities are present between the personal and environmental factors of innovative behaviour (Anderson et al., 2004; Patterson, 2002) and the characteristics and workplace expectations of gifted employees (Heylighen, 2007). Several scholars have speculated about the connection between giftedness and innovation (Besjes-de Bock & de Ruyter, 2011; Renzulli, 2003), but few have theorized about this connection in depth (Jessurun, Shearer, & Weggeman, 2015; Shavinina, 2011), built a case for it (Corten, Nauta, & Ronner, 2006) or collected data on how gifted employees perceive their innovative behaviour and its environmental determinants (Klabbers, 2015). No empirical evidence has been found concerning the actual innovative workplace behaviour of

gifted employees and how the innovative behaviour of gifted people is perceived by their environment. This lack of evidence is due in part to the fact that until now, innovation research has never studied gifted people in particular. Personality factors related to innovation are generally measured using continuous scales adopted from psychology (Anderson et al., 2004; Batey et al., 2010; Patterson, 2002). In conducting research on the relationship between giftedness and innovation, it is recommended to build on a clear conception of giftedness – in this study the Delphi-model (Kooijman, 2008) - use a comparison group, focus on contributions rather than problems and collect actual empirical evidence to support the assumed connection (Rinn & Bishop, 2015).

The current study bridges the gap between innovation research and giftedness research by examining the innovative work behaviour of gifted employees. Environmental factors were included in the study because they are known to moderate innovation and influence the work satisfaction and efficacy of gifted employees. Because day-to-day (innovative) behaviour is an iterative and complex process (Anderson et al., 2004; De Spiegelaere et al., 2014; Hammond et al., 2011), which both depends on and influences the environment and the gifted employee (Kooijman, 2008; Ziegler, 2005), this study examined possible relationships between innovative work behaviour and environment and (changes in) environmental factors and the personal factors of gifted employees.

1.2. Research method

The goal of the current study is to explore the relationship between personal factors and the innovative work behaviour of gifted people. A conceptual framework was constructed based on the literature about innovation and the literature about giftedness. In this framework the characteristics of innovative work behaviour form the dependent factor. The framework incorporates intelligence and non-cognitive personal and environmental factors known to stimulate innovation. The model was tested by using qualitative data from six gifted people of various ages and working in various jobs and industries. The subjects were interviewed about personal factors and their perceptions of their own innovative work behaviour, the environment and the proposed relationships. To examine if their perceptions were consistent with the perception of other people in their working environment, also their supervisors or – in the case of self-employed professionals and entrepreneurs – a co-worker or business associate was interviewed.

2. Literature review

2.1. Innovative work behavior and its determinants

Innovation contributes to competitive advantages and may be one of the main factors in surviving the increasingly changing and globalized organizational environment of today (Anderson et al., 2004; Crossan & Apaydin, 2010; Patterson, 2002). Based on an extensive literature review, Crossan and Apaydin (2010) defined innovation as ‘production or adoption, assimilation and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems. It is both a process and an outcome’. As a process, innovation is often divided in two phases (1) ideation, also called initiation (Glynn, 1996), the ‘awareness or suggestion phase’ (Patterson, 2002) or ‘idea generation’ (De Spiegelare et al., 2014) and (2) implementation. These phases are relevant on the individual level because they require different kinds of innovators. The first requires nonconformist idea generators, and the second calls for ‘more bureaucratic savvy’ innovation champions (Glynn, 1996) who engage more in social processes (Patterson, 2002). De Spiegelare et al. (2014) divide the phases further: idea generation in the sub phases problem acknowledgement, idea generation and idea development; implementation in the sub phases gaining support and implementation. In reality, innovation is a cyclical, iterative and complex process (Anderson et al., 2004; De Spiegelare et al., 2014; Hammond et al., 2011).

Although creativity is frequently linked to innovation as a factor in generating new ideas, it differs from innovation on two points. Creativity is only particularly important in the *initiation phase* of innovation and is less relevant in implementing ideas. Moreover it is only associated with *entirely new ideas* (Adams, 2005; Cropley, Kaufman, & Cropley, 2011; Glynn, 1996; Hammond et al., 2011). One clear definition of creativity does not exist; it is conceptualized as a (personal) characteristic, a process and an outcome. In this study creativity won’t be used, as the overlapping concept of innovation suffices for business settings and also covers the very relevant implementation phase.

Innovation has been studied on the organizational, group and individual levels. The relevance of researching the individual innovation level is disputed by knowledge- and capabilities-based researchers (Crossan & Apaydin, 2010) and because organizations are becoming increasingly reliant upon group-based structures (Anderson et al., 2004). Other scholars advocate for further research on the individual level because individuals generate and execute ideas (De Spiegelare et al., 2014; Denning, 2004; Hammond et al., 2011; Shavinina, 2012). Anderson et al. (2004) and Crossan and Apaydin (2010) have indicated that multilevel research is relatively scarce. A way of bridging the levels is to connect extensive studies on innovation *practices* (shared routines of behaviour) to more rarely studied *praxis* (what people do in practice) by *practitioners* (innovative actors in this case) (Crossan & Apaydin, 2010; Whittington, 2006). In an extensive literature review, De Spiegelare (2014) defined individual work behaviour (IWB) as ‘all employee behaviour aimed at generation, introduction and/or application [-] of ideas, processes, products or procedures new and intended to benefit the unit of adoption’. Individual work behaviour (IWB) is a usable concept on which to build empirical research. Kleysen and Street (2001) operationalized IWB by asking employees to score on a six-point scale how often they actually performed acts of innovative behaviour; the researchers analyzed the data quantitatively (Kleysen & Street, 2001). However, this practice is not suitable to study the infinite variation in innovative actions.

Internal individual factors are known to contribute to innovation. Knowledge and expertise are at the base of innovation. These features require 10 years to build on average but do not guarantee new ideas, as too much knowledge can block idea generation (Adams, 2005; Patterson, 2002). Organizational psychologists have made a central contribution to research on the relationship between personality and innovation (Patterson, 2002), including use of the robust constructs of the Five Factor Model (FFM) of personality (Batey et al., 2010; Patterson, 2002). Of the five factors, openness to experience is most closely related to innovation. Agreeableness is important in implementing new ideas but not in original thinking. Conscientiousness relates negatively to innovation. The effects of extraversion and neuroticism are not clear (Batey et al., 2010; Hammond et al., 2011; Patterson, 2002). After analyzing the biographical and autobiographical data of well-known innovators, Shavinina theorized that their thinking contains extraordinary intellectually creative, meta-cognitive and extra-cognitive manifestations (Shavinina, 2003, 2011). Innovation thrives with high levels of intrinsic motivation coming from within employees (Patterson, 2002). Extrinsic motivation can be harmful to innovation but synergistic when it is informational or enabling (Adams, 2005; Hammond et al., 2011).

In the innovation field, it is broadly accepted that environmental factors explain the degree of innovation on all levels (Crossan & Apaydin, 2010). Job characteristics have the most consistent and strongest positive relationship with creativity and innovation (Hammond et al., 2011). Autonomy, span of control, job demands, job satisfaction, support for innovation, mentor guidance and appropriate training are other determinants of individual innovation in the workplace (Anderson et al., 2004). In terms of organization-level leadership, management levers and business processes (Crossan & Apaydin, 2010) explain the organizational climate stimulating innovation. Leadership support and guidance is vital in promoting innovative ideas, and these factors create the conditions to implement innovations (Crossan & Apaydin, 2010). Structure, diversity and psychological safety are some of the explaining factors on the workgroup level (Anderson et al., 2004; Hammond et al., 2011). In particular, innovation thrives when completely different forms of expertise meet (Adams, 2005).

2.2. Gifted adults and their work environments

Giftedness research is a distinct field mainly aimed at developing the talents and education of gifted children and students. Many conceptions of giftedness have been developed. Studies on gifted adults are scarce, and studies on these adults in the work context are extremely rare (Kooijman, Van Kampen, & Besjes, 2008; Rinn & Bishop, 2015).

The conceptions of giftedness relevant to this study are intelligence, over-excitabilities and other personal traits, the dispute about potential and performance, and the system theory view on giftedness. Giftedness was first connected to intelligence and measuring IQ as a construct for intellectual capabilities is a common practice with reliable and valid outcomes (Heylighen, 2007; Kooijman et al., 2008; Rinn & Bishop, 2015). An IQ above 130 is frequently viewed as a marker for giftedness. However, the results of IQ tests for determining giftedness are at best incomplete, as IQ includes only parts of human intelligence and ignores other traits that characterize gifted people (Heylighen, 2007; Renzulli, 2005). Personal traits associated with giftedness are creativity, emotional sensitivity or over-excitability (Rinn & Bishop, 2015), divergence, excitability, sensitivity, perceptivity, entelechy (Lovecky, 1986) and idealism and ethic consciousness (Webb, 2013). However, few are

firmly supported by empirical data (Rinn & Bishop, 2015). Regarding personal factors, giftedness research would benefit from adopting more robust concepts from fields such as psychology, which seems rare. An example is a study comparing the controversial concept of over-excitabilities (Rinn & Bishop, 2015) with the factor of openness to experience in the FFM concluding facets of openness 'appear to represent the same construct as over-excitabilities' (Vuyk, Krieschok, & Kerr, 2016). Another dispute is whether giftedness must be defined as potential or performance (Mayer, 2005; Renzulli, 2005; Sternberg, 2005). The best solution is likely examining adult giftedness and eminence as independent constructs (Rinn & Bishop, 2015). Because no single definition of giftedness exists and percentages of 'gifted people' vary from 2-20% (Heylighen, 2007; Renzulli, 2005), giftedness cannot be ascertained in a reliable way. For this reason, Ziegler (2005) 'integrates the environment into the construct' and proposes actions as a more appropriate object of investigation than gifts. For the same reason the current study used innovative actions as the starting point for data collection.

Few studies have focused on gifted adults, but Rinn and Bishop (2015) as well as several other scholars have ascertained that 'cognitive ability seems to be predictive of [-] occupational success' (Rinn & Bishop, 2015). Gifted adults tend to 'feel different' but not to the extent that they change their behaviour. They also see others' perceptions of them as positive and rate themselves higher in terms of internal motivation (Rinn & Bishop, 2015). In several studies, gifted adults reported more job satisfaction than a comparison group (Reijseger et al., 2013, 2014; Rinn & Bishop, 2015; Siekańska & Sękowski, 2006). Others who based themselves more on observations espoused the theory that gifted employees may experience difficulties when their work environment does not fit their characteristics and needs: autonomy, clear boundaries, psychological safety and a people-oriented manager (Nauta & Corten, 2002; Nauta et al., 2012; Ronner et al., 2012; Waal et al., 2013). The present study builds on the definition of giftedness which describes a gifted person as: 'A quick and intelligent thinker who can handle complex cases; Autonomous, curious and passionate by nature; A sensitive and emotional person, intensely alive; He or she enjoys being creative' (Kooijman, 2008; Waal, Nauta, & Lindhout, 2013). This definition is part of the Delphi-model of giftedness. This model is chosen for several reasons: the model is consistent with the broad conceptions in giftedness research; it was developed with gifted *adults* in mind; it was developed by experts working with gifted people who were gifted persons themselves; the model includes intelligence and also other personal factors of gifted individuals; and it also includes the interaction with the environment.

2.3. The innovative work behavior of gifted employees

As demonstrated, the personal and environmental factors of innovative behaviour and the characteristics and workplace expectations of gifted employees are remarkably similar. Several scholars have noticed this similarity, suggesting or even stating a link between giftedness and innovation (Besjes-de Bock & de Ruyter, 2011; Renzulli, 2003). However, few scholars have deliberated on the subject. Corten, Nauta and Ronner (2006) are in the minority of researchers who have actually built a case that the capabilities of gifted people provide 'a unique and significant contribution to innovation'. They compared characteristics of gifted employees with the well-known concepts of creativity and innovation, such as Belbin's 'plant' team role and Mintzberg's 'adhocracy' organization structure (Corten et al., 2006). Shavinina (2011) analyzed biographical and autobiographical data of leading innovators and induced the theory that innovative leadership is characterized by exceptional intellectually-creative, meta-cognitive and extra-cognitive abilities

(Shavinina, 2011), which seem to match characteristics of gifted people. After interviewing gifted employees Klabbers (2015) found five categories of problems gifted employees experience in their innovative work behaviour during the implementation phase (Klabbers, 2015). Therefore, no research was found concerning the actual innovative work behaviour of gifted employees – as meant by actions (Ziegler, 2005) or praxis (Whittington, 2006) – and their relationship with personal and environmental determinants.

2.4. Propositions and conceptual framework

The goal of the current study is to explore the relationship between giftedness and the concrete innovative action (praxis) of gifted employees. The review of the literature illustrated similarities in personal factors between gifted employees and innovators. Therefore, the first proposition is as follows:

Proposition 1: Because of their high levels of ability and specific traits, gifted employees show a high level of innovative work behavior.

Job description, organizational climate, leadership and structure and systems are demonstrated contributing factors to (individual) innovation as well as environmental factors gifted employees identified as important for their own innovative behavior:

Proposition 2: Environment influences how characteristics of gifted employees are transformed into innovative actions.

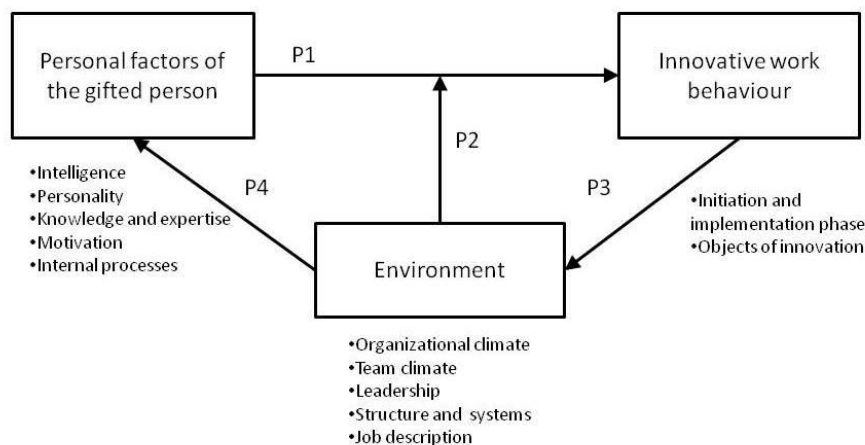


Figure 1. Conceptual framework

People use their intelligence to choose, shape and adapt their environment to their own needs (Sternberg, 2005). Because gifted employees are more intelligent than the general population, they should be more capable of applying these strategies to create their own suitable contexts:

Proposition 3: Gifted employees take actions to choose, shape, and adapt their environments.

Gifted people tend to be more perceptive and sensitive to (changes in) their environments than the average population:

Proposition 4: The personal factors of gifted people are influenced by their working environment and the changes thereof.

Each of the propositions represents an assumed process based on prior studies. Together they form a system in which a complex of interactions may take place. These are represented by the conceptual framework tested in this study (Figure 1).

3. Methodology

3.1. Research design

The current research is a multiple case study. The objective of this study was to explore in depth the innovative behaviour of gifted employees related to their personal characteristics within the complexity of their real-life context. Case studies are one of most common approaches to this kind of research (Adolphus, 2016). The decision to study multiple cases was based on the objective to explore common characteristics in behaviour, personal factors, environment and the in-between relationships. Because the cases were not critical or typical (Adolphus, 2016) multiple cases were investigated.

This study was conducted following the steps in Table 1. Because this research design was new for the researcher, the approach was tested with one case from the chosen sample. Evaluation of the pilot case did not lead to changes in the methodology. A second independent researcher not involved in the execution of the study reviewed all products marked with an asterisk (*).

Research step	Products
1. Preparation	- Research proposal * - Interview protocols* - Formats for analysis*
2. Sample choice and preparation for data collection	- List of sample candidates with variables - Sample of gifted employees and their managers * - Justification of chosen sample* - Preliminary information for interviewees delivered by email or letter
3. Pilot case study	- Notes on evaluation of pilot - Adapted interview protocols*
4. Interviews	- Interview recordings - Notes made during and concerning interviews - Collected documents
5. Interview transcription	- Interview transcripts*
6. Reflection	- Notes made during and concerning reflection - Adapted formats for analysis
7. Data ordering and analysis	- Completed analysis formats - Aggregated findings and patterns* - Notes made during and concerning analysis
8. Conclusions	- Provisional results* - Provisional issues and discussion*
9. Reporting	- Research report*

Table 1. Overview of the Research Design

3.2. Data collection

Data for this study was collected from separate cases, each consisting of one gifted employee in his or her working environment. For each case, data was collected from three sources. The primary source was the interview with the gifted person. For different views onto the same behaviour the supervisor of the gifted person was also interviewed; for self-employed professionals and entrepreneurs, a co-worker or business associate was interviewed. The third data source were documents regarding expectations and evaluations of work behaviour (job description, job

evaluation report and personal development plan, if available). Sample candidates were selected by contacting members of Mensa in the Netherlands and subscribers to newsletters targeting gifted adults. Purposive sampling was used to explore commonalities and differences (Adolphus, 2016): the cases differed in terms of age, gender, industry, job content and nature of occupation (being employed, entrepreneur or leadership position). A varied sample was composed from the group of sample candidates based on these variables.

The interviews were semi-structured; during preparation, interview protocols were developed, containing instructions and questions. One protocol was prepared for gifted employees as well as for their supervisors, co-workers and business associates. Interviews were recorded and transcribed to ensure that all data was available for analysis and enable the reviewer to assess the data analysis process. The aim of the interviews was to collect data on actual behaviour (the positivist perspective) as well as meaning and emotions (the constructionist perspective). This goal was pursued by framing questions during development of the interview protocol and seeking depth in follow-up questions within the structure of the interview.

3.3. Operationalization

The concepts studied in the conceptual framework (see Figure 1) were operationalized by the interview structure and questions (see Appendix 1). The interviews with gifted employees and with their managers or co-workers had a similar structure. The interview protocol was tested with the pilot case and did not need to be improved before interviewing other pairs of participants.

3.4. Data analysis

Before conducting the formal data analysis, a reflection step was built into the process. The aim of this step was to rationally and intuitively reflect on the main patterns, similarities and differences in the studied objects by 'hovering above the data'. For this purpose, an abstract was written for each interview transcript and each case based on the interview transcripts and documents. The observations from the reflections were compared with the conceptual framework and data analysis formats. As theory building is key in the case study process (Adolphus, 2016), the model and formats were adapted as needed before analyzing the data in detail, and some small enhancements were made.

The data-analysis consisted of sorting and aggregating the findings. During data analysis a format was used to sort the findings per data source per concept and proposition and aggregate the results for each case (see Appendix 2). Cross-case synthesis was used as the final step in the data analysis, which involved converting the aggregated results into conclusions about the propositions. In verbalizing aggregated findings, references were made to the supporting cases (A-H) and sources (1: gifted person interview; 2: supervisor, co-worker or business associate interview; 3: documents).

3.5. Methodological issues

To ensure maximum construct validity, three sources of data were used for each case. The weakness of using interviews to determine behavior was compensated for using triangulation. Additionally, because the measures for the concepts were not all clearly defined, the data collection aimed to find

rich data on the subject. The four propositions were formulated to concentrate data collection and analysis on chains of evidence.

Internal validity was enhanced by investigating potential causal relationships, meaning and emotions; in-depth questions were included in the interview structure. Cross case synthesis to match the findings with the propositions. To achieve maximum external validity, data collection was based on theoretical generalization (the conceptual framework in Figure 1). Replication logic can be based on multiple cases. A risk of the sample was self-selection, as the cases include employees who are gifted and value participating in studies about the subject. This risk was somewhat reduced by using different sources to collect sample candidates. Guaranteed anonymity and in-depth questions asked in the interviews helped to decrease the risk of socially desirable responses. A transparent research design (Table 1), interview protocols and data collection formats were used to obtain optimum reliability. An independent researcher assessed the important intermediate products.

4. Results

4.1. The sample

4.1.1. Finding candidates

For the present study, gifted Dutch adults were called to enlist as interview candidates through announcements on the website of Dutch Gifted Adults Foundation (Instituut Hoogbegaafdheid Volwassenen, IHBV), the Dutch Mensa newsletter and social media. Between February 24 and March 7, 26 candidates responded by email, telephone, text message and Whatsapp; all candidates were phoned promptly. During these phone calls the research design was discussed and the data necessary for composing the sample was completed. In the process, ten candidates were eliminated for several reasons: two candidates sent an email, did not mention their telephone number and did not respond when contacted; three were not working at the time of the study; it was impossible to arrange an interview with the supervisors, co-workers or business associates of five candidates.

Of the 16 remaining candidates, 9 were men and 7 were women. One candidate was in the 21-30 age group, 7 were 31-40, 5 were 41-50 and 3 were 51-60. Nine candidates were employed, and three held managerial positions; five were self-employed professionals; one was an entrepreneur; and one combined part-time self-employment with a job. Most candidates worked in services (7) and not-for-profit and governmental institutions (8); one worked in the industry sector.

4.1.2. Composing the sample

The sample was selected in six steps. In every step, a candidate with one or more unique characteristics was added. The first candidate selected for the sample was the only one in the 21-30 age group: a woman working as a self-employed healthcare professional. The second candidate selected was the only one working in the industry sector; she was a 35-year-old woman employed in a management position. The third candidate selected was the only man in the 51-60 age group and the only candidate with a track record in public service jobs. The fourth candidate selected was the only entrepreneur, a 43-year-old man working in car electronics, commercial real estate and company training. The fifth candidate selected was a 40-year-old woman employed as a market analyst at a university; she did not hold a management position. The sixth candidate selected was a 48-year-old Business Intelligence (BI) consultant employed by a small consulting firm and mostly working on-site for clients, top Dutch companies. The sample is listed in the following table.

Case	Candidate #	Gender	Age	Occupation	Sector	Contract
A	9	v	23	Counsellor	Healthcare	Self-employed
B	19	v	35	General manager	R&D, production, installation and maintenance	Employed, managerial position
C	23	m	60	Liaison, privacy officer	Public administration	Employed (temporary contact)
D	7	m	43	Founder, owner, director, professional	Car electronics, real estate and business training	Entrepreneur
E	18	v	40	Market research	Science and education	Employed
F	26	m	48	BI Consultant	Professional services	Employed, assigned on client sites

Table 2. Candidates Selected for the Sample

4.1.3. Description of cases

This paragraph briefly describes the six cases in the sample in alphabetical order using fictitious names starting with the letter representing each case.

Aaqilah

Aaqilah was a 23-year-old counsellor. She and her husband Ahmed, a 28-year-old social worker, ran their own practice in the neighbourhood in which she grew up. Aaqilah knew that she was gifted since her early teens. She completed different school levels before obtaining a bachelor's degree in psychology. Aaqilah focused primarily on clients; because Ahmed managed their paperwork, she was free to continually learn and develop new counselling services.

Barbara

Barbara was a 35-year-old general manager at a small engineering company that delivered lubrication solutions for dredging, offshore and oil and gas installations worldwide. She was appointed as a management assistant by Bert, who founded the company more than ten years previously and still partially owned and directed it. She was quickly given full management responsibilities. Her innovative contribution was structuring engineering and R&D processes and recognizing and solving management issues and implementing them directly.

Casper

Casper was a 60-year-old public servant with a track record in national and local government jobs that he characterized as pioneering, mostly at the forefront of implementing new legislation. Over his lifetime he graduated in a range of formal studies. He preferred working in multidisciplinary teams. He had recently worked as a liaison for an external audit team and a privacy officer in a public institution for health and safety. At this institution, the deputy director and controller, Charles, was his manager. Caspar had recently become aware of his giftedness and regarded it as a factor in having difficult working relationships and losing several jobs after disputes.

David

David was a 43-year-old entrepreneur in three trades: installation of car electronics, buying and leasing commercial real estate, and developing and teaching courses on working with aggressive clients. Dick was a business contact from one of David's electronics suppliers. They became friends, and Dick helped David with his real estate maintenance work. David had discovered his giftedness a few years previously. In addition to managing three well-running businesses, he made time to learn and enjoy the company of his wife, young daughter and friends.

Emily

Emily was a 40-year-old market researcher at a university. She created her job herself after working as a PR manager for eight years; she reported to Eric, a former colleague. Emily discovered her giftedness through her son and by passing the Mensa test. She innovated by conducting data analyses and developing and implementing ideas.

Frank

Frank was a 48-year old business intelligence consultant employed by a small consulting firm and working for top companies in the Netherlands, implementing BI systems and guiding users to

employ them effectively. He had learned of his giftedness several years previously. He found his analytical skills to be an advantage but still searched for his place in the world. He was largely motivated by the open and warm climate of the firm where he worked and the inspiration and leadership of his manager Fred, who was also one of the firm's owners.

4.2. Data collection and analysis

The interviews were conducted from March 29 to May 8, 2017. To the greatest extent possible, interviews were conducted personally and consecutively on the same day for each case. First the gifted adult was interviewed, followed by the supervisor, co-worker or business associate. The case sequence was coincidental and the result of possibilities to meet (E, B, D, C, A, F). In two cases, an interview was rescheduled and conducted via Skype at a later date (A2, F1).

All interviews were recorded. To obtain a verbatim report for data analysis, the recording was played at a lower speed and transcribed and corrected with respect to interviewees' literal responses. Reports were produced in the same order in which the interviews took place, and the interview with the gifted subject was always transcribed first. This process resulted in 12 reports totalling 216 pages and over 130,000 words. Reports varied from 13 pages (B1) and 7,181 words (E2) to 20 pages (C1, D1) and 16,572 words (E1). The documents were the third source of data. Only two subjects had formal job descriptions and performance review reports (B, E). One subject provided a written statement of one of his clients (D).

The collected data was analysed as described in Chapter 3; the results are aggregated in the following paragraphs.

4.3. Findings

4.3.1. Personal factors

Intelligence

All participants called themselves fast, analytical and complex thinkers (A, B, C, D, E, F) and handlers of knowledge and information (A, B, C, D, E, F); most are recognized as such (A, B, C, F). Some participants had passed the Mensa test (B, E, F), others had been tested by psychologists (A, D) and almost all recognized the traits of giftedness in articles and books (A, B, C, D, E). Two participants found easy (D) or repetitive (A) tasks to be difficult. One gifted adult connected giftedness explicitly with performance (B). One viewed giftedness as more than just intelligence, as giftedness has a different kind of energy and is less focused (D).

'Nou, wat ik bij hoogbegaafden gemerkt heb, is ... Ik heb ook wel eens [-] trainingen gegeven aan allemaal chirurgen. Dat zijn hoogintelligente mensen allemaal. [-] Maar de energie die daar af kwam was heel anders [-] dan de energie van als ik met een hoogbegaafde praat, [-] veel minder bevlogen [-], veel rationeler [-]'.

'What I noticed about gifted people ... I have one time trained surgeons. They were all highly intelligent, but their energy was quite different from the energy when I talk to a gifted person, much less spirited, much more rational'.

(David, 43 years old, entrepreneur)

Personality

Some participants were empathetic, warm and accommodating (A), social and caring (F), tender, and sympathetic (B). Participants were also described by their supervisor as more introverted and thoughtful (F) or as lacking some of the traits necessary to easily connect with others (B, C). Most participants at some time experienced difficulties fitting in, at work as well as in general (A, B, D, E, F). They connect with people over the shared goal of the content of the work (C, E, F) or only when they lead groups and other members follow (A). One participant reported fitting in well in general, but his supervisor contradicted this statement, saying the participant's collaboration was sometimes problematic (C). Gifted people may dislike protocol and status (C). Several participants reported always achieving average scores on personality scales (A, E) or varying results (C) on the Belbin team role test depending on the environment. Others reported behavioural flexibility (B, D), such as 'acting extrovertly' in a calculating way (D) or taking on whatever the Belbin team was lacking in a team (C).

'Ik ben heel gebalanceerd. [-] Wat voor testjes [ik] doe, [ik] kom in het midden uit. [-] Ik ben in die zin vrij flexibel, maar vraag me soms ook af [-] of dat niet een [-] aanpassingsgedrag is geweest'.

'I am quite balanced. Whatever test I do, I score in the middle. In that sense I am quite flexible, but I also ask myself if that has not been adaptive behaviour'.

(Emily, 40 years old, market researcher)

Participants characterized themselves as being structured (B, F), honest and straightforward (B, F), loyal (B, D, E), conscientious, perfectionists (B, E), punctual (D, F) and reliable (F) – even to an extent that can cause anxiety and insecurity (D, E). Some participants reported high levels of perseverance (B, C, D).

Knowledge and expertise

The knowledge and expertise of the people in the sample varied greatly with age and sector. This variation was expected considering the way the sample was composed. Some participants had deep knowledge and extensive experience in their areas (C, D, F). Some reported that acquiring knowledge was necessary for them to innovate as well in their own fields (A, F) as in new ones (B, C, D, E). For all participants, gaining new knowledge and information was a personal motivation (A, B, C, D, E, F). Ways of acquiring knowledge included formal studies (A, C, E), reading (A, C, D), observing (B, D), exchanging information with (other) experts (A, E, F) and experimenting with new tools (F) and their own behaviour (D). In one case, a participant began a job without any relevant knowledge and expertise. Her ability 'to ask the right questions' was sufficient to optimize the company's innovation process and continually acquire knowledge about the company in the process (B).

'Je hoeft er niet zoveel van te weten. Als je maar de goede vragen stelt. En na drie-en-een-half jaar weet je er stiekem natuurlijk inmiddels wel een hoop van af. Ik denk wel dat je als je niet hoogbegaafd bent en je komt in deze situatie terecht dat het wel te overweldigend is'.

'You don't have to know much about it. You just need to ask the right questions. And, after three and a half years, you know quite much of course. Moreover, I somehow think that it might be overwhelming if you are in this situation and you are not gifted'.

(Barbara, 35 years old, general manager)

Motivation

Most participants reported an intrinsic motivation to do good and make beauty (A, B, C, E). One mentioned building her reputation as well (B). All subjects reported doing new activities and learning new information as a strong intrinsic motivational factor (A, B, C, D, E, F). One participant even left a managerial position to encounter the for her new field of market research (E).

'Ik wil gewoon iets moois doen'.

'I just want to do something fine'.

(Emily, 40 years old, market researcher)

Some gifted participants reported a strong external motivational factor, such as a reaction to events (E in a former job), the inspiring and motivational behaviour of a manager (F) or the need to prove their place in the family (D). Other motivational factors mentioned were: identifying their place in the world and being happy (A), being heard (B) and becoming financially independent to take care of their family and maximize their life experiences (D).

'Mijn motivatie komt met name door het enthousiasme [-] van Fred. [-] Die maakt me enorm enthousiast voor dingen, ook als ik daar zelf mijn twijfels over heb'.

'My motivation is mainly caused by Fred's enthusiasm. He makes me very enthusiastic about things, even if I have doubts about them myself'.

(Frank, 48 years old, consultant; discussing Fred, his manager and founder and owner of the consulting firm for which Frank worked)

Thought processes

Some people provided very clear descriptions of their thought processes (A, D, E, F), some were aware of their processes but struggled to describe them (B) and others were unable to describe their thought processes (C). Participants described their thought processes as top-down and holistic (A, D), thinking in pictures (C, D) building constructions viewed from above (A), gathering pieces of a puzzle (A) and connecting concepts (B, E).

'Ik weet dat anderen mijn denkwijze niet begrijpen. [-] Want ik moet alles aanhoren en verzamelen en dan pas aan het eind ... [-] Het is gewoon een soort boom en ik wil die hele boom zien. Want als ik nu eerst ga vragen over die ene tak, misschien is dat bijvoorbeeld een onbelangrijke tak en dan kom ik hier niet, omdat ik hier deze kant al ben opgegaan. En dan wijkt het hele eindresultaat af'.

'I know others don't understand my way of thinking because I have to hear and collect all information first and only in the end ... It is just a kind of tree and I want to see the whole tree first because if I ask about this one branch, maybe it is an unimportant branch and then I won't arrive here because I went that way already. And then, the end result is completely different'.

(Aaqilah, 23 years old, counsellor)

Some participants told perceptions of problems and ideas or solutions did not arise after deliberate thinking and analysis but instantly in an unconscious or intuitive way (D, E, F). For another participant they more slowly arise during the process of exploring (A). One participant gave her

thought processes names, such as ‘the optimizer’ for monitoring and adjusting implementation and ‘the director’ for rehearsing and monitoring conversations (E).

Other

Most participants reported thinking differently or in a more ‘out-of-the-box’ way (A). All felt different than other or average people (A, B, C, D, E, F). Some sought or struggled to find their way in the world (A, C, E, F) and even grieved about being gifted (E) and reported low self-confidence at some points in their lives (B, C, D, E). All said they *knew* this awkward feeling would never change, but some seemed to have accepted this reality and developed coping strategies (B, D). ‘Creative’ is a word used by gifted to describe themselves; to them it meant developing unusual ideas and solutions (E) as well as creating physical objects by tinkering or decorating a room (A). Some reported being overly sensitive (A) or having an antenna for sensing situations intuitively (C, D, F), which was not always supported by their managers (C).

4.3.2. Innovative praxis

Initiation and implementation

Participants reported a great variety of roles in the innovative process. Some reported covering the entire innovative process from problem recognition to idea implementation (A, B, D). One subject explicitly mentioned the importance of knowing what a client wants first hand (D), which matched others’ practices (A, B, F).

‘In het algemeen herkenning van het probleem bij de klant en dan helemaal doorvoeren tot het eind. [-] Ik vind het lastig om het proces dat iemand start af te maken. En ik vind het ook lastig als ik het start en iemand anders het afmaakt. Want ik heb een bepaald idee in mijn hoofd en zo moet het zijn’.

‘In general, recognizing the problem of the client and then carrying it through to the end. It is not easy for me to finish the process someone else started. And, it worries me if I start it and someone else finishes it because I have a particular idea in my head and that is what it should be’.

(David, 43 years old, entrepreneur)

Some participants emphasized that their role was in implementation (E, F). One subject highlighted his value was in transition from idea development (the last activity of initiation), to beginning implementation by promoting the idea and building support. After that others should finish the job (C).

‘Ik zit aan het begin [van het innovatieproces]. Het idee is niet nieuw. Dat is al bedacht. [-] Dan zit mijn kracht erin ... [-] In feite help ik dat hele nieuwe concreet te maken. Maar [-] het zal wel geïmplementeerd moeten worden. Daar zijn weer andere mensen voor’.

‘I am at the beginning [of the innovation process]. The idea is not new. That was conceived earlier. Then it is my strength ... In fact I help to make the completely new concrete. But, it has to be implemented as well. That has to be done by others’.

(Caspar, 60 years old, civil servant)

None of the subjects created completely new knowledge or technologies. They reused existing knowledge and brought it to their environments in new ways (A, B, C, D, E, F).

Objects of innovation

A great variety of innovated objects was found. One of the subjects innovates social and counselling services, societal structures and a physical environment suitable for counselling for highly sensitive people (A). One participant had a strong influence on the effectiveness of engineering and R&D processes and all other business processes in general and its problems and outputs, including the engineering and R&D processes itself, probably as only a general manager can have (B). Another subject transformed (parts of) a governmental organization by beginning to implement new legislation (C). One subject innovates by delivering new products and services in car electronics, commercial real estate (better and cheaper) and training services (D). Two of the participants were improving data quality and analysis efficacy (E, F). Some subjects mentioned innovating their own behaviour in connection with others as an object of innovation (B, D).

4.3.3. Environment

Environment varied greatly for the six cases; this variation can be explained by the case selection.

Organizational climate

Those working for large organisations described organizational climate to a great extent. Each identified specific structural and cultural characteristics determining the climate in which they worked (E, F).

'Bij (bedrijfsnaam) is dat dus een heel open en warm klimaat. Iedereen wordt gewaardeerd. [-] [Het organisatieklimaat bij klanten] is heel verschillend. [-] Eén bedrijf, dat is echt een multinational die [-] enorm snel groeit. [-] Dan wordt er meer reactief dan proactief gewerkt. [-] Bij beide organisaties vind ik het een prettige omgeving. [-] Maar ik heb ook wel eens bij een klant gezeten – daar vond ik het niet prettig. Daar werd heel erg afstandelijk gewerkt'.

'(Employer's company name) has a very open and warm climate. Everyone is appreciated. The organizational climate of clients can vary greatly. One company is a fast-growing multinational. People work more reactively than proactively. I experience both companies as an agreeable environment. But I have also worked for a client – that was less agreeable for me. People there worked in a kind of detached way'.

(Frank, 48 years old, consultant)

Self-employed subjects and the general manager described the climate of local (A, D), national (D) and global (B) markets in their sectors. In small businesses, the climate is less formal and rigid; it is perceived as free and easier to influence, and clients provide direct feedback (A, B, D, F). In the public sector, regulations, politics and personal gain are determining environmental factors (C). Innovation is of vital importance (A, B, D, F) and it is often an unstructured process (B, E, F). Some subjects played active roles in improving innovation (B, F). Strong market focus (B, D) and a drive to create a better life for (vulnerable) groups in society (A, E) linked environment to personal motivation.

Team climate

Most subjects reported working one-on-one with fixed partners by whom they are appreciated and accepted (A, D, F) or mostly solitarily (C). One subject reported that her company of 10 people had become a team that was psychologically safe (B). The participant working in a formal team within a larger organization reported that it did not function well; the team had no common purpose and was not psychologically safe; personalities did not match well (E).

Leadership

Leadership was a foremost factor for employed subjects (B, E, F); perceptions of leadership differed greatly. One subject's supervisor had a clear vision of the business and inspired personal growth (F). Another subject worked with the founder, partial owner and director of the firm. Subject and supervisor differed greatly in personality but had developed mutual acceptance and appreciation of one another's abilities. Nevertheless, the subject experienced 'no leadership whatsoever' (B). One subject's manager scattered his own ideas and was critical of others' ideas. In the meantime the team lacked a clear direction and psychological safety (E). Another subject's manager was distant because of work pressure and the organizational philosophy that professionals should self-organize (C). Self-employed subjects reported not experiencing leadership; this situation was a main reason for starting their own businesses (A, D).

Structure and systems

Large organizations were reported to have the most structure and systems; these factors affected climate (E). Public service organizations, potentially dangerous industries and societal and healthcare services are tied to regulations and verification standards (A, B, C). A strong and constantly evolving structure of political power can also be present in public office (C). Small business owners limit structure and systems because these features do not add value for them (A, D, F).

Job description

In two cases, formal job descriptions were in place and participants were evaluated with performance reviews (B, E). In all cases, participants crafted their own jobs over time and in response to environmental demands and developments (A, B, C, D, E, F). Innovation was part of every job; in some positions, innovating made up all (F) or most of the work (B, C, E).

4.3.4. Proposition 1: Innovative work behavior and personal factors

Analytical, top-down and out-of-the-box thinking helps with identifying gaps leading to new ideas (B, C, D), making plans for implementation and following through (B, D, E). Knowledge and information play a major role in innovative praxis. Some participants mention the importance of earlier acquired knowledge (A, C, F). Almost all subjects mention innovation is connected to acquiring new knowledge; by learning and reading (A, C); through observation and interaction on client sites (B, D, F) or neighbourhood (A); by data analysis (E); through experimenting (D). Encountering new concepts and linking them to earlier knowledge can lead to surprising conceptual connections (B, E). Using imagination can make people feel like part of a new future already (C). One subject started anew in a sector and said 'you don't have to know the trade, you just have to ask the right question'. Though, as she gained more knowledge, her confidence increased (B). One participant reported that his knowledge was mostly of no use, as each project was completely new. However, having

knowledge enabled him to connect to others easily because of his understanding of different subjects from formal studies (C).

‘Er zijn mensen die mij te abstract vinden. [-] Die zeggen: dat is theoretisch. Terwijl het voor mij heel concreet is. Ik zit dan te vertellen en dat is voor hun dan een ver-van-mijn-bed-show [-], maar [-] ik zit al in die toekomst. [-] Het is een soort inbeelding. Ik heb het al klaar voor ogen’.

‘There are people who find me too abstract. They say “it is too theoretical”. Meanwhile for me it is very concrete. Suppose I am sharing my vision and for them it is difficult to grasp, but I am in that future already. It is a kind of imagining. For me it is a clear picture’.

(Caspar, 60 years old, civil servant)

Participants reported a driver of innovative behaviour is gifted people’s motivation. This motivation was rooted in the will to learn (A, B, C, D, E, F) and, for most subjects, a purpose and wanting to do good (A, B, E). For some motivation was also extrinsic and related to acute problems to be solved (E in a former job) or inspirational leadership (F). External motivation may be linked to implementation (E, F). Implementation skills may also be rooted in loyalty and consciousness, in addition to the ability to see a plan before it is made (B) and optimize all the details (E).

Innovation is not achieved alone. Participants reported collaboration to grow when people ‘act extrovertly’ (D), are honest and straightforward, and dare to challenge co-workers (B, F).

‘Ja, echt een mensenmens. [-] Zet hem in een groep en hij [praat] tegen iedereen. [-] Ik denk dat hij bij de meeste gezelschappen goed tevoorschijn komt’.

‘He is a real people’s person. Put him in any group and he will talk to anybody. I think he fits in almost all groups’.

(Dick discussing David, 43 years old, entrepreneur)

On the other hand, when communication (partly) fails, innovation withers (C, E). Participants who reported to communicate openly and effectively (A, B, F) and experiment with communicating more effectively (D), however exhausting the process, also reported being more successful and happy. Innovative behaviour may be obstructed by perfectionism, which hinders sharing ideas (E), and by being a thinker above all else, because innovation also requires follow-through (C, F).

4.3.5. Proposition 2: Environmental influence

Subjects reported environment playing a key role and significant differences were present in the sample. Environment was fairly stimulating (or at least not obstructing) to gifted participants who were self-employed or worked as managers. They reported environments in which they could innovate in any way they saw fit because they had largely created these environments by themselves (A, B, D). Employed subjects found a multidisciplinary, critical, highly intellectual environment stimulating and appreciated a common purpose and psychological safety (C, E, F). Only one of this group reported working in such a climate (F).

‘Dus het team waar ik me nu in bevind, [-] remt het af, want ik vind hier [-] een stukje angstigheid [-] en [-] te weinig zekerheid [-] om soms zo’n idee wat je hebt [-] verder te brengen’.

‘So the team I am in now slows it down, because I find a piece of fearfulness and too little security to sometimes bring up an idea you have’.

(Emily, 40 years old, market researcher)

Project- and R&D-driven firms may help in focusing on innovation (B). To stimulate innovation, the process may be structured for effectiveness (B, E), such as with regular team meetings (B), since new information leads to new ideas (E). Gifted adults reporting to supervisors found these supervisors to be a key factor in the possibilities to innovate (B, C, E, F). Supervisors can be a great source of information about clients and products (B) as well as inspiration and external motivational factors (F).

‘Dat is met name Fred die me bijvoorbeeld heel erg steunt in de dingen die ik doe en hoe ik ze doe en me daarin motiveert en vertrouwen geeft. [-] Ik ben altijd iemand die op het tweede plan staat. Dus eigenlijk externe motivatie nodig heeft om dingen te doen en dingen te durven’.

‘Fred in particular is the one supporting me in the work I do and the way I do it. He motivates me and trusts me. I have always been a person in the background. As a matter of fact, I need external motivation to do things and to dare things’.

(Frank, 48 years old, consultant)

Inconsiderate managers can be obstructing (C, E). If a gifted person and his or her manager have different views on work and innovation in particular this situation can lead to stress and frustration (C, E). When it is worked on e.g. by straightforwardly discussing it, a fruitful relationship can take shape (B). Participants that are in charge themselves have the freedom to act independently (A, B, D, E). However, too much freedom can be an obstacle for people with many ideas who struggle to choose and follow through (E).

4.3.6. Proposition 3: Innovative work behavior influencing environment

The gifted adults in the sample interacted with their environments in highly varied ways. Gifted people may choose and create their environments carefully by working independently (A, D), sending a large number of job applications at one time and choosing the offer that seems to fit best (B), making it a personal project to find an optimal working environment after leaving a job that did not fit (F), or creating a new job for herself which is in the interest of the organization besides a personal opportunity (E). Only one subject clearly stated himself that he had never been in a position to choose his environment although according to his supervisor, the same subject clearly made choices by declining opportunities for new assignments he was offered (C).

'Ik had in mijn jeugd al een heel plan samengesteld [-]. Dit en dit bereiken. Als ik 40 ben wil ik niet meer hoeven werken. Daar heb ik vijftien jaar hard voor gewerkt. Nou heb ik dat'.

'In my childhood I have made a plan, accomplishing this and that. When I am forty, I want the freedom not to have to work anymore. That's what I worked hard for, for fifteen years, and now I have it'.

(David, 43 years old, entrepreneur)

The gifted adults in the sample who were working independently and in management roles continually shaped their environments by reacting to market opportunities and client needs, problems and complaints (A, B, D). The subject working as general manager, reported a greater influence, as she shaped organizational structures leading to more effective processes and eventually another culture (B). The influence of shaping their environment may consist of changing apparently simple behavioural patterns, such as working in the office of another department to meet new people (E). Social abilities are reported not only to lead to better innovation processes but they may also enhance influence on environment and one's own position in it (A, B, D). One subject considered life to be one grand experiment. He divided his life into compartments and tried new behaviours in the communication with other people (D). Another participant stressed the tool of written language and using techniques such as arguing and reframing (C). Always ensuring delivery of the right quality within the agreed timeframe creates trust in the long run (D). Being straightforward to a supervisor about one's own behaviour and continuously informing the supervisor may lead to a productive relationship (B). In one case being not straightforward created mutual lack of understanding (E).

'[-] ik weet waarover ik [mijn leidinggevende] moet informeren. Ik weet waarvoor ik toestemming moet vragen. [-] Ik probeer hem vooral mee te krijgen, de kant die ik op wil en dat houdt eigenlijk in dat hij het los laat'.

'I know what to inform my manager of. I know what to ask permission for. Primarily I try to persuade him in the direction I want to go to, and in fact that means he lets go'.

(Barbara, 35 years old, general manager)

Influence may also exist unconsciously. For instance, sharing knowledge with pathos was reported to lead to change in the short term, but when this behaviour causes the gifted person to be seen as a know-it-all the long term influence may be disappointing (C). One subject reported shaping her environment was hindered by the lack of a clear focus on what to create; she wanted to craft her new job, but could not decide where to begin because all issues she encountered were interesting (E).

All of the gifted adults in the current study reported adapting to their environments. They adapted the speed of their thinking (B, E), learned to stay low or hold back (A, B, C, D, F) and sometimes left situations alone (A, B, D, E). Some subjects often felt bad about adapting in the process or afterward (C, E, F). One subject reported unconsciously taking on missing team roles (C). Most subjects reported feeling that adapting is sometimes necessary and productive, and being conscious of the necessity of this process helps in accepting that sometimes adapting is for the better (A, B, D). However, adapting was reported by most as a kind of survival strategy that they had used unconsciously for a long time (A, C, D, E). Some subjects noted that adapting is surely not always for

the better; speaking out leads to influence, which is sometimes applauded by supervisors (B, E, F). A striking difference between the gifted subjects and their supervisors was that supervisors reported that gifted participants did *not* adapt while participants felt that they did (C, E). Some subjects stated that they deliberately chose not to adapt because in doing so a person ‘might lose yourself’ (A, C).

‘[-] toen ik in aanraking kwam met hoogbegaafden, is me wel opgevallen dat iedereen er pas achter kwam, nadat ze in de knoop zijn gekomen met zichzelf. En ik denk dat het beter is me niet aan te passen en te experimenteren. [-] Nee, ik denk dat ik altijd wel mezelf blijf. Behalve dat het [-] een soort gewicht met zich meebrengt’.

‘When I came in touch with other gifted persons, it occurred to me that everyone found out after a personal crisis. I think it is better not to adapt and to experiment. No, I think I will always be myself. Except, you will carry a certain load’.

(Aaqilah, 23 years old, counsellor)

4.3.7. Proposition 4: Environment and personal factors

None of the gifted adults in the sample reported having their personalities changed by their environments. Almost all participants experienced anxiety, frustration, anger, loneliness or sadness because of feeling that they did not fit in or not getting what they wanted (A, B, C, D, E).

‘Mensen kunnen denken dat ik zeker overkom, maar in feite ben ik een heel gevoelig jochie’.

‘People may have the impression I am very confident, but in fact I am a sensitive little boy’.

(Caspar, 60 years old, civil servant)

All subjects reported that they had analysed themselves at certain times in their life (A, B, C, D, E, F). Some deliberately developed their social capabilities by training and experimenting (B, D) or learned to cope with their social shortcomings (C). Those participants reported personal growth and, in turn, feeling more at ease as a result. One participant reported feeling more confident after learning of her giftedness (B). One participant reported being able to set his giftedness to good use nowadays and having gained more self confidence because of it (F).

‘Je kunt je zelf wel veranderen als je dat wilt. Dat heb ik vooral geleerd. [-] De overtuiging dat je het toch wel kunt. [-] Ik ben ook heel dankbaar dat ik hier de kans heb kunnen krijgen’.

‘You can change if you want. That is above all what I learned. The conviction you can do it. And I am very grateful they gave me a chance here’.

(Barbara, 35 years old, general manager)

Knowledge and expertise may vary and will always change as a result of working in a given environment; where people work they gain new knowledge and experience (A, B, D, E, F). Some of the subjects reported that their motivation was directly influenced by their environment as firing triggers (D). One subject told how a management position in a hectic department offered a constant stream of problems that needed solutions, constantly fostering her creative process (E, in a former job). Another participant reported an environment that stimulated by offering complex data analysis problems and first hand client feedback on work well done (F).). Most subjects reported that their intrinsic motivation was so strong that it was not reduced by environmental factors (A, B, C, D).

Financial independence made one subject feel more at ease. However, when people said they admired his businesses he was bothered because he saw himself as a modest person (D).

4.3.8. Multiple patterns

In reviewing the findings, some patterns that are wider than a single proposition are present. First, the gifted adults working as independent professionals and in a top management position shaped their environments to their own visions (A, B, D). Along with the consultant who chose his employer carefully (F), these people seemed most happy with their environment and felt most supported to innovate. Additionally, social capabilities seem consistent with being able to better connect with other people and innovate in pairs and teams (A, B, D, F). For some gifted adults, being honest and straightforward was an effective way to shape their environment. In reaching honest and straightforward communication several strategies were reported. One subject reached this capability in an unconscious, authentic way (F), one subject reached it in a conscious upright way (B) and one subject reported having found out what worked in influencing others in an experimental, somewhat calculating way (D). However, the impact seemed the same. The fourth wider pattern seemed that some participants reflected more on their characteristics and special position in the workplace than others. These subjects seemed to invest more in training, coaching and experimenting to develop their social skills and in the end seemed to find themselves more successful. They experienced having their personal goals fulfilled and reported to be more at ease and more self-confident (A, B, D, F).

4.3.9. Comparing the data sources

The gifted adults in the sample on the one hand and their supervisors, co-workers and business associates on the other had a fairly consistent view of the gifted people's innovative work behavior and its underlying patterns (A, B, F). In some cases there were small (D) or major (C, E) differences. Some of the pairs in the sample experienced a deep mutual understanding and appreciation (A, B, D, F). In one case, this work is difficult for both parties. They both acknowledge that their personalities are almost opposite and that communication and acceptance are used to maintain a productive relationship (B). In another case the business associate valued the gifted adult primarily because of his social skills, which appear natural. At the same time, the gifted adult experiments with these skills and uses them in 'a somewhat calculating way' (D).

However, innovative capabilities of gifted adults may not always be recognized. In one case a high level of associating lead to a continuous stream of ideas in the mind of the gifted person. Because the gifted participant withheld these ideas out of a concern that they might be not effective enough (yet), her supervisor had barely noticed any talent in initiating innovation (E). In several cases both parties reported the key to recognition is open communication about personal drivers (B, F). In one case the gifted participant reported being able to work with all his co-workers and even filling in missing team roles. The participant's supervisor qualified the collaborative skills and environmental awareness of the gifted participant lower than the gifted participant valued those capabilities himself. (C). In the same case the gifted person positioned himself in the vital step from initiation phase to implementation phase. His supervisor qualified the gifted participant's work as comprehensive and theoretically impressive but questioned the practical use of work done by 'a

professor in his study' (C). Most employed gifted participants were reported by their supervisor as 'following their own agenda first' (B, C, E).

'[Mijn kracht zat] in de multidisciplinaire samenwerking. En vooral verbindend zijn tussen al die disciplines'.

'My strength was in the multidisciplinary collaboration and foremost in connecting all the disciplines'.

(Caspar, 60 years old, civil servant)

'Ja, ik denk dat teamsamenwerking een lastige is voor hem. Ik denk dat hij wel als onderdeel van de organisatie functioneert, maar gelijktijd ook heel erg op zichzelf is'.

'Yes, I think collaborating in a team is difficult for him. I think he functions as part of the organization, but at the same time he is quite in itself'.

(Charles, manager of Caspar, 60 years old, civil servant)

5. Conclusions, discussion and recommendations

5.1. Conclusions

As demonstrated in Chapter 2 the personal and environmental factors of innovative behaviour and the characteristics and workplace expectations of gifted employees are remarkably similar, but existing research is insufficient to support the case built by some scholars that gifted individuals are innovative at work. The aim of the present study was to analyze the relationship between giftedness and the concrete innovative action ('praxis') (Crossan & Apaydin, 2010; Whittington, 2006) of gifted people, the environmental factors influencing this relationship, the ways gifted adults manage their working environments and how they are personally influenced by this environment. Environment was also 'integrated into the contract' (Ziegler, 2005) by interviewing the supervisor, a co-worker or business associates for each case, and analyzing documents.

Based on the current research, gifted adults seem to like being involved in innovation. Their preferences for specific phases or objects of innovation differ greatly. Their intelligence and fast, complex and associative thinking help them recognize problems, generate ideas and, plan and implement these ideas. However, styles of innovative behaviour and effectiveness and recognition also seem to depend greatly on other personal factors. Traits such as perseverance and valuing taking control of one's own life, can lead to increased efforts and results. Even traits such as perfectionism and anxiety, which typically have negative connotations, were found to have positive effect on innovative efforts. A strong personal factor was the will and social ability to connect with others. Another one is the degree to which a gifted person is convinced that investing in and experimenting with personal development and more specifically social capabilities and practices this assumption. Some gifted people have strong intrinsic motivations to 'do something good'; the performance of some is particularly sensitive to external stimuli. Having no knowledge or experience is not an obstacle for innovative work behaviour, as acquiring new knowledge is an important intrinsic motivation, and being gifted helps people to 'ask all the right questions' and remember the answers.

The gifted adults interviewed in this study experienced a strong environmental influence on the relationship between their personal factors and their innovative work behaviour. The strongest environmental factors were team climate and style of leadership, especially from their direct supervisor. Gifted adults working independently named these aspects as a major motive for doing so. Furthermore, gifted adults may use very different strategies in associating with their environments. Choosing a well-fitting environment and shaping it in accordance with personal values and goals can lead to major positive environmental changes. All subjects noted that they regularly adapted to the lower speeds of thinking of people around them and perceived resistance to their ideas or behaviours, although supervisors found them not always adapting enough. Gifted adults think their personalities do not change just because of environmental factors. All subjects reported at one time in the past having felt frustrated, angry or sad because they were different. Some experienced great changes in motivation, and all subjects acquired new knowledge and experiences from their work environments.

5.2. Discussion

This study delivered some empirical evidence of the behaviour of gifted adults in the innovation process. As will be demonstrated in this Chapter the findings are mostly consistent with prior findings found in innovation literature and several scholars' argumentation on giftedness. This study adds to prior research because it does not focus primarily on the problems gifted adults encounter in work contexts. It examined actions as the demonstration of innovative behaviour and at its underlying drivers.

Proposition 1: Because of their high levels of ability and specific traits, gifted employees show a high level of innovative work behaviour.

The way subjects in this study described their giftedness is consistent with the definition in Kooijman (2008) as they also used the words quick and intelligent, curious, passionate and sensitive or clear synonyms of those words. By intelligence they meant not only logical and mathematical abilities, but also interpersonal intelligence (e.g. in investigating problems and influencing others), intrapersonal intelligence (e.g. in investigating their own abilities and developing them by learning and experimenting), linguistic intelligence (e.g. in arranging thoughts and influencing others) and visual and spatial intelligence (in describing their thought processes). This is consistent with the multiple intelligences Jessurun et al. (2015) theorized upon. All gifted individuals in the present study rated their innovative work behavior high as argued by Corten et al. (2006) and said it was grounded in their intelligence, curiosity, passion, sensitivity and enjoyment to create new things (Kooijman, 2008). In the sample there was a great variation in the parts of the innovation process and the innovated objects to which the gifted participants contributed. This is consistent with the idea there are 'different kinds of innovators' (Glynn, 1996), also within the group of gifted innovators. Their roles in teams might well differ more greatly than Corten et al. (2006) argued as they saw gifted people typically fulfill the 'plant' team role. The high levels of intrinsic motivation found are consistent with the autonomous, curious and passionate nature (Kooijman, 2008) and idealism and ethic consciousness of gifted adults (Webb, 2013) on one hand and the high levels of intrinsic motivation found in innovative environments (Patterson, 2002) on the other. Gifted employees in the present study pointed at 'information and enabling' as extrinsic motivation (or lack thereof as a negative factor for motivation) (Adams, 2005; Hammond et al., 2011). Participants showed characteristics of intellectual leadership (Shavinina, 2011): to some extent all subjects had intellectual and creative productivity; some subjects were highly capable of describing, influencing and compensating their thought processes (meta-cognitive abilities); and all subjects had senses, beliefs, preferences and intuition which helped them innovate (extra-cognitive abilities). Most cases are consistent with the suggestion 'that knowledge is necessary [-] for innovation to occur' (Patterson, 2002). One subject innovated without prior knowledge, which might be attributed to her giftedness, as giftedness is related to openness to new experiences (Rinn & Bishop, 2015) and gifted people acquire new knowledge more quickly and add value to the innovation process by using whatever prior knowledge to come up with develop completely new ideas (Shavinina, 2011).

In other aspects a mixed image of the innovative work behavior of gifted people arises. Most gifted adults in the present study seemed to innovate alone or in pairs, and some of the subjects insist on carrying out all phases by themselves. This is consistent with the autonomous nature of gifted people (Kooijman, 2008). In innovation research 'many innovation researchers believe innovation is

a team sport' (Shavinina, 2011), but others suggest 'what distinguishes innovative individuals is their lack of fit to their environment' (Patterson, 2002). All gifted people in the sample reported challenges interacting with others. The participants felt different and felt isolated in groups. The subjects who reported having developed their social skills seemed to report more innovative success and were more clearly recognized by their environment, but for none of the subjects operating in social contexts came easy. For some subjects in the present study conscientiousness seemed a positive factor in the implementation phase. This is inconsistent with the suggestion that 'conscientiousness rates negatively to innovation' (Batey et al., 2010; Patterson, 2002). Most gifted people in the present study seemed to struggle with others' perceptions of them and did not particularly perceive these perceptions as positive, which is inconsistent with the suggestion of Rinn & Bishop (2015).

Proposition 2: Environment influences how characteristics of gifted employees are transformed into innovative actions.

The strong influence of the environment (organizational climate, team climate and psychological safety, leadership, systems and structures) is consistent with existing innovation research (Crossan & Apaydin, 2010; Patterson, 2002; Volberda, Jansen, Tempelaar, & Heij, 2011) and the developing of intelligences into talent factors and performance areas (Jessurun et al., 2015). As all subjects reported shaping their job (or business) job characteristics (Crossan & Apaydin, 2010) seemed the only exception. This study delivered diverse findings in coping and defence strategies and self-concept (Jessurun et al., 2015), which may be rooted in the past of the gifted individuals and may partly account for the differences in the described innovative work behaviour. The findings support the crucial role of leaders in support and guidance and creating innovation friendly conditions (Anderson et al., 2004; Hammond et al., 2011) and the importance of psychological safety on the team level (Anderson et al., 2004; Hammond et al., 2011).

Proposition 3: Gifted employees take actions to choose, shape, and adapt their environments.

The strategies of gifted adults are consistent with Sternberg's theory of successful intelligence defined as the '(1) the ability to achieve one's goals in life, given one's sociocultural context, (2) by capitalizing on strengths and correcting or compensating for weaknesses (3) in order to adapt, to shape, and select environment (4) through a combination of analytical, creative and practical abilities' (Sternberg, 2005). None of the subjects in this study matched this definition completely. Successful intelligence may be more of an enabler of a continuous process than a state or ability. Driving abilities (Jessurun et al., 2015) in this process seem to be (1) intrapersonal intelligence, the ability to '[identify] their strengths and weaknesses, and to find ways to work within that pattern of abilities' (Sternberg, 2005), and (2) interpersonal intelligence, as communicating effectively with others leads to more influence and possibilities to choose and shape one's working environment.

Proposition 4: The personal factors of gifted people are influenced by their working environment and the changes thereof.

All subjects reported their intelligence and personality did never change because of influences of their environment. Their internal thought processes developed over time, but not as a result of environmental influences. They all liked to acquired new knowledge, which is consistent with

'curious' in the definition of giftedness (Kooijman, 2008) and reported having done so in their work. The motivation of most subjects in the present study was highly intrinsic and not influenced by their environment which is also consistent with the definition of Kooijman (2008). Some participants reported experiencing external factors as 'synergistic when it is informational or enabling' (Adams, 2005; Hammond et al., 2011). Based on the present study also in the context of innovative work behavior, gifted people can be emotional (Kooijman, 2008), (over) sensitive, perceptive (Lovecky, 1986; Rinn & Bishop, 2015) and idealistic (Webb, 2013). Several subjects reported frustration and grief as a result, which is consistent with prior studies (Nauta & Corten, 2002).

5.3. Recommendations for practitioners

The current study provides valuable advice for gifted adults, supervisors, directors, top teams, HR professionals, governments, and policymakers. Gifted adults are advised that they may have great potential to contribute to innovation in several steps in the innovation process and a broad range of objects of innovation according to their own preferences and abilities. Because innovation is a team effort, gifted innovators may be more effective (and happy) if they develop and use the ability to connect and collaborate with others. It is imperative gifted people choose their working environment wisely, as innovation is largely determined by leadership and team climate and, to a lesser extent, by organizational climate and systems and structure. Gifted people may find the best way to choose or create an optimum working environment may be to start a business, work as a self-employed professional or apply for a management position, as these choices provide more freedom and variation. Once a person has chosen an environment, he or she may use his or her influence to shape it to fit his or her needs. If gifted people share what works for them in a clear and straightforward way, people will honour their needs to a certain extent. However, it must be remembered that gifted adults will never be average and will always find it necessary to adapt. Those who adapt should do so consciously and with acceptance and gratitude. Being at ease and communicating authentically may pay off in the long run.

It is important for leaders to know that their guidance and support is vital for an innovative climate and act according to this knowledge. Having gifted employees on a team may present even greater opportunities for innovation. Using this situation advantageously requires supervisors to know which employees are gifted and understand their specific types of intelligences and personal traits and provide necessary support and guidance. Gifted people have a greater need – possibly more than others – for open and warm atmospheres, freedom in managing their own work, a context where different fields of expertise meet and the ability to change jobs when they are ready to move on. Supervisors are advised innovative work behaviour is not only determined by logical and mathematical intelligence. For instance, interpersonal intelligence makes it possible to detect client problems better, and linguistic intelligence may assist in implementing new ideas. Gifted individuals in leadership roles have the opportunity to create an innovative climate for others and lever their innovative work behaviour to the innovative climate of their businesses or organizations. Gifted leaders must remember that collaboration is possible. As well-known innovation leaders do, gifted people can let their metacognitive abilities help 'compensating for their own lack of creativity, knowledge or whatever their innovation may need' (Shavinina, 2011).

Directors, top teams and HR professionals are advised that gifted employees in organizations may be hidden assets. If gifted employees' specific needs are met, they can be of great value to fulfilling

strategic goals. They may be happier, absent less frequently as the result of illness and able to work to an older age. It may pay off to develop specific policies to recruit such people, rotate their jobs and assignments frequently, facilitate continuous learning, deliver networking opportunities and maintain a supporting organizational structure.

The position, value and demands of gifted individuals are not well known in society today. Government institutions can increase awareness of opportunities through publicity and may stimulate innovation by initiating and funding research, think tanks, knowledge transfer and private initiatives. These institutions can also create legislation aimed at innovation and diversity. Besides influencing society by publicity and policies governments can set an example by guiding and supporting their employees for innovation. Identifying the gifted employees in their own organizations and supporting and facilitating employees' efforts may contribute to solving today's public and governmental challenges in innovative ways. Additionally, governments can then share the results and experiences of these efforts and their outcomes with the public.

5.4. Limitations and Recommendations for further research

This study provides an exploration of how gifted adults perceive their own innovative work behaviour and how this behaviour is perceived by their environments. It is clear that many factors determine this complex of perceptions. It is also clear that this study has a number of limitations. One such limitation is that though this study was built on a clear conception of giftedness (Kooijman, 2008) this conception is one of many. Another limitation is that the results in this study are limited to gifted people. The comparison with the general population was at most mentioned by themselves or their supervisor, co-worker or business associate. A third limitation is the exploratory nature of the current study, the broad scope and the use of qualitative data. Based upon the broad sample a rich array of conclusions could be drawn, but none of these conclusions can be generalized. Moreover, questions remain on the specifics of the relations in the conceptual framework and possible explanations of the similarities and differences that were found between the subjects. There are also limitations rooted in the way the sample was composed. It contained only Dutch subjects working in Dutch environments. Candidates signed themselves up, were aware of their giftedness, had a special interest in innovation and were willing to invest in participating, mostly because they expected to gain new insights into the process. Selecting the sample this way excluded people who are unaware of their giftedness and those gifted people who not like to talk about their giftedness or their innovative praxis. The method used also presents limitations. Although innovative praxis was at the core of the study this feature was not directly observed. Moreover, most subjects seemed familiar with literature about giftedness and had created their own interpretations and narratives about themselves as gifted people and their roles in the innovation process. Some gifted subjects also seemed to have created such narratives about their personal development activities and the effects that followed such actions. This is quite limited empirical evidence about personal development interventions and the (assumed) results.

Further research is recommended in several directions. To shed more light research can be aimed on giftedness with adults and possibly on integrating current conceptions of giftedness. A second direction for further research is recommended to the innovative work behaviour of gifted people. Existing measurements from innovation (and creativity) research may be used and by using control groups conclusions might be drawn on the differences in innovation praxis between gifted people

and the general population. A third direction is further research to make the relations in the conceptual framework clearer. It is recommended to use robust measures from psychology research are used as has previously been done to some extent in innovation research. Some concepts may need to be developed or improved. Using the method applied in the current study on other samples (e.g. from other countries or gifted people who do not volunteer but are requested to participate) may strengthen or enrich the findings in the current study. A fifth direction for further research may shed new light on actual innovative behaviour or praxis by using methods such as observation and journaling. A final direction is derived from the developing component that patterns found in this study seem to have. Some subjects seemed to have accepted being different. Investing in personal development may strengthen social connections, increase influence and improve environment, leading to more innovative work behaviour. Further research may examine these assumed causal effects by using a method such as action research, which enables researchers to design process experiments, take measures over longer periods of time and account for the complex context in which innovative work behaviour takes place.

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