VERBAL ABILITY AND IDENTITY DEVELOPMENT

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Abstract

This study examined the relationship between verbal ability, as measured by the Vocabulary and the Similarities subtests of the WAIS-IV, and identity exploration and identity commitment, as measured by the exploration and commitment scales of the Ego Identity Process Questionnaire (EIPQ). The sample consisted of 23 undergraduate students from Rutgers University. Identity exploration refers to the process of exploring and considering alternative sets of values and beliefs, while identity commitment involves making a choice to adhere to certain values. Individuals can exhibit various levels of both exploration and commitment. For instance, they may be actively exploring without having committed, committed without having truly explored alternatives, etc. The literature suggests that individuals explore alternative sets of values by creating self-narratives, or stories about the various social interactions and events in their lives. These narratives can range from complex and insight-driven to more simple and factual. The literature suggests that there is a link between higher complexity and more insight in narratives and higher identity exploration scores. The main hypothesis of the current study was that since verbal ability is associated with narrative construction, and since narrative construction is associated with identity exploration, there must be a positive correlation between verbal ability and identity exploration. This hypothesis was confirmed: When verbal intelligence, non-verbal intelligence, well-being (as measured by the BDI) and gender were regressed on identity exploration scores a significant positive main effect of verbal intelligence on identity exploration was detected. When a similar multiple regression analysis was conducted with identity commitment as the dependent variable no main effect of verbal intelligence was detected. In addition, a significant main effect of well-being on identity commitment was detected, confirming existing findings in the literature.

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Introduction and Review of Literature

In his seminal work *Childhood and Society* (1963) Erik Erickson proposed that individuals go through eight stages of psychosocial development, which begin at birth and end at the end of life. Erikson's main idea was that, contrary to some earlier theories of personality (most notably Freud's; Engler, 2009), personality development does not conclude in early childhood, but rather continues throughout life. He proposed that each life stage, starting with infancy and ending with old age, is characterized by its own "psychosocial crisis" (i.e. a major existential task that an individual must grapple with and resolve). The pre-adolescent stages, according to Erickson, are characterized by struggles around basic trust, autonomy and competence. During the pre-adolescent years the young person must establish him/herself as a basically competent and capable individual, separate from his primary caregivers but still remain able to trust in the fundamental goodwill of others.

More relevant to the current paper, however, is Erickson's proposed 5th stage, which takes place during adolescence and revolves around the struggle for a personal identity. Erickson proposed that during this stage the young person is faced with the task of deciding who he/she wants to be and what he/she wants to stand for in life. This is done through considering alternative sets of values, beliefs, religious and moral stances, family and social roles, etc., and solidifying a set of values that is personally relevant and satisfying. Erickson contended that a person who fails to resolve this "identity crisis", or one who is thwarted in his attempt to resolve it by overly overbearing parents or adverse life circumstances, will experience a state of identity confusion and will flounder through life aimlessly until he/she is able to begin a process of exploration. It is important to note that though Erickson presented his stages as sequential, he actually maintained that these stages are only loosely sequential and that people may cycle

through them at different paces and return to certain unresolved stages at later times in their lives. Thus, an individual who failed to develop a mature identity in his adolescence may continue grappling with this developmental task in his 20s, 30s or even 40s. However, an individual who finds himself in a chronic state of identity confusion will, according to Erickson, struggle in important life domains such as intimacy and selecting and maintaining gainful employment, and may in extreme cases become so confused as to break from reality and develop symptoms of schizophrenia (Erickson, 1968).

Two prominent methods have been developed to scientifically study Erickson's theoretical construct of identity formation. The first and older method, pioneered by James Marcia (1966), has focused on trying to categorize young people's identities into different empirically supported "types", and on understanding the different stages of identity formation and the different paths people take to form an identity. This direction in research has resulted in a number of different quantitative tools designed to assess one's stage of identity formation and a number of empirically-supported mechanisms through which individuals may approach the process of identity formation (e.g. Adams, Shea & Fitch, 1979; Balistreri, Busch-Rossnagel & Geisinger, 1995; Grotevant & Adams, 1984). Researchers in this area have identified identity exploration and identity commitment as the basic mechanisms through which individuals form identity (Marcia, 1966) and then considered a number of different types of exploration and different types of commitment and proposed different types of interactions between these processes and the different identity stages that result from these various interactions. For convenience and flow, this approach will be referred to in this paper as the "quantitative approach" and will be discussed in depth in the section on quantitative identity research below.

The second, newer direction of research, which gained momentum in the 2000s, focuses on the ways in which people build their identities by constructing and refining self-narratives, or life stories. Instead of focusing on constructing questionnaires and/or quantifying identity stages, this area of research asks how people actually go about the process of identity exploration and what the experience amounts to for them. The main proposition that underscores this line of research is that people construct identity through creating self-narratives, or life stories, and that differences in how people narrate their lives accounts for differences in how deeply people are able to explore and how firmly they are able to commit to identities (e.g. McAdams, 1993). The common data collection method for researchers working in this field is through collection, coding and analysis of written narratives that participants provide about episodes in their lives. For example, participants might be asked to write down a memory reflecting a difficult or pivotal moment in their lives, a very happy memory, and so forth. Depending on the specific research question, participants' narratives are analyzed for the presence of various thematic elements, overall complexity, and more. This method of identity research will be referred to in this paper as the "qualitative approach" and will be discussed in the section on qualitative identity research below.

Though it may seem natural for these two research directions, which seemingly study the same theoretical construct (i.e. personal identity) to converge, or at least overlap, little cross-area research has been done. In as much as researchers from the two camps have made attempts at integration, the proposed link between the quantitative and qualitative methods can be summarized as follows: The quantitative method maintains that individuals ultimately achieve a personal identity by exploring different sets of values and then choosing a set of values that fits their personality and life goals (e.g. Meeus, 2011). But how do they code these data points? The

qualitative camp proposes that they code these identity pursuits as stories about themselves (e.g. McAdams, 1993). The stories may incorporate lessons they had learned that have caused them to accept or reject a certain identity (e.g. "I neglected a relationship in favor of work – did well at work but lost the relationship. This made me very unhappy and now I know that for me family comes first"), or the stories may be more simple and merely state a factual bit of information (e.g. "I'm very angry because my girlfriend left me saying that I work too much. Next time I will go out with someone more understanding"). More research is needed in order to make definitive statements about the links between identity stages and self-narratives, but supposedly the former story, which conveys an insight, is correlated with more mature identity (a discussion of identity stages and the meaning of "maturity" follows), while the latter, which merely conveys a simple life lesson, is correlated with less mature identity (McLean & Pratt, 2006).

The final section of this introduction will discuss the interface between qualitative and quantitative identity research more in depth and will situate the present study within the broader landscape of research on identity. The purpose of the current paper is to draw an additional link between individuals' identity stages and their narrative identity by hypothesizing that if individuals use narratives to form identity, then their verbal ability must have a role to play in how efficiently they are able to code information about identity, and therefore, how effectively they go through the processes of identity exploration and identity commitment. This proposition and the specific hypothesis of this study will be discussed more in depth in the final section of this introduction.

Quantitative Identity Research

Marcia (1968) elaborated on Erikson's concepts of identity formation by introducing the two related concepts of identity exploration and identity commitment. In a now-classic precursor to much behavioral research on stages of identity formation, Marcia suggested that the extent to which an individual has achieved a healthy adult identity can be conceptualized as the extent to which he had explored alternative sets of beliefs and values (for instance, alternative occupations and political and religious views), and the strength of one's commitment to any particular set of values. The individual who has neither explored alternatives nor harbors any strong commitments can be said to be in a state of *identity diffusion*, while the individual who has made a lasting commitment to a particular set of values following a process of active exploration can be said to be in a state of *identity achievement*. According to Marcia's model, the individual who has not made a commitment (i.e., low on the "commitment continuum") but who is actively exploring his options is in the midst of an identity crisis and is said to be in a state of *moratorium*.

Finally, the individual who had chosen to commit to a set of values without having gone through active exploration (for instance, the individual who blindly subscribes to parental values) is said to be in a state of *foreclosure*. This summary of Marcia's model provides the skeleton for all subsequent quantitative identity research. As will be detailed shortly, subsequent studies elaborated on Marcia's identity exploration and identity commitment dimensions, developed different measurement tools to quantify these dimensions and, importantly, explored life outcomes associated with exhibiting various patterns of exploration and commitment. However, Marcia's basic tenet that identity is achieved through some combination of exploring alternative sets of values and then committing to a specific set of values remained basically unchallenged. A

good recent survey of the accumulated quantitative identity research can be found in Meeus (2011).

Expanding our understanding of identity processes beyond Marcia's original model.

In the many years since Marcia's seminal work his followers have focused their efforts on several interrelated but distinct classes of research questions. One direction in research has been to expand our understanding of the mechanisms behind identity exploration and identity commitment and to achieve a better understanding of identity as a process, as opposed to a fixed state. That is, later researchers expanded Marcia's initial model and broadened our understanding of the way identity exploration and identity commitment dynamically operate and impact each other. In a sense, it can be said that with the passage of time the study of identity became less focused on outcomes and more focused on developmental processes. For example, Bosma (1985) conducted exploratory factor analysis on results obtained from a large sample of young adults who completed the Groningen Identity Scale. He found preliminary evidence for the idea that identity commitment is not a unitary concept, but rather can be distilled into commitment making (which corresponds to Marcia's initial definition of commitment) and identification with commitments already made (a concept not initially considered by Marcia).

Grotevant (1987) elaborated on this finding by proposing that identity commitment contributes to a clear sense of personal identity only when a young person comes to actually identify with the commitment he/she has made. In other words, he proposed that the mere decision to practice certain values, for example, to attend Catholic mass, would not in itself make one feel a sense of identity integrity. Rather, one comes to experience a sense of identity integrity only when one has accumulated a store of personally-relevant reasons for having made this

decision, for example, when one has reflected that attending mass enhances one's connection with one's faith and community, contributes to one's peace of mind, and so forth. In accordance with this idea, Grotevant also proposed the idea that individuals engage in identity exploration not only in the sense that they consider alternative values and ideas (which was Marcia's initial definition of exploration), but also in the sense that they explore and accumulate evidence for commitments already made. In a later study, Meeus, Iedema and Maassen (2002) conducted two-wave longitudinal research with a large sample of adolescents using the same identity scale (the Groningen Identity Development Scale) and found a correlation between the strength of adolescents' commitments and the degree to which they explored them. In other words, they found that adolescents who made stronger commitments explored them more, or alternatively, that exploring commitments in more depth makes them stronger. Meeus et al. theorized that these findings provide additional support for the idea that both identity exploration and identity commitment are more nuanced developmental processes than initially believed and that young people may initially engage in exploration in order to make preliminary commitments, but they ultimately continue to engage in exploration in order to strengthen commitments already made.

Luyckx, Goossens, Soenens and Beyers (2006) undertook to empirically validate and combine the findings above into a coherent identity formation model. They gave 565 freshmen from a large Dutch university two different identity scales, combined the items from these scales and performed confirmatory factor analysis on the resulting data. They found that the data best fit a model in which both identity exploration and identity commitment were further subdivided into exploration in breadth, exploration in depth, commitment making and identification with commitment. Exploration in breadth in this model corresponds to the original definition of

exploration (i.e., exploration of different alternatives), while exploration in depth refers to the process of seeking evidence for/against existing commitments.

In parallel fashion, commitment-making refers to the original definition of commitment (i.e., the act of picking a set of values, a religious view, a social role, etc.), while identification with commitment refers to the subjective experience of having compelling personal reasons for having made certain commitments. Based on these data, Luyckx et al. (2006) proposed that the process of identity formation occurs through recursive exploration and commitment cycles as follows: exploration in breadth --> commitment-making --> exploration in depth --> identification with commitment. In other words, they hypothesized that people first explore alternatives, then make commitments, then explore and accumulate data on the commitments they have made and then either identify with those commitments, or discard them. If a commitment previously made is discarded, this triggers an additional cycle that begins with exploration in breadth. Interestingly, the authors of this paper do not specify how this expanded view of the processes of identity exploration and commitment may impact the four original identity statuses proposed by Marcia, and they do not propose additional identity statuses to account for the additional identity processes they propose. However, it is implied in their paper that those individuals who have more commitments with which they have come to identify through a process of exploration in depth are closer to a state of identity achievement.

Inferences about the developmental progression of identity stages drawn from the association between identity statuses and well-being.

This expansion of our understanding of identity processes and the proposition that identity processes proceed in a predictable and recursive pattern leads to an additional distinct

but related question that has been widely studied and explored in the literature. Namely, it leads us to the question of whether the four identity statuses follow a developmental trajectory. In other words, is there any merit to using terms such as "more mature" and "less mature" identity statuses? Several different empirical approaches have been applied to this question. One approach has been to correlate the different identity statuses with various measures of well-being, mental health, life outcomes, etc. (e.g. Balisteri, Busch-Rossnagel & Geisinger, 1995; Hoffman, 1984; Marcia, 1980; Nelson, Hughes, Handal, Katz & Searight, 1993; Watreman, 1992). The main premise in this line of research is that identity statuses that are correlated with better mental health and more positive life outcomes are more "advanced" or more "mature", which is a reasonable assumption if one subscribes to the general notion that the goal of development is to achieve a state of higher emotional functioning.

In general, there is support in the literature for the notion that the two high-commitment identity statuses (i.e., identity achievement and identity foreclosure) are associated with positive personality traits and higher well-being. For example, Luyckx, Soenes and Goossens (2006) conducted longitudinal research with female university students and asked students to complete identity and personality measures at three different points in time. They found that the two high-commitment statuses were negatively related to neuroticism over time and positively related to extraversion, openness and agreeableness. It is important to note that the longitudinal nature of this study allowed the researchers to demonstrate that young adults in their sample became less neurotic, and more open, extraverted and agreeable as they became more committed.

Crocetti, Klimstra, Keijsers, Hale and Meeus (2009) studied the relationship between anxiety and identity with two groups of participants: a younger adolescent participant group with ages ranging from 10 to 15 at the onset of the study, and an older group with ages ranging from

16 to 20 yrs at onset. Participants completed an identity status questionnaire and an assessment measure for symptoms of anxiety once yearly for 5 years. These researchers found that the level of identity commitment tends to increase over time (which is consistent with Erikson's original theory that individuals build their identity by exploring values and making commitments over time). They also found a correlation between higher anxiety and a lower rate of increase of commitments over time and a consequent correlation between belonging to a higher commitment status and reporting less anxiety. Similarly, Luyckx et al. (2008) found that young adults in their college sample who reported higher levels of identity commitment (and hence were classified as either identity achievers or identity foreclosures) obtained substantially higher self-esteem scores and lower depression scores.

On the whole, these results seem to suggest that belonging to a high-commitment identity status predicts higher well-being. This may not come as a surprise in regard to the identity achievement status, which, as its name implies, has been conceptualized from the outset as a desirable identity outcome. However, this may surprise some readers in regard to the identity foreclosure status. Ostensibly, individuals in the identity foreclosure category are those who have made life decisions without giving them very much thought, which may not strike one as a very desirable state of being. In discussing their findings, the authors of the studies cited above hypothesize that the reason for the positive association between commitment and well-being may be that any commitment implies a decrease in uncertainty and an increase in stability. Extrapolating further, their findings imply that any commitment, even an unconsidered one, is better than no commitment.

Parenthetically, in light of these findings one may wonder as to the utility (in terms of life outcomes) of exploring alternative options. In answer to this question, some studies have found

that although people may navigate life successfully with commitments that have not been

systematically explored, commitments made after a period of exploration tend to be more

resilient and more flexible in the face of changing life circumstances (e.g. Cote & Levinbe, 2002;

Luyckx, Goosens, Soens, Beyers & Vansteenkiste, 2005). An additional interesting discussion of

this can be found in Dr. Mary Pipher's book Reviving Ophelia (1994). In her book Pipher

provides an overview (with case examples) of over 20 years of clinical work with female

adolescents. Her observation is that indeed adolescent girls who come from authoritarian,

prescriptive families that don't leave much space for exploration tend to present as more

psychologically intact, less rebellious, more connected to their families and communities and less

likely to engage in risky behaviors. However, she also discusses the fact that these girls tend not

to have had a chance to explore talents, interests and so forth. Pipher hypothesizes that this

increased psychological health in adolescence might come at the expanse of fulfillment and well-

being in middle age when adults tend to reflect on the choices they have made and take stock of

what their life has stood for. Discussion of the negative outcomes in later life of living an

unexamined life is prevalent in the clinical literature and interesting perspectives can be found in

the literature on existential therapy (e.g. Frankl, 1985; Yalom, 1980).

The relationship between identity exploration and well-being has been shown in the

literature to be much more complex. While some studies (e.g. Berman, Schwartz, Kurtines &

Berman, 2001; Luyckx, Goosens & Soenens, 2006) have found correlations between higher

scores on the identity exploration dimension and increased openness and curiosity, other studies

have found consistent associations between active identity exploration and symptoms of anxiety

and depression, as well as college maladjustment (e.g. Kidwell, Dunham, Bacho, Pastorino &

Portes, 1995; Luyckx et al., 2008). These seemingly divergent findings make sense when one

considers what the process of exploration actually entails. It certainly entails a certain openness and the courage to approach the unknown with curiosity and flexibility – people who do not possess at least some capacity for curiosity are not very likely to earnestly explore values and opinions that are different from those that are familiar to them.

However, the process of exploration also entails the suspension of judgment, uncertainty about life goals, a potential period of social chaos as one moves between peers groups, and a period of confusion about what one values in life. When examined from this perspective, a period of active identity exploration sounds almost synonymous with a period of increased anxiety and emotional volatility. Schwartz, Zamboanga, Weisskirch and Rodriguez (2009) set out to explore these disparate results further by hypothesizing that if identity exploration is stressful but constitutes a good investment in the future (i.e. allows for more robust commitments, as discussed previously), then current identity exploration should be correlated with lower well-being but past identity exploration should not. In order to test this hypothesis they gave a group of 905 undergraduate college students from five American universities sections of two different ego identity questionnaires, one worded in the present tense (e.g. "I am not sure what religion means to me. I would like to make up my mind, but I am not done looking yet") and one worded in the past tense (e.g. "I have considered adopting different kinds of religious beliefs").

From both questionnaires they chose the statements that specifically reflect identity exploration (i.e. they omitted the commitment-related questions). In addition, participants completed measures of adaptive psychological functioning (i.e. self-esteem, locus of control, and ego strength) and measures of maladaptive psychological functioning (i.e. internalizing and externalizing symptoms, depression, anxiety and impulsivity). They found, among other things,

that current personal identity exploration was positively associated with anxiety, depression and impulsivity, and negatively associated with adaptive functioning, while past exploration showed the opposite trend and was positively associated with adaptive functioning and negatively with maladaptive functioning. In addition, the researchers assessed identity diffusion (i.e. low exploration and low commitment) by having participants complete the identity diffusion subscales from two different identity scales and found a correlation between identity diffusion and symptoms of psychopathology.

Taken together, the research on the correlation of well-being to identity exploration and identity commitment can be summarized as follows: High commitment appears to be correlated with positive outcomes whether it is preceded by exploration or not (though commitment that is preceded by exploration appears to be more robust and resilient), while current identity exploration tends to be correlated with lower well-being (though past exploration is positively associated with well-being). Thus, proceeding from the assumption that self-states that lead to higher well-being are more desirable and more mature, the literature seems to support the notion that identity achievement (i.e. high commitment and high past exploration) is indeed the most mature state and identity diffusion (low commitment and low exploration) is the least desirable and mature. Further, the moratorium identity status, which is a high-anxiety status, is developmentally less mature than the achievement status, since it is, by definition, the precursor to it (i.e. in order to attain identity achievement one must go through a stage of active identity exploration, which defines the identity moratorium stage). The identity foreclosure status appears to be an alternative to identity achievement as an end-point of identity development and may in fact be an end-point that bypasses the high anxiety period associated with active exploration. However, since some research indicates that foreclosure may be a less resilient state than

achievement and that people in identity foreclosure may experience lower well-being in later life, it may be a less mature end-point of identity development than identity achievement.

An alternative way to study the developmental trajectory of identity development has been through mathematical modeling. In this approach, researchers have conducted longitudinal studies in which they gave they participants identity process questionnaires (with different studies using different assessment tools) at different points in their lives and then using mathematical modeling to derive the most common pathways for identity transition (e.g. Luyckx, Schwartz, Goossens, Soenens & Beyers, 2008; Meeus, van de Schoot, Keijsers, Schwartz & Branje, 2010). The purpose of this class of studies is to identify whether people tend to progress through the different identity statuses in some predictable sequence, which would provide evidence for the stages being developmentally sequential. One review study (Kroger, Martinussen & Marcia, 2010) analyzed the results of 11 longitudinal studies and found that following identity shifts: Diffusion (D) --> Foreclosure (F), D --> Moratorium (M), D --> Achievement (A), F --> M, and M --> A, were more common than the following shifts: F --> D, M --> D, M --> F, A --> D, and A --> M. In other words, shifts away from diffusion were more common than shifts toward it and shifts toward achievement were more common than shifts away from it. These findings support the conclusions outlined previously, though it must be pointed out that this direction in research has some shortcomings. Most notably, these longitudinal studies seem to suggest that transitions from achievement to diffusion, though rare, are theoretically possible. Given that having been in a state of achievement at one point one must, by definition, have undergone a process of exploration, it appears that a transition from achievement to diffusion should be a theoretical impossibility and the reporting of such a transition warrants a separate discussion. An additional review of the literature, Meeus (2011)

reviewed 21 longitudinal studies the majority of which used young people in their late teens and twenties. Of these studies all but seven included at least three waves (as opposed to Kroger et al., where the majority of studies included only two waves of assessment) and found, among other things, that the high-commitment statuses (i.e. achievement and foreclosure) were more likely to serve as endpoints in the identity formation process than the low commitment statuses. That is, if individuals' identity status changed at all between the first assessment and the last, it was more likely to change such that individuals moved into a high commitment status in their last assessment. This finding provides additional support to the idea outlined previously that the developmental trajectory of identity development seems to be toward commitment-making.

A note about the potential existence of additional identity processes and identity statuses.

Additional identity statuses were proposed in a 2008 study by Luyckx, Schwartz, Berzonsky, Soenens, Vansteenkiste, Smits & Goosens, who proposed, and set out to validate, an additional dimension of identity exploration. These researchers suggested that in addition to exploration in breadth, which is associated with exploring new sets of values, and exploration in depth, which is associated with the validation of existing values, there is also a type of exploration characterized by persistent self-doubt and a constant cyclical re-hashing of decisions already made. Luyckx et al. based their description of this self-defeating exploratory process on observations made in the literature of individuals who tend to succumb to societal pressure to constantly "better themselves" and become stuck in a perpetual state of identity moratorium, in which they constantly dwell on the different alternative commitments that could be made without actually making any firm commitments (e.g. Berzonsky, 1985; Marcia, 2002; Schwartz, Cote & Arnett, 2005).

The implication in the literature that while normally identity moratorium would be a precursor to identity achievement (see discussion below), this "perpetual moratorium" is not a healthy state, and does not necessarily lead to identity development. Luyckx et al. (2008) named the process of repetitive exploration "ruminative exploration" and set out to differentiate it from the more adaptive types of exploration and to explore its implications for our typology of identity statuses. Firstly, these researchers developed and validated an identity measure that included ruminative exploration as one of the identity dimensions (that is, their measure, the Dimensions of Identity Development Scale, DIDS, measures exploration in depth, exploration in breadth, ruminative exploration, commitment making and identification with commitment). Secondly, in their sample of 263 university freshmen they found an association between exploration in depth and exploration in breadth (which they termed reflective forms of exploration) and the two commitment dimension, while finding no such association between ruminative exploration and either commitment dimension. In fact, the researchers found some evidence that ruminative exploration may hinder commitment-making and identification with commitment. In addition, the researchers found that when ruminative exploration was controlled, the association between symptoms of anxiety and depression and identity exploration disappeared, suggesting that ruminative exploration accounts for the association between identity exploration and emotional maladjustment.

Finally, the researchers proposed two additional identity dimensions, in addition to the ones proposed by Marcia. Namely, they suggested that the moratorium identity status should be separated into two distinct statuses, ruminative moratorium and adaptive moratorium, where adaptive moratorium is a precursor to commitment, while ruminative moratorium is not. They also proposed two different types of diffusion statuses, carefree diffusion and diffused diffusion.

In their model, carefree diffusion is characterized by a lack of interest in identity development, no exploration of any kind, and fewer symptoms of maladjustment, while diffused diffusion is characterized by fruitless rumination without adaptive exploration and more symptoms of maladjustment.

It is important to note that the theory above constitutes the first attempt (to the author's knowledge) to expand our understanding of identity statuses and has thereby earned its place in this review. However, the authors concede that they were not able to find strong evidence in their data to validate the addition of ruminative moratorium and diffused diffusion to the four previously existing statuses. Much future research is needed if these additional statuses are to enter the mainstream in this field.

Qualitative Identity Research

There are many ways to store information: Numerically, as on computer disks, visually, as in paintings and photographs, biochemically, as in DNA molecules, and more. The question of exactly how information is stored in the human brain has fascinated neuroscientists, biologists and psychologists for decades and the literature on this topic is vast, multidisciplinary and varied. Without going in to unnecessary detail, there is evidence that some information is stored in the human brain in non-verbal modalities. For example, humans possess muscle memory (e.g. one's fingers know how to tie a shoe lace without being able to describe it), as well as "emotional" memory (e.g., certain stimuli evoke the subjective sensation and the physical manifestations of fear without a clear verbal link between stimulus and response).

However, there seems to be consensus in the literature that many forms of memory (e.g., memory for factual information and autobiographical memory) are largely mediated by language

(Squire & Kandel, 2000). This is not to say that there is not an emotional, non-verbal component to our autobiographical memories. For example, we might experience distaste for dogs because we possess a memory of having been bitten by one, and that sense of distaste may come up in us automatically and independent of language any time we see a dog. However, if we are to be able to recollect when, why, where and under what circumstances we had been bitten, and most importantly, if we hope to be able to share that memory with others, we must rely on verbal representations (Squire & Kandel, 2000). In fact, almost all forms of informational transfer between individuals are heavily language-based (as can be appreciated from the fact that textbooks and magazines routinely print unillustrated text, but almost never provide illustrations without captions and verbal descriptions).

Important evidence for the centrality of verbally-stored information comes from the field of clinical psychology where much empirical support exists for various forms of "talk therapy" (e.g. Messer & Warren, 1995; Weisz & Kazdin, 2010), a vast majority of which impact change by altering people's implicit assumptions about the world, transforming unconscious impulses into conscious self-knowledge and/or altering the way people talk to themselves – all of this achieved through verbal exploration of past and present behaviors/symptoms/events. Furthermore, in her seminal work on treating post-traumatic stress disorder (PTSD) Dr. Judith Herman (1997) describes traumatic memories as largely visual and visceral memories that lack context, remain unelaborated and are not integrated into a person's overall autobiographical narrative. According to Herman, an important component of effective interventions for PTSD is helping the client integrate traumatic memories into his/her life narrative.

Thus, since it appears that much of what people know about themselves and the world is mediated by verbal information storage and transfer, it stands to reason that the way people

construct their identities should also be significantly impacted by the way they verbally narrate

their lives. In the mid-90s and 2000s a new direction in identity research took shape that set out

to study just that – how do people chose to tell the stories of their lives, and how do their

particular types of stories impact their ability to explore values, learn from experience and build

a robust personal identity?

Term definitions and research methodology.

To situate the reader, it is important to define the various terms that are commonly used

by narrative identity researchers. Firstly, it is important to be clear about the field's definition of

personal identity, or self-concept, which the field shares, or even borrows from, a long tradition

of research on personality (Singer, 2004). *Self-concept*, or identity, is often defined as one's set

of conscious beliefs about oneself, which include beliefs about one's abilities and preferences

and, importantly, about the types of behaviors that are typical of the self and the types of

behaviors that would be unusual or unlikely (e.g. Kernis & Goldman, 2003; McLean, Pasupathi

& Pals, 2007; Markus & Wurf, 1987). The reader will recall that in quantitative identity research

(outlined previously) identity commitment is defined as a state in which one has chosen a set of

beliefs and values that will guide one's behavior. This definition can be seen to be similar to the

one proposed here in that both view identity as a state of explicit self-knowledge, particularly

knowledge about the principles that guide one's life.

The *life story*, or life narrative, is often defined as an extensive autobiographical memory

record that links events and experiences in one's life over time and across situations, possesses a

thematic quality and is told in such a way as to support of refute various beliefs about the self

(e.g. McAdams, 1993; McLean et al., 2007; Rice & Pasupathi, 2006). For example, a person who

views him/herself as thrifty (i.e. thriftiness is a chosen personal value that is part of the self-concept), might possess a life story that emphasizes examples of thrifty behaviors in various situations and across time, and furthermore, singles out instances of extravagant behavior as uncharacteristic. Inherent in this definition is the idea that people are selective in what they include in their life stories such that not every event becomes part of a person's self-narrative, and even when an experience does become part of the self-narrative, some aspects of it might be emphasized and others forgotten.

Before moving forward, a word on research methodology is in order. Unlike quantitative identity research which, generally speaking, relies heavily on assessment tools (e.g. identity questionnaires) to glean information about participants' identity categories and/or numerically-quantified levels of identity commitment and exploration, narrative identity research heavily relies on analysis of participants' written narratives (e.g. memories, stories, etc.). As can be seen in Singer's (2004) cogent review of the field, much of the research on narrative identity follows a protocol whereby participants are asked to recount (in writing) certain memories of autobiographical events, the specific nature of which depends on the particular research question. The researchers than code the written narratives using various coding systems that, again, depend on the research question, with the goal of identifying various story elements and themes present in the narratives. Specific examples will be provided in later sections, but some examples of story elements are self-event connections (i.e. connections between some characteristic of the self and some life event) and event-event connections (i.e. coherent links between events that happened in the past and more recent events).

What determines whether or not a particular episode will become part of the life story is subject to active research. There is evidence to suggest that people's narration styles, for

example, the extent to which their stories are emotionally elaborated and detail-rich, can be

traced back to their early interactions with their parents, such that parents who use more

elaboration and elicit more information from their young children raise children whose life

stories are more rich and complex (e.g. Farrant & Reese, 2000; Haden, Haine & Fivush 1997;

Harley & Reese, 1999; Hudson, 1990; McCabe & Peterson, 1991). In addition, there is evidence

in the literature that audience characteristics affect the construction of the life story, such that

stories that are repeatedly ignored and/or actively rejected are less likely to become incorporated

into the self-narrative (Pasupathi & Hoyt, 2009; Pasupathi, Stallworth & Murdoch, 1998;

Bohanek et al.., 2006). This is consistent with the observation, fundamental to many branches of

psychodynamic clinical work, that aspects of the self that are repeatedly minimized, shamed or

rejected by parents and/or society become repressed – that is, they descend into the unconscious

and henceforth surface as unconscious desires, impulses, etc. but not as explicit parts of the self-

concept (McWilliams, 2004). An additional factor that affects the construction of the life story is

an individual's existing self-concept. That is, there is some evidence that people are motivated to

repeat and internalize self-stories that are consistent with values they want to endorse or that they

view as fundamental to their existing ideas about who they are (Sanitioso, Kunda & Fong, 1990).

This finding is consistent with the idea (discussed in the previous section) that identity

exploration includes exploration in depth, which is a process whereby people focus on values

and self-definitions to which they have already committed and explore those commitments more

thoroughly. Finally, some findings suggest that people's stable personality characteristics (e.g.

the big five personality traits) impact on the types of stories they create. For example, Bauer,

McAdams and Sakeda (2005) found that people who score higher on openness to experience and

extraversion and lower on neuroticism tend to construct life stories that place more emphasis on growth and learning from experience.

Overall, the reader will notice that the narrative approach to identity development takes a more holistic view on identity then the quantitative approach. It describes identity as a complex interplay between environment, innate traits, parental influences, and past experiences and views the life story as a multiply-determined entity that develops recursively (i.e. present events influence the ongoing construction of the life story, which in turn influences the lens through which one views future events and reinterprets events from the past).

Narrative identity and developmental themes.

Studying identity by examining narratives provides researchers with the unique opportunity to examine not just the overall degree to which individuals are exploring identity options and/or have committed to a given identity, but also the specifics of what it is that people find significant at certain stages of their lives, and the specific routes that identity exploration takes. For instance, by examining how narratives differ by age group researchers can arrive at a better understanding of how people at different life stages construe reality and register the events that happen in their lives. As was mentioned above, one important assumption in the field of narrative identity research is that not every event becomes part of the life story and even when it does, the same event can go down in the record in very different ways depending on what a person values, believes and strives for in that moment in his/her life (Sanitioso, Kunda & Fong, 1990).

In one study Conway and Holmes (2004) set out to investigate participants' life stories vis-à-vis Erikson's 7 developmental stages (Erikson, 1963). The researchers asked a group of

elderly participants to write down seven significant memories from seven life stages spanning

from 0-9 years of age to memories from age 60+. The researchers then coded these narratives for

the presence of Erikson's major developmental concerns (i.e. trust vs. mistrust, autonomy vs.

shame, initiative vs. guilt, industry vs. inferiority, identity vs. role confusion, intimacy vs.

isolation, generativity vs. stagnation, ego integrity vs. despair). Though it was of course not

expected that participants would be able to recall memories from their earliest years

corresponding to Erikson's first few developmental themes, the researchers found an overall

correspondence between the ages from which memories were recalled and Erikson's predicted

prevalent themes corresponding to those life stages. Thus, they found that memories from the

first decade of life tended to include more themes of trust, autonomy and competence, memories

from the second decade tended to reflect identity exploration, memories from the third decade

were more likely to pertain to relationships and intimacy, and so forth.

These results suggest that people may continue to build their identities (or the stories of

their lives) throughout life and that different types of self-understanding may be added at

different developmental stages. As will be discussed in a later section, the majority of

quantitative identity studies to date have been conducted with adolescents and young adults,

reflecting the assumption that identity exploration takes place mostly during these formative life

stages. By the same token, the majority of widely-used identity questionnaires focus on areas

such as career choice, political views, religious views and views on intimate relationships

(Luyckx et al., 2006), all of which may be seen to reflect developmental themes that are

associated with young and middle adulthood, and certainly reflect choices that individuals are

often called upon to make early in life (i.e. individuals gain the right to vote at 18 years of age,

typically graduate from college, start careers and get married in their mid- to late twenties, and so forth).

It appears that the field of quantitative identity research could be significantly enriched by exploring the degree to which different types of identity exploration may be common in later life. For instance, it would be interesting to explore the degree to which adults in mid-life and in their later years engage in renewed exploration of their social roles with respect to their grown children, the younger generation in general, and society at large. Erikson's theory of personality and Conway and Holmes' study (2004) appear to suggest that older adults may engage in continued identity exploration along different themes, such as their views of themselves as wise or unwise, as guardians of old ways or adopters of innovation, as stewards within their families, and more.

While the literature on identity statuses has focused mostly on adolescents and young adults, the field of narrative identity research has given more attention to individuals spanning the age spectrum. For instance, Bluck and Gluck (2004) designed a study that explored how adolescents (ages 12-15) and early adults (ages 30-40) narrate events in their lives that are associated with the acquisition of wisdom. They instructed their participants to write about events or memories that stand out as pivotal moments in their lives during which they acquired a new understanding or a new "truth". The researchers found that both younger and older participants tended to write about challenging or negative situations that were ultimately successfully resolved. This supports previous findings that individuals are more likely to engage in autobiographical reasoning (active reasoning about the meaning of events and situations in their lives) when constructing stories about negative events, as opposed to positive or neutral events (e.g. Blagov & Singer, 2004; Bruner, 1990; McLean & Thorne, 2003). Bluck and Gluck

also found that wisdom narratives in general tended to connect multiple events in an individual's life, but that this trend was stronger among the adult group as compared to the adolescent group. That is, younger participants were more likely to provide stories that were more literal and had a heavier focus on a particular lesson learned from a specific life event, whereas older participants tended to provide stories that linked multiple life events and focused on more global lessons and philosophical insights gained from their overarching life story.

In a similar vein, Thorne, McLean and Lawrence (2004) conducted a study in which they asked college undergraduates to record memories of "self-defining" events, which they defined as events that impacted participants' view of themselves, evoked a lot of emotions and were thought of often. The researchers than coded the narratives as "meaning making" (i.e. narratives that included some sort of an attempt to come to a better understanding of a specific situation, oneself or the world) vs. non-meaning-making (i.e. narratives that simply provided factual information). For narratives in which meaning making attempts were evident, the researchers further coded the narratives as "lesson learning" vs. "gaining insight" narratives, whereby "lesson learning" narratives evidenced an attempt to draw a conclusion about the practical implications of the experience and about good ways to handle a similar situation in the future. "Gaining insight" narratives on the other hand, included attempts to draw more overarching conclusions about oneself or the world in general and included some evidence of an attempt to gain philosophical understanding of certain aspects of the life experience.

Firstly, Thorne and colleagues found that only 23% of the 504 narratives they collected (i.e. ~115 narratives) fell in the meaning making category. Thus, the majority of narratives provided by undergraduates in the sample were simply factual in nature and did not focus on gaining insight or increasing self-understanding. Though it is difficult to draw definitive

conclusions from this isolated result, this finding might give us a clue to the fact that meaning making processes, though important, may account for a relatively small proportion of people's overall self-narrative endeavors. Similarly to Bluck and Gluck (2004), Thorne and colleagues found that narratives recounting negative events were more likely to include attempts at meaning making than narratives about achievement or leisure activities. Interestingly, Thorne and colleagues also asked their participants to indicate whether their self-defining memories were ever recounted to others and if so, how they were received. They found that of those memories that included attempts at meaning making, "lessons learned" and "insight gaining" narratives were equally likely to have been interpersonally shared, but that "gaining insight" memories tended to be better received by listeners. This finding seems to suggest that though one must work harder to gain insight from a life event, people tend to appreciate when others make an effort to do so. It would be interesting to investigate in future research how listeners incorporate others' insights into their own life stories.

In an additional study that set out to explore differences in the ways the young and old tell their life stories McLean (2008) asked two groups of participants, a younger group (n = 85, 17-35yrs) and an older group (n = 49, 65-85yrs), to report three self-defining memories (self-defining memories were defined as in the Thorne et al. study described above). The narratives were coded for self-event connections (a connection between a specific event and some aspect of self-understanding), event-event connections (an attempt to connect at least two events across time and draw wisdom from their association), change connections (an explicit reference to ways in which the individual changed over time), and explanatory connection (an attempt to explain why one is the way he/she is). The researcher viewed event-event connections to be somewhat more sophisticated meaning making attempts than self-event connections, because they require

that individuals reflect on the course their lives had taken over time, as opposed to merely drawing a lesson from a specific situation. In this way, memories that reflect event-event connections can be seen to be similar to "gaining insight" memories in the Thorne, McLean and Lawrence study described above. McLean found a statistical trend (though the result did not reach significance) for older adults to have more event-event connections.

However, the new piece this study brings to our overall understanding of developmental trends in narrative identity lies in the stability vs. change aspect of the participants' narratives. Namely, younger participants were more likely to provide change connections, whereas older participants were more likely to provide narratives in which they described themselves and their lives as more stable and were more likely to provide explanatory connections. In addition, the older group was more likely to have a common theme to all three narratives (i.e. a common metaphor or thread that tended to recur). This finding provides an interesting perspective on the ideas of identity exploration and identity commitment. It appears the narratives of the younger participant group reflected more themes of identity exploration and turmoil, while the narratives of the older adults reflected a commitment to the way they were and, moreover, a certain degree of commitment to a lens through which to view life.

Overall, the literature on the developmental nature of narrative identity seems to indicate that while there is evidence for the idea that adolescence and young adulthood are unique times for turmoil and identity exploration, there are ways in which identity continues to develop throughout life. It appears that while younger adolescents may be more active in their attempts to revise their basic understanding of who they are, older individuals may be better at tapping deeper meanings inherent in the connections between different life events. It also seems that while younger individuals are busy accruing specific life lessons from the events in their lives,

older individuals may be in a better position to step back from events and incorporate them into a larger metaphor – a narrative of wisdom, as opposed to a practical "operations manual" to life.

Narrative identity and well-being.

The literature weaves a complex story when it comes to the link between well-being and narrative identity. What is most striking about the findings on this subject is that they seem to indicate that age is a moderator variable in the relationship between meaning-making processes in life narratives and well-being.

Studies conducted with adults (where adulthood was loosely defined as ages 40 and above in most studies, to put sufficient distance between this age group and young adult groups, which are usually drawn from undergraduate college populations), consistently show that those adults who have more sophisticated life narratives show better adjustment on such diverse measures of well-being as self-esteem, propensity for depression, physical well-being, overall life satisfaction and more (Adler, Lodi-Smith, Philippe & Houle, 2015). For example, Pals (2006) asked a group of 52-year-old women to write a narrative reflecting the most difficult and transformational time in their lives since college. The women were instructed to pick an event that was challenging and that had an impact on their view of themselves and the world. The narratives were coded for a variety of variables, among them the level of complexity of the narrative and the degree to which the narrative conveyed a sense of closure and a positive resolution to the challenging event. More specifically, the narratives were coded for the degree to which participants were open to exploring the negative emotions that were associated with the challenging event and the degree to which they drew connections between different elements of their story and tried to make sense of what they had experienced.

In addition, the narratives were coded for the degree to which each participant described

a positive change in the self as a result of having lived through the negative event (note that

participants who recounted negative events that were still ongoing were excluded from analysis).

The researchers found that the presence of both complexity in the narrative and a positive

resolution predicted better physical health when the women were assessed at age 61 (i.e. almost

10 years after the narratives were collected). In addition, a higher level of exploratory meaning-

making in the narratives collected at age 52 was associated with higher ratings on a scale of

maturity at age 61. Maturity in this case was defined as the presence of more stable emotional

responses to stressors (i.e. the ability to function in the face of stressful events), self

understanding and integrity. All three aspects of maturity were gleaned from a detailed interview

at age 61, which was conducted by a clinically-trained interviewer. Bauer, McAdams and

Sakaeda (2005) conducted a similar study but chose to focus on narration of positive, as opposed

to negative, events. They asked a sample of adult participants (mean age = 57 yrs) to write "high

point" narratives, where high points were defined as follows:

> "These are generally moments or episodes in a person's life in which he or she feels a
>
> sense of great uplifting, joy, excitement, contentment, or some other highly positive
>
> emotional experience."

The narratives were coded for a number of structural and thematic elements, among them the

presence of integrative themes (i.e. evidence that the participant was making connections

between various events in his/her life and trying to learn more about oneself and the world) and

the presence of intrinsic (humanistic) concerns, such as concerns with making contributions to

society, becoming a better person, growing through experience and so forth. These were placed

in opposition to extrinsic (materialistic) concerns, such as accruing wealth, maintaining

appearances and so forth. Similar to the results obtained by Pals (2006), the researchers found that those participants whose narratives showed more complexity, narrative integration, and an orientation toward personal growth obtained higher scores on measures of subjective well-being, as well as emotional stability, ego strength and emotional intelligence.

In short, similar results were obtained in multiple studies with adults focusing on well-being and different types of narratives ranging from memories of positive experiences, to negative experiences, to experiences of traumatic events (e.g. wartime memories) to memories associated with the illness of children (e.g. Bauer & McAdams, 2004; King, Scollon, Ramsey & Williams, 2000; McAdams, Reynolds, Lewis, Patten & Bowman, 2001). It appears that when it comes to adults, the ability to create more elaborated and thematically integrated life stories is positively associated with well-being.

The link between narrative complexity and well-being in children is more complex. Evidence in the literature suggests that while more complex narrative processes in conversations between parents and children are correlated with higher self-esteem in children, higher levels of complexity in children's writing about stressful events (i.e. accounts created without the input of parents) is linked to lower overall well-being. For example, in one study a sample of 51 5- and 6-year-old children and their parents were instructed to converse about a number of past negative events and ongoing conflicts. The conversations were transcribed and coded and the researchers found, among other things, that children whose parents provided more complex narratives about past events had higher self-esteem (Reese, Bird & Tripp, 2007). On the other hand, in a study that required 9- and 13-year-old children to write about past emotional events, those children who included more elaborations and emotional details in their narratives obtained higher anxiety and depression scores (Fivush, Marin, Crawford, Reynolds & Brewin, 2007). The authors

interpreted these results as indicating that in order for complexity in narrative to correlate positively with well-being a person must possess certain cognitive resources that children may not yet possess, such as the ability to handle ambiguity, the ability to consider multiple perspectives simultaneously and the ability to engage in independent emotional regulation.

While the two studies described above provide insight about the relationship between well-being and life narrative complexity in children, neither study provided insight about the developmental quality of this relationship. In an interesting follow-up study by McLean, Breen and Fournier (2010) the authors did just that. Instead of collecting narratives from a sample of participants at a certain developmental stage, they collected four separate autobiographical narratives (high point, low point, turning point and continuity experience) from a group of participants ranging in age from 11 to 18 years old. Participants completed, among other measures, the Rosenberg Self-Esteem scale and the Beck Youth Depression Inventory (scores on which were averaged to derive a well-being score), and their narratives were coded among other things, for sophistication of meaning (defined as the degree to which participants "gleaned specific emotional, psychological, or relational insight from the event that applies to broader areas of the reporter's life"). The results were highly illuminating. Firstly, the researchers found that sophistication of meaning sharply increased with age, which in itself is perhaps not very surprising, given the widely observed increase in cognitive resources from age eleven to age eighteen. Secondly, results showed that age was a moderator in the relationship between sophistication of meaning and well-being. Namely, the correlation between sophistication of meaning and well-being was strongly negative for early adolescents, moderately negative for middle adolescents and moderately positive for late adolescents. Thus, this study provides strong

support for the idea that as individuals gain in cognitive and emotional resources, they begin to

benefit from the ability to construct complex and integrated life stories.

Overall, both the quantitative and the qualitative approach to identity research highlights

the fact that the process of building a personal identity is complex and, at certain stages, anxiety

provoking. Ultimately, however, individuals benefit greatly from having a firm grasp on who

they are and what they stand for in life. The section that follows will draw some connections

between the two different approaches to identity research and present the rationale for the current

study.

Rationale for the Present Study

Despite the fact that both the quantitative and qualitative approach to identity research

concern themselves with the same broad theoretical construct, there has been less overlap

between these two approaches than one might suspect. Review articles that discuss identity often

review research generated by these two methods in separate sections (e.g. Meeus, 2010) and

empirical studies linking the two approaches are largely missing from the literature. A notable

exception to this is a study by McLean and Pratt (2006) in which the researchers asked a sample

of 896 adolescents (mean age = 17.4) to complete an identity process questionnaire, as well as to

provide a "turning point narrative", which was defined as "an important transition or change with

respect to their understanding of themselves". Among other things, the narratives were scored on

a scale of 0-3 for the level of meaning-making detected. Stories that conveyed no attempt at

meaning-making (e.g. stories that simply provided facts) receiving a score of zero, stories that

reported a simple "lesson learned" (e.g. "I learned not to procrastinate on assignments") received

a score of one, and stories that reflected attempts at generating deeper insight (e.g. "I reflected on

this event and realized that I am not a very trusting person by nature") received scores of two or three.

The study yielded interesting, if somewhat tentative results. Though the researchers did not find a robust association between specific identity statuses and meaning-making (most strikingly, they did not find a significant relationship between being in the identity achieved status and higher scores on meaning-making in narratives) the researchers did find an association between being low on the exploration dimension (i.e. belonging to the foreclosure or diffusion identity status) and low scores on meaning-making. In other words, this study appears to provide preliminary empirical support to the idea that identity exploration and narrative construction are related processes, and that individuals who do not appear to be engaged in active exploration also tend to narrate their lives in less sophisticated ways. The direction of causality, of course, cannot be inferred from this research design. Interestingly, an additional finding was that, quite apart from any deeper analysis longer stories were correlated with higher meaning-making scores, reflecting the fact that quite apart from any other consideration, the ability to write a longer, more elaborate narrative may be associated with the ability to generate more personal meaning from life events.

The purpose of the current study is to continue the line of research begun by McLean and Pratt and draw an additional link between identity statuses and narrative identity. The reader will recall that identity exploration, or the process of actively considering alternative value and belief systems, emerges in the literature as a precursor to stable identity commitment (Schwartz et al., 2009). The literature also suggests a link between the process of identity exploration and the creation of elaborate, meaning-laden self-narratives (McLean & Pratt, 2006). Furthermore, there is robust evidence in the literature that more meaning-laden life narratives are associated with

higher subjective and physical well-being and better self-understanding in adults (Adler et al., 2015), which provides further support for the importance of the life narrative in the formation of identity.

The current study proposes to carry this argument further. If people use narratives to form identity, then their verbal ability must have a role to play in how efficiently they are able to code information about identity and therefore, how effectively they go through the processes of identity exploration and identity commitment. For example, if someone has better vocabulary, knows more idioms and is generally able to form more sophisticated links between verbal pieces of information, it would follow that he/she would also be better able to form sophisticated self-narratives, and that in turn would be reflected in that person's ability to engage in identity exploration. This is what the current study sets out to investigate.

Study Hypotheses

The author's initial intention was to classify study participants into the four identity statuses previously discussed and conduct statistical analyses accordingly. However, as the study progressed a few things became evident. Firstly, it became evident that for various practical reasons outside of the author's control the participant sample had to be somewhat smaller than originally planned. Additionally, the author became more and more convinced that the richest data in extant literature came from studies that treated identity exploration and identity commitment as separate and distinct processes and investigated them separately. For instance, the reader will recall that the literature on identity statuses and well-being focuses not on the four identity categories (achievement, foreclosure, moratorium and diffusion), but on the commitment and exploration dimensions and demonstrates that well-being in positively associated with one's

level of commitment and with past exploration, but negatively associated with present identity

exploration (Lycks, Soenes & Goossens, 2006; Crocetti et al., 2009).

Of the identity questionnaires developed to date, two of the most widely cited are the Ego

Identity Process Questionnaire, EIPQ, developed by Balistreri, Busch-Rossnagel & Geisinger

(1995) and the Objective Measure of Ego-Identity Status, OMEIS, originally developed by

Adams, Shea and Fitch in 1979 and revised several times since. Both questionnaires are based on

Marcia's original model and are conceptually quite similar in terms of the domains of identity

they examine (e.g. interpersonal, occupational and religious views). The main difference

between these two questionnaires is in the scoring. The OMEIS yields four scores for each

participant – one per identity status. Roughly speaking, the participant is categorized into the

identity status in which he has obtained the highest score. By contrast, The EIPQ (which was

used in the present study) essentially consists of two continuous scales – the exploration and the

commitment scale. Each participant receives two scores and is categorized into an identity status

based on where he or she falls on each of the two scales. More specific details can be found in

the Methods section below, but essentially, a person with high scores on both exploration and

commitment will be classified as identity achieved, a person low on both scales will be classified

as identity diffused, and so forth. Thus, the EIPQ provides the benefit of being able to obtain

both continuous exploration and commitment data, and categorical identity status data

simultaneously for each participant. The author originally chose the EIPQ over the OMEIS,

despite the fact that the OMEIS is quite a bit older and thus has been used in significantly more

studies than the EIPQ, precisely because it provides this added continuous data. Given that the

author had access to continuous exploration and commitment data (which yields more power

than categorical identity status data) and given the small final sample size, the author decided to

conduct statistical analyses using the commitment and exploration scales of the EIPQ. The study

hypotheses remained theoretically congruent with the original research question and intention of

the study, but were reworded to reflect the change in intended data analysis.

The hypotheses of the present study can be summarized as follows:

1) Based on the assumption that increased verbal ability allows one to form more complex self

narratives and therefore to explore identity options more effectively, the author hypothesized that

higher verbal ability scores will be positively associated with higher identity exploration scores.

2) The author expected to confirm prior data (Crocetti et al., 2009; Kidwell et al., 1995; Lyckx et

al., 2008) that identity commitment is positively correlated with well-being and identity

exploration is negatively associated with well-being.

It is important to note that since the present study uses subtests from the verbal section of

the Wechsler Adult Intelligence Scale, 4th Edition (WAIS-IV) to measure verbal ability (refer to

the Methods section below), and since scores on the verbal section of the WAIS-IV are strongly

correlated with overall intelligence (or the Full Scale IQ, FSIQ; Sattler, 2008), it was important

to control for overall intelligence in this study. This was important because the literature is

abundant in studies demonstrating that higher intelligence is correlated with wide-ranging

benefits in multiple areas of life (Lubinski, 2004), and thus demonstrating that higher

intelligence confers benefits for building identity would be neither relevant to the hypothesis of

this study, nor particularly surprising. In order to avoid this trap, the current study used subtests

from the WAIS-IV perceptual reasoning index to control for overall intelligence. Put in the

simplest terms, the author used the non-verbal subtests to separate those people whose cognitive

ability was uniformly high or low in general from the people who had a specific strength or weakness in the verbal domain.

Methodology

Participants

The sample consisted of 23 participants between the ages of 18-21. Participants were recruited from the undergraduate research participant pool at Rutgers University and received course credit for their participation. Since the majority of studies in the literature on identity use mixed gender samples and since no specific hypothesis were made in this study about gender differences, a mixed gender sample was recruited. Participants were required to have begun full-time education in an English-speaking country no later than grade 5 in order to control for proficiency in the English language. This restriction was necessary in order to ensure that performance on tasks measuring verbal reasoning ability was not confounded by language barriers.

Measures

Ego Identity Process Questionnaire. The Ego Identity Process Questionnaire (EIPQ; Balistreri, Busch-Rossnagel & Geisinger, 1995) is a 32-item self-report questionnaire where participants are asked to indicate their degree of agreement with various statements on a 6-point Likert-type scale. The statements concern such topics as the respondent's views on gender roles, family roles, friendships and his/her occupational decision-making process. The EIPQ produces two scores for each respondent, which place that individual on a continuum of identity exploration and identity commitment. In accordance with Marcia's original model (1964), these

two scores can be combined to determine an individual's membership in one of four ego identity statuses: identity achievement, moratorium, foreclosure or diffusion. Specifically, scores on both scales range from 16 to 96 with a median of 66.5 for the identity exploration scale and 62 for the identity commitment scale. Individuals who score above the median on both scales are classified as identity achieved, those below the median on both scales are considered to be in a state of identity diffusion, those above the median on commitment but below the median on exploration are classified as foreclosed and those below the median on commitment and above the median for exploration are classified as being in a state of moratorium. This measure was normed on a college-aged population and shows moderately high reliability and construct validity. Specific reliability and validity figures can be found in Balistreri, Busch-Rossnagel & Geisinger (1995).

Due to the small sample size in the current study, an insufficient number of participants was classified in each of the four identity categories described above to allow for meaningful statistical analysis. Therefore, the exploration and commitment scales were used separately in all analyses described below.

Wechsler Adult Intelligence Scale – Fourth Edition. The Wechsler Adult Intelligence Scale – Fourth Edition (WAIS-IV; Psychological Corporation, 2008) is a cognitive assessment tool designed to measure cognitive ability in a variety of domains in adults and older adolescents. The WAIS-IV is composed of four indices, each designed to tap a unique aspect of cognitive ability and each composed of a number of unique subtests. The four indices are: Verbal Comprehension, Perceptual Reasoning, Working Memory and Processing Speed. A full administration of the WAIS-IV requires that the participant complete at least 10 subtests. The subtests are administered orally and raw scores are converted to standard scores with a mean of 10 and a

standard deviation of 3. For the purposes of the present study the full WAIS-IV was not administered. Rather, participants were administered two Verbal Comprehension subtests (Vocabulary and Similarities) and two Perceptual Reasoning subtests (Matrix Reasoning and Visual Puzzles). The former two subtests provide information about the participants' grasp of vocabulary and ability to reason with words, while the latter two subtests tap the participants' ability to reason abstractly when presented with non-verbal puzzles.

It is important to note that since the full WAIS-IV was not administered to participants, the data obtained does not provide information about the participants' overall cognitive ability (Full Scale IQ). Likewise, standard scores of Verbal Comprehension and Perceptual Reasoning were not calculated. Rather, a proxy of participants' verbal ability and perceptual ability was obtained by adding the scaled scores for the two relevant subtests of each index (i.e. WAIS_Verbal = WAIS_Vocabulary + WAIS_Similarities; WAIS_Perceptual = WAIS_VisualPuzzles + WAIS_MatrixReasoning).

The WAIS-IV was standardized on a sample of 2,200 adults in the United States and is one of the most widely used cognitive assessment measures. The test has been found to be highly reliable and scores on the WAIS-IV correlate highly with such criterion variables as measures of academic performance. Specific reliability and validity figures for the overall test, as well as for individual subtests can be found in the WAIS-IV Technical and Interpretive Manual (Psychological Corporation, 2008). Additional information about administration and scoring can be obtained in Sattler & Ryan (2009).

Rosenberg Self Esteem Scale. This scale is a 10-item self-report questionnaire that asks respondents to indicate on a 4-point Likert-scale the degree o which they endorse various

statements about themselves (e.g. "On the whole, I am satisfied with myself"). Additional

information about this scale and its psychometric properties can be obtained in Rosenberg

(1965).

Beck Depression Inventory (BDI-II). The BDI-II is a 21-item self-report inventory that is widely

used in the literature to assess symptoms of depressed mood. For psychometric properties of the

BDI-II with American college students please refer to (Carmody, 2005).

Cantril's Ladder. This assessment measure asks respondents to indicate, on a scale of 1-10, the

overall quality of their life as they currently experience it. Additional information can be found

in Cantril (1965).

Cultural Demographics Questionnaire. Participants were asked to complete a brief cultural

demographics questionnaire, where they were asked to report such information as their age,

ethnicity, and cultural and linguistic background. Note that all data was collected anonymously.

Procedure

Following a short introduction to the study and signing of the consent form, participants

were asked to complete a demographic information form, in which they were asked to provide

information about their age, bilingualism status, cultural and ethnic background and, for those

not born in the US or Canada, age of immigration. Data was collected anonymously and all

forms and protocols were labeled with a unique participant number only. This number cannot be

traced back to the participant's name.

Subsequently, four subtests of the WAIS-IV were administered by the researcher in the order in which they would normally be presented for a standard administration of the WAIS (Similarities, Matrix Reasoning, Vocabulary, Picture Concepts). Instructions for these subtests are presented orally and the participant is asked to provide verbal responses.

After completion of the WAIS portion of the study, participants were asked to complete a number of paper-and-pencil scales in the following order: Ego Identity Process Questionnaire, Beck Depression Inventory, Rosenberg Self Esteem Scale, Cantril's Ladder. Note that question #9 on the Beck Depression Inventory, which asks about suicidal ideation, was omitted for reasons of liability. Therefore, participant scores on the BDI-II cannot be compared to scores obtained from clinical samples where all the questions are considered.

Following completion of the experiment participants were given the opportunity to ask additional questions and obtain clarifications about any of the tasks they had been asked to perform.

Results

Descriptive Statistics

The sample consisted of 23 college students (9 male, 14 female) drawn from the Undergraduate Research Participant Pool at Rutgers University, New Brunswick. As will be discussed in more detail later, gender was not found to moderate the relationship between linguistic ability and any relevant measures of identity development, and therefore the two genders were combined for all analyses. As per the inclusion criteria for this study, all 23 participants identified English as their dominant language. 19 of the 23 participants were born in

the US. Of the remaining 4 participants, 3 immigrated to the US before they reached the 5th

grade. The remaining participant immigrated to the US at age 13, but reported that he attended an

English-speaking school in India. He reported that English is his dominant language and that he

had never been schooled in a language other than English. A stem-and-leaf analysis identified no

outliers on any of the relevant variables listed in *Table 1* below.

Table 1.

Means, Standard Deviations and Ranges for Relevant Variables (N=23)

Variable	M	SD	Range
Age	18.96	.928	18-21
Age_At_Immigration	1.26	3.292	0-13
WAIS_Similarities$^£$	12.39	2.743	6-17
WAIS_Vocabulary$^£$	13.04	2.531	7-18
WAIS_MatrixReasoning$^£$	11.74	2.158	8-16
WAIS_VisualPuzzles$^£$	9.43	2.465	7-15
WAIS_VerbalTotal*	25.43	5.035	13-33
WAIS_PerceptualTotal*	21.17	4.019	15-29
EgoID_Exploration (EgoID_E)	68.22	11.631	42-88
EgoID_Commitment (EgoID_C)	58.48	10.937	36-79
SelfEsteem	29.91	5.672	16-40
BDI	13.70	10.645	1-38
Cantril's Ladder (scale of 1-10)	6.39	1.751	3-9

$^£$*For these WAIS subtests the general population mean is 10 and the standard deviation is 3.*

*Note that since the full Verbal Comprehension and Perceptual Reasoning Indexes of the WAIS were not administered, the scores reported here cannot be compared to the population M and SD. Refer to the Methods section for a description of how these scores were derived.

Table 2.

Number and percentage of participants that fell in each of Marcia's identity categories

Identity Category	Number of Participants (% of sample)
Achieved	3 (13%)
Moratorium	14 (61%)
Foreclosed	4 (17%)
Diffused	2 (9%)

Correlation Analysis

Table 3 below highlights the correlations between all the relevant variables used in the present study. Among other things, these correlations were used to identify variables that are significantly correlated and cannot be used together in a regression equation. Unsurprisingly, all three measures of well-being (the BDI, the Rosenberg self-Esteem Scale and Cantril's Ladder) were significantly correlated (please refer to Table 3 for specific values). Note that higher values on the Rosenberg Self-Esteem Scale and on Cantril's Ladder indicate higher self-esteem and higher overall life satisfaction, respectively. These two measures were positively correlated with each other ($r = 0.66$, $p=<.01$). On the other hand, higher scores on the BDI indicate more depressive symptoms and are therefore indicative of a lower quality of life. The BDI correlated negatively with both the Rosenberg Self-Esteem Scale and Cantril's Ladder ($r = -.75$, $p = <.01$; $r = -.76$, $p=<.01$). As will be discussed in more detail below, the BDI was selected for use in the regression analysis because it is the most widely used measure of the three in both clinical applications and research.

As described in the Methods section, scores on two verbal comprehension subtests of the WAIS (Vocabulary and Similarities) were summed to derive a total WAIS verbal score and two perceptual reasoning subtests (Visual Puzzles and Matrix Reasoning) were summed to derive a total WAIS perceptual score. As expected, the Vocabulary and Similarities scores were highly positively correlated ($r = .82$, $p = <.01$), landing support to the validity of combining these two scores. Similarly, the Visual Puzzles and Matrix Reasoning scores were also highly correlated ($r = .51$, $p = .01$). The correlation between the total WAIS Verbal and WAIS Perceptual scores did not reach significance ($r = .39$, $p = .07$), lending support to the supposition that they reflect two distinct types of intellectual abilities. It is important to note that though there is evidence that verbal and perceptual abilities are distinct categories of intelligence, a significant and strongly positive correlation was found between scores on the Matrix reasoning subtest of the WAIS and both the Vocabulary and the Similarities subtests ($r = .55$, $p = .01$ for both). This finding is consistent with the observation that though different modalities (i.e. verbal vs. non-verbal) are used for these subtests, all three subtests have common elements. For instance, they rely on the use of logic. A more in-depth discussion of construct validity for different WAIS subtests is beyond the scope of this paper, and can be found in the diverse and extensive literature on the Wechsler scales (e.g. WAIS-IV Technical and Interpretive Manual (Psychological Corporation, 2008)).

Gender did not correlate with any of the other variables with the exception of scores on the perceptual component of the WAIS; specifically, the Matrix Reasoning subtest and the combined WAIS perceptual score ($r = -.48$, $p = .02$; $r = -.42$, $p = .05$). Since males were coded as '1' and females were coded as '2' for the purposes of the statistical analysis reported here, these negative correlations indicate that there was a significant relationship between being

female and obtaining a lower score on perceptual components of the WAIS (note that no such

significant correlations was found between gender and verbal components of the WAIS).

Similar gender effects in visuospatial perception have been repeatedly reported in the literature

(e.g. Halpern, 2000; Kimura, 1999; Maccoby & Jacklin, 1974) and the mechanism remains

controversial. One supposition is that males tend to outperform females on visual-spatial tasks

because it is much more common for boys, as opposed to girls, to play video games (e.g.

"shooters") that place heavy demands on spatial orientation skills. Since this finding does not

impact the hypotheses of the current study, a further discussion of this effect is beyond the scope

of this paper. For a more in-depth discussion the reader is invited to refer to an extensive review

of the relevant literature by Spence and Feng, 2010.

Importantly, a significant and negative correlation was found between scores on the Ego

Identity Exploration and Ego Identity Commitment scales that together comprise the Ego

Identity Process Questionnaire ($r = -.53$, $p = .01$). This indicates that there is an inverse

relationship between these two scores such that those who score lower on exploration tend to

obtain higher scores on commitment and vice versa. A discussion of this finding follows in the

Discussion section, but at present it is important to note that the fact that a strong negative

correlation exists between these two scales partly explains the fact that so few people in this

study were categorized as Identity Achieved (refer to Table 2), since this identity category

requires that people score highly on BOTH exploration and commitment.

Finally, a strong positive correlation was found between scores on Ego Identity

Commitment and scores on the Rosenberg Self Esteem Scale ($r = .52$, $p = .01$). In other words,

participants who tended to be more committed to a set of views and values also tended to report a

higher subjective sense of self-worth. No such relationship was observed between the identity

exploration dimension and any of the well-being measures, and the implications of this will be discussed in the Discussion section below.

Table 3.

Pearson Correlations between Relevant Variables (Significant Correlations Highlighted)

Pearson r	1	2	3	4	5	6	7	8	9	10	11	12
2-tailed Sig.												
1.WAIS Similarities		.82	.13	.55	§	.37	.07	.00	-.28	.02	.09	-.35
		.00	*.56*	*.01*		*.08*	*.75*	*.98*	*.20*	*.94*	*.68*	*.10*
2.WAIS Vocabulary			.13	.55	§	.38	.21	-.12	-.32	.01	.18	-.24
			.56	*.01*		*.08*	*.33*	*.59*	*.13*	*.95*	*.41*	*.28*
3.WAIS VisPuzzles				.51	.13	§	-.25	.03	.25	-.16	-.30	-.26
				.01	*.54*		*.26*	*.88*	*.26*	*.48*	*.16*	*.23*
4.WAIS Matrix					.58	§	-.20	.05	-.25	.24	.14	-.48
					.01		*.36*	*.83*	*.26*	*.27*	*.53*	*.02*
5.WAIS Verbal						.39	.15	-.06	-.31	.02	.14	-.31
						.07	*.51*	*.68*	*.14*	*.94*	*.53*	*.15*
6.WAIS Perceptual							-.26	.05	.02	.03	-.11	-.42
							.23	*.83*	*.94*	*.88*	*.61*	*.05*
7.EgoID Exploration								-.53	.23	-.35	-.02	.39
								.01	*.30*	*.10*	*.93*	*.07*
8.EgoID Commitment									-.39	.52	.37	.14
									.07	*.01*	*.08*	*.54*
9.BDI										-.75	-.76	.10
										.00	*.00*	*.66*
10.Self Esteem											.66	-.16
											.00	*.47*
11.Cantril's Ladder												.29
												.18
12.Gender												

§ - no correlations are provided between total WAIS scores and the subtests that were summed to derive them

Regression Analysis

Two separate regression models were built for the exploration and commitment dimensions of the Ego Identity Process Questionnaire (EIPQ). They are discussed separately below.

Regression Model with Identity Exploration as the Dependent Variable (Refer to Table 4).

When verbal intelligence (as measured by WAIS_Verbal), non-verbal intelligence (as measured by WAIS_Perceptual), well-being (as measured by the BDI), and gender were regressed on Ego Identity Exploration the overall model did not reach significance, $R^2 = .38$, F $(4,18) = 2.74$, $p = .06$. However, a main effect of verbal intelligence on identity exploration was found, $\beta = .49$, $t = 2.26$, $p = 0.037$. In other words, controlled for well-being, non-verbal intelligence and gender, there is a significant positive effect of verbal intelligence on identity exploration. A semi-partial correlation (sr^2) was used to estimate effect size. This measure estimates the proportion of the variance in the dependent variable (in this case, identity exploration) uniquely accounted for by variation in the independent variable in question (in this case, verbal intelligence). sr^2 for WAIS_Verbal was found to be .18, which corresponds to a moderate to large effect size. When assessing for differential prediction, no significant interaction was found between gender and verbal intelligence (Gender X WAIS_Verbal), indicating that gender is not likely to be a moderator in this model, $\beta = 1.67$, $t = 1.40$, $p = .18$. This finding provides evidence in support of the original hypothesis and indicates that verbal intelligence is likely to have a significant positive effect at least on the identity exploration dimension of ego identity as measured by the EIPQ. No significant main effects of non-verbal intelligence, gender or well-being were detected.

As stated previously, aside from the BDI participants also completed a measure of self-esteem (Rosenberg Self-Esteem scale) and were asked to report on their overall current well-being by rating it on a scale of 1-10 (Cantril's Ladder). As expected, all three measures correlated highly, which can be expected since all three reflect aspects of well-being. The BDI, being the most widely used and well-researched measure of the three was used in the regression model. As an additional test, the researcher standardized scores on all three well-being measures (the BDI, Rosenberg Self-Esteem Scale and Cantril's Ladder) and then averaged each participant's standard scores to obtain a combined well-being score. When this combined well-being score was used in the model instead of the BDI the main effect of verbal intelligence fell just slightly below significance, $\beta = .43$, t $= 2.05$, $p = 0.055$. It is quite likely that significance would have been reached with a bigger sample.

Regression Model with Identity Commitment as the Dependent Variable (Refer to Table 5).

When verbal intelligence (as measured by WAIS_Verbal), non-verbal intelligence (as measured by WAIS_Perceptual), well-being (as measured by the BDI), and gender were regressed on Ego Identity Commitment the overall model did not reach significance, $R^2 = .24$, $F(4,18) = 1.44$, $p = .26$. For the commitment dimension no significant main effect of verbal intelligence was detected, $\beta = -.24$, t $= -1.01$, $p = .33$. Likewise, no significant main effects were found for non-verbal intelligence or gender and no gender interactions were detected. However, a significant main effect was found for BDI scores, $\beta = -.49$, t $= -2.22$, $p = .04$, $sr^2 = .21$. In other words, lower scores on the depression scale (making one less depressed) were significantly predictive of higher scores on identity commitment (making one more committed to a set of beliefs and values), when gender and verbal and non-verbal intelligence were factored out.

Interestingly, when a combined well-being score (as described above) was used in place of the BDI to assess well-being the effect remained essentially unchanged. In other words, a significant main effect of well-being on identity commitment was detected, $\beta = .54$, t = 2.63, $p = .02$, $sr^2 = .27$.

   Taken together, the results of the two regression analyses can be summarized as follows: When controlled for non-verbal intelligence, symptoms of depression and gender, higher verbal intelligence tends to predict higher scores on identity exploration. Thus, participants who obtained higher verbal scores tended to report significantly more exploration of alternative sets of values and beliefs. For the commitment dimension of identity no such effect of verbal intelligence was found, but, controlled for gender, verbal and non-verbal intelligence a significant positive effect of well-being on identity commitment was detected. Thus, participants who tended to report higher overall well-being tended to report more commitment to a particular set of values and beliefs. Additionally, identity exploration and identity commitment are significantly negatively correlated with each other. The implications of these findings are discussed below.

Table 4.

Summary of Regression Model with Identity Exploration as Dependent Variable (DV)

Independent Variable (IV)	β Coefficient	t statistic	Significance	Semi-partial Correlation (sr^2)
WAIS_Verbal (Verbal Intelligence)	.492	2.259	.037*	.180
WAIS_Perceptual (non-verbal intelligence)	-.298	-1.369	.188	-
Beck Depression Inventory (BDI)	.348	1.750	.097	-
Gender	.385	1.852	.080	-
Overall Model: N = 23, R^2 = .38, F(2,18) = 2.74, *p* = .06				

* Result significant at α = 0.05

Table 5.

Summary of Regression Model with Identity Commitment as Dependent Variable (DV)

Independent Variable (IV)	β Coefficient	t statistic	Significance	Semi-partial Correlation (sr^2)
WAIS_Verbal (Verbal Intelligence)	-.234	-1.012	.325	-
WAIS_Perceptual (non-verbal intelligence)	.237	.983	.339	-
Beck Depression Inventory (BDI)	-.487	-2.220	.040*	.207
Gender	.206	.898	.381	-

Overall Model: N = 23 , R^2 = .242 , F(2,18) = 1.437 , *p = .262*

* Result significant at α = 0.05

Discussion and Conclusions

This study had two major hypotheses. Firstly, the researcher set out to investigate whether there is a link between verbal ability and identity exploration, hypothesizing that the two are positively correlated. Secondly, the author expected to confirm existing research that increased identity commitment is positively correlated with well-being. Both hypotheses have found support in the data reported here.

While the link between identity commitment and well-being is not a new concept and has been observed in numerous studies before (as was detailed in the introduction section), the

idea that verbal ability contributes to identity exploration is novel, and, to the best of the author's knowledge, has not been directly explored to date. The logic behind the proposed link between identity exploration and verbal ability hinges on the idea (described in depth in the introduction section of this paper) that individuals explore alternative identities, values, life goals and so forth by weaving various life lessons and insights into "life narratives" (McAdams,1993). These life narratives can have various levels of thematic coherence, complexity, and continuity in time and space. These elements have collectively been referred to in several studies as meaning-making processes (e.g., Bauer, McAdams & Sakaeda, 2005; McLean & Pratt, 2006; Pals, 2006). In other words, while some people weave life narratives that incorporate contemplative reflections on events and that evidence attempts at understanding general trends in their lives (e.g. why certain challenges tend to recur), other people tend toward simpler, more factual narratives (Pals, 2006). Additionally, there is preliminary evidence in the literature that there is a link between the lack of meaning-making processes in life narratives (i.e., simple and more factual narratives) and lower scores on identity exploration as measured by identity questionnaires (McLean & Pratt, 2006). The author proceeded from the assumption that quite apart from any other personal qualities, one's agility in the use of language has an obvious role to play in his/her ability to construct narratives. Thus, the author hypothesized that the relationship between verbal ability and identity exploration is mediated by narrative complexity such that higher verbal ability allows one to create more complex and meaning-laden life narratives, which in turn leads to higher scores on identity exploration.

Identity Exploration, Identity Commitment and Verbal Ability

The results outlined here support the initial hypothesis that higher verbal ability is correlated with higher scores on identity exploration. This effect had a moderate to high effect size and was not moderated by gender. No such link was found between verbal ability and identity commitment. These combined results provide preliminary support for the idea that individuals rely on narrative construction to mentally explore alternative identities, and that higher language skills may facilitate the creation of more sophisticated narratives and thereby facilitate identity exploration. Additional research is required in order to establish a more direct link between verbal ability and narrative complexity. This could be achieved, for example, by collecting narratives in addition to the other data collected in the present study and analyzing whether higher verbal ability can be directly linked to higher complexity and more meaning-making attempts in those narratives.

The findings reported here raise the interesting question of why identity exploration appears to be correlated with verbal ability, while identity commitment is not. A potential answer to this question can be obtained from a look at what identity exploration actually entails. The literature supports the idea that the process of exploration requires the creation and testing of hypotheses about the self, which take the form of verbal propositions (e.g. "I am the kind of person that…"; "I like X and dislike Y") (McLean, Pasupathi & Pals, 2007). It stands to reason, therefore, that a process that requires the creation of multiple alternative hypotheses would place heavy demands on narrative construction since at this stage one might be called upon to make sense of new experiences and decide how they fit in the context of one's previous life experiences (Singer, 2004). This is the stage at which one may either form a sophisticated story

with multiple links to past behavior and a "lesson learned", or, may simply code a factual bit of information (e.g. "event X took place today").

Conversely, the process of identity commitment is viewed in the literature as a process that involves making a choice between different "possible selves" – deciding which of the alternative possible self-narratives one wants to live by and develop further (Dunkel, 2000). By way of a simplified example, during the identity exploration stage of identity formation one may have tried both authoritative and authoritarian parenting techniques with his/her children, coded both attempts in the form of a story, and created a more or less complex narrative (as the case may be) regarding the outcomes of each attempt. During the identity commitment stage, one supposedly will have to choose between an "authoritative parent self" and an "authoritarian parent self" and commit to one of these styles of parenting. The reader can appreciate that, if one subscribes to the overall model of identity exploration and identity commitment reviewed in this paper, the stage of identity commitment is a stage that places much lower demands on narrative construction and higher demands on other personal qualities and their interaction with environmental factors.

For instance, a person who is constitutionally more prone to seeking to be in control, and one who was raised by authoritarian parents may be more likely to choose authoritarian values. Moreover, the literature suggests that such a person will be more likely to construct narratives that support the utility of authoritarian values (Bauer, McAdams & Sakeda, 2005). However the case may be, for the purposes of the current discussion the most important point is that the identity exploration stage of identity development appears to be the stage that places heavy demands on narrative construction, while the identity commitment stage appears to lean more heavily on other skills. This observation is a likely explanation for the link demonstrated in this

study between identity exploration and verbal ability. Of course, it is important to keep in mind that the current study is correlational in nature and thus causality cannot be inferred. There is a possibility that the link can be explained in the opposite direction. Namely, it is possible that people who get more practice, or are more interested in identity exploration develop better verbal skills. It is also possible that a third variable not explored in the current study causes people to have both higher verbal ability scores and higher identity exploration scores. Future research on this topic is required to answer these questions.

Identity Exploration, Identity Commitment and Well-being

The results of the current study support existing research and show a strong link between higher scores on identity commitment and higher well-being. This link was demonstrated in the original regression model in which lower scores on the BDI (signifying fewer depressive symptoms) were significantly predictive of higher identity commitment scores. The effect was maintained when a combined well-being score (which was obtained by standardizing and averaging scores on the BDI, the Rosenberg Self-Esteem Scale and Cantril's ladder) was used in the regression model in place of BDI scores. No link was observed between well-being and identity exploration scores.

As described in the Introduction Section, belonging to a high-commitment identity status has been shown in past research to be predictive of better functioning in multiple areas of life, including fewer symptoms of psychopathology, better physical health, better adjustment to stressors and more (e.g. Luyckx, Soens & Goosens, 2006; Luyckx et al., 2008). Though, again, one must be cautious not to infer causality from a correlational study, the most widely accepted explanation for this recurrent result is that there is a certain peace of mind inherent in having a

good sense of who one is and what values one represents. While high scores on identity

exploration, which have often been linked in the literature to higher anxiety (e.g. Kidwell et al.,

1995; Luyckx et al., 2008), imply that one is in a state of turmoil and is facing some uncertainty

regarding who he/she is, high scores of identity commitment imply that with respect to at least

some important questions in life one has reached a stage of relative stability and certainty. Most

readers will be able to appreciate by inspection of their own life experiences how difficult

uncertainty can be (e.g. being uncertain about which major to choose in college) and the

tremendous relief one can experience once the choice is made (e.g. once one has settled in a

certain major and becomes fairly certain that it suits him/her and that he/she is willing to

graduate with it and follow the career path it implies).

It is important to point out that while this study found the predicted link between identity

commitment and well-being, a negative correlation between well-being and identity exploration

was not observed, despite the fact that it has been repeatedly demonstrated in other studies as

sited above. This is likely due to the fact that the sample in the present study was fairly small

and, as can be attested to by the fact that the majority of the sample fell in the identity

moratorium identity status, the majority of the sample obtained fairly high scores on the identity

exploration dimension. It is possible that with a larger sample, and more variability in the data,

an effect would have been detected.

A Note on the Negative Correlation between Identity Exploration and Identity

Commitment

The reader might recall that when simple correlations were computed between variables

(refer to Table 3), a significant negative correlation was found between scores on the identity

exploration and identity commitment scales of the EIPQ. This implies that identity exploration and identity commitment, at least as they are conceptualized in the EIPQ, have an inverse relationship whereby high commitment is predictive of low exploration and vise versa. On the one hand, this finding can be seen to make sense: When one is actively exploring alternatives it stands to reason that he/she has not made a commitment yet, and once one has made a commitment it is implied that he/she has finished exploring, at least to some degree. Viewed from a different perspective, however, this finding is somewhat alarming. Recall that in order to be classified as identity achieved one needs to score high on both commitment and exploration, demonstrating that one has both actively explored and committed to a set of values. Would a measure where the exploration and commitment scales are strongly negatively correlated not be biased against classifying anyone as identity achieved? Likewise, would there not be a bias against classifying anyone as identity diffused, which is a status low on both exploration and commitment? Indeed, if one looks at the results of the current study (refer to Table 2), the majority of participants fell in the moratorium and foreclosed statuses (a combined 78%) which require high scores on one or the other of the exploration and commitment scales (but not both), and only 22% (combined) fell in the achieved and diffused categories. This result may of course represent a true trend in the college population at the college from which participants were drawn, or it may be an artifact of the low sample size in the current study. However, it is important to consider the possibility that it may reflect a certain bias in the measurement instrument. Luyckx et al. (2006) have used the EIPQ in their research on identity and made a similar observation – namely, that the exploration and commitment scales seemed to be negatively correlated. In a subsequent study, Luyckx et al. (2008) proposed that identity exploration should be divided into reflective exploration (which the authors defined to include

exploration in depth and exploration in breadth) and ruminative exploration, which the authors

defined as a fruitless and recursive process of self-doubt. Luyckx et al. proposed that unlike

reflective exploration, which eventually leads to identity commitment, ruminative exploration

does not lead to commitment, and in fact delays commitment by causing a person to

continuously doubt his/her choices and observations in an obsessive manner. That is, the authors

proposed that ruminative exploration is the component of exploration responsible for the

negative association between exploration and commitment. In their 2008 study Luyckx et al.

developed and validated a new identity questionnaire (the Dimensions of Identity Development

Scale, DIDS) aimed at separating ruminative exploration from reflective exploration. Since the

present study was more concerned with scores on the individual exploration and commitment

scales than with identity statuses, and since the EIPQ remains one of the most parsimonious and

well-studied tools available in the literature for this purpose, it was well-suited for the purposes

of the current study. However, future studies, especially those concerned with identity statuses,

might consider supplementing or replacing the EIPQ with a questionnaire such as the DIDS in

order to ensure that the achieved and diffused identity categories are captured accurately.

Policy Implications

While the confirmation of the link between identity commitment and well-being is

valuable, the main novel contribution of the current study to the literature on identity formation

is the link between identity exploration and verbal ability. To the best of the author's knowledge,

this avenue in research has not been pursued previously and the current study is the first to link

identity development to verbal ability. One important implication of this finding concerns the

weight that needs to be placed in schools on developing language skills (e.g. through serious

study of literature) and the importance of early interventions for children who enter school with

poorer vocabularies, who are identified as struggling readers, etc. Admittedly, the importance of

language development is already widely recognized by teachers and policy makers (Gibbons,

Dali, & Stallworth, 2006), and many school districts are already hard at work attempting to

remediate the vocabulary gap between children from higher vs. lower SES homes entering

kindergarten and the first grade (Beck & McKeown, 2007). However, until now only the

academic and career success ramifications of poorer language development have been widely

acknowledged. The finding that there may be a link between verbal ability and something as

basic as identity development implies that there is an additional hidden cost to the widely

acknowledged gap in vocabulary and reading levels between higher and lower SES children

(Fernald, Marchman & Weisleder, 2013), and the stakes might be even higher than previously

believed. For example, this finding might imply that poorer language development might be

detrimental to career success even for those individuals who are not on an academic track and

who intend to learn trades. Furthermore, in so far as poorer verbal ability might predispose

someone to less robust identity exploration and subsequent identity diffusion, gaps in language

development between higher and lower SES children may partly explain a multitude of negative

life outcomes that are disproportionately observed in disadvantaged neighborhoods (Bradley &

Corwyn, 2002; Luo & Waite, 2005). Thus, the observation that verbal ability and identity

development are potentially linked may serve as an additional incentive to devote human and

financial resources to improving literacy and language development among children from lower

SES homes.

It is important to note that the current study uses portions of a cognitive assessment

battery to assess verbal ability, and since intelligence is considered essentially stable (Sattler,

2008), one can argue that not very much can be done to impact verbal intelligence as such –

one's verbal IQ simply is what it is. Even if this were true, one certainly hopes that not very

many educators and mental health professionals hold the view that if someone tests low on

verbal intelligence the best course of action is to simply give up on that child as a writer and/or

reader – on the contrary. Most conscientious teachers and school psychologists would offer

interventions aimed at helping this child develop skills despite what may be a natural area of

weakness. Additionally, despite the fact that intelligence is indeed a remarkably stable trait, there

are nonetheless studies that show that intensive early interventions can impact cognitive

development in children (Burchinal, Campbell, Brayant, Wasik & Ramey, 1997).

Limitations and Directions for Future Research

One obvious limitation of the current study is its small sample size. A larger sample size

could allow not only for more power to detect effects that may exist but have not come to the

surface here (such as a negative correlation between identity exploration and well-being), but for

a more nuanced understanding of the effects that were detected. For instance, with a larger

sample size there would likely be enough participants categorized into each of the four identity

statuses (i.e. achievement, diffusion, moratorium and foreclosure) to allow for statistical analysis

not only of the continuous exploration and commitment scores, but also of the categorical

identity status data. Such an analysis could answer questions such as whether membership in

either high exploration category (i.e. identity achievement and identity moratorium) is linked to

higher verbal ability, or whether the link exists preferentially for one or the other of those.

Further, a larger sample size would have allowed for more nuanced analysis of demographic

data. For instance, with more participants it would have been possible to ask questions about gender effects (even though this was not an initial goal of the current study).

It should be noted that one potential reason for the difficulty in recruiting more subjects is associated with the recruitment method used in this study. As the reader will recall, participants were recruited through the research participant pool at Rutgers University, where the study was advertised under the title seen here (i.e., "Verbal Ability and Identity Development"). It is possible that the use of the term 'verbal ability' alerted potential participants to the fact that some form of intelligence testing will be conducted, which may have caused some participants to opt for less anxiety-provoking studies. This circumstance may have led to some degree of restriction in range of verbal ability among the individuals who did choose to participate, since it is possible that individuals who were more confident in their verbal abilities were more likely to sign up for the study. The researcher does not believe that this potential range restriction significantly affected study results, since it appears that the range of verbal ability in the sample was sufficient to obtain significant results. However, one wonders whether a bigger range (and therefore, more statistical power) could have been obtained with a more neutral study title.

Another significant limitation of the present study is that it uses only one measure of identity status (the Ego Identity Process Questionnaire, EIPQ) which, according to more recent research, reflects only one aspect of identity exploration and identity commitment, namely, exploration in breadth and commitment making. However, as described in detail in the Introduction Section, the processes of identity exploration and commitment are now believed to include exploration in depth, which differs from exploration in breadth in that it focuses on researching existing commitments, as opposed to exploring new ones, and identification with commitment, which involves becoming more comfortable with commitments already made

(supposedly, after a process of exploration in depth, during which a person collects additional evidence to support the validity of an already-made commitment) (Luyckx et al., 2006). As mentioned previously, ruminative exploration is another, ineffective type of exploration that more recent studies also consider. Thus, since measures have been developed to assess these additional forms of exploration and commitment, future studies would benefit from using more than one identity questionnaire to widen our understanding of the link between identity formation and verbal ability. For instance, the current study found no link between verbal ability and identity commitment, which, as mentioned before, could be explained by the fact that commitment making is often conceptualized as simply choosing between stories that have already been constructed during the identity exploration phase (Luyckx, 2006). However, the process of identification with commitment supposedly involves explaining to oneself why a commitment that has already been made is in fact a good one. It stands to reason that this process would again rely on narrative construction and it would be interesting to see whether a link between identification with commitment and verbal ability exists.

Future studies would also benefit from collecting and analyzing narratives, as well as collecting identity status data. An analysis of narrative complexity and structure vis-à-vis verbal ability scores could more directly demonstrate whether lower verbal ability scores are in fact linked to less complex narratives, narratives with fewer insights, some combination of these, or perhaps some other aspect of self-narratives.

Finally, an ambitious future project could include a detailed interview with participants in addition to data collection. It would be interesting, for instance, to learn more about the subjective experiences of participants who fall in each of the four identity categories and to gain a more nuanced understanding of their level of adjustment and overall well-being. One

interesting question that could be raised is the influence of culture on participants' propensity to engage in identity exploration and its influence on their narrative styles. To be more specific, it stands to reason that different cultures have different styles of story-telling in general, which might be reflected in the way they narrate life events to their children, in the stories they read and pass on from generation to generation, and so forth. Different cultures also likely put emphasis on different aspects of experience (e.g. unity vs. individual achievement), which likely influences how people weave various life events into their overarching life stories. It would be interesting to obtain more culturally rich data that could potentially combine information about participants' verbal ability with their cultural perspective on life in order to understand how the two interact to influence the self-narratives they construct and the type of identity exploration they engage in.

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