

The Psychological Birth of the Genius: The Relationship between Eminence and Defense Mechanisms

Young-gun Ko¹ and Jin-young Kim

Korea University; Korea University

Abstract. Through the use of biographical evidence, this study compares defense mechanisms between a prodigy (Robert J Oppenheimer) with low scientific eminence and a late bloomer (Niels Bohr) with high scientific eminence. The results suggest that in the transition process of the gifted the use of sublimation does not guarantee high eminence, rather the convergence of lower level defenses to the high adaptive level defenses is the more important factor. Based on these results, the psychological birth of the genius is discussed.

Keywords: Genius, Prodigy, Late bloomer, Defense mechanism, Niels Bohr, Robert J Oppenheimer

1. Introduction

People tend to believe that ‘gifted children, especially prodigies, go on to become eminent and creative adults’ (p. 312). However, studies on child prodigies demonstrate that only a few child prodigies are able to achieve the level of eminent creators. [1]

Although many researchers have been interested in geniuses' transition processes, doing research on this topic is very difficult. One of the difficulties is that the effect of emotional maturation and the effect of artistic or scientific talent may be complicatedly inter-wound in the lives of geniuses. For example, it is very difficult to differentiate whether a salient difference in eminence between two geniuses originates in their talents or other psychological factors. Therefore, a special methodology is required to distinguish one effect from the other.

Science may be a typical domain wherein prodigies and late bloomers coexist. The academic area dealing with an investigation of the natural world is a domain with a relatively high percentage of prodigies due to its easy accessibility to children. At the same time, late bloomers in the natural sciences, who had not been assessed through intelligence tests as child prodigies, have managed to achieve higher eminence than child prodigies. For example, William Schockley and Luis Alvarez, who were not identified as child prodigies in Terman's study, received a Nobel Prize, achieving higher scientific eminence than the Terman's prodigies. [2]

However, a systematic study on the relationship between the defense mechanisms and the transition process of the gifted has not been reported yet. In this context, this study compares defense mechanisms between a prodigy with low scientific eminence and a late bloomer with high scientific eminence.

2. Method

2.1. Criteria for Prodigy and Late Bloomer

A prodigy is defined as ‘a child who is able to perform at or near the level of an adult professional in an intellectually demanding field’ (p. 299). [3] For the definition of late bloomers, this study adopts Winner's (1996) position that late bloomers tend to discover their own talents after entering college.

2.2. Eminence Indices

The criterion for eminence as used in this study is based on Murray's (2003) eminence indices. [4] The criterion for high eminence is classification among the upper 25% of Murray's (2003) eminence indices, while low eminence is classification among the lower 25%.

2.3. Subject Selection Procedure

In the process of studying creativity of geniuses, Ludwig (1995) gathered extensive biographical information on over 1,000 extraordinary men and women. [5] From them we searched for a prodigy with low eminence and a late bloomer with high eminence who would satisfy the following criteria: belonging to the same cohort group (persons born within a limited span of about twenty-two years); specializing in the same subject; and having similar societal, economical, and cultural family background. Robert J. Oppenheimer and Niels Bohr fulfilled these conditions most nearly. Therefore, this study casts Oppenheimer and Bohr as protagonists for the analysis of defense mechanisms of historical geniuses.

2.4. Oppenheimer as a Prodigy

Oppenheimer was the research director of the Manhattan project where the first atomic bombs were designed and made. According to Royal (1969), he was a child prodigy in intellectual matters. [6] At the age of twelve, he made his scientific debut, presenting his first scientific paper.

2.5. Bohr as a Late Bloomer

Bohr was one of the representative theorists in quantum physics and the winner of the 1922 Nobel Prize in Physics. Bohr appears to be a typical late bloomer. It seems possible that Bohr's being a late bloomer originated from his difficulties in written expression. Some researchers (e.g., Shaywitz and Shaywitz, 2005) have argued that Bohr had a disorder of written expression, one of the subtypes of a learning disorder. [7] Although he was not assessed with the standardized tests which the Diagnostic and Statistical Manual of Mental Disorders (4th ed.; DSM-IV; American Psychiatric Association, 1994) would now require, it seems evident that his writing skills were below his age, intelligence, and education level. [8]

2.6. Comparison of Scientific Eminence between Oppenheimer and Bohr

Murray's (2003) physics inventory reports that Bohr's index score is 51 and Oppenheimer's, 5. Bohr's index score is at the 97 percentile and Oppenheimer's is at the 24 percentile.

2.7. Evaluation of Defense Mechanisms

The DSM-IV defines defense mechanisms as 'automatic psychological processes that protect the individual against anxiety and from the awareness of internal or external dangers or stressors' (p. 751). This study utilizes the Defensive Functioning Scale (DFS) of the DSM-IV in order to assess the defense mechanisms.

3. Results

3.1. Bohr's Defense Mechanisms

Bohr mainly used immature defense mechanisms in adolescence. For example, he displayed acting-out; the more he was not allowed, the more intensively and rebelliously he conducted the prohibited behaviors. Once he tore a psalm book into pieces and threw them onto a playground from the second floor; also he played ball in class with a big bag stuffed with fruit peel. [9] But most of the defense mechanisms Bohr used in adulthood were mature ones.

In adulthood Bohr primarily used the defense mechanisms at the highest level, the high adaptive level. For example, Bohr, a clasher in adolescence, became a physicist who dealt with the clash phenomena of light and electrons in the invisible world, enabling him through sublimation process to manage his inner aggression. Also, when Germany announced the anti-Jewish ordinance, he dedicated himself to helping the Jews escaping from Germany even though he himself was grieving his losses of the early 1930s; this altruism may have served to overcome the guilt feelings over not being able to save his family. [10]

3.2. Oppenheimer's Defense Mechanisms

One of the most serious problems for Oppenheimer was identity. Like his parents, he appeared to want to conceal his Jewish heritage. [11] For example, during his school days he once asked Smith 'if he could travel under the name of Robert Smith to disguise his Jewishness' (p. 370). Oppenheimer used acting-out in rebellious adolescence. He expressed his inner aggression through offensive behavior, resulting unhappiness in others.

Even in adulthood, Oppenheimer used low level defense mechanisms, displaying all seven levels of defense mechanisms. For example, he once used psychotic distortion at the defensive dysregulation level. While studying at Cambridge, Oppenheimer experienced a psychological crisis and, while hallucinating, tried to poison Patrick Blackett, a colleague and future Nobel laureate. [12] Blackett was a handsome, brilliant, and highly skilled experimenter. Oppenheimer seemed to have had ambivalent feelings of strong jealousy as well as respect (Smith and Weiner, 1980). Oppenheimer's friend John Edsall regarded this event as evidence of Oppenheimer's rivalry with Blackett, believing that Oppenheimer's hallucination must have related to his jealousy of Blackett. [13] Oppenheimer was then diagnosed with dementia praecox, schizophrenia in contemporary psychiatric classification. [14]

In adulthood Oppenheimer also used some defense mechanisms at the high adaptive level. As a nuclear physicist who dealt with plutonium named after Pluto, 'a god of the earth's fertility but also the god of the dead' (Rhodes, 1986, p. 355), Oppenheimer was able to express his inner anger in a more productive way in adulthood using sublimation. In particular, according to Bird and Sherwin (2005), as director of the Institute for Advanced Study Oppenheimer showed an empathetic attitude toward John Nash, the protagonist of *A Beautiful Mind* who shared psychiatric ordeals similar to his own, by inviting him to the Institute. Indeed, this seems to evince altruism.

3.3. Comparison of Defense mechanisms between Oppenheimer and Bohr

In general, people show transition from low to high levels in the use of defense mechanisms on their way to maturation. These changes are recognizable in the lives of both Oppenheimer and Bohr. However, Oppenheimer used both low and high levels of defense mechanisms even in adulthood, displaying all seven levels of defense mechanisms defined by the DSM-IV. That is, his defense mechanisms did not converge to mature mechanisms, but remained scattered over various levels. Contrary to Oppenheimer, Bohr in adulthood primarily used the defense mechanisms at the high adaptive level, suggesting that his defense mechanisms converged to mature mechanisms.

4. Discussion

According to the results, the reason that Oppenheimer achieved lower eminence than Bohr, even though he had showed a higher level of scientific eminence than Bohr until adolescence, is related to "defense dispersion"; it is not that he did not use mature defense mechanisms. Defense dispersion refers to the phenomenon that defense mechanisms do not converge to mature mechanisms and remained scattered over various levels.

In adulthood Oppenheimer used some mature mechanisms. He did use some of the defense mechanisms at the high adaptive level: sublimation, suppression, and altruism. Contrary to Bohr, however, his use of defense mechanisms displayed defense dispersion.

With the integration of all the aforementioned, a genius may be considered as being born twice. First birth is being born as a prodigy. Second is a psychological birth as seen in late bloomers.

The results suggest two important implications regarding the birth of the genius. First, the psychological birth process is far more essential to high eminence than being born as prodigies. If unsolved problems remain in the process of the psychological birth of the genius, being born as prodigy does not then guarantee his or her acquirement of high eminence. On the other hand, late bloomers with a successful completion of the process may attain high eminence. Second, convergence to mature defenses is more important in the process of the psychological birth of the genius than mere existence of mature mechanisms. That is, the intermittent use of mature defense mechanisms in adulthood does not guarantee acquirement of eminence at a high level.

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