The Cultivation of Innovative Talents in a Collectivistic Social Environment

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Abstract

Educational research nowadays pays little attention to how innovative talents are cultivated under the East Asian education system influenced by Confucian culture. This qualitative study interviews Taiwanese innovators as a case study, and the analysis focuses on their school experience and parents' attitudes towards education. In an exam-driven school system that stifles one's creativity, evidence of this study highlights the parents' parenting styles of innovators provide more encouragement and flexibility to develop innovative skills. The findings suggest that innovative talents grow in the family environment where their parents pass on traditional morals but with less control and less emphasis on academic achievement, allowing innovators more space for self-exploration and developing intrinsic motivation. Generous parental support and trust provide a love, stable and safe environment where variation, innovation, and novelty can blossom.

Keywords Innovative Talents, Innovative Skills, Innovators, Confucianism, Taiwan Education

1. Introduction

1.1 Background and Motivation

The changing job climate and rapid technological advancement are transforming the nature of work. Currents of thought have seen innovation as a key driver for a more competitive national economy and a better sustainable living environment for the future(S. M. Lee & Trimi, 2018; Wagner, 2012). Individuals who possess creativity and innovation ability are among the most valuable assets of any economy or company. The lack of innovation will cost national competitiveness dearly in the future. Accordingly, the problem of how to nurture an individual's innovative skills in an exam-driven school system that stifles children's creativity(Zhao, 2017)challenges parents and educators.

Education is a social-cultural process. Previous research has shown that childrearing in East Asia practices with distinctive cultural traits(Chou & Spangler, 2016). East Asian societies, particularly those influenced by Confucianism, generally attach importance to education, and educational systems are inclined to attribute learning outcomes to children's effort more than innate ability (Ripley, 2014; Stevenson & Stigler, 1992; Y. Zhou & Wang, 2016). East Asian parents believe that various levels of effort primarily cause learning gaps, and the length of study time indicates the degree of effort. Viewing education as the route to social status and material success(Da & Welch, 2016; Starr, 2012),East Asian education systems compel children to spend most of their time preparing for the examinations. The social environments focus education on pursuing academic achievement rather than exploring an individual's interests.

The exam-oriented education in Chinese Society in Taiwan has overwhelmingly dominated the education system for decades and has been a constant source of stress for both children and parents. Despite repeated efforts at educational reform in Taiwan for alleviating students' academic pressure, competition has become an end unto itself, not the learning it is supposed to motivate. The fixation on rankings and test scores is crushing the learning interest of children and young people, depriving them of their passion and confidence. According to the Ministry of Education statistics, the number of Taiwanese university students who dropped out of school exceeded 186,000 in 2019, accounting for 15.3 percent of all students. The reason is mainly due to incompatibility between their studies and interests. Furthermore, more and more students graduate from college knowing how to pass exams but less motivated to discover things on their own-the essential practices of innovation.

Although innovation skills can be nurtured, taught, and mentored (Amabile & Pillemer, 2012; J. Dyer, Gregersen, & Christensen, 2011; Wagner, 2012), the development of innovators requires matching values and methods to be effective. One of the serious problems with education in Taiwan is that it takes children much time, but what it trains is not the ability children need in the future. Continuous adult direction, rote memorization, standardized tests, and conforming pressure restrict children's innovation skills development. In a society with collectivist cultural values that promote community over individualism and hierarchy over merit(J. Dyer et al., 2011), students seek to avoid appearing different from others and learn to restrain themselves from maintaining group harmony(Kim, 2005). The fear of making mistakes or feeling embarrassed keeps many students discouraged from inquiry and curiosity and silent. There is no concerted effort to nurture children's creativity in Taiwan schools. In that way, how Taiwanese innovators cultivated are?

In *The Innovator's DNA*, the authors (2011)discovered that almost all the disruptive innovators, in their childhood recollections, mentioned that at least one adult, such as a parent or teacher, in their lives paid personal attention to their innovation skills. Either parent or teacher played an influential role in fostering their innovation skills as they grew into adulthood. Support their curiosity, value their questions, a secure and stable childhood allows them to explore, take risks, and try entirely new ways of living and being. Tony Wagner, Harvard education expert, also found that the young innovators he has interviewed, from privilege and poverty, were far more intrinsically motivated. Wagner identifies a pattern from every case: play, passion, and purpose intertwine in innovators' lives and lie at the heart of their intrinsic motivation(2012). What these innovators, despite different backgrounds, have in common is having parents or outlier teachers who support them in pursuing their passions and make a significant difference in their lives. Their research findings reveal that parenting and teaching styles can compensate for the lack of creativity development in schools.

1.2 Problem Statement and Research Objectives

So how to parent innovative skills of young people in the Taiwanese setting where the education system values academic outcomes most? A good way to look into an educational system is to look through the eyes of innovators who have ever experienced its quality of learning. However, rarely do the literature studies about the learning experience of Taiwanese entrepreneurs or innovators. Were they all successful at academic achievement before, so that they lead to successful job careers now? What different roles do parents play for innovators' education in a Confucianism society which influences Taiwanese collective cognition and values? How do parents affect the way they turn out? There has been relatively little in-depth research into the family values for education that adopts Taiwanese innovative talents' perspective, especially from their own experience at home, school, work, and life.

This article explores the nurture of innovators in Confucianism cultural context, focusing on innovators' schooling experience and their parents' attitude towards education, attempting to answer the following questions by using Taiwanese innovators as a case for investigation:(1) To what extent do innovators' parents involve in their education? (2) How do Taiwanese innovators have more flexibility out of the pressures of school?

This study begins with discussing the existing literature and relevant theoretical frameworks, followed by a discussion of research methods and the sample of research participants. Findings are presented thematically with quotes. The study concludes with a discussion and conclusion, indicating that although formal educational settings are ineffective in cultivating innovative talents, individuals can acquire innovation skills from their ecology of the family - childrearing values and practices.

2. Literature Review

2.1 The Skills of Innovators

Recent research indicates that innovation skills are not simply a genetic endowment but can be developed.In *The Innovator's DNA*, authors Jeff Dyer, Hal Gregersen, and Clayton M. Christensen(2011) discovers that different types of innovators (e.g., startup entrepreneurs, corporate entrepreneurs, product innovators, and process innovators) have numerous similarities. These innovative people consistently engage more in questioning, observing, networking, and experimenting behaviors to spark new ideas than typical executives. Their study provides that almost all the disruptive innovators mentioned that at least one adult in their lives paid personal attention to their innovation skills and sustained nurture them as they grew into adulthood. The experts (J. H. Dyer, Gregersen, & Christensen, 2008; Sawyer, 2006; Wagner, 2012) believe that individuals can become more creative and innovative through given the right environment and opportunities.

According to Wagner (2012), innovators are far more intrinsically motivated. Intrinsic motivation is a vital determinant of creativity across multiple populations and contexts (Amabile & Pillemer, 2012).Many studies have shown that children's engaging in play is where learning happens with intrinsic motivation (Elkind, 2007; Gray, 2015).Play is an

activity conducted primarily for its own sake. Dr. Russ(2013) views play as a vehicle for creative expression and an opportunity for a child to generate new ideas. Once children have mastered a skill over repetitive play, they want to innovate and extend the limits of what they have learned. Russ also attempts to relate childhood experiences of play and creativity to later adult creativity in the sciences and the arts. As Elkind (2007) states, after artists or scientists have mastered the discipline's basic skills, they are ready to innovate and go beyond and challenge the frontiers of what has been already learned. Now, the value of play is served to develop the capacities of employees to become more innovative. Successful high-tech firms such as Google and Pixar, companies that require innovation and creativity, intentionally set aside time and space for play.

Driven by accelerating globalization and faster technological developments, the workplace will need more task types of decision-makers, leverage resources, and make decisions(Raconteur, 2016).To prepare for tomorrow's world of work, people with attitudes and behaviors of flexibility, resilience, collaboration, enterprise, and creativity are the next wave of talents(UKCES, 2014). Lee and Trimi (2018)argue that innovations, nurtured and harvested in the culture and environment where creativity is valued, can disrupt barriers to a smart future. Given this perspective, children and young adults need a new ecosystem of learning. The Organization for Economic Co-operation and Development (OECD) has identified that innovation is one of "Transformative competencies" young people need to navigate through uncertainty(OECD, 2016).Future-ready students will need both broad and specialized knowledge; innovation increasingly springs through cooperation and collaboration to draw on existing knowledge and create new knowledge.

2.2 East Asian Parenting styles and Creativity

As the first and most potent socializer, parents bear responsibility for meeting the needs of children and helping them acquire cultural knowledge to become competent members of society. The remarkable expansion of public interest in childrearing is underpinned by the assumption that there is a direct causal link between the quality of parenting and social outcomes(E. Lee, Bristow, Faircloth, &Macvarish, 2014). In a world where schooling determines success, many parenting focuses on getting children to learn more, learn better, and learn faster. The high value placed on education in East Asia leads to a high level of parental devotion to their children's education, which contributes to Asian students' academic achievement (Zhao, 2018).There has been much cross-cultural research concerning Chinese parents' contribution to their children's education to explain the learning gaps between Chinese and United States and other Western societies(Hsin & Xie, 2014; M. Zhou & Wang, 2019).

Chinese parents view education as the route to social status and material success. Rooted in Confucian philosophy and the social mobility system, Chinese parents have "pressure on children to succeed at school"(Starr, 2012). They pay immense attention to their children's education, hoping that their sons will become dragons and their daughters are phoenixes one day. The parent is a motivator and facilitator to encourage children to work hard and succeed in school(Haynes & Chalker, 1998). East Asia parents are also dedicators willing to putting almost all their resources toward their children's education, including money, time, and energy(Kim, 2005). According to *The Value of Education* (HSBC, 2017), the survey shows that parents in Chinese society are the most likely to have decreased or wholly suspended leisure activities and holidays. East Asian parents spend a much more significant proportion of their income on children's education than Western parents.

Emphasizing education may decrease creativity through a work-play dichotomy and a devaluation of play (Chou & Ching, 2012; Chou & Ho, 2007). Recent research has shown that it is through play that learning happens. Play contributes to having more motivation, having more focus, learning more effectively, and being more resilient (Davies et al., 2013; Elkind, 2007; Gray, 2015). Although more and more educators provide insight into the relationship between play and creativity, most East Asian parents regard creativity as somehow a frill and an extracurricular activity, something that's kind of nice to have but not essential. Consequently, it is not uncommon for East Asian parents, such as "tiger mom" and "helicopter" parents, to discourage or prohibit any activity seen as distracting from children's education.

Tiger mom parenting believes that education leads to positive social movement, and hard work can beat talents."Tiger moms" do not believe in play and will not allow their children to fail(Chua, 2011; Lichtman, 2011). On the other hand, parental angst can result in "helicopter" parenting (Elkind, 2007).Helicopter parents often engage in hyper parenting, overprotection, and over-programming(E. Lee et al., 2014). They take the responsibility to cultivate children's potentials and tend to indulge and insulate their children from failure at all costs. Wagner has noted that neither kind of parenting is likely to produce innovators or entrepreneurs(2012).

Moreover, the family system values may stifle creativity through rigid parent-child relationships and an overemphasis on obedience, filial piety, and loyalty(Lau, Hui, & Ng, 2004).Filial piety underlies the definition of authority relationships and, more generally, the ideological conservativeness of Confucianism(Ho, Xie, Liang, & Zeng, 2012).East Asian children inculcated with Confucian filial piety are more willing to conform to parents' expectations than Western children. While a child learns that being obedient and making a personal sacrifice to help the family is valued, one will reduce willingness to question the status quo and authority or express one's thoughts (Chou & Spangler, 2016; Raj &Raval, 2013). As Zhao(2017) has argued: "An individual cannot be compliant and creative at the same time."The hierarchical relationship between parents and children exists an intrinsic tension and limits flexibility and creativity.

2.3 Educationin Taiwan

Like other East Asian societies, Taiwan's society has been influenced by Confucian values, which emphasize credentials and the practice of taking examinations(Chou & Ching, 2012; Chou & Spangler, 2016).Although Taiwan's education system has been through repeated efforts at reform, students' academic pressure remains a crucial issue to be addressed by various sectors of Taiwan. Taiwan has low fertility rate, yet cram schools keep popping up(Liu, 2012).Attending cram schooling is typical for improving students' abilities for taking tests on academic subjects. According to the Ministry of Education statistics, 17,400 cram schools in Taiwan in 2021, which was 14,000 more than 20 years earlier.

Existing research on Taiwanese education focuses much on proving the effectiveness of practices in determining children's performance. For example, researchers have examined the approaches to mathematics teaching for students' high performance (Leung, 2001, 2006; Siu, 2004; Wang, 2016), the efficiency in afterschool programs (Cheng & Jacob, 2016; M. Zhou & Wang, 2019; Y. Zhou & Wang, 2016), and the relation of social and cultural capitals with students' academic performance(Chou & Ho, 2007; Da & Welch, 2016).Many contribute to how to enhance students' ability in test scores but not learning interests.

Compared with European and American countries, Taiwanese students have better academic performance, but they are not happy. As Yong Zhao has observed about students in Asia, the focus on passing exams reduces the enjoyment and the intrinsic value of the studied subjects (Zhao, 2018).Despite their top performance in international tests such as TIMSS and PISA, Taiwanese students consistently have reported lower confidence in math. The OECD Programme for International Student Assessment (PISA)also shows that the percentage of Taiwanese students satisfied with life is a low level - below the OECD average (OECD, 2019). In this regard, research indicates that learning climate is closely associated with students' confidence in their abilities and affects their interests and sense of well-being.

3. Methodology

Based on the theoretical underpinnings, this paper aims to explore two researchquestions:

(1) To what extent do innovators' parents involve in their education?
(2) How do Taiwanese innovators have more flexibility out of the pressures of school?

Qualitative research was carried out to explore an innovator's education experience in the context of Taiwan families and how their family has impacted their development of innovation skills. This research interviewed 18 Taiwanese innovators aged 30 to 45 and studied their family ecology. Based on a set of pre-set question structure guides the interviewees to recall the way their parents view education, the way of family interaction, school life, and influence. This paper tries to find out which interaction modes are helpful for the development of interest and innovation skills.

Among the 18 interviewees, they all have received the Nine-Year Compulsory Education, the curriculum from primary to junior high school, which started to be implemented in 1968 in Taiwan.

Of the 18 interviewees, 15 have completed their university education in Taiwan, and the other three have completed their university education abroad. Of the 15 respondents who completed their university education in Taiwan, six continued to obtain a master's degree in Taiwan, and nine completed a master's degree abroad. Of the three respondents who completed their university education abroad, two continued to obtain a master's degree. To sum up, of the 18 Taiwanese innovative talents, 15 have a master's degree, and 11 have experience in the foreign education system.

To assess whether these 18 respondents are innovative talents, besides understanding their work content and form, they also get a high score on discovery skills through Christensen's "Discovery- and Delivery-Skills Quiz," indicating that they have excellent innovation skills

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4. Findings

The research findings suggest that among the parents of innovative talents, attitudes towards schoolwork, some require high standards for grades, and some do not. However, parents who have requirements for grades are mostly stricter in the elementary period and then gradually loosen their attitude towards grades. According to the interview, although most interviewees felt intense pressure from formal schooling during the junior high school and high school periods, their parents would no longer put pressure on schoolwork. On the contrary, they can feel stable support and trust from their families.

The interviewees had taken some extracurricular courses when they were children, such as painting lessons, calligraphy, English lessons, and piano lessons. Almost everyone particularly has the experience of learning piano, reflecting a kind of collective cultural awareness and beliefs about childrearing among their parents. In addition to schoolwork, Taiwanese parents also value their children's artistic abilities and talents. Sharing and exchanging similar experiences is very common among Taiwanese parents (Chou & Spangler, 2016).Moreover, interviewees' family collections indicate that their parents hardly compare school grades and test results with other children, different from ordinary Chinese parents who favor comparing their own and other children. Table 1 shows the evidence by quotes from the interview of innovative talents about their parents' attitudes toward academic performance in different school stages. In Table 2, the quotes from the interview express their parents' support and trust for encouraging their aspirations.

Table 1 Parental attitude toward academic performance in different school stages

School Stages	Parental Attitude toward Academic Performance
Elementary school	"My mother is the kind of mother who is "relaxed" to our academics. My parents never told me that I must take the first place in the exam or something, never."
	"I have always been happy in elementary school. My mother took me home after class. We went to buy afternoon tea together, then chatted and watched TV at home. In my impression, I have not been forced to get good grades. Apart from being scolded for not finishing homework of summer and winter vacations, I have not been forced to get good performance at school."
	"Adults usually help children find out which school is good, so my parents helped me choose this elementary school at that time. Intellectual education is usually the most important in our age, but this school pays more attention to group education and aesthetic education. The school often organizes team competitions, and there are many art and music courses."
	"They don't seem to ask me much in my schoolwork. If I get a bad score in the exam, my parents are not angry, but exhort me."
	"I was a kid who studied spontaneously. My dad never tried to govern my schoolwork ever, even neither did my mom. Although my mother demanded good academic performance, she didn't intervene too much."
	"I don't think there is any particular discipline in my family. My parents may blame me for some big mistakes I made but hasn't blamed me because of my poor grades."
	"My mother chose to send my elder brother and me to the experimental elementary school. The experimental elementary school focuses on academic performance and has various extracurricular activities, such as taekwondo. My brother is a good student, but I am not. I don't like to write homework. However, our family doesn't punish me via grades."
Junior high school and High school	"My mother is very opposed to duck-filling education, so this is why I have had almost no afterschool tutoring since I was a child. Because she believes that learning is to concentrate on what teachers taught in class and then take a solid review at home."
	"When I was in junior high school, I had to take exams every day, so I am under much pressure at school. But fortunately, my parents did not give

	me pressure when I was at home. They thought I could go to vocational school alternatively if I couldn't pass the college entrance examination."
	"My family has a very good way of education, which means that parents will not force children to study and become somebody, but the only condition is that you cannot be a bad person. There is not much pressure on whether my academic performance is good or not. I got much time to explore myself."
	"My mother is the kind of person who doesn't force her children to study at all. She even asked me to travel abroad a month before my college entrance examination."

Table 2 Parental support and trust for the aspirations of innovative workers

The aspirations of innovative workers	**Parental support and trust**
Clothing design	"My dad is a teacher, but I don't think he has any high expectations in my schoolwork. I think he cares more about cultivating my interest."
Drama and design	"Although they sometimes have some traditional concerns and values for a future career, their actions are supportive, which encourages me to pursue the dream I want."
Visual narration and production	"I am a person with a clear goal. I knew early on what I wanted to pursue and what I wanted to be. Coupled with my family's support, they didn't stop me from going this way; that is my luck."
Programming and UX/UI design	"My parents play a very laissez-faire role. They provide enough financial resources and care about me, but they never say what I should become. I think they took little intervention in my development."
Travel-related business	"My mom's highest principle is that if you are happy to make this decision, then you do it. But before that, she helps you analyze what situations would happen, pro and con, and then let you make your own decision. If what I made is a wrong decision or the consequence is not good, I know my mom won't blame me."
Human–machine interaction	"I think I am fortunate. My parents gave me space and financial support. They allowed me to go abroad. Taiwan's education ruined me single-handedly because I have been different from others since childhood. I am a late bloomer, and Taiwan's education system does not give late bloomer any chance because it is a consistent and homogenizing education."
Commercial space design	"I am very grateful to my parents that they let me go to the United States to study. Although my father doesn't know about design, he thinks that I should go to a big city to study space design. He said that big cities have culture and museums, and many different buildings, which can enlighten me."

4.1 Less control, more support, psychological safety

Compared with typical East Asian families, the parents of innovative talents in this study are not an analogy to "tiger mom" or "helicopter" parents. They chose schools for their children and arranged extracurricular courses, but they did not insist on high learning outcomes standards, which mean not trying to make a particular kind of child. Therefore, when young innovators were under the pressure of schoolwork, anxiety for preparing for high-stakes tests for the college entrance exam, the family became a relatively comfortable place, providing warmth and support.

According to the interview, the innovators believe that their parents would not intentionally praise them for their excellent grades or compare them with their siblings' academic performance. Confronted with grades, their parents pay more attention to morality and good behavior. Many innovators said they pursued academic achievement because of self-demand; getting good scores was out of their intrinsic motivation, not complied with authority.

Although the Taiwanese education system may compel students to spend all their time preparing for the examinations, this study found that innovators have more autonomy in their families, decide whether to participate in extracurricular tutoring classes, choose university departments and develop aspirations. They felt psychologically safe with their parents, allowing them to regain their suppressed interests from the education system and explore their possibilities.

4.2 Play, potter, social competence

One of the remarkable skills of innovators is the capacity for social networking and having the courage to challenge the status quo.The innovative talents in this study have good social skills and other related competence, such as loving to know people with diverse backgrounds, being good at social interaction, and cross-field cooperation. During the interview, they usually answered questions in a fast, flexible, and fluid fashion.

In the elementary school memories of innovative workers, most think they have much time to play after school. As long as they finish their homework, they can play. Play with siblings or neighbor kids, play at home, play in the park, the woods, or the farmland. Even if sometimes parents arrange extracurricular courses for them, such as piano, calligraphy, writing, painting, or dancing, they still have spare time to play. However, of all the extracurricular courses, they agree that learning the piano is the most painful because practicing it is time-consuming and no fun. They love music and enjoy playing the piano, but not like the strict way of instruction. As the research shows, play is fun and inherently social. For innovators' development, play is associated with better social competence later on. Through variability and messiness, play helps an individual learn in robust, flexible, and creative ways.

In the challenging period of junior high school and high school, increased pressure and studying long hours are in every teenager's life in Taiwan. Most teenagers are not allowed to engage in interests or sports that have no contribution to academic performance. Nonetheless, innovators in this study recalled that they still had the opportunities to participate in extracurricular activities or freedom from test anxiety in a high-stakes environment. There are similarities among their experiences found in their interviews. More than twelve innovators said that their parents allowed them to arrange their own time after school class as adolescents, such as hanging around in the bookstore, enjoying watching movies, or playing basketball.

Two innovators had the experience of studying high school abroad. One studied high school in Australia and liked to play tennis after school. "Because my friend's house has a tennis court, I play tennis with him quite frequently. Sports are valued there. I never knew I liked sports when I studied in Taiwan." Now he owns a start-up company, and he is also a tourist ski instructor in winter. The other one studied in the United States. He was in Arizona, climbing in the mountain almost every day after school. "Do you know what I was doing after school? I went to the mountains, where the scene was stunning with the cactus and the sunset. I climbedand spent the time just pottering around in the mountains almost every day. So today, I have developed a habit of climbing mountains. I like nature."After climbing and pottering around outside, he went home to draw. His teacher encouraged his drawing and recommended him enter the university, but he didn't even know he could draw when studying in Taiwan.Now, his career life is abundant in design and nature.

In summary, it shows that innovative talents, given the opportunity, have more flexibility out of the pressures of school. Following a different, less conventional path in his or her role, each of their parents allowed young innovators to make decisions and trusted their judgment. This flexibility will enable them to be agents of their own learning and prepare them to be lifelong learners.

5. Conclusion

In response to two research questions, the study has found that the family plays a vital role in cultivating personal innovation skills. Under Taiwan's social and cultural environment that highly values education, the innovators interviewed in this study believe that their parents did not particularly emphasize academic achievement and were not worried about where they might lead in terms of a career. Parents and children can reach various goals in the long run, not just academic achievement in the short run. This implies that less emphasis on academic results leads to the development of children's capacity for autonomy.

This study confirms that the development of innovators requires matching values and methods to be effective. Less academic pressure during young adult age and generous parental support and trust is helpful to the development of innovation skills. Less academic pressure allows space for self-exploration and learning about things one likes, not because of other people. Generous parental support and trust provide a love, stable and safe environment where variation, innovation, and novelty can blossom. Unlike many Taiwanese parents who reward the "old school" behaviors of compliance to authority and strive for conventionally defined "success," parents who can nurture innovative talents have innovative educational values because they break through the values constrained by exams and standard answers.

Since educational researchers have paid little scholarly attention to the growth background of innovative talents in East Asia, the contribution of this study reviews the school education experience and parental values for education from the perspective of innovative talents in Taiwan culture context. The findings indicate that the family's values and lifestyle could be the platform for innovation. Furthermore, in the face of accelerating globalization and a faster rate of technological developments, transformative competencies have become more relevant than ever for the young generation. Through the response of innovative talents, the cultivation of confidence is also significant for their passion and purpose, others such as tolerance of differences, international outlook, logical deduction, self-drive power, which are lacking in the entire educational environment in Taiwan. Therefore, today's innovators are more conscious and different from traditional views on the next generation's education and well-being, worthy of further research.

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