

Context-Specific Learning, Personality, and Birth Order

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Abstract

Most people believe that learning to get along (or not get along) with their siblings played an important role in shaping their personality, and that their position in the family—oldest, youngest, or in the middle—had lasting effects. Yet studies of birth order generally fail to support these beliefs. The apparent contradiction can be resolved by taking into account the context-specific nature of learned behavior. There is abundant evidence that people do not automatically transfer behavior from one context to another: They wait until they have evidence that what they learned in Context 1 will also be useful in Context 2. Because patterns of behavior acquired in the family of origin tend to be useless or inappropriate in other settings, birth order effects show up only in that context. Outside the family they grew up in, firstborns and later-borns are indistinguishable in personality.

Keywords

birth order; personality; context-specificity; transfer of training

A young baby lies in a crib, looking up at a mobile hanging over her head. Yesterday she learned something interesting about a mobile like that. A researcher tied one end of a ribbon to the baby's left ankle, the other to the mobile, and

the baby discovered—to her delight—that she could make the mobile jiggle by kicking her left leg.

But that was yesterday. Does she still know how to make the mobile jiggle? Only if the important features of the setup remain unchanged. If the red doodads hanging from the mobile were replaced with blue doodads, or the crib liner is decorated with squares instead of circles, or the crib was rolled from the bedroom to the den, the baby will stare at the mobile cluelessly, as if she never saw such a thing in her life (Rovee-Collier, 1993).

The baby's cluelessness provides a clue to one of the enduring puzzles in psychology: the puzzle of birth order. Most large, well-controlled studies of birth order yield no significant effects, or only small effects that do not hold up from one study to the next. Most reviewers of such studies have concluded that birth order has no important effects on adult personality. Nevertheless, most people—and many psychologists—continue to believe that birth order has a formative influence on personality. Why is there still no consensus on an issue that should have been settled long ago? The answer rests on the way behavior is affected by context.

IS THERE TRANSFER OF TRAINING?

Detterman (1993) surveyed 90 years of research on transfer of training—the degree to which

learned behavior is repeated in a new situation. His conclusion: Transfer between two situations occurs only if the situations are highly similar. Even then it is rare.

Failure to transfer makes participants in learning experiments appear unintelligent. The baby stares cluelessly at the mobile. The schoolchild stares cluelessly at a problem that could easily be solved with a technique learned on a similar problem. In real life, however, failure to transfer could be adaptive. It is risky for the baby to assume that what worked in one situation will work equally well in another—better to tread cautiously at first and assume nothing.

That, the evidence suggests, is how babies are designed. The learning device they come equipped with is not incapable of transferring learning from one situation to another, but it is biased against doing so. Not to transfer is the factory default setting.

CONTEXT-SPECIFIC BEHAVIOR

Looking for cross-situational similarities in behavior is a traditional research technique in psychology. Is personality stable or is it dependent on context? Correlations between behavior in different contexts are used to support one view or the other. Is a child's behavior influenced by the parents? Correlations between behavior with parents and behavior with peers are used to support the view that experiences with parents influence the child's behavior in other social contexts.

If the two contexts are not very similar, the correlations tend to be low. For example, children who behave in an obnoxious manner (hostile, uncooperative, or bossy) with their parents do not necessarily behave that way with their peers

(Dishion, Duncan, Eddy, Fagot, & Fetrow, 1994). Children who are dominated by older siblings at home do not run an increased risk of being dominated by their peers (Abramovitch, Corter, Pepler, & Stanhope, 1986). Children who are timid with adults are not necessarily timid with peers, and vice versa (Rubin, Hastings, Stewart, Henderson, & Chen, 1997).

But the correlations are generally above zero. Dishion et al. (1994) found a correlation of .19 between obnoxious behavior with parents and obnoxious behavior with peers. Rubin et al. (1997) found that some children are timid in every situation. Does this show that experiences in one situation influence behavior in other situations? Not necessarily.

GENETIC AND ENVIRONMENTAL INFLUENCES ON BEHAVIOR

Studies of twins and adoptees indicate that genetic influences account for a substantial portion of the variation—the individual differences from one person to another—in most measures of behavior and personality. These studies have also shown that environment, too, has important influences on behavior and personality. In a theoretical article (Harris, 1995), I proposed that the genetic component of personality influences behavior in every social context, but that the acquired, or environmental, component is firmly linked to the context in which it was acquired. This hypothesis, stripped to its essentials, is diagrammed in Figure 1.

Support for this hypothesis was provided by Saudino (1997), who summarized the results of recent studies using a technique called multivariate genetic analysis. This

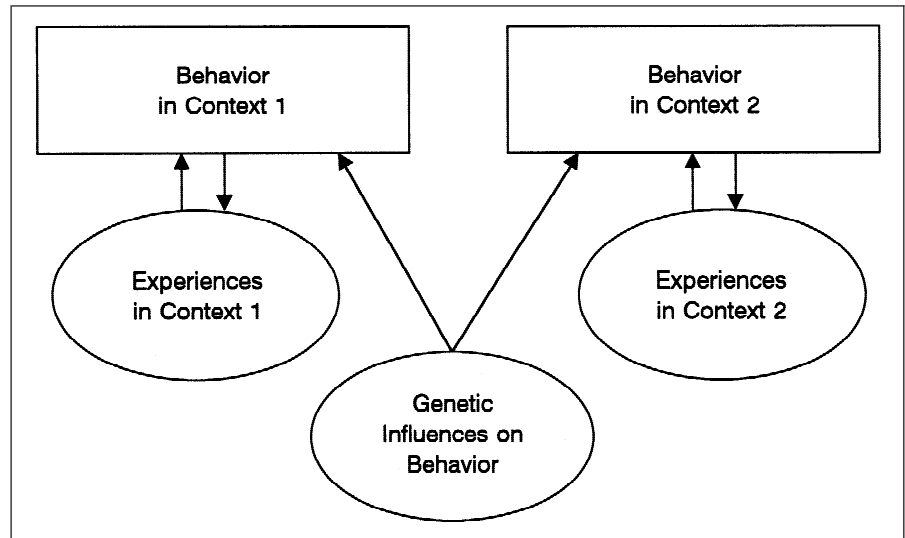


Fig. 1. Genetic and environmental influences on behavior in two separate contexts (Harris, 1995). Genetic influences affect behavior in all contexts and can produce similarities in behavior across contexts. Similarities in behavior can also be the result of similar experiences in the different contexts. Behavior in a given context affects experiences in that context.

technique enables researchers to assess the degree to which genetic and environmental influences each contribute to the correlations found between behavior in different contexts. In one study, children's shy or timid behavior was assessed at home and in the laboratory. The observed correlation between shyness in the lab and shyness at home was due almost entirely to overlapping genetic effects, reported Saudino. In contrast, differences in shyness between home and lab were due almost entirely to environmental factors. Some children are timid wherever they go because they were born with a tendency to be timid; others are timid only in certain contexts because of what they experienced in those contexts.²

The results of the multivariate analyses have a surprising implication. Because most personality tests are designed to look for cross-situational consistencies in behavior, the underlying personality dimensions they identify may be largely genetic in origin. Indeed, McCrae and Costa (1999) have recently proposed that the five com-

ponents of their Five-Factor Model of personality are "endogenous basic tendencies" (p. 144) with a biological basis.

Nevertheless, heritability estimates based on standard personality tests are seldom above .50. Endogenous basic tendencies have to express themselves in specific behaviors, thoughts, and feelings that are acquired through experience. And people's experiences in different contexts often have a lot in common. Similarities between behavior in two contexts are not necessarily an indication that the behavior is genetically influenced—they could be the result of similar experiences.

For example, most American children speak English both at home and in school. The similarity in behavior is due, not to an inherited tendency to speak English, but to the fact that the relevant experiences have been similar in the two contexts. The children have learned that English works in both places. On the other hand, children readily adapt to two separate language contexts. They may speak Korean at home and English at school,

switching between them with remarkable nonchalance. Eventually, however, one language usually wins out over the other. The language these children will take with them to adulthood is the one they speak outside the home (Harris, 1998). They retain the behavior that works in the contexts they will inhabit as adults and leave behind the behavior that worked only within their family of origin.

In short, children learn separately how to behave in each of their social contexts. Previously acquired behaviors are carried along to a new context only if they prove useful there. Often, behaviors acquired at home are counterproductive outside the home. Later-born children who are dominated by older siblings at home would be unwise to assume that they will be dominated wherever they go, and research has shown that they are no more likely than firstborns to allow themselves to be dominated by their peers (Abramovitch et al., 1986). Age differences between siblings make birth order important at home, but outside the home children in developed societies associate mostly with their age-mates.

RESEARCH ON BIRTH ORDER AND PERSONALITY

The apparent simplicity of birth order as an independent variable makes it a perennial favorite among students in search of a dissertation topic. Unfortunately, there are hidden complexities in studying birth order. To do the job properly requires sophisticated, careful researchers and enough participants to provide an adequate sample from families of various sizes and socioeconomic levels—ideally, a cast of thousands.

Among the first to meet these requirements were the Swiss re-

searchers Ernst and Angst (1983), who not only surveyed 35 years of earlier work on birth order but also did a study of their own. They gave personality tests to 7,582 young adults, measuring 12 aspects of personality, including extraversion, neuroticism, and openness. No significant differences in any aspect of personality were found between firstborns and second-borns from families with two children. In families of three or more, there was one significant difference: Last-borns were slightly lower in masculinity than their older siblings.³

Ernst and Angst (1983) used a standard self-report personality test. Their study yielded essentially negative results, as did the majority of large, well-controlled studies in their survey of the birth order literature. But Ernst and Angst noticed that studies of one particular kind generally yielded positive results: those in which respondents judged the personalities of family members. For example, when parents judged their children's personalities, they tended to describe their firstborns as serious and responsible, their later-borns as cheerful and independent.

To account for the discrepancy between family judgments and results obtained with other methods, Ernst and Angst (1983) proposed an interesting hypothesis: Firstborns and later-borns may indeed develop different patterns of behavior, but they may behave that way only in the presence of their parents. "The firstborn personality may be *parent-specific*" (p. 171, italics theirs).

Fast-forwarding to the present, I will describe three studies that are representative of recent work on birth order.

Hauser, Kuo, and Cartmill (1997) used personality-test data from the Wisconsin Longitudinal Study: 9,000 adult respondents, of whom 4,990 had siblings in the

study. The researchers compared firstborns with later-borns from the same family and concluded that birth order was not related to any of the "Big Five" dimensions of personality.

Freese, Powell, and Steelman (1999) used survey data from a representative national sample of 1,894 adult respondents, including hundreds of sibling pairs who were compared directly, to test Sulloway's (1996) claim that firstborns are more conservative, supportive of authority, and punitive than later-borns. "We find no support for these claims," the researchers concluded (p. 207). Even the non-significant effects were not in the right direction.

In contrast, Paulhus, Trapnell, and Chen (1999) did find significant birth order effects. Based on the responses of 1,022 college students and middle-aged adults, these researchers concluded that firstborns are more conscientious and achieving, later-borns more rebellious. The respondents were asked to compare themselves with their siblings, and their siblings with each other, by indicating which member of their family was the academic achiever and which was the most rebellious. Firstborns were most often named, or named themselves, as achievers. Later-borns were identified as rebels.

Within the family, this is how firstborns and later-borns are perceived. But is it an accurate picture of what they are like in the world outside the family? In a gargantuan study—63,344 participants—Blake (1989) looked at educational attainment as a function of birth order and family size. Educational attainment was unrelated to birth order in small and medium-size families. In large families, it was the two youngest siblings who were most likely to graduate from high school and go to college. In this respect, at least, they showed no inclination to rebel.

YOU CAN LEAVE HOME WITHOUT IT

Why do many psychologists, and most nonpsychologists, continue to believe that birth order has important effects on personality? I believe this persistent belief is based, not on research evidence, but on subjective impressions. When we think about birth order, we think about people whose birth order we know. These are people—close relatives, for example—whom we have seen in a family setting. We observe how they act, even in adulthood, when they are with their parents and siblings, and we assume that they act the same in other contexts. It is an unwarranted assumption. The evidence indicates that patterns of behavior developed in the family setting are not carried along to other contexts—Ernst and Angst (1983) got it right. There is little or no transfer of training because patterns of behavior acquired at home are likely to be inappropriate or irrelevant outside the home.

Birth order affects the way we behave with, and feel about, our parents and siblings. These behaviors and feelings are left behind, along with other mementos of our childhood years, when we leave home.

IMPLICATIONS

Research has shown that half the variation in adult personality, measured with standard personality tests, cannot be attributed either to

genes or to environmental influences shared by siblings who grew up in the same home. Consequently, attention has turned to environmental influences within the home that are *not* shared by siblings. But if within-the-home differences in environment were responsible for the unexplained variation in personality, then we should find substantial differences between firstborns and later-borns on standard personality tests, and we do not. The unexplained variation remains unexplained. It is time for researchers to look elsewhere—outside the childhood home—for the sources of the nongenetic variation in adult personality.

Recommended Reading

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Notes

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2. Context-specific genetic effects have also been found, which means that genes can contribute to differences, as well as to similarities, between behavior in different contexts. This additional complication, which appears at this point to be a minor one, is not shown in Figure 1.

3. Interestingly, this result has held up. Feminine behavior in boys and homosexuality in men have been found to be more prevalent in individuals from larger families and later birth orders, perhaps due to intrauterine effects on prenatal development.

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