Delay of Gratification: the Experiments of Walter Mischel

People vary considerably in their ability to rein in acquisitive and hedonistic urges, and understanding this may prove valuable in understanding health risk behaviors such as promiscuity, taking drugs or eating inappropriately. Some clues may derive from studies of delayed gratification.

Walter Mischel and colleagues carried out a series of experiments between 1968 and 1974 on the ability of four year-old children attending a nursery school to delay gratification. The experimental paradigm involved offering each child a choice between having a treat, such as a cookie or a marshmallow, immediately, versus receiving a larger treat (e.g., two cookies) after an unspecified delay. In a plain room, the experimenter would seat the child at a table with the first treat and a bell, explaining that he had to go out for a while, but the child could ring the bell at any time to call him back in and could then eat the treat. Alternatively, if the child preferred, he could stay seated at the table until the experimenter returned (generally after 15 minutes) and would then get the larger treat. The dependent variable was the duration of delayed gratification. The children were observed and the ways they tried to distract themselves from the temptation were recorded; successive experiments tested various independent variables such as whether the treat was in plain view or concealed and whether the child was advised on ways to distract him or her from the dilemma. While the core experimental results concerned delay of gratification under varying experimental circumstances, the result of interest here is that the children were recontacted at several intervals during their adolescence and adulthood. Their length of delay at age four was then compared against subsequent academic success, intelligence, social competence, coping ability, drug use and marital happiness.

When recontacted in 1981-82, at around age 15, the initial length of delay predicted parental judgments of their coping ability, planning ability, anxiety, motivation and intelligence, with correlations in the range 0.4 to 0.58 (1, Tables 2 and 3). However, this result only held for the ‘pure’ experimental paradigm: the one in which the reward was exposed in full view and the child was given no instruction on how to avoid the temptation (N = 43). When followed to 18 years of age (in 1984), the baseline delay scores significantly predicted Scholastic Aptitude Test scores for (correlation 0.42 for verbal scores and 0.57 for quantitative scores; N = 35). Again, however, this held only for one of four experimental groups, while among children in three other paradigms the correlations were not significant, and actually fell in the opposite direction (1, Table 4; 2, p936). This suggests that, although an enduring trait concerned with patience, attention to detail and the ability to use cognitive cooling strategies appear very early in life, these can apparently be masked by environmental manipulation and do not provide a very robust prediction of subsequent development. In the interim, therefore, Mischel’s team postulated further personal and situational characteristics that might modify the association between early delay of gratification and subsequent behaviors. One such characteristic was sensitivity to rejection – a person’s tendency to anticipate that they will be rejected by other people, and the anxiety this causes them. This would appear to hold potential relevance to health because it will predict a person’s success in forming friendships with others, and also in predicting their tendency to pursue behaviors in order to gain a sense of belonging to a group (3). Subsequent follow-up in 1993-95, when
the study participants were around age 27, therefore studied the interaction of the original delay of gratification with rejection sensitivity. Outcomes included ratings of self-esteem, self-worth and coping (made independently by the person themselves and by their parents); educational attainment, and use of crack cocaine and other drugs. The consistent finding was that delayed gratification scores at age four significantly predicted outcomes for the high rejection sensitivity group but not for those low in rejection sensitivity. Thus, people who people with high rejection sensitivity who had performed well on the delay of gratification experiment years earlier had outcomes no different from people with low sensitivity to rejection. However, those with high apprehension of rejection but who had a poor ability to delay gratification consistently had worse outcomes: less positive overall functioning, lower educational attainment, and more cocaine use. Effect size is difficult to interpret from the article, but appears to be about three-quarters of a standard deviation for the measure of positive functioning, and about the difference between a Bachelor’s and a Master’s degree in education: i.e., a substantial difference among people who felt anxious about rejection between those low and high in delayed gratification. The existence of the interaction indicates that we should not expect a simple, direct link between early ability to delay gratification and subsequent outcomes. Instead, that early ability to delay gratification confers “a fundamental protective mechanism that shields individuals against the negative interpersonal and intrapsychic consequences of their chronic personal vulnerabilities. . . The protective mechanism studied was the ability to strategically control attention in the service of long-term goals.” (3, pp787-788). A further study applied these analyses to teenagers in a poor neighborhood of the Bronx, New York, following participants over a three-year period from age 11 (3, p784). Perhaps the most striking finding was that the group of adolescents who were high in sensitivity to rejection and also in delay of gratification were rated by teachers as having better interpersonal functioning than those low in rejection sensitivity. The authors noted: “. . . because high RS people are typically concerned about preventing rejection and gaining acceptance, they are also motivated to establish and maintain smooth relationships. Having the competencies that allow them to self-regulate in the face of frustrating and aversive interactions with others that otherwise tend to trigger automatic maladaptive responses may thus enhance high-RS people’s efforts to maintain good social relationships.” (3, p787).

How may skill in delaying gratification arise? In a subsequent study, Mischel’s team traced the link upstream, to 18-month old infants. Would variations between infants at age 18 months predict delayed gratification later on? The team studied how toddlers reacted to being briefly separated from their mother, and correlated this with the mother’s parenting style, classified as controlling or not. The research was cast in the hot/cool conceptual framework of coping styles, and toddlers who reacted to their mother’s absence by using cooling strategies, such as distracting their attention by focusing on play, were expected to experience less negative affect and subsequently be more able to delay gratification at age five. More specifically, a cooling coping style was expected to be effective with a controlling mother, whereas an approaching coping style might be appropriate with a non-controlling mother (4). During the experiment, the mother was called out of the room where she had been playing with the child, whose reaction was then observed. The results showed that toddlers who used active distraction strategies (such as playing with a toy) to take their minds off the absence of their mother showed less distress, and this also predicted their use of an effective strategy to cope with delay of gratification time 31/2 years later. The mother’s style was then factored in. For children of controlling mothers, moving away to explore when the mother approached the child predicted longer delay of gratification: by 18
months, the child had already learned to distance him or herself from a mother perceived as intrusive. For children of less controlling mothers, the opposite was true; those children who moved towards their mother, perceiving her approach as an effort to engage instead of an interruption, had longer delay of gratification times and used more cool coping strategies (4, p774). Thus, if patterns of early child development are formed in part by parenting style\(^1\), the question arises of whether there is an association between parenting style and social class – the starting point of our journey. It also raises the question of whether we learn our parenting style from that of our own parents, thus perpetuating the cycle and leading to relatively stable differences across generations, and perhaps between groups.

The finding that simple characteristics of children at age 18 months can predict a wide range of outcomes 20 and more years later is striking and reinforces the importance of a lifecourse perspective. And yet, the finding that the link only holds for certain sub-groups of people reminds us that we should not expect a simple, mechanical link between personality and health. It also tells us that studying behavioral or environmental risk factors in large groups of people in the epidemiological research paradigm that ignores individual differences in vulnerability will, at best, produce only lukewarm associations. Instead, we need to conceptualize the associations in terms both risk and vulnerability factors, and bring qualitative aspects of the situation back in. We should anticipate that associations will vary across sub-groups of the population.

Before leaving the work of Walter Mischel and his colleagues, some comments on the study are in order. The work used an experimental paradigm, with relatively small and homogeneous samples drawn (initially, at least) from a middle-class group, a nursery school affiliated with Stanford University. A subsequent did, however, replicate some of the analyses on a poorer, urban sample (3). The retention rates for the follow-up studies were sometimes as low as 25%, and participation was apparently biased towards those with more successful baseline performance in the delay task (1, pp979-980). Perhaps the keynote finding is that the associations are complex. We do not observe a simple, quantitative association between length of delay at age four and performance at age 18, but there was an association between the young children’s style of coping with the temptation at age four and their test results at age 18 (5). The association between delayed gratification and subsequent performance only occurred in some of the experimental groups, so the link depends critically on how the delay paradigm is applied. Here, young children who found a way to ignore the stimulus were slightly more successful at age 18 than children who coped with the temptation by focusing on the rewarding aspects of receiving the larger reward (5). Furthermore, as Shoda et al noted, even the highest correlations obtained only account for about 25% of the variance (1, p985).

Shoda, Mischel and Peake offered several potential explanations for the association (1, p985). A sociological explanation concerned the stability of the family environment: security and consistent child rearing may support the child’s ability to delay gratification and also foster success in coping with adolescence. A social psychological view holds that the qualities that support self-imposed delay in early childhood form part of “intelligent social behavior” that includes intelligence, social skills, and problem solving competency.

\(^1\) Perhaps in partial reaction to the toddler’s temperament
The impression is that traits associated with delayed gratification are laid down very early in life; it seems plausible that these characteristics may be relevant for health in middle age. The ability to plan ahead may predict a person’s commitment to giving up unhealthy lifestyles; the ability to stave off immediate gratification may predict success in avoiding addictions. The coping mechanisms used by those who can delay gratification are relevant to handling a range of other stressors using cool, rather than hot, reactions (6).

References


