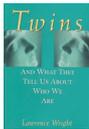


## Lawrence Wright "Twins: and What They Tell Us About Who We Are" (1997)

Written by Eric Walberg Эрик Вальберг/ Уолберг □□□□□ □□□□

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Lawrence Wright, *Twins: and What They Tell Us About Who We Are*, John Wiley & Sons, 1997.

These notes summarize the main findings of twinning studies during the past century which lead to some startling conclusions.

- behaviorism (BFSkinner) argued all behavior genetically based (we are the product of natural selection) but can be programmed in the individual. he denied special genes for altruism/ criminality/ other character trait -what our genes give us is the capacity to adapt to our environment. we are not innately good/ bad, rather determined by our environment. there is no individual responsibility. to change behavior we must design a different environment.
- but twin studies suggests genetic basis to behavior (approximately 50%, ie, 1/2 determined, 1/2 'free will' which we develop by creating our own environment as we mature and become more self-aware)
- 1920s Cyril Burt psychologist for London County Council in charge of mental testing -studied separated twins and found no difference in IQs from different class adopting parents.
- intelligence heritability roughly .8 -but no single gene for intelligence (or even height).
- identical twin (**monozygot, mz**) 56% chance to get TB if other twin has it, fraternal twin (**dizygot, dz**) only 22%, the difference reflecting the degree of genetic determination, with 'completely heritable/ determined' 100% concordance in mz, 50% in dz. strong genetic component for mental illnesses (autism, schizophrenia 30--50% (dz 10% same as siblings), phobias, neuroses). Hodgkin's disease, breast cancer high heritability, melanomas low
- 1/2 of variance in most personality traits genetic. heritabilities of social attitudes .65 radicalism, .54 toughmindedness, .59 religious leisure time interests (time spent in church or reading religious texts), though importance of religion more environmental p147.
- occupational interests .36 (shared environmental effects significant .11, especially compared to personality zero effect of shared (family) environment).
- shared environmental important in male juvenile delinquency and academic achievement (frontal lobe not mature - more open to suggestion) p148.
- divorce heritability .5 but zero for shared environmental effects (this difference shows the flaw in Skinner, as he would predict the opposite)
- > traumatic childhood experiences can lead to neurosis or can be overcome by one's choice of environment
- re extrasensory hypothesis, one study concluded not so much clairvoyant, but rather thinking the same thing at same time.-but CIA study suggested some had ability of 'extrasensory induction of brain waves' tho not universal in all identical twins
- only 'proof' re genetic influence on personality and behavior still comes from twin/ adoption

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studies, "demonstrating effects without revealing causes" p83.

**-environmental factors** - prenatal (including one vs separate placentas), family (+ birth order), unshared environment (peers, education which accounts for nearly all the personality difference from nongenetic factors) - as child grows he creates his own environment as prompted by genes and experiences - "genes drive experience" Sandra Scarr UofMinnesota (chooses friends, activities...). "genes are components in a system that organizes the organism to experience the world." p139.

-twins separated early are more similar (reflecting twinning effect of struggle to differentiate, assert 'free will')

-over time, separated adopted twins revert to character of biological parents (tho early nurturing crucial to individual's ability to realize his potential. -elderly twins more alike in mental functioning than younger twins ('catch up' effect)

-heritability vs environment stats fuzzy as child grows up as his genetic disposition prompts him to choose his environment. -entire process of evolution is one of genes adapting to the environment (turning on/off as needed) 'we make environment which makes us' feedback. [in wider sense, capitalism shapes our expression of our genetic disposition, hardwiring us for materialism. nature-nurture mutually determining p152.

-even dz twins closer in intelligence than siblings due to prenatal environmental effect. -but also competing in womb - some fight, some kiss p91.

-Tourette's syndrome - genetic basis but requires an environmental trigger (weaker twin in womb, stress of life experiences...)

-52% m/z for gay compared to 22% for dz, 11% for adopted brothers (Australian study says 20% for m/z and zero for fraternal) -another study for women 50%, men zero -but what is inherited? (m/f attraction, sensitive character... ie, complex of traits), there are contributing genes but they must be triggered, once some triggered, others follow as domino effect to accord with the reality of what the implications of the dominant choice (msm vs msf)

-twin differences reveal how environment affects the activation of genes (which both twins have (tho the cystic fibrosis case for one m/z twin set suggests the real story is more complex, variable)), also psychological complexity of mirroring self in other, differentiating/ fusing

-re criminality -Swedish study (1982) found the rate in adopted children 2.9% for noncriminal adopted parents, 6.7% for criminal adopted parents, 12.1% if biological parents criminal, 40% if both parent groups criminal (genes more important, but environment also very important)

-m/z twins marry about the same time, even marry spouse with same names, but marry contrasting spouses who don't usually even like the other twin. one study concluded that "human pairing is inherently random" p127 "romantic infatuation, like impri ting, forms an initial bond" which leads to learning and adaptation to create an enduring bond based on "compassionate love".

-using categories extraversion (positive emotionality), neuroticism (neg) and psychoticism (criminality, mental disorders) over 3 generations found neuroticism has genetic component (twins/ siblings more correlated on neg than different generations), but m/z/dz differences small on extraversion suggesting shared experiences, instead of genetics, important (Happy families are all alike; every unhappy family is unhappy in its own way. ie, happy from good experiences, but unhappy from genetic singularity)

**-twins are birth defect.** 12--15% pregnancies twins, but only 3.5/1000 m/z and roughly 11/1000

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dz. -most twins aborted or 'disappear' (most pregnancies fail anyway, twin may be absorbed in other or miscarried -hermaphrodite probably a merged fraternal twins). -why embryo splits is mystery (the case of mz where one girl cystic fibrosis ie all father's x chromosomes went to her - other twin fine - natural defence of body? -make sure at least one healthy, so chromosome defect triggers twinning?). mz twins twice as likely as singletons to have heart defect (but if one has, then other has only 50% chance)

-twinning occurs on or before 14th day after conception. if early, separate placentas (nearly all fraternal twins), if after 4th day the outer placental membrane forms and as is the case with 2/3 mz they will be in single placenta. if from 5th-8th days, still in separate amniotic sacs (inside placenta) but if after 8th day, they will be in same amniotic sac (most alike in personality) -> 1/2 will die strangling in each other's umbilical cords. if 12th day, division will be incomplete resulting in conjoined twins 1/400 mz births. abnormalities more prevalent in girls since male twins more likely to miscarry. p90.

-most malformed children born as singletons may be products of twin pregnancies. also true of left-handers (survivors of mirror twins) who are more common among twins (35% mz). dz twins teeth more irregular than singletons, and mz teeth more irregular than fraternal

-mz, dz too simplistic, maybe 3rd type where fraternal twins result of egg that splits before conception

-dz rate differs according to diet (Japan 6/1000, 11/1000 US, 45/1000 Nigeria, 90/1000 Yoruba villagers who eat yam high in estrogen causing higher rate of ovulation)

-largest number of identical multiples Dionnes 1935, another set born in Argentina 1943 mz boys, mz triplet girls. ratio of multiple births to all births rose 214% 1980--1994 (1/3 first births to over 35s in 1994, plus superovulating women, in vitro) but this is not good - prematures, low birth weight, stress in womb

-calico cats only female. color carried on x chromosome, m may be b, w, orange, and offspring xx calico mix, xy b, w, or orange

-only armadillo regularly has mz twins/ quadruplets. some twins genetic, others case of disturbed development

-lefties' brains more diffuse, even reversed, more likely to be alcoholics, psychotics, epileptics, dyslexics, allergic, autoimmune disorders, gifted. -right-handed twins schizo 92% vs mirror and lefty twins schizo less severely ill

-mirror-image identicals polarized in sleeping habits (psychological mirroring as well as physical)

-results of twin studies reinforces genetic argument (but initial 5-7 yrs good environment vital) -> revival of eugenics/ desegregation advocates. also calls for licensing to have children: David Lykken UofMinnesota argues adopting parents are selected, so we should demand maturity, stable home (mother/father), adequate income, no serious mental illness or criminality. if unlicensed woman got pregnant and wanted to have the baby, she should be confined in a maternity home to protect the child's prenatal environment, and then the child adopted. possibly temporarily sterilize offending mother p132

-study of black/ mixed-race adoptees into rich white families -> IQ 106 (vs 90 for black children in the region), but another study concluded that by the time children grew up, adopted children's IQs were not affected by the type of family that adopted them (no relation to those families' biological children after childhood). adopted children revert to the IQ, personalities of their biological parents. and the 106 fell to 90 by adolescence. ie, catch up effect shown in mz/dz

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studies

-mz twins raised apart rate their experience of parental warmth similarly, ie each twin evokes an experience just by being who he is (here nature-nurture almost fused)

-realizing we are born with certain genetic inclinations (shyness, tendency to drink too much, become obese, prone to cancers...) lets us deal with them as our responsibilities rather than wounds inflicted by our environment. ie 'know thyself and be proactive!' p155. human freedom is capacity of human organism not to be dominated by external circumstances, results from evolution, the transcending of the limitations of the environment. "quest for freedom is genetic" Lindon Eaves geneticist at Medical College of Virginia.