

CHAPTER THIRTY NINE

MICHAEL WALLACH AND NATHAN KOGAN: INDELIBLE CONTRIBUTIONS TO GENERATIONAL UNDERSTANDINGS OF CREATIVITY TESTS

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ABSTRACT: The contributions of Michael Wallach and Nathan Kogan to creativity research are indelible. The two very eminent research psychologists responded uniquely to J.P. Guilford's 'call for action' for research into creativity and 'operationalised' his ideas about divergent thinking as noted below by James Kaufman. Wallach and Kogan were both alumni of Harvard University where they met and hatched out their collaboration. Their research collaboration on childhood creativity and intelligence birthed one of the most widely used instruments for measuring creativity – the Wallach-Kogan Creativity Test, from which an e-version was adapted, launched and administered in Hong Kong in 2004. This brief chapter celebrates Michael Wallach and Nathan Kogan, provides brief biographical notes on some of their scholarly accomplishments, and introduces their contributions to creativity - especially creativity assessment.

Keywords: Michael Wallach, Nathan Kogan, creativity, intelligence, creativity assessment, contributions

Biographies

Michael A. Wallach (8 April 1933 – 16 January 2020)

Michael Wallach was the younger and first author of the Wallach-Kogan Creativity Test (WKCT) fame. He was a research psychologist of note with interests in, amongst others, creativity in childhood, risk-taking and creativity and intelligence. Wallach was born in Manhattan, New York, United States, on 8 April 1933. Following his secondary education at the Columbia Grammar School, the oldest non-sectarian independent secondary school in New York, he proceeded to Swarthmore College, Pennsylvania, USA, to study psychology and earned a bachelor's degree 'with highest honors' in 1954 (see Stickler,



2014, p. 551). Wallach then proceeded to Harvard University graduate school from where he earned a doctorate in psychology in 1958. Wallach stayed on at Harvard, from 1958 to 1959, where he worked as an instructor. He was an assistant professor of psychology at Massachusetts Institute of Technology, MIT (1959-1962), associate professor of psychology at Duke University, North Carolina, USA (1962-66), and full professor at Duke University (1966-1972). After a year stint as William S. Gray Professor at the University of Chicago, USA (1972-1973), Wallach returned to Duke until his retirement in 2004. The same year, 2004, he was made professor emeritus of psychological and brain sciences until his passing on 16 January 2020. For nine years, 1963-72, Wallach edited the *Journal of Personality*; also for nine years, 1989-2008, he was Series Editor, *SUNY Series on Alternatives in Psychology*, State University of New York Press. Wallach was a fellow of 5 divisions of the American Psychological Association: *General Psychology*, *Experimental Psychology*, *Personality and Social Psychology*, *Psychology of Aesthetics*, *Creativity and the Arts*, and *Educational Psychology*. He authored or co-authored over 120 papers and 9 books.

Nathan Kogan (2 May 1926–28 April 2013)

Nathan Kogan's contribution to creativity research is legendary. Indeed, he was a leader who helped establish the field itself. With Michael Wallach, Nat operationalized many of J. P. Guilford's ideas about divergent thinking and developed many of the most popular creativity tasks used to this day. He also conducted groundbreaking research on how creativity is related to other constructs, such as intelligence and personality; this work remains some of the most cited scholarship in the field of creativity.

- James C. Kaufman (2014)

Nathan Kogan was the older and second author of the Wallach-Kogan Creativity Test (WKCT) fame. Like Wallach, he was a noted research psychologist with interests in cognitive, personality, developmental and evolutionary psychology among others. Kogan was born in Bethlehem, Pennsylvania, United States, on 2 May 1926. He worked in the small family business, selling and repairing jewelry; later, he attended Lehigh University also in Bethlehem, Pennsylvania, where he earned a bachelor's degree in 1948. Kogan proceeded to Harvard University, where he received his doctorate in psychology in 1954. He stayed on at Harvard for his post-doctorate from where he and Wallach met, and commenced his collaboration with Wallach. From 1959 to 1967, and from 2006 until his death, he served as head of the personality and social



behaviour research group and senior adviser on psychological research respectively at the Educational Testing Service, New Jersey, USA (see also Stricker, 2014). Following a sabbatical in Paris, France, from 1967-1969, Kogan joined the New School for Social Research, New York, USA, in fall 1969 as a professor and chair of the department of psychology in the Graduate Faculty. He remained a full professor until his retirement in 2006, when he was made emeritus professor of psychology. Like Wallach, Kogan was a fellow of the American Psychological Association with fellowship in seven divisions including the *Psychology of Aesthetics, Creativity and the Arts* (division 10). He served as the president of the Division 10 twice in 1980-1981, and 1989-90; he received *Farnsworth Award* for the 'outstanding service to Division 10 of the APA' in 2010, and the Sir Francis Galton Award for Outstanding Contribution to the Study of Creativity in 2002. Kogan held visiting professorships in several universities including Princeton, USA; Melbourne, Australia; Konstanz, Germany and the London School Economics, UK. He authored or co-authored of over 100 publications including journal papers, 5 books and chapters.

The Wallach and Kogan Creativity Measure

The need for creativity assessment was explicit in Guilford's (1950) American Psychological Association presidential lecture that challenged the psychology community to explore creativity research to improve empirical understanding. Guilford did not prescribe any particular methodology for creativity assessment but admitted that he could not think of any appropriate instruments that will not involve 'completion tests of some kind' (p.449). He went on to postulate testable hypotheses on individual differences, including tests for fluency, novel idea, verbal associations, flexibility, and complexity that can validly and reliably measure creativity.

Michael Wallach and Nathan Kogan took up the Guilford challenge and 'operationalised' much of his ideas (Kaufman, 2014) with the publication of the *Modes of thinking in young children: a study of the creativity-intelligence distinction* (1965). This highly influential book reported two pieces of research that aimed to:

determine whether solid evidence could be found that would support the validity of a distinction between intelligence and creativity as modes of cognitive activity, and second, if a distinction between these concepts could be given acceptable empirical support, to investigate the possible psychological correlates of individual differences in creativity and intelligence when variations along these two dimensions were considered jointly.

The Modes of thinking in young children: a study of the creativity-intelligence distinction gave birth to the Wallach-Kogan Creativity Test, one of the widely-used instruments for measuring creativity (Villalba, 2008; Cropely, 2015; Bayliss, 2016) particularly within the category of divergent thinking. The Wallach-Kogan Creativity Test is ranked second only to the Torrance Tests of Creative Thinking, the most widely used and 'longest-

running' (Houtz & Krug 1995; Kim 2006; Kaufman, Plucker & Russell, 2012, p. 62), and Guilford's Alternative Uses Task.

Together, the Torrance Tests of Creative Thinking, the Wallach-Kogan Creativity Test, and Guilford's Alternative Uses Task are particularly widely used to assess the creativity of primary schoolchildren.

Revisiting Wallach-Kogan Creativity Test

The limitations of conventional intelligence tests have long been suspected, but attempts to demonstrate those limitations empirically have not been easy to come by... Also, the purported measures of creativity had been administered under test-like conditions, whereas exercise of creativity calls for more relaxed, game-like circumstances. [We] showed: (1) Tasks could be defined which, on their face, looked relevant to creativity— tasks concerning the readiness of a person's flow of ideas and the uniqueness of the ideas produced. (2) These tasks could be administered under relaxed, game-like conditions. (3) Productivity and uniqueness of ideas, assessed under game-like circumstances, not only was consistent across different kinds of tasks, but virtually unpredictable from results on intelligence tests.

– Wallach & Kogan (1965, p.357)

The idea behind the Wallach-Kogan Creativity Test was traceable to Sarnoff Mednick's associative theory of creativity in which Mednick defined creative thinking as 'the forming of associative elements into new combinations which either meet specified requirements or are in some way useful... The more mutually remote the elements of the new combination, the more creative the process or solution' (Mednick, 1962, p.221). Divergent thinking 'often leads to originality, and originality is the central feature of creativity' (Runco & Acar, 2012, p.67).

A major appeal of the Wallach-Kogan Creativity Test lies in its 'game-sense approach' to assessing children's creativity (see also Cropley, 2000). Fundamentally, Wallach and Kogan believed that a game-like setting, relaxed atmosphere and conditions, and the absence of time limit – or less standardised testing procedures – are conducive for creative performance and output. This is particularly important given the well-established relationship between creative thinking and creative performance (Milgram & Milgram, 1976); and given that test tension, on the part of examinees, could 'mitigate' against creative performance, while scoring could be at the whims and caprices of the scorers (Child, 1993), and their predispositions (Jones, 1972; Foster, 1970).

The Wallach-Kogan Creativity Test is a battery of tests designed specifically for use with children to assess verbal and visual content. It comprises three verbal subsets and two ambiguous figural stimuli subsets. The latter are alternative uses and similarities – the most widely used being the alternative uses (Cropley, 2015); the former are pattern meanings and line

meanings. In applying the alternative uses, for example, schoolchildren were given open-ended activities and asked to come up with many possible common items that were in a general group – for example in the instances subsets, children were asked to name ‘all the round things they can think of’, or to generate possible similarities uses or unusual uses for common items such as a newspaper, shoe, key or tire, or to record ‘anything that moves on a wheel’ from a given list of responses such as a truck, a train, a car, or a lorry. The test is scored using four specific creativity indexes – fluency, flexibility, originality (uniqueness) and elaboration. Fluency of thinking measures the ease with which an individual uses and stores information and the speed with which s/he sums up ideas (Child, 1993). Flexibility measures the variety of responses; and, originality measures rare, original or infrequent responses given by the examinees (also see Acar & Runco, 2014). Elaboration is ‘suggested when the individual follows an associative pathway for some distance’ (Runco & Acar, 2012, p.67).

In the Wallach-Kogan Creativity Test, fluency was calculated by the number of responses; for flexibility, the number of different categories was calculated; for originality, responses were aggregated with each response compared with the total aggregate – higher total scores in a group indicates an aptitude for original thinking. Elaboration were assessed based on the amount of detail from no elaboration to elaboration.

Although the Wallach and Kogan battery is simple to administer, accurate rating of indices like elaboration can be challenging (Cramond et al., 2005) – hence some level of training on the use of the instrument may be needed to satisfactorily score or rate elaboration.

Reliability and Validity of the Wallach-Kogan Creativity Test

Wallach and Kogan set out to achieve two primary goals in their creativity measures. The first was to show a high degree of reciprocal relationship between the verbal and visual indices under measurement, and the second was to show comparably low degree of relationship with IQ scores. Using these two goals as the yardsticks, the Wallach-Kogan Creativity Test was fit for purpose.

Susan Crockenberg’s (1972) extensive review of selected creativity tests explained the discriminant validity of the Wallach-Kogan Creativity Test:

The ten creativity indices are strongly intercorrelated. Of the 45 correlations, 43 are significant beyond the .05 level, 41 beyond the .01 level. An item analysis to determine the extent to which every item is contributing to the score provided by the sum of all items indicated that all item-sum correlations were .40 or better; 71 of 78 were .60 or better. In addition, the verbal and visual indices were also highly intercorrelated, although less highly than verbal or visual measures were within themselves. Thus, whatever the battery measures appears to be a fairly unitary phenomenon.

– Crockenberg (1972, p.37)

Indeed, studies have supported the validity and reliability of the Wallach-Kogan Creativity Test over the decades. Without going down the list, a few examples will suffice. Three years after the publication of the *Modes of thinking in young children*, Cropley's (1968) research report of the administration of the Wallach-Kogan Creativity Test to 124 university students in Australia supported the validity of the battery; the results showed a 'high degree of internal consistency and relative independence of intelligence tests' (p.197). Similarly, Cropley & Maslany's (1969) administration of the Wallach-Kogan Creativity Test to 207 undergraduate students in Canada reported high reliability of the Wallach and Kogan battery. The results showed that the five creativity test-items under examinations not only 'clustered strongly among themselves', but also 'correlated poorly with the intelligence tests' (p. 395).

Crockenberg's (1972) selection of the Wallach-Kogan Creativity Test along with the Torrance Tests of Creative Thinking were, partly, because 'each has generated considerable evidence related to questions of reliability and validity; and each has been recommended for educational use' (p.28). Similarly, an investigation of the construct validity of the Wallach and Kogan Battery by Wallbrown, Wallbrown, & Wherry (1975) 'provided considerable support for W-K's theoretical foundations' (p. 83). Also, Milgram and Hong's (1993) investigation into the predictive validity of the Wallach-Kogan Creativity Test 'utilizing data collected over 18 years and found that these tests were better predictors of adult life accomplishment than intelligence or school grades' (p.135). More recent work by a plethora of authors including Rákóczi & Szitó (2021), Şahin & Lee (2016), Silvia (2008), and Griffith & Clark (1981) provided support for the Wallach and Kogan battery.

The development and administration of the e-version of the Wallach-Kogan Creativity Test was another measure of its reliability and validity (Cheung, et al., 2004), wide application and popularity. The latter adaptation was also a response to the increasingly use of computerised creativity tests (Palaniappan, 2012) or online assessment which became popular during the Covid-19 global pandemic. Lau & Cheung's (2010) administration of e-version of Wallach-Kogan Creativity Test alongside the print version to a sample of 4th Grade Chinese students to examine the comparability of both versions produced no surprises. The results showed that 'the two versions generated similar patterns of reliability coefficients and inter-correlation coefficients for the eight creativity measures (verbal and figural fluency, flexibility, uniqueness, and unusualness)' (p. 101).

Creativity and intelligence

Creativity and intelligence are two constructs that have been subjects of intense investigations and discussions among psychologists and educationalists over the decades. Guilford himself talked extensively about this in his APA 'call for action' lecture and spent much of his career exploring human intelligence – see Guilford (1950, 1967, 1987). As previously stated, the second goal of the Wallach and Kogan battery was to show poor correlation between creativity and intelligence when tests are administered under relaxed, untimed game-like conditions. The finding by Wallach and Kogan that creativity and

intelligence were distinguishable under the conditions in question was not only significant, but also against the prevailing ‘skepticism’ at the time (Stricker, 2014, p. 551). Subsequent findings by Cropley (1968), Ward (1968), and Cropley & Maslany (1969) supported poor association between creativity and intelligence.

However, forty three years after the publication of the *Modes of thinking in young children*, Paul Silva’s reanalysis of its original data using latent variable analysis found that ‘the latent originality and fluency significantly predicted intelligence’ (Silva, 2008, p. 34), suggesting that creativity and intelligence were more highly correlated than Wallach and Kogan studies showed.

Some criticisms of the Wallach-Kogan Creativity Test

The very essence of what Wallach and Kogan considered as an innovative approach to creativity assessment – less-standardised testing procedures such as emphases on relaxed and game-like atmospheres and untimed test conditions – were the basis of the criticisms of the battery. Seven years after the publication of the *Modes of Thinking Young Children*, John Hattie’s (1977) investigation into the ‘conditions for administering creativity tests’ found ‘little evidence against using timed test-like conditions as the norm for administering creativity tests’ (p.1249). Similarly, Hattie’s (1980) comparative investigation into the conditions for administering creativity for tests found that ‘conventional test-like condition seems optimal’ (p.87).

Creativity-intelligence testing procedures have moved with time as the Wallach-Kogan Creativity Test is routinely administered under timed conditions.

Conclusion

This chapter barely scratched the surface of the contributions of Michael Wallach and Nathan Kogan to creativity. The duo’s creativity assessment instrument – the Wallach-Kogan Creativity Test – remains influential and widely used in measuring creativity to this day.

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