In this paper a description is provided of the history of what was to become the specialty of clinical neuropsychology as it occurred in New York City over a period extending from about 1930 to 1960. An effort will be made to demonstrate that the field of clinical neuropsychology was essentially founded in New York because of a number of historical forces that will be discussed. Beginning with a personal note I will remark on how I got into neuropsychology because it will provide a perspective and context in which this history is expressed. I had the good fortune of living in New York City from birth until 1956 and attended the City College of New York (CCNY), where much of this history occurred. At that time CCNY had a world class psychology department chaired by Gardner Murphy and staffed by several individuals who were to become major founders of what was to become neuropsychology.

One of them was Herbert Birch (Fig. 1). Birch was an experimental psychologist at CCNY who worked mainly with animals and was interested in learning theory. While there, he made an existential decision to give up that career, go to medical school, and become a pediatric neurologist. He succeeded in doing that and subsequently joined the faculty of Yeshiva University and ultimately became what can reasonably be thought of as the founder of child developmental neuropsychology. His enormous literature on development during early life and the influence of deprivation, malnutrition, being disadvantaged, and on learning disability and autism had a profound influence on our field (e.g., Hertzig & Birch, 1971; Richardson & Birch, 1973). Birch is still memorialized by the International Neuropsychology Society’s Birch Lecture and a child development center named after him at the Einstein Medical College in the Bronx. His work continues to be read and applied.

Also at CCNY at that time was Kurt Goldstein (Fig. 2). His collaborator Martin Scheerer (Fig. 3) had left shortly before I arrived, and I did not study with him there, but did so later. Kurt Goldstein, of course, was a major theoretician, philosopher, and clinician (Goldstein, 1939). The Goldstein-Scheerer tests (Goldstein & Scheerer, 1941) were probably the first neuropsychological battery, and Kurt Goldstein’s theoretical work continues to have a major influence on concepts of brain function and on what is now called the process approach to neuropsychological assessment. Kurt Goldstein was a powerful and charismatic teacher, and I attended his lectures regularly where he spoke about holistic or organismic theory of brain function, the abstract attitude, and what is now called the process approach to assessment.

Martin Scheerer had left CCNY but had organized the experimental psychology course and so I was initially influenced by him at a distance, getting to work with him quite closely later on. Despite his strong German accent he was born in New York, actually in the Bronx. He left America and returned to Germany as a young child and returned to New York to avoid the holocaust. His collaboration with Kurt Goldstein brought sorting tests into neuropsychology, largely in the form of the Goldstein-Scheerer tests’ descendants, the Halstead Category Test and the Wisconsin Card Sorting Test. Scheerer was also a strong advocate of what is now called the process approach to neuropsychological assessment. Kurt Goldstein was a powerful and charismatic teacher, and I attended his lectures regularly where he spoke about holistic or organismic theory of brain function, the abstract attitude, and what is now called the process approach to assessment.

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and gestalt psychology. Because Scheerer was an American citizen he was able to leave Germany without much difficulty. When he was back in America he helped in bringing Werner out. Werner came to New York and taught at Brooklyn College before going to Clark. To add to the story, Edith Kaplan, Harold Goodglass, and Norman Geschwind were brought up in Brooklyn during that era, and Edith attended Brooklyn College. I believe they knew each other when they were still in New York. Therefore, there seems to have been an interaction between what became the Boston group with Werner, Scheerer, and Kurt Goldstein in New York City before the developments that took place in Boston. The process approach “named” after Werner appears to have its roots in Hamburg and New York City through interactions among Heinz Werner, Kurt Goldstein, Martin Scheerer, Edith Kaplan, Harold Goodglass, and Norman Geschwind and became the “Boston” process approach after the latter three individuals moved to Boston.

Leaving CCNY, there are two other major Universities that had profound influences on neuropsychology. I’ll start with Columbia, and particularly with the Psychiatric Institute. Joe Zubin was a major figure there for many years (Fig. 5). Zubin is not generally characterized as a clinical neuropsychologist, and in fact he once asked me if he would be considered as one. I don’t recall exactly what I said, but I’m sure it was positive. Not only do I think Joe Zubin was a neuropsychologist, but he also had a major affect on others we would now clearly identify as major neuropsychologists. In his research on schizophrenia he worked with a psychophysicologist named Sam Sutton who discovered the P300 evoked potential waveform; perhaps, the first identified brain marker of information processing. Joe Zubin also co-authored papers on memory and in 1950 co-authored a paper with Carney Landis and Fred Mettler called “The function of the human frontal lobe” (Landis, Zubin, & Mettler, 1950). Joe’s affect on neuropsychology was also accomplished through his influence on Arthur Benton (Fig. 6), who was a student of his at Columbia. Joe once expressed a little disappointment in Arthur because he did not pursue a career in schizophrenia research, after a good start in a paper entitled “The nature of deterioration in schizophrenic conditions.” (Benton, 1948) followed by another paper entitled “Simple and choice reaction time in schizophrenia” published in the *AMA Archives of Neurology and Psychiatry* in 1959 (Benton, Jentsch, & Wahler, 1959). Nevertheless, Arthur Benton learnt enough at Columbia to become, at least to some authorities, the founder of the field of clinical neuropsychology. Without question, he is one of its major founders.

There is a complex of events concerning Columbia that had a great deal to do with the use of sorting tests in neuropsychology, still our major assessment procedures to evaluate abstract reasoning, problem-solving, and what is now called executive
function. Kurt Goldstein was a member of the faculty at Columbia and with Martin Scheerer introduced the first battery of abstract reasoning tests, which contained several sorting tests. However, there is also an interesting and important story to tell about the Wisconsin Card Sorting Test. The initial paper on the Wisconsin Card Sorting Test was by Grant and Berg published in 1948. David Grant was an experimental psychologist interested in cognition and Esta Berg was apparently his graduate student. Esta Berg subsequently, I believe, went to New York City and became associated with the Columbia-Greystone studies of frontal lobotomy of patients with schizophrenia. Joe Zubin was strongly associated with these studies and published a great deal of research coming from them (Zubin, 1949). One day he told me that the Wisconsin Card Sorting Test was developed because a quantitative sorting test was needed for the Greystone studies and Esta Berg was asked to work with David Grant to develop one. Although the Wisconsin Card Sorting Test might not have been developed solely for the Greystone studies, the timing is right for there to have been some association; the Wisconsin Card Sorting Test article came out in 1948 (Grant & Berg, 1948) and the Mettler Greystone Study report was published in 1949 (Mettler, 1949). It therefore appears that the first major clinical study involving the Wisconsin Card Sorting Test was the Greystone studies. This history is documented in Grant and Berg (1948), North, Lesser, Berg, and Zubin (1952), and Zubin (1949) when considered together.

More interesting, perhaps, are the historical and theoretical aspects of these events. It all goes back to someone named Egon Weigl, who no one seems to have known. With some searching I learned that he was an established neuroscientist living in Germany but emigrated to Romania because of the Nazi persecution and later returned to Germany. Luria was a student of his in Berlin. The Grant and Berg article called the Wisconsin Card Sorting Test a “Weigl-type card-sorting problem.” They also acknowledged the contributions of Goldstein and Scheerer to the development of the Wisconsin Card Sorting Test. The story becomes more complex because Harry Harlow and Paul Settlage were also at Wisconsin, and while Grant and Berg apparently did not work with Harlow, they must have been aware of his animal work in problem-solving. Settlage had an extensive collaboration with Harlow and wrote a classic paper with Ward Halstead called “Grouping behavior of normal persons and of persons with lesions of the brain” (Halstead & Settlage, 1943). Apparently, this paper constituted a theoretical basis for what became the Halstead Category test. Also, Joe Zubin knew Halstead personally because he visited him in New York to pursue his interest in the tests used in the Greystone study. Halstead about that time published his classic book Brain and Intelligence about the frontal lobes (Halstead, 1947).

The point of these considerations is that our currently used sorting and abstract reasoning tests originated in a network of individuals who did not always interact directly but who were generally aware of each others’ work and who formed a strong theoretical basis for the development of these procedures. Historically, a focal point for this interaction was the Greystone lobotomy research at Columbia that provided a kind of nexus for many significant investigators of abstract reasoning and problem-solving, and for what we now call executive function.

Going to the east side of Manhattan, we turn our attention to New York University. Hans-Lukas Teuber (Fig. 7), who had his laboratory there, is generally credited with inventing the term neuropsychology. However, what he meant by it was not clinical neuropsychology as we know it but a merger between experimental psychology and the neurological sciences for studying
relationships between the brain and behavior. He described it as a coalescence of experimental psychology and experimental neurology (Teuber, 1948). Teuber was always an experimental psychologist, and directed laboratories rather than clinics. He and what became known as the Teuber group established what was probably the first human neuropsychology laboratory where brain function could be studied experimentally rather than, as had been the case in the past, through clinical practice and observation. The Teuber group was composed of individuals who each developed individual reputations as important scientists. The names of Sid Weinstein, Mort Mishkin, William Battersby, Rita Rudel, Morris Bender, Josephine Semmes and later Sue Corkin are familiar to many of us. I can only list the areas in which major contributions were made; they include unilateral neglect, visual perception, movement, touch and other sensory functions, hemisphere differences, spatial orientation and later in his career, memory. His long-term project of bringing individuals with penetrating missile wounds with definitive localization for studies in his laboratory probably marks the beginning of experimental human neuropsychology. Everything before then was done with animals or based upon clinical observations. Teuber did real science with experimental and control samples and the use of statistics to analyze data. I would venture to say that there would be no neuropsychology as we know it without Teuber and his group at NYU.

Staying at NYU but moving downtown a little we come to Bellevue hospital. Bellevue is NYU’s psychiatric hospital and David Wechsler worked there (Fig. 8). David Wechsler was not called a neuropsychologist, but his knowledge of the field as it existed at the time was substantial, particularly in mental deterioration, an area in which he was particularly interested and made a substantial contribution. The Wechsler Intelligence Scales have been shown in surveys to be the most commonly used neuropsychological tests, and the Wechsler Memory Scales also has very extensive use. The first edition of the intelligence scales published in 1939 was called the Bellevue Intelligence Tests, but became popularly known as the Wechsler-Bellevue Intelligence Tests. Regarding clinical neuropsychology, David Wechsler gave us a set of relevant procedures that are still used widely in clinical practice, but more than that made an important scientific contribution. Perhaps, without knowing that is what he was accomplishing, I believe he was the person most responsible for introducing quantitative methods and psychometric science to the field of clinical neuropsychology. His tests were standardized, had norms, and objective scoring systems. He established a legacy that encouraged continued advances in psychometric sophistication and incorporating advances in the cognitive psychology of intelligence. Surely, he is a major founder of neuropsychological assessment.

Remaining at NYU but moving uptown again, we go to a facility known as the Rusk Institute. It is the rehabilitation hospital where Leonard (Lenny) Diller (Fig. 9) worked. I think it would be fair to say that Lenny Diller was the founder of scientifically
based cognitive rehabilitation. Although assessment and basic science in neuropsychology were moving along at a rapid pace, there was little work done in the areas of treatment and recovery. Books had been written by Luria (1948, 1963) and Kurt Goldstein (1942) about rehabilitation of brain-damaged patients, but apparently they were not widely read, and the material they contained was not widely applied. There was perhaps an implicit view that neuropsychologists did assessments of patients, after which they were handed over to the speech, occupational, and physical therapists for rehabilitation. Lenny apparently thought differently about the matter and held the view that psychologists could make unique contributions to the rehabilitation of stroke and head-injured patients. In collaboration with Yehuda Ben-Yishay (Fig. 10) and many others, an extensive body of literature emerged concerning cognitive rehabilitation and the place of neuropsychology in the rehabilitation of patients with brain damage. In 1970, two classic publications appeared; “Relationships between initial competence and ability to profit from cues in brain damaged individuals (Ben-Yishay, Diller, Gerstman, & Gordon, 1970)” and “Accidents in Hemiplegia (Diller & Weinberg, 1970)” that powerfully demonstrated what neuropsychological knowledge could do to design and guide rehabilitation procedures.

Fig. 7. Hans-Lukas Teuber.

Fig. 8. David Wechsler.

All of this took place in New York City, probably largely for historical reasons. A major factor was World War II and the persecution by the Nazis, particularly of Jewish doctors and other professionals who were able to escape, came to New York, and went no further. Many of the people I’ve discussed had heavy accents because New York City acquired many talented psychologists, psychiatrists, and neurologists who had to leave Europe. Fortunately, New York had strong Universities and medical schools that welcomed these people and provided them with the resources they needed to do their work. They joined forces with clinicians and scientists already in America, and had students who continued and expanded their work. I grew up in New York during World War II and was a college student shortly after it. I could see some of what was happening in psychology, but I wasn’t at all aware of the confluence of these individuals in the development of neuropsychology. I only understood that these people didn’t get along with each other very well, and would leave to private conversation the comments they sometimes made about each other. One is taught that science progresses most effectively when conducted by a team of people with diverse talents who collaborate with each other in pursuit of common goals. The New York experience suggests that is not necessarily the case.

Now, in retrospect, I feel greatly privileged by living in a world surrounded by these individuals who were in the process of forming a new field, although they might not have been aware of it at the time. What characterize all of them are not only their technical and professional competencies but their charismatic leadership qualities. You could not meet Kurt Goldstein or Martin Scheerer or Joe Zubin or Herbert Birch or Lenny Diller without being impressed by their personalities. These individuals were
not only scientists or clinicians, but were also philosophers, advocates, teachers, and highly committed individuals. Kurt Goldstein was a psychiatrist, but he was also an important philosopher with elegantly formulated views of the relation between human nature and society, the adaptation process in normal and impaired individuals, and brain function theory. I remember Martin Scheerer at the University of Kansas as a superb teacher and clinician, who was known for his strong advocacy of his views about the place of cognition in life, and its alterations and assessment following brain damage. Teuber was an advocate for the scientific study of brain function and precise experimental work. Herbert Birch was a major advocate for disabled children. Lenny Diller and Yehuda Ben-Yishay made a strong case for cognitive rehabilitation and the role of psychologists in the treatment of brain-damaged patients. Each of these leaders was able to marshal life-long efforts to effectively organize productive activity devoted to their particular goals. People like me, lucky to have been brought up in New York City at the right time, had the benefit of being surrounded by such people, and now in retrospect have the pleasure of communicating this experience.

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Conflict of Interest

None declared.

References


