

Brain Benefits of Bilingualism

“

“Who is bilingual?” has a simple answer, namely 50% of the world population (Grosjean, 1982)

”

*Fabbro, F. 1999. The Neurolinguistics of Bilingualism: An Introduction. East Sussex UK: Psychology Press Ltd.

IN

PRACTICALITY, NOT ONLY DO MULTIPLE LANGUAGES SERVE A POSITIVE USE IN A SOCIAL ENVIRONMENT, BUT THE COGNITIVE EFFECTS OF MULTILINGUISM - AND BILINGUALISM IN PARTICULAR - HAVE BEEN LONG DOCUMENTED IN THE FIELD OF PSYCHOLINGUISTICS AND NEUROLINGUISTICS, IN ORDER TO PRESENT EVIDENCE TO SUPPORT THE IDEA OF BILINGUALISM BEING BENEFICIAL FOR THE BRAIN AND ITS COGNITIVE PROCESSING. RESEARCH SHOWS THAT BILINGUALISM HOLDS A SIGNIFICANT ROLE IN STROKE RECOVERY, PREVENTING EARLY SYMPTOMS OF DEMENTIA, IMPROVING GENERAL MENTAL PROCESSES SUCH AS ATTENTION, AND ENHANCING DIVERGENT THINKING AND SYMBOLIC REASONING.

STROKE RECOVERY

HAS BEEN FOUND TO BE SIGNIFICANTLY IMPROVED IN BILINGUAL PATIENTS. A 2015 STUDY PUBLISHED UNDER *THE AMERICAN HEART ASSOCIATION INC.*, SHOWS STATISTICAL EVIDENCE FROM ITS POOL OF 608 ISCHEMIC STROKE PATIENTS IN

ORDER TO STUDY THE ROLE OF BILINGUALISM IN PREDICTING COGNITIVE IMPAIRMENT AFTER A STROKE. RESULTS SHOWED THAT

40.5% OF BILINGUALS COMPARED TO 19.6% OF THE MONOLINGUALS HAD NORMAL COGNITION, SHOWING THAT THE PERCENTAGE OF PATIENTS WITH INTACT COGNITIVE FUNCTIONS AFTER A STROKE WAS MORE THAN TWICE AS HIGH IN BILINGUALS. BILINGUALS ACHIEVED HIGHER RESULTS IN THE ACE-R (ADDENBROOKE'S COGNITIVE EXAMINATION) - A BRIEF COGNITIVE TEST ASSESSING 5 COGNITIVE DOMAINS USED TO INDICATE BETTER COGNITIVE FUNCTIONING - ON ATTENTION AND FLUENCY DOMAINS. THIS EVIDENCE THEREFORE SUPPORTS THE NOTION OF THE PROTECTIVE ROLE OF BILINGUALISM, AS AN INDEPENDENT FACTOR, IN THE DEVELOPMENT OF POST-STROKE COGNITIVE IMPAIRMENT IN STROKE PATIENTS.

A RECENT STUDY BY PERANI ET AL., PUBLISHED UNDER THE *PROC NATL ACAD SCI USA*, INVESTIGATING THE IMPACT OF BILINGUALISM ON BRAIN RESERVE AND METABOLIC CONNECTIVITY IN

DEMENTIA

ALZHEIMER'S DEMENTIA, SHOWS SUPPORTING EVIDENCE OF BILINGUALISM ACTING AS A COGNITIVE RESERVE (CR) THAT EXERTS NEUROPROTECTIVE EFFECTS AGAINST NEURODEGENERATIVE DISEASES SUCH AS ALZHEIMER'S DEMENTIA (AD). CR - THE BRAIN'S ABILITY TO RESIST BRAIN DAMAGE - IS KNOWN AS A PROTECTIVE FACTOR IN COGNITIVE DECLINE ASSOCIATED WITH AGE AND DEMENTIA. THE RESEARCHERS CONDUCTED FDG-PET SCANS THAT DETECT GLUCOSE UPTAKE IN THE BRAIN IN ORDER TO ASSESS THE DIFFERENT LEVELS OF HYPERMETABOLISM (AND HENCE BRAIN ACTIVITY) IN DIFFERENT BRAIN REGIONS. IN 85 PATIENTS WITH AD - 45 GERMAN-ITALIAN BILINGUALS AND 40 MONOLINGUALS - RESULTS SHOWED THAT CEREBAL HYPERMETABOLISM WAS MOST NOTICABLE IN THE GROUP OF BILINGUALS. COMPARED TO THE MONOLINGUAL GROUP, THEY SHOWED INCREASED CONNECTION OF BRAIN FUNCTION IN AREAS INVOLVED IN EXECUTIVE CONTROL AND SIGNIFICANTLY HIGHER LEVELS OF METABOLISM IN BRAIN AREAS DESPITE ALL PARTICIPANTS BEING AT THE SAME STAGE OF ALZHEIMER'S DISEASE. AS THE BILINGUAL GROUP WERE ON AVERAGE 5 YEARS OLDER THAN THEIR PEERS, THIS IMPLIES LIFELONG BILINGUALISM MAY ACT AS CR IN DELAYING THE ONSET OF DEMENTIA.

ATTENTIONAL CONTROL

LEADING RESEARCH BY BIALYSTOCK ET AL. SHOW INCREASING EVIDENCE TO SUPPORT THE THEORY THAT BILINGUALISM IMPROVES COGNITIVE CONTROL OF ATTENTION IN BOTH

CHILDREN AND ADULTS ALIKE. THIS COGNITIVE ADVANTAGE IS EXPLAINED BY THE BILINGUAL'S ABILITY TO CONCURRENTLY HOLD TWO LANGUAGES IN THE MIND, UNYIELDING TO INTERVENTIONS FROM WORDS AND GRAMMAR FROM ONE LANGUAGE

TO THE OTHER - AS REFLECTED BY THE IMPROVED PERFORMANCE ON TASKS WITH DISTRACTING OR CONFLICTING PIECES OF INFORMATION. MORE RECENT RESEARCH FOLLOWING UP ON BILINGUALISM STUDIES ON CHILDREN SHOWS THAT THIS COGNITIVE CONTROL IS SUSTAINED INTO ADULTHOOD AS ADULTS WHO HAVE BEEN BILINGUAL SINCE CHILDHOOD ARE MORE CAPABLE IN COMPARISON TO MONOLINGUAL ADULTS IN MANAGING THEIR ATTENTION WHEN FACED WITH TASKS REQUIRING COGNITIVE CONTROL.

DIVERGENT

THINKING HAS BEEN STUDIED IN BILINGUALS ALONGSIDE SYMBOLIC REASONING AND CREATIVITY. STUDIES SUCH AS PEAL AND LABMBERT (1962)

SUGGEST THAT AS A RESULTS OF SWITCHING BETWEEN TWO LANGUAGES AND TWO DIFFERENT PERSPECTIVES, A BILINGUAL INDIVIDUAL SHOWS GREATER COGNITIVE FLEXIBILITY AND CREATIVITY. CUMMINS (1976) ALSO PROPOSES THE IDEA THAT BILINGUALISM STIMULATES THE DEVELOPMENT OF SYMBOLIC OR ABSTRACT REASONING THROUGH THE EXPOSURE OF HAVING TWO DIFFERENT WORDS FOR MAJORITY OF CONCEPTS. THIS IN TURN ALLOWS BILINGUAL CHILDREN TO DEVELOP AND UNDERSTAND THE RELATIONSHIP BETWEEN WORDS AND THE CONCEPTS THEY REFER TO IS ENTIRELY SYMBOLIC AND ABSTRACT IN NATURE.