

## Neuroscience, Neuroimaging & Interventional Radiology

Yacov Rofe and Bar-Ilan

University in Ramat Gan, Israel

The book, *The Intuitive Rational-Choice Theory: Schizophrenia, Criminal Inanity & Neuroses*, presents a new theory which explains the development and treatment of schizophrenia and criminal insanity as rational coping mechanisms. Based on the strong relationships between schizophrenia and neurological impairments, medical models took for granted that all cases of schizophrenia result from neurological impairments, even when there was no evidence, as in the case the Unabomber and John Nash. The new theory, termed also Psych-Bizarreness Theory, demonstrates that it can explain all cases of schizophrenia, regardless whether they suffer from neurological damages or not, as well as criminal insanity and neurotic disorders, by conscious-rational terms. According to the new theory, when individuals are confronted with extreme levels of stress, irrespective of whether the source of the stress is neurological or environmental, their behavioural options become limited: They can commit suicide, develop a drug abuse, use aggression to eliminate the stressor, or intuitively choose certain mad/bizarre behaviors diagnosed by five empirical criteria (Rofé, 2000, 2016), that suite their coping demands. Madness is seen primarily as a repressive coping mechanism, which individuals intuitively choose when confronted with unbearable levels of stress. Thus, contrary to psychoanalysis, madness causes repression rather than visa versa. The choice of a specific mad behavior is determined by the same three principles which guide the consumer's decision-making process when purchasing a certain product. The major principal is the need controllability: The specific mad behavior must increase the patient's ability to exercise control over the stressor and/or provide certain desired privileges. The second guiding principle is availability: The choice of the specific symptom is affected by various channels of information, such as the media, person-

al experiences, genetic predispositions, family and peers that increase the saliency of certain suitable behaviors. The third principle is cost-benefit analysis: The mad behavior is chosen only if the individual intuitively feels that it will reduce the level of his or her emotional distress. Although the decision to implement the intuitive/unconscious choice is conscious, patients become unaware of the Knowledge of Self-Involvement (KSI) through a variety of cognitive processes that disrupt the encoding of this knowledge and a number of memory inhibiting mechanisms that cause its forgetfulness. Subsequently, utilizing their socially internalized beliefs regarding the causes of psychological disorders, patients develop a self-deceptive belief which attributes the cause of their symptoms to factors beyond their conscious control. The new theory proved its ability to integrate all therapeutic methods pertaining to neurosis into one theoretical framework, explaining all data relevant to the development and treatment of conversion disorder, including neurological findings, which seemingly support the medical explanation of this disorder, and resolves the theoretical confusion regarding the explanation of phobia by distinguishing between bizarre (e.g., agoraphobia and chocolate phobia) and non-bizarre phobia, such as dog phobia. Robert Aumann, the Nobel Prize-winning economist, noted in a letter of recommendation to publishers of the present book (2017), Rofé's theory is as "revolutionary as it sounds, fits well into the frameworks of economics, game theory, and evolution"

**Introduction:** Interventional radiology originated within diagnostic radiology as an invasive diagnostic subspecialty. Interventional radiology is a therapeutic and diagnostic specialty that comprises a wide range of minimally invasive imaging-guided therapeutic procedures, as well as invasive diagnostic imaging.<sup>27</sup> In 1929, Werner Forssmann put a

catheter into his own antecubital vein, advanced it through, and took X-rays to prove that the catheter was in the right atrium. He was awarded the Nobel Prize in Physiology or Medicine in 1956.<sup>28</sup> Many additional breakthroughs came throughout the 1950s and 1960s in interventional radiology. In 1953, Sven-Ivar Seldinger described a procedure used to obtain safe access to blood vessels,<sup>29</sup> and in 1964, Charles Dotter began to perform transluminal angioplasty, in which he utilized catheters through the brachial artery to open peripheral arteries.

The range of diseases and organs amenable to image-guided therapeutic and diagnostic procedures is extensive and is constantly evolving; they include, but are not limited to, diseases and elements of the vascular, gastrointestinal, hepatobiliary, genitourinary, pulmonary, musculoskeletal, and central nervous systems.

Common interventional imaging modalities include fluoroscopy, CT, US, and MRI. Although fluoroscopy and CT use ionizing radiation, both methods are fast and geometrically accurate. Ultrasound suffers from image quality and tissue contrast problems, but it is fast and inexpensive. Although MRI is expensive and requires specialized instruments, it provides superior tissue contrast.

#### Interventional Radiology or Special Procedures Rooms

Interventional radiology (or special procedures) rooms encompass a wide range of rooms, including cardiac catheterization laboratories, angiography suites, electrophysiology suites, and neurology suites. All special procedures rooms are equipped with fluoroscopic capabilities but with better video

resolutions, smaller focal spots, higher power, and a multitude of support equipment. Many of these units are almost like a separate practice within the hospital. As the equipment is used for twelve or more hours every day, incorporating it into a PM program is difficult. One must be flexible by servicing these areas at times when, for example, staff are having patient conferences or are on breaks.

The support equipment in these areas includes such devices as defibrillators, multichannel monitors, lasers, pacer programmers, electrosurgical devices, and radioactive sources used in angioplasty. One might have problems in maintaining a good inventory of equipment in this area as some of the devices may be on loan or consignment, or simply “borrowed” from other parts of the hospital. Care should be taken to follow universal precautions when working in these areas.

#### Interventional Radiology and ERCP

A combined interventional radiology (IR) and ERCP approach can be used to access the biliary tree. This is most useful when the endoscope can be passed to the area of the choledochojejunostomy but the opening cannot be identified or accessed. It can be decided to place an internal stent entirely by IR with subsequent management endoscopically or by IR placement of a guidewire followed by endoscopic management by rendezvous. A percutaneous approach to pancreaticojejunal anastomotic strictures has been used at tertiary care centers by experienced endoscopists when the pancreatic anastomosis cannot be identified or accessed.<sup>15</sup> This combined approach is preceded by acquisition of detailed cross-sectional imaging such as CT or MRCP.<sup>16</sup> Administration of periprocedural antibiotics is recommended.