The Nature of Prevention Science

1 The Emergence of Prevention Science

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The history and development of prevention has been described in various publications (e.g., Mrazek & Haggerty, 1994; Romano, 2015; Spaulding & Balch, 1983). Some of these reviews addressed general aspects of prevention, such as the process of formalizing prevention efforts in the United States (U.S.; Romano, 2015), whereas others have addressed specific aspects of prevention, such as society's changing attitude toward problem behavior (e.g., illicit drugs; Jonnes, 1999), the societal benefits of promoting positive behaviors (e.g., breastfeeding; Renfrew et al., 2012) as a way of preventing disease, or the early childhood antecedents of major health problems that should be prevented (e.g., obesity; Morris, Skouteris, Edwards, & Rutherford, 2015). The purpose of this chapter is neither to describe nor to review the field of prevention, but rather to suggest a descriptive analysis of how the ancient idea of prevention has become a vivid scientific discipline in recent years. In line with this analysis, the chapter will advocate the notion that globalization – that is, broadening the perspective of prevention scientists and practitioners to include the efforts, effectiveness, and efficacy of preventive interventions that are taking place around the globe – is the next necessary step that *prevention* as a *science* needs to address. Naturally, along this general description, only part of the information will be outlined, and hence the reader is encouraged to explore further the details – and especially additional, and maybe alternative, approaches – in order to get an even more comprehensive picture of the emergence of prevention science.

Biblical and Ancient Times

Prevention is the oldest human problem known in history. Moreover, it is a question with which many people around the globe, consciously or often unconsciously, are still preoccupied. An explanation for these claims can be found in the Bible (the Old Testament). It does not matter whether one believes in God or not, nor whether the Bible was written by God or by a human being; in any case, the Bible is well accepted as one of the most ancient books ever written. Interestingly, the first three events that open the Bible are all related to human beings dealing with issues that are associated with the prevention of sexual behavior, aggression, and alcohol use.

Firstly, it was Eve who disobeyed God's restriction not to eat from the Tree of Knowledge, and she surrendered to the snake's "temptations" to taste it. Why is the story of Adam and Eve, living in Heaven and then breaking God's command, one of the first events of human history? This question gains more importance when we explore the details of the story; that is, what arguments did the snake use in order to convince Eve? Why did Eve listen to the snake rather than ignore it? Why did Adam follow suit and taste the fruit from the Tree of Knowledge as well? And, the most interesting question of all: what knowledge did Eve and Adam gain from eating from the Tree of Knowledge? Welcome to the debate on *healthy sexuality* – that is, once Adam and Eve ate the fruit, they realized they were naked and tried to cover their bodies. Billions of words have been spoken and written about this story and its interpretations, each one shedding light on it from a difference perspective. However, one common shortcoming of all existing references is the difficulty in explaining what should have been done (by Adam?) or have occurred (as an act of God?) in order to prevent Eve from disobeying the order and its devastating result – the exile from heaven. Alternatively, it is possible that the message that this story tries to convey is the ultimate truth regarding human nature – that is, that nothing can prevent a human being from experiencing the "un-permitted."

The biblical story goes on to tell us about Cain's aggression against Abel. Cain was too jealous of Abel, who was favored by the father/leader figure (God), and finally turned his jealously into aggression, murdering Abel and hiding the body. No one existed except for these two brothers and their parents – that is, no gang, violent television, electronic games, or movies, and no previous murder to imitate. Nevertheless, Cain couldn't control himself and committed the first ultimate aggression ever. Why? Welcome to the debate on healthy (or adaptive) *aggression*. Not much later in the Bible comes the description of Noah's departure from the Ark. Astonished by his survival of the flood, probably overwhelmed by his feelings and thoughts regarding his extraordinary experience, and yet almost the first thing he did was to get drunk (Genesis, 9, 21); welcome to the debate on *(healthy) alcohol consumption*.

Interestingly, these three stories are well known to people around the world, unrelated to their religiosity or belief. This is especially the case in regard to the story about Eve and "The Ancient Sin" and the glorification of returning (once "passing away…") to heaven, which three major religions highlight: in Judaism, the wish to return to heaven is a leading theme – for example, it is mentioned in every Jewish wedding; in Christianity, the wish to go away from sins and return to heaven is discussed in the New Testament several times (e.g., Lucas, XIII, 43); in Islam, it is widely discussed in the Koran (in Sora 47, 15; 56, 15–22; etc.), and returning to heaven (جنة عدن) is presented as approaching the ultimate place of physical and spiritual pleasures.

In light of the intensive preoccupation with the story of "The Ancient Sin," the question of why Eve – and since then, many other people – could not prevent herself from being involved in "forbidden activities" is challenging.

This is why prevention can be regarded as one of the most ancient problems that human beings address and an issue that is relevant to everyone's life.

The importance of prevention is also emphasized in Greek mythology as well as in Roman mythology. In Roman mythology, one of Asclepius's children, the god of medicine, was Hygeia (currently, Hygiene), the goddess of health and cleanliness. Hygeia had several sisters and brothers, among them Iaso, the goddess of recovery from illness; Aceso, the goddess of the healing process; and Panacea, the goddess of remedy. Yet, there are several indications of Hygeia's exceptional importance in ancient times: (a) the intensive documentation of ordinary people's belief in the power of sleeping in one of the temples that were named after her; (b) the Pythagorean philosophers' nomination of their five-angles-star symbol of greeting with the five (Roman) letters of her (Roman) name; and (c) the placement of her statue – along with the statue of her Greek duplication, Athena Hygeia – in the entrance to the Acropolis of Athens. Hygeia's importance represents the power that has been attributed to prevention on ancient times.

Beyond these ancient examples, it seems that for the ordinary person the idea of prevention is very appealing and somehow encouraging: everything would be fine if we were able to conduct a program that prevents disease, risk behavior, natural disasters, and so on. This is why, since ancient times and up to these days, the idea of prevention has actually been the guideline of many well-known and well-established concepts, values, and duties, such as "(Good) Parenthood" as a way to prevent problems in children's development; "Education" as a way to prevent societal and personal problems as a child matures into adulthood and beyond; "Special Education" as a way to prevent greater problems among children with special needs; "driving license" as a way to prevent car accidents; medical inoculation (e.g., polio vaccines) as a way to prevent personal and familial suffering along with public health costs; and so forth. However, it should be noted that prevention is also a very irritating idea, as no one likes to think that a problem could have been prevented had she or he – that is, the individual, the community, the company, the nation, the world – behaved differently and intervened. For example, for some parents it may be easier to claim that their child suffers from an organic/neurological problem (e.g., ADD/ADHD) rather than confront the notion that their parenthood is problematic and might be the cause of their child's problem behavior (e.g., Singh, 2004). Another example is the case for decision makers who have to make decisions and develop policies regarding what potential terrorist attack should be addressed – the one that is more normative or the one that might expose them to greater public blame in case of a failure to prevent it (McGraw, Todorov, & Kunreuther, 2011). Practically speaking, since ancient times people did try to prevent maladaptive behaviors; however, it was considered to be only secondary in importance to healing those who were already suffering from a disease or already suffering from the outcomes of maladaptive behavior. However, in recent years, gradually the situation has been changed and a new science has emerged: *prevention science*.

Several Historical Notes

Throughout history, occasional references to the importance of prevention have been made by various individuals and under various circumstances. Several of these references were highlighted by Martin Bloom, during his term as the editor of the *Journal of Primary Prevention* (2000–4), under the title of "An historical note." Bloom mentioned, among others, the businessman Robert Owen (1771–1858), who believed that society and education – rather than the person himself or herself – mold people's character. Based on this belief, he advocated for the improvement of the educational, communal, familial, and industrial circumstances within which (his) workers were occupied, in order to prevent them from becoming ill and ignorant; the educator Maria Montessori (1870–1952), who tried to promote effective learning in preschool children, in hopes of improving their lives; and the U.S. physician and epidemiologist Joseph Goldberger (1874–1929), who was ready to be infected by pellagra during his trials to prevent it. Bloom's homage to these people represents the notion that prevention has always existed as a possibility, but only a few people actively pursued its large-scale implementation.

Moving forward to modern history, at the beginning of the twentieth century, the idea of prevention was significantly promoted by the personal experience, personal dedication, and personal resources of Clifford Beers (1864–1929). Beers, a wealthy person who had been hospitalized due to a mental breakdown, wrote the milestone book *A Mind that Found Itself* (1908). In this autobiography, Beers described his and others' dehumanized personal experiences as mental health patients and wrote in support of the need to prevent mental health problems. However, Beers was not only a person of words and conclusions but also a person of acts; right after the strong and positive public response to his book, the National Committee for Mental Hygiene was established in the United States (1909) by him and another one hundred attendees (see Long, 1986), followed by the establishment of a mental hygiene clinic (1913) and the publication of the interdisciplinary journal *Mental Hygiene* (established 1917). Beers' legacy is still influential, with the Clifford-Beers Foundation's (United Kingdom [UK]) significant contribution to today's global efforts to promote mental health and prevent mental illness (www.claifordbeers.org.uk).

Since the beginning of the twentieth century, the idea of prevention has gained greater prominence, with cascading movements toward the establishment of prevention as a science. Many people and numerous events were part of this journey and paved the way to the increasing importance of prevention science. A random and extremely short list of examples of acts, events, institutions, and people – together with numerous others who were as significant as these examples are – would include the following:

- Based on Darwin's theory of evolution, the "eugenic movement" advocated the idea of improving the quality of human beings *born* into the world (e.g., by early intervention among those parents-to-come). Yet, it should be

mentioned here that this pro-prevention movement, which was popular in the 1900s through the 1930s, was also the birthplace of racial discriminations, such as that of Ernst Rüdin, who used eugenics as a justification for the racial policies of Nazi Germany (Joseph & Wetzel, 2013).

- Alfred Adler's (1927, 1928) interest in the prevention on neurosis later initiated his development of the strategy for preventative education (Ansbacher, 1990).
- The establishment of the U.S. National Institutes of Health (NIH) and Communicable Disease Center (CDC), both in 1946, played an influential role in shaping the contents of research in both health sciences and social sciences, such as grant competitions as well as the later (1963) support in establishing National Institute of Mental Health (NIMH) community mental health centers across the United States.
- U.S. President Dwight Eisenhower's administration's Joint Commission on Mental Illness and Health (1961) was headed by George Albee, who later postulated the idea that both "risk factors" and "protective factors," as well as the relationship between these factors, are important in understanding the intensity and the nature of prevention (Albee, 1980).
- G. Caplan (1964) noted the well-known differentiation among primary, secondary, and tertiary prevention. It should be noted that originally Caplan's differentiation referred to the prevention of problems that might arise due to mental health hospitalization problems; however, later on it was adopted by others to represent the three general domains of prevention, until replaced by the current differentiation among universal, indicative, and selective prevention (Gordon, 1983; Mrazek & Haggerty, 1994);
- Albee's later contributions in collaboration with colleagues declared that "Primary prevention works" (Albee & Gullotta, 1997).
- Emory Cowen (1970), one of the founders of prevention as a science, undertook innovative and extensive prevention studies and initiations, including setting "baby-steps to prevention."
- Price, Cowen, Lorion, and Ramos-McKay's (1998) eye-opening book, *14 Ounces of Prevention: A Casebook for Practitioners*, was one of the first publications to pose a demand on people who are dealing with prevention to establish their interventions on solid, theoretical, and evidence-based grounds, as well as one of the first publications to present well-established prevention interventions – although only fourteen at the time – that work.
- The U.S. Surgeon General's Office Report on Healthy People (Healthy People, 1979) widened the scope of the perspective on health and living by suggesting goals and recommendations to improve the health of U.S. citizens across the life span.
- The World Health Organization (WHO, 1999) redefined health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity"
- The Melbourne Charter for Promoting Mental Health and Preventing Mental and Behavioural Disorders (2008) provides a framework that

recognizes the influence of social and economic determinants on mental health and mental illness and identifies the contribution that diverse sectors (including, but not exclusive to, health sectors) make to influencing those conditions that create or ameliorate positive mental health.
- The Society for Prevention Research (SPR) (www.preventionscience.org/) was established in 1991 and the SPR official journal *Prevention Science* began publication in 2000.
- The European Society for Prevention Research (EUSPR) (euspr.org) was established in 2010 and was formally approved and registered by the Polish authorities as an international not-for-profit organization, based at the Institute of Psychiatry and Neurology in Warsaw.
- The discussion paper on "Unleashing the Power of Prevention" (Hawkins et al., 2015) proposes "to mobilize across disciplines and communities to unleash the power of prevention on a nationwide scale" (p. 1).

In addition, several chapter authors in this *Handbook* describe prevention organizations and government initiatives that highlighted prevention in the latter part of the twentieth century and early-twenty-first century (e.g., in this volume, see the chapters by Basic and Rovĭs [Croatia]; Pérez-Goméz and Mejía-Trujillo [Latin America]; and Campello, Heikkila, and Maalouf). As mentioned previously, this list of institutions, declarations, and people includes neither the most important nor the most representative components of the antecedents of prevention science. Rather, these are examples of the rich and diverse milestones of the modern history of prevention. However, what is more important is to analyze which processes underlie these milestones, leading to the emergence of prevention as a science and the demand "to unleash" its power.

For example, a closer look at the list of the aforementioned milestones, and the institutional and professional affiliations of the people who propelled the transition from one milestone to another, reveals that scholars and institutions from various professional domains were involved in the study of prevention. This large scope of professional affiliation represents the multidisciplinary nature that characterizes the field of prevention science. In a retrospective analysis of the emergence of prevention science, it seems that such interdisciplinary development served as a fertilizing power toward the emergence of this new science.

Interdiscipline Facilitates Prevention

Some people argue that prevention is not a subject matter in itself but rather a domain in which knowledge and discoveries from other scientific fields are applied. A very similar argument has frequently been directed toward the domain of education that some people see as the umbrella under which prevention should also be categorized as a subsection. Actually, in both domains (i.e., prevention and education) one may find scholars who have conducted their

research on a wide selection of subjects, not to mention people who are dealing with prevention, for example, and who are faculty members of various departments, such as psychology (e.g., cultural competence), social work (e.g., social advocacy and social justice), family studies, criminology, medicine (e.g., HIV prevention), psychiatry (e.g., prevention of mental health disorders), sociology, political science (e.g., prevention and public policy), mathematics (e.g., prevention of math anxiety), physics (e.g., prevention of community disaster), business administration (e.g., burnout prevention), labor studies (e.g., prevention of unemployment), economy (prevention of unemployment and economics of prevention), and so on. In relation to prevention as an interdisciplinary science, while some may view prevention as a subset of scholarship of many fields, perhaps it is more accurate to propose that prevention science is not an accumulation of partial knowledge and contributions from various fields, but rather a specialty in itself that includes different specialties and disciplines. The multidisciplines that comprise prevention science have certainly contributed in many ways to better theoretical understandings, research and evaluations methods, and strategies for interventions. Thus, the contributions are much stronger than what might be gained without the multidisciplines that contribute to prevention science. However, the multidisciplinary orientation of prevention exists not only in the academic affiliation of those who focus on this domain, but also, and more profoundly, in the mutual enrichment of prevention and other related domains of the behavioral sciences, such as developmental psychopathology, community psychology, public health, counseling psychology, counseling, and counselor education.

Prevention science's growing interdisciplinary orientation occurred in a time (i.e., since the mid-1990s) of increasing awareness of another emerging interdisciplinary scientific domain, namely developmental psychopathology (DP). Developmental psychopathology – that is, the exploration of personal, biological, situational, communal, as well as other determinants of children's positive development versus psychopathology (e.g., Moffitt, 2005) – is currently a dominant and somehow revolutionary field in the behavioral sciences. One of the major assumptions of DP is that "normal" development is neither simple nor something that can be taken for granted; rather, during every child's development, there are potentially many risks and obstacles that may lead the child to develop problematically (e.g., Garmezy, 1985). However, another major assumption is that over time, every child – even the one who enters the world with "a problematic heredity" (e.g., a child of schizophrenic parents) – could potentially encounter many positive opportunities and fostering events that could lead to the child's positive development, development that *overcomes the odds* (Werner, 1992). These two assumptions are extremely challenging, as they postulate that child's development should not be taken for granted – that is, (many times) negative development is preventable and (many times) positive development is a kind of ordinary magic (Masten, 2001) that results from proper preliminary fostering interventions. The link between these postulations of DP and the basic notions of prevention science is clear. Yet, the scope of

interests and goals of each domain is not identical, rather only partially overlapping, although the accumulating knowledge within each field is mutually enriching. As one might expect, many of the leading researchers in the field of DP graduated from psychology programs in which the concept of prevention was integrated into graduate training (Cicchetti, & Rogosch, 2002).

In terms of the emergence of prevention science, one of the general influences of DP on both scientists and practitioners was the encouragement to readdress preliminary assumptions regarding the power to change children's development. Probably the most representative example of the departure from the old assumptions regarding child development and prevention of problem behavior is the emergence of the term (child) *resilience* (e.g., Garmezy, 1987; Rutter, 1987) and the continuing extensive explorations regarding its antecedents. Such a growing openness to consider the possible contributions of well-designed interventions further paved the way to the establishment of prevention science.

Another field of scientific exploration that to some degree is related to prevention science is positive psychology. The basic notion of those promoting positive psychology (e.g., Kobau, 2011; Snyder & Lopez, 2007) is that psychology is too preoccupied with the treatment of psychopathology while paying much less attention to people's strengths and assets. Thus, positive psychology's demand to enlarge the scope of (dependent) variables that need further scientific understanding would be followed by professional interventions to enhance a person's strengths (e.g., protective factors). Interventions that contribute to those people who are not yet in a serious problematic situation (e.g., selective and indicated prevention) deserve attention as much as interventions that help people who are already in an extreme situation (e.g., those clinically diagnosed). Once the scope of a possible relevant intervention was enlarged also to include interventions that help people who are not in an extreme position, many of the already existing prevention interventions became relevant and acceptable, such as interventions to promote resilience (Cutuli et al., 2013). In this context, it is worth mentioning Cowen's suggestion of the term "wellness," saying that it is time to coin this term in relation to the goals of prevention (1984); this term was later a unifying concept in exploring the nature and scope of prevention in various fields (Cicchetti, Rappaport, Sandler, & Weisberg, 2000) and, recently was presented and reinforced through Conyne's book on counseling for wellness and prevention (Conyne, 2015).

In relation to wellness, or well-being, it is important to mention that to a significant degree there is a resemblance among several of the postulations of positive psychology, especially the goals and interventions that counseling psychology (CP) and counselor education (CE) address. For example, researchers in the field of CP have long been preoccupied with questions relating to issues that are in the scope of positive psychology, such as the promotion of happiness and well-being, career choice job satisfaction, and positive adaptation. As one might expect, researchers in the field of CP also address the issues of prevention, which has led to significant insights and practices in prevention science. One example of this work are the Guidelines for Prevention in

Psychology, that were initiated by a workgroup of mainly American Psychological Association (APA) Division 17 (Society of Counseling Psychology) members and have been approved and adopted by the APA Council (APA, 2014). See the final chapter of this *Handbook* for a summary of the guidelines.

Finally, cognitive-behavioral therapy (CBT) as a theoretical foundation is often used in prevention applications (e.g., Romano, 2015). There are many examples of CBT conceptualizations and models that are relevant to prevention science, of which two examples will be mentioned here: (1) Stress inoculation training (SIT; Meichenbaum, 1985) is a general framework for the prevention of future negative responses to stressful encounters. Originally, SIT was proposed as a demonstration of the implementation of CBT in the context of stress management, including a special emphasis on the need to promote clients' (a) cognitive conceptualization of the problem, (b) skills that are relevant to stress management in a specific situation, and (c) exposure to and experiences in future related situations. This approach has been implemented widely in various contexts (Meichenbaum, 2007), most of which are related to topics that the prevention literature addresses. However, while only a few references to SIT exist in the prevention literature (e.g., Gullotta, 1997), analysis of the strategy and components of prevention efforts that have been published (e.g., Griffin, Scheier, Botvin, & Diaz, 2001) show a basis for incorporating SIT into prevention contextualizations and applications. (2) CBT's concern for relapse prevention (e.g., Rose, Skelly, Badger, Naylor, & Helzer, 2012) could be more effectively elaborated and implemented should knowledge from prevention science be applied to these types of efforts.

The Emergence of Prevention Science

The preceding description of boundaries and mutual influences between prevention science and other fields of psychology can further be extended to present other interdisciplinary connections that facilitated the emergence of prevention science, such as its connections with developments in public health, social work, medicine, public policy, and economics. However, the somewhat associative mentioning of prevention science, developmental psychopathology, positive psychology, counseling psychology, counselor education, and finally clinical psychology is not incidental. Rather, it represents the interactive nature of the gradual emergence of prevention science as a prominent scientific domain. For example, one of the most profound shifts in prevention paradigms (see Israelashvili, 2002) that has taken place over the years is the increasing comprehension that efforts to promote and foster various aspects of the individual and/or the situation (e.g., skills acquisition) are frequently more powerful in dealing with potential risks for negative behavior than are efforts to eliminate or destroy problematic issues that may lead to problem behavior or disease. In addition, there has been a shift from only focusing on the individual to acknowledging and trying to influence institutional and systemic changes