Welcome fellow Biosocial Criminology Association (BCA) members! As current President of the BCA, I would like to formally thank you for becoming a part of the only academic association devoted to encouraging and facilitating biosocial criminological research. The BCA was created to offer an outlet for researchers and practitioners (like yourselves) to collaborate with colleagues on projects that focus on examining how biological and environmental processes work together to create individual differences in antisocial behavior. Despite the exponential growth in biosocial research and interest in recent years, there still remained no official organization designed to help encourage and enable biosocial research to continue at its current pace. After observing this void in the field of criminology, there seemed to be a need for an organization that could offer biosocial criminologists and related researchers the same type of attention accorded to several other sub-disciplines of criminology. As such, with the enormous help of my fellow BCA officers (i.e., Joseph L. Nedelec and Joseph A. Schwartz), we created the BCA. We would like to thank you for joining us in this important effort to promote and expand the biosocial perspective.

This newsletter is the first issue of the Biosocial Bulletin. The Biosocial Bulletin is the official newsletter of the BCA that will be administrated to all registered BCA members on a quarterly schedule. The bulletin is designed to provide members with information on cutting-edge biosocial findings, informative resources on commonly used biosocial research designs, discussions from biosocial scholars on contemporary methodological and theoretical issues, and information on young biosocial scholars who are on the job market. Members are also encouraged to email us any suggestions for certain sections that they may like to see added to the Biosocial Bulletin.

In this issue of the Biosocial Bulletin, Vice President Joseph L. Nedelec converses with Professor Anthony Walsh on his experiences as a biosocial criminologist and what he thinks the future holds for the biosocial perspective. Professor Anthony Walsh is the 2014 recipient of the David C. Rowe Lifetime Achievement Award that is awarded to a scientist who has advanced the biosocial perspective and, in turn, has made an invaluable impact on our current understanding of why people commit crime and delinquency.

The second feature of this issue of the Biosocial Bulletin is an excellent commentary by Joseph A. Schwartz on infinite plasticity and its implications for criminology.

I hope you enjoy reading the Biosocial Bulletin and learn something new about biosocial criminology. I would like to thank you again for joining us in a much needed effort to promote the biosocial perspective and hope to see you at the first annual BCA meeting later this week.

Eric J. Connolly
BCA President
An Interview with Professor Anthony Walsh

JN: Where and when did you complete your education?

AW: I received my PhD in criminology from Bowling Green State University, Bowling Green, Ohio, in 1983, after 28 years in the real world.

JN: How did you first become interested in examining the biosocial underpinnings to antisocial behavior?

AW: I was always interested in the inseparable nature of biology and experience in forging human behavior. I began my studies in biology and, much to my regret, later became interested in Marxist philosophy. Thus, I went to graduate studies in sociology. However, I was grabbed to work on a grant for my thesis, which was a biosocial examination of the social and psychological precursors of hypertension. I completed this in 1977 and then decided to study criminology since my police background got me into jobs in a juvenile detention center, and later a full-time job in adult probation in Toledo, Ohio.

JN: What would you say is the greatest benefit of biosocial research to the field of criminology?

AW: The greatest benefit of biosocial research in criminology has been to begin, just begin, to move it into the 21st century. We have been stuck with ideologically based theories formulated in the 1920s and 1930s so long that, as C. Ray Jeffrey said in 1977, it’s a disgrace to any discipline claiming scientific status. The greatest impetus has been the development of new observational techniques such as the ability to go straight to the DNA and neuro-imaging techniques. As Frank Cullen and his colleagues wrote, advances in new observational techniques are more valuable than advances in theory to progress in science.

JN: Who, would you say, has had the greatest impact on your current understanding about the causes and correlates of antisocial behavior?

AW: I would probably say someone like the ethnologist Niko Tinbergen and his famous four questions. He told us that to understand any behavior or trait of any animal we must understand its function, phylogeny, developmental ontogeny, and causal mechanisms (much like Aristotle’s four causes). I would also say that the anthropologist Robin Fox and the psychologist Hans Eysenck had a big impact. Among criminologists, it would have to be C. Ray Jeffrey and Lee Ellis.

JN: In your opinion, what would you say is the most important issue surrounding contemporary knowledge about the development of antisocial behavior?

AW: I believe that the most important issue surrounding contemporary knowledge about antisocial behavior has to be the removal of ideological blinders, and the education of criminology students and professional criminologists in the rudiments of genetics, neurobiology, and evolutionary biology—all needed to follow Tinbergen’s advice. I have had reviewers of my textbook Criminology: The Essentials, tell the publisher that even if they adopted my text they would not use the two chapters in which I address these topics. Some say that their students wouldn’t understand the material, and one even admitted that he or she didn’t understand it. Heaven forbid that we push our students beyond the current orthodoxy or that our professors be burdened with new knowledge. Can you imagine professors in the physical and natural sciences willfully ignoring advances in their disciplines?

“I’m happy to see that the biosocial perspective has gone as far as it has; I never thought I would see biosocial work featured in major criminological journals.”

Continued on the next page…
JN: Based on the current state of criminology, what theoretical or methodological issues do you think will change the perspective of the field over the next decade?

AW: Based on the current state of criminology, I can't see any theoretical or methodological advances that would convince the majority of the current crop of criminologists to change their perspective—"What; me retool at my age!" I see a profound truth in the statement of the great physicist, Max Planck: "A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it." Science progresses one funeral at a time, so it's all up to you young Turks. I'm happy to see that the biosocial perspective has gone as far as it has; I never thought I would see biosocial work featured in major criminological journals. I think the kudos goes to such brilliant scholars such as John Wright and Kevin Beaver who have produced so many fine youngPhDs filled with a passion for biosocial criminology.

JN: In your opinion, what is missing from the biosocial approach to crime and criminology?

AW: I honestly don't see anything missing in the current biosocial approach. If forced to give an answer, I would say find some time to study philosophy. I have always been impressed with the fact that some of the greatest minds in physics have recommended philosophy as an adjunctive study for their colleagues. Einstein believed that a philosophic frame of mind "is the mark of distinction between an artisan and a real seeker after truth." I am particularly fond of Roy Bhaskar's critical realism.

JN: What is the most effective way to illustrate the value of a biosocial approach to sociologically minded criminologists?

AW: I believe the most effective way to illustrate the values of the biosocial approach to sociologically minded criminologists is to do it in a non-combative way. I have tried to do this in two of my books by attempting to show how the most popular mainstream theories can be improved by adding biosocial insights to them, such as Wright and Beaver's work on the genetic underpinnings of low self-control.

Sigmund Freud told us that the secret to happiness is love and work. Well, I'm lucky enough to be employed doing what I would do for nothing, and I'm married to the nicest and most drop-dead gorgeous women on the planet. I am indeed blessed.
The Duplicity of Infinite Plasticity: A Sociological Trojan Horse

By Joseph A. Schwartz

I am deeply honored to contribute to the first ever issue of the Biosocial Bulletin. We are currently in the midst of an exciting time within the field of criminology with dramatic changes taking place over relatively short periods of time. However, as one would expect, with rapid change comes resistance. Criminologists who are deeply entrenched in the status quo have a rooted interest in standing their ground and attempting to weather the “biosocial storm.” A significant number of criminologists have built impressive careers on the foundation of the concepts that comprise conventional criminological thought. An impressive amount of money, time, and page space have been spent attempting to qualify conventional criminology and refine the theories, concepts, and methods that comprise this perspective. Based on these observations, it stands to reason that a significant number of criminologists who buy into and have heavily invested in conventional criminology would oppose a new biosocial paradigm. After all, as scientists, we are taught to be critical of results that oppose our existing theories and findings. The problem of findings that oppose the status quo becomes magnified when such a pattern of findings can be replicated. Even greater cause for concern arises when such findings are found to be highly robust and the specific mechanisms that account for the disparity of findings can be identified and directly modeled.

This is where the field of criminology currently finds itself. There is a highly robust, well-replicated pattern of findings stemming from biosocial research that does not directly align with findings flowing from conventional criminology. In addition, and perhaps even more troubling for those attempting to defend their sociological turf, we have been able to identify the mechanisms that account for these disparities. To summarize these findings as succinctly as possible: both biology and environment have influences on behavioral variation. In other words, the primary reason that findings between conventional and biosocial research differ, is because the latter takes into account biological and environmental influences, while the former attempts to explain all behavior through a purely sociological lens. Biosocial research has revealed that after taking various biological processes (e.g., genetic influences, neurological processes) into account, the extent to and the manner in which environmental influences impact behavior differs dramatically from what our sociological forefathers may have thought. Some environments matter, others don’t. Some don’t matter in the ways that our theories seem to suggest they should. Needless to say, these findings have not been welcomed with open arms by those still clinging to their sociological roots.

Based on this observation, it is not all that surprising that biosocial research has undergone a significant amount of scrutiny, criticism, and at times, even ridicule as the perspective begins to take hold within criminology. The problem is that biosocial research has stood up quite well against such criticism. Different modeling strategies analyzing different datasets have reached convergent findings. Methodological and theoretical critiques have been dismissed empirically. The robustness of these findings has led some conventional criminologists to “jump ship” and realize the utility that biosocial research offers the field of criminology (see for example Cullen, 2009). However, such converts are relatively rare and most criminologists have simply ignored biosocial criminologists’ calls for a more biological criminology. There also exists yet one additional group of criminologists—those who are so entrenched in conventional criminology that

Continued on the next page…
they see the robust pattern of findings flowing from biosocial research as threatening.

Those who view biosocial research as a direct attack against conventional criminology have attempted to thwart a “biosocial invasion” in many different ways. One fairly recent attack attempted to target the productivity of biosocial criminologists by attempting to classify the large volume of biosocial research stemming from a relatively small number of researchers as an unethical research practice (Gardner, Osgood, & Baumer, 2012). More specifically, a small group of “concerned” criminologists questioned the productivity of biosocial criminologists and accused researchers working in this area of splitting a large idea or single piece of research into smaller pieces in an effort to generate a larger number of articles. This accusation of so-called “salami slicing” would provide reviewers and editors of top criminology journals a highly subjective justification for the rejection of virtually any submitted manuscript. The problem with this strategy is that it was not limited to biosocial research and could be applied to any form of research. Upon realizing the potential ramifications of implementing policies aimed at minimizing “salami slicing,” both biosocial and conventional criminologists specified the concerning nature of such policies, curbing editors concerns at least temporarily.

More recently, conventional criminologists have employed a new, and perhaps even more concerning, tactic to purge biosocial research from criminology. In an article recently published in *Criminology*, Burt and Simons (2014; hereafter BS) observe that “behavior genetic studies by criminologists investigating the heritability of criminal behavior and factors associated with crime have been published at a rapid and seemingly increasing pace” (p. 224). BS then go on to criticize studies relying on twin methods based on methodological (e.g., violation of underlying assumptions) and conceptual (e.g., genetic and environmental influences cannot be effectively separated from one another) critiques. Based on their appraisal of twin-based methodologies, BS call for “an end to heritability studies in criminology” and urge “scholars to recognize that existing heritability estimates are the result of models biased toward inflating genetic influences and underestimating shared environmental ones” (p. 246). BS continue their attempt to root genetically informed research from the field of criminology by arguing that “using these rough and biased heritability estimates to undergird specious debates about the irrelevance of shared environmental factors...does a disservice to both scientific and public knowledge” (p. 246).

This call for an “end to heritability studies in criminology” has serious ramifications within and outside of biosocial criminology. Twin studies and behavioral genetic methodologies represent one of the most commonly used classes of analytic techniques within biosocial research. By attempting to discredit heritability studies within the criminological literature, BS would effectively “close the gap” between findings from the biosocial and conventional literatures. The primary issue accompanying this strategy is that BS have to venture into uncharted territory in order to succeed. They must make a call for academic censorship. More specifically, their argument plainly informs researchers that certain analytic strategies should no longer be allowed within the field of criminology. Such a call sets a dangerous precedent and can easily be applied to virtually any other class of analytic techniques. Keep in mind that this blatant call for academic censorship was accepted and published in the flagship journal of the field of criminology, which indicates that the editors of the journal (along with the researchers that reviewed the article prior to publication) also endorse this view.

In another recently published article, my coauthors and I revealed that the concerns raised by BS were factually and mathematically incorrect and the direct result of selective reading of the literature, a misunderstanding of key quantitative genetic concepts, and a desire to stress the
the importance of environmental influences on behavioral phenotypes (Barnes et al., 2014). Despite the results of our close examination of the BS paper, the fact that such an article was published in the first place resulted in a deeper concern. The publication of this article in the flagship journal of our field sent a clear message to biosocial criminologists: Our work is not appreciated within criminology, and our mere presence is viewed as a nuisance standing in the way of conventional criminologists’ social construction of reality. This message was clearly received by many of us engaging in biosocial research. For years, many biosocial criminologists have discussed the need for our own organization. Not a subdivision of the American Society of Criminology (ASC), but a clean break. We sought to follow the lead of several organizations within psychology that had clearly and successfully differentiated themselves from the rest of the field such as the Association for Psychological Science (APS) or the Human Behavior and Evolution Society (HBES). The publication of the BS paper mobilized a group of us to form the Biosocial Criminology Association (BCA), an organization for any researcher wishing to better understand human behavior and guided by empirical research, not ideology. In this way, the publication of the BS paper can be viewed in a positive light, in that it provided the impetus for significant growth in biosocial research.

In this light, I would like to take this opportunity to augment the mathematical and methodological criticisms of BS’s arguments offered by Barnes and colleagues (2014) by identifying some of the conceptual errors in BS’s arguments. In an effort to accomplish this goal, this commentary aims to achieve three related objectives. First, I will provide an overview of BS’s newly proposed biosocial life-course perspective with a critical eye toward discussing some of the more concerning aspects of this perspective. More specifically, I will attempt to situate some of the more fundamental aspects of the perspective within the contemporary literature linking epigenetic processes and neuroplasticity to behavioral phenotypes. Second, I will demonstrate how BS’s biosocial life-course perspective represents a “sociological Trojan Horse” aimed at completely removing genetic influences from the etiological processes resulting in antisocial or criminal behavioral phenotypes. Third, I will discuss some of the methodological issues that accompany the biosocial life-course perspective. In addition, I will offer some suggestions for overcoming these limitations and moving the field of criminology toward becoming a more interdisciplinary field.

**Lifelong Plasticity and Immense Flexibility: Developing the Trojan Horse**

After calling for an end to heritability studies within the field of criminology, BS provide a description of a new biosocial paradigm which they refer to as a biosocial life-course perspective (p. 250). The crux of this “new” perspective is to focus on the manner in which environmental influences “sculpt an individual’s physiology, especially the brain” and “change the person’s biological systems” (p. 250). Directly in line with these suggestions, BS go to great lengths to illustrate the immense flexibility of the genome (p. 245) and the “lifelong plasticity” of both human development (p. 249) and the biopsychosocial system (p. 250). While BS do not explicitly claim that the developmental processes they describe are infinitely plastic, this is inherently implied with a host of statements such as “systems can be recalibrated and the brain can be resculpted” (p. 250). In this way, the very foundation upon which the biosocial life-course perspective is built inherently assumes that both the human genome and brain are, at the very least, immensely flexible and can change dramatically over the entire life course. As will be demonstrated in more detail below, this fundamental aspect of the proposed perspective is a necessary first step in effectively shifting all emphasis from biosocial explanations of behavior to “purely” social explanations. In this way, the assumption of immense (or perhaps even infinite) plasticity represents a sociological
Perhaps the most pressing question one may ask when viewing this repeated pattern would be: Why wouldn’t BS provide citations supporting the concepts that comprise the very foundation of their newly proposed perspective? While it is not possible to answer with certainty, one possible solution is quite simple: There are no empirical studies that support these contentious claims. In fact, to date there has been no empirical investigation of just how plastic the genome and other biological systems actually are. In addition, there has been limited research examining the potential role that epigenetics (and various other processes which result in neurological modifications) play in the etiological development of human behavior. The preliminary nature of epigenetic research, and the potential misuse of the limited extant findings, has resulted in leading experts in epigenetics to urge social scientists to proceed cautiously (Heijmans & Mill, 2012). This issue is illustrated by Heijmans and Mill (2011) when discussing a single aspect (methylation occurring throughout the entire genome, which is referred to as the methylome) of the highly complex epigenetic process when they concluded that “our basic understanding of the methylome…is in its infancy, and we are still learning about the specific localization of the features that when differentially methylated, regulate gene expression and are thus relevant for epigenetic epidemiologists to study” (p. 1). Heijmans and Mill (2011) encourage the further investigation of epigenetic processes and their application to various outcomes, but caution future researchers that “[v]ery much like genetics, epigenetics will not be able to deliver the miracles it is sometimes claimed it will” (p. 4). This same sentiment, and skepticism, was echoed by Smith (2011) who described epigenetics as “the current fashionable response to any question to which you do not know the answer” (p. 539). To be clear, epigenetic research is expected to hold a critical place in future research examining a wide range of outcomes, which
inherently includes behavioral outcomes, and findings flowing from these studies may play an important role in furthering our understanding of the etiological development of human behavior. However, at least at the current time, such findings do not yet exist and levering the future of an entire perspective (or even discipline) on what may come of future research is unsound, particularly when the fundamental assumptions of such a perspective have yet to be realized (or even adequately examined) within an objective, quantitative framework.

In light of this (lack of) evidence, an appropriate question may be: What do we do then? There is no single answer to this question, but findings flowing from the extant literature provide a preliminary response. Previous research has indicated that while biological systems can exhibit significant changes over the life course, such changes are “bounded” to some degree, making an assumption of infinite plasticity a gross over-exaggeration (Headey & Wearing, 1989; Lykken & Tellegen, 1996; Rowe, 2001). For example, David Rowe (2001) describes a “set point theory” in which individual level behavioral changes may occur over the life course, but such changes have boundaries and are directly related to a genetically influenced set point. Much in the same way temperature can vary but is bounded by the set point of 98.6 degrees Fahrenheit by homeostasis, phenotypes may vary over time but only in accordance to a particular set point. Unlike the example of temperature, behavioral set points are hypothesized to vary between individuals as a function of differential genetic influences.

This same general principle may also apply to epigenetic changes in which various genes are activated or silenced over the life course. In this way, each individual’s genetic and neurological malleability, or the extent to which epigenetic and neurological changes can occur, is influenced to some degree by their genome, resulting in individual-level variation in malleability. One particular finding stemming from the extant literature provides preliminary support for this hypothesis. Previous research has indicated significant levels of individual-level variation in response to macro- or meso-level influences (Baumer, Horney, Felson, & Lauritsen, 2003). For example, research has revealed that the majority of individuals in even the most disadvantaged neighborhoods refrain from serious criminal behavior (see for example Anderson, 1999). Previous research has relied on gene-environment interactions (GxEs; Belsky & Pluess, 2009) and gene-environment correlations (rGEs; Harden, Hill, Turkheimer, & Emery, 2008) to explain this variation in response. While these explanations remain valid, a complementary explanation may involve epigenetic responses to deleterious environmental stimuli, wherein some individuals may possess genomes that are more susceptible to such stimuli relative to others. In this alternative framework, epigenetic changes can still occur, but due to the underlying “structure” of the genome such changes are bounded, ultimately resulting in individual variation in response. This is not to say that epigenetic changes do not occur, as results from twin studies have revealed epigenetic changes between monozygotic (MZ) twins even very early in the life course (Wong et al., 2010). Rather, the overall plasticity of the genome is dependent, at least to some degree, on the structure of the genome itself and can vary significantly between individuals.

In this way, the bounded plasticity perspective seems to align much more closely with the findings stemming from the existing literature, relative to the biosocial life-course perspective, and its underlying assumption of infinite plasticity, proposed by BS. An infinitely flexible genome would likely result in a more homogeneous response to pervasive and chronic negative stimuli. More specifically, emphasizing change and unlimited malleability removes any potential mechanism for explaining individual-level phenotypic variation in response to negative stimuli. Discounting the initial structure of the genome and ignoring the concept of bounded plasticity actually diminishes the explanatory power of the biosocial life-course perspective.

Continued on the next page…
Environmental Reductionism: Invasion Tactics

Upon this foundation of infinite malleability, the biosocial life-course perspective begins to take shape. Citing epigenetic processes and neuroplasticity, BS contend that immense biological changes occur continuously over the life course and, perhaps even most importantly, such changes are driven exclusively by environmental influences. More specifically, the exposure to various environments (both deleterious and beneficial) have significant and long-lasting effects on the expression of various genes and the generation and maintenance of neural networks. According to BS, “[t]he new biosocial paradigm would suggest that these cognitive changes are likely associated with epigenetic reprogramming and rescultping of brain circuitry” (p. 250, emphasis added). In this way, two conclusions can be gleaned from the proposal of the biosocial life-course perspective. First, the “biopsychosocial system” is immensely (or perhaps even infinitely) flexible or plastic. Second, the primary driving force of change that continually shapes the genome and brain over the entire life course is social influence. Importantly, these two convening arguments represent BS’s sociological Trojan Horse: a purely social explanation of behavior cleverly hidden under the guise of epigenetics and neuroplasticity.

This observation is further evidenced by the future outlook BS provide for “criminologists who are uninterested in biological influences or pathways and who prefer to focus on social influences” (p. 251). BS reassure criminologists that research ignoring the relevance of both genetic and environmental influences in the etiology of criminal behaviors is “not undermined by biological findings at the current state of knowledge” and that “it seems unlikely that social models will be undermined in the future by biological research, as the more we learn about biological and genetic influences and mechanisms, the more consequential and intertwined social influences become” (p. 251).

The underlying sentiment of this particular statement seems to suggest that findings flowing from non-genetically informed research should be just as influential in a biosocial life-course perspective as results stemming from studies which account for both genetic and environmental influences on criminal behavior. While BS acknowledge that we ignore biological influences “at our own peril,” their encouragement of conventional, sociologically based explanations of criminal behavior fail to effectively illustrate the “perilous” nature of such empirical inquiry. These passive and reassuring comments can be juxtaposed against the calls for an end to heritability studies and the accompanying criticisms against current biosocial research and quantitative genetic studies within the field of criminology.

Much like their discussion regarding the continued importance of research that fails to consider biological influences on behavior, the more fundamental aspects of BS’s arguments also seems to overemphasize the importance of social influences. More specifically, maintaining that the human genome is immensely flexible and that such flexibility is the direct result of purely social influences manipulating biological influences on criminogenic phenotypes ultimately removes any need to examine genetic influences in future studies. Since the underlying arrangement and structure of the brain and genome become largely unimportant in the biosocial life-course perspective where such systems can exhibit significant and lifelong change stemming from environmental exposure and socialization, it is unclear what objective would be accomplished by continuing to examine genetic influences in any capacity. In this way, observing genetic influences on criminogenic phenotypes appears to be highly redundant and continuing to examine associations between environmental influences and antisocial outcomes is permissible. In fact, BS highlights this point in the above-mentioned comments indicating that empirical investigations that wholly ignore biological or genetic influences on outcomes will not be “undermined by biological findings.”

Drawing from the philosophical principle of Occam’s razor, the more parsimonious explanation of...
criminogenic outcomes become more clear. Findings flowing from such studies are not challenged by the principles favored in the biosocial life-course perspective because the environmental influences examined in these studies constitute both genetic and social influences.

When viewed in this way, what else, other than an added layer of complexity, does examining biological systems within the biosocial life-course perspective contribute? Collecting genetic data is expensive, in both a monetary and temporal sense. Criminological research can simply continue without the added costs and complications that accompany the collection of genetic information. In fact, when viewed in this light, collecting and analyzing genetic information in any way simply becomes an exercise in futility, or science for the sake of science. In an effort to minimize the importance of genetic influences on criminogenic phenotypes, BS have explained away any potential utility of examining genes in the first place. This form of environmental reductionism is the full realization of BS’s sociological Trojan Horse.

**Unintended Consequences of the Biosocial Life-Course Perspective**

Simply eliminating the examination of genetic influences on behavioral outcomes may seem to be an attractive alternative to securing a biosocial data set, learning how to estimate genetically informed statistical modeling strategies, and consuming the immense literature examining biosocial influences on behavioral phenotypes. However, such oversight would be met with a host of methodological and theoretical limitations that are far more “perilous” than BS make them out to be. Somewhat ironically, BS’s encouragement of conventional studies that simply ignore the importance of biological processes in the etiology of behavioral phenotypes, is directly related to a sweeping assumption of any statistical model used in such capacity. Stated as simply as possible: any statistical model that does not sufficiently account for genetic influences inherently assumes that all of the variables included in the analysis are purely social and completely free from any genetic influence, including genetic influence stemming from gene-environment interplay. This underlying assumption is reified by BS’s sociological Trojan Horse and their reassurance that conventional criminologists should continue business as usual.

Perhaps the most important question for conventional criminologists who continue to estimate statistical models based on the assumption that behavioral phenotypes and the key predictor variables specified in primary theoretical perspectives is: how pervasive is the effect of genetic and other biological influences on these concepts? This is a key question since BS’s rosy outlook

Continued on the next page…
regarding conventional criminological research would only become nefarious if genes influence both the independent and dependent variables included in most statistical models. Genetic influences that do not impact both sets of variables are not concerning. However, if genetic influences are found to impact both dependent and key independent variables, statistical models that fail to adequately control for such influences will be misspecified due to genetic confounding and will likely yield biased parameter estimates or even identify spurious associations as statistically significant. The concern surrounding genetic confounding is nothing new and has been voiced several times over the past few decades. For example, the influential social scientist David Rowe (1994) voiced such concerns approximately two decades ago. Other critics have followed suit (Harris, 2009; Pinker, 2002) and have raised the very real possibility that a large portion of the findings flowing from the social sciences should be interpreted with extreme caution due to the very likely possibility that such findings are biased due to genetic confounding. While the majority of the work cautioning against genetic confounding is theoretical in nature, it is important to recall that this issue is a statistical question that allows for an objective, quantitative assessment.

A quantitative assessment is critical, as it would assess two separate, but related, issues. First, genetic confounding needs to be assessed directly in an effort to quantify the impact of failing to consider genetic influences. This second issue is important since the sheer presence of genetic confounding does not necessarily invalidate all existing and future research that fails to adequately control for genetic influences. For example, adjusting models for genetic confounding may result in nonsignificant or trivial changes that do not alter the overall pattern of findings. Alternatively, if genetic influences have relatively large effects on key independent and dependent variables commonly used in criminological research, genetically informed models may result in associations that are either highly attenuated or even nonsignificant.

Fortunately, both of these issues have been thoroughly addressed in the extant literature. Regarding the heritability of various phenotypes, a large number of studies have revealed that virtually every measureable trait is influenced by genes. In fact, the findings are so robust and pervasive, when writing the first law of behavior genetics, Turkheimer (2000) acknowledged that “[a]ll human behavioral traits are heritable” (p. 160). Based on results stemming from decades of research, more recent assessments have echoed Turkheimer’s observation (Carey, 2003; Plomin, DeFries, Knopik, & Neiderhiser, 2013; Johnson, Turkheimer, Gottesman, & Bouchard, 2009). Importantly, these findings are not only limited to behavioral outcomes such as antisocial behavior, but also extend to many of the environmental variables that interest criminologists including peer group membership, parental socialization, and stressful life events (for an overview see Kendler & Baker, 2007). While some may question the manner in which genes influence factors typically considered to be “purely environmental,” this phenomenon, referred to as gene-environment correlation, is essentially a result of genetically influenced selection processes that ultimately result in significant variation in exposure to different environments (for a more detailed explanation of gene-environment correlations see Moffitt, 2005). Collectively, findings flowing from this immense literature substantiate the issue of pervasive genetic influence across variables commonly examined by criminologists. More specifically, these findings indicate that genetic confounding is likely a pervasive problem that plagues a significant amount of criminological research flowing from the social sciences.

While the above findings seem to indicate that genetic confounding is a common problem, such findings do not necessarily indicate that failing to account for genetic confounding introduces substantive or meaningful bias. A converging line of research has directly assessed this issue by examining the ramifications of failing to properly account for genetic confounding in statistical models (Barnes, Boutwell, Beaver,
The findings flowing from this literature are troubling, and seem to directly contrast BS’s comments regarding the lack of consequences for criminologists who are “uninterested in biological influences or pathways and who prefer to focus on social influences.” The results of this literature not only indicate that failing to control for genetic influences can artificially inflate parameter estimates, but also may result in even more problematic forms of bias. For example, Harden and colleagues (2008) reestimated models estimated by Armour and Haynie (2008) and employed a genetically informed model. The results of the models that adequately controlled for genetic confounding revealed that the findings reported by Armour and Haynie were significantly biased, indicating that the models were misspecified. Perhaps even more importantly, the parameter estimates reported by Armour and Haynie were so badly biased that they misreported the direction of the association. Despite BS’s assurance that biological influences will not undermine findings stemming from studies focusing on social influences on criminal outcomes, such a claim simply is not reflected in the literature.

What does this mean for conventional criminological research that does not take into account biological process in the formation of behavior patterns? Unfortunately, the answer is not a comfortable one and will likely impact a large swath of criminologists. The literature examining the quantitative ramifications of genetic confounding raises the very real possibility that the vast majority of findings flowing from the field of criminology (and other social science disciplines) are at the very least misspecified and in some instances may even be wholly incorrect (as in the case of Armour & Haynie, 2008). Additional research is needed to fully assess the extent of the problem and just how problematic the criminological findings are, but a significant number of studies have already explored this issue within the field of criminology. Unsurprisingly, the overall pattern of findings reported by these studies directly aligns with studies investigating the role of genetic confounding in other disciplines. More specifically, the limited number of studies examining the impact of failing to adequately control for genetic confounding in criminological research has revealed that this methodological issue is pervasive and failing to estimate genetically informed models results in highly biased parameter estimates (see for example Wright & Beaver, 2005). These findings indicate that criminological research is not immune to methodological issues identified in other disciplines and is just as susceptible to genetic confounding as research in other fields.

Standing our Ground: Dispatching Invasion Efforts and the (Biosocial) Future of Criminology

While the above findings may paint the current landscape of criminology as relatively bleak, the future of our discipline does not have to follow suit. Despite BS’s claims to the contrary, biological findings at the current state of knowledge do seem to undermine social models that ignore genetic influences. This observation should not be all that surprising given BS’s acknowledgement of “biopsychosocial” processes in the etiology of antisocial phenotypes. As discussed in more detail above, BS attempt to circumvent (and even remove entirely) biological influences on behavioral phenotypes by arguing that the underlying structure of the genome and brain are largely meaningless due to lifelong plasticity stemming from purely environmental influences. As indicated previously, the most critical aspects of this argument (e.g., immense or infinite plasticity) have not been demonstrated empirically, and such arguments also seem to suffer from logical inconsistencies stemming from a misunderstanding (or misinterpretation) of basic genetic and epigenetic processes. Based on this inventory of the current state of criminology and the potential ramifications of the findings of contemporary biosocial research within criminology, it is no wonder
that BS “call for an end to heritability studies.” The results from quantitative genetic studies (including heritability studies) pose a serious threat to those criminologists who wish to reify the sociological “status quo” which guided the formation of criminology and persists in virtually all aspects of the discipline currently. Without any doubt, challenging the sociological status quo will likely result in sweeping and significant changes within the field of criminology, many of which will likely result in a more biological criminology, wherein biological and environmental influences are equally emphasized and examined.

With that said, criminologists who wish to focus on environmental influences on criminal behavior should not be discouraged. Recent advances in behavioral genetics have led leading behavioral geneticists to conclude that “the bottom line is that everything is heritable” (Turkheimer, 2000, p. 160) and that “specific estimates of heritability are not very important” (Johnson et al., 2009, p. 220). Despite BS’s claims to the contrary, this does not mean that heritability studies no longer serve any purpose. Rather, the importance of such studies is immensely intensified. Being aware of the fact that virtually every measurable concept is influenced by genes in some way and to some extent illustrates the crucial importance of accounting for genetic influences when examining such concepts and the variables used to measure them.

In this way, the utility of behavior genetic methodologies is not to simply estimate heritability coefficients, but rather to control for genetic influences. Properly controlling for genetic influences allows for a more direct isolation of the association between environmental influences and outcomes of interest. The current biosocial paradigm is not one that dismisses the importance of environmental influences. To the contrary, this particular paradigm and behavior genetic methodologies allow for the most appropriate and properly specified examinations of environmental influences on criminal outcomes.

In this way, the field of criminology finds itself at a critical crossroad. Continuing to ignore the potential role of genetic and other biological influences on behavioral phenotypes is becoming more and more problematic. The existing, and ever growing, body of evidence linking biology to behavior is quickly becoming irrefutable. In many ways, the decision regarding the inclusion of biological concepts in criminological explanations of behavior has already been made. Biological processes are directly and heavily involved in the etiological of behavior, including delinquent and criminal behavior. This observation is no longer disputed due to the expansive amount of high quality research demonstrating a robust association. The decision that still needs to be made involves specifying the pathways leading from biology to behavior.

BS attempt to provide a framework linking biology to behavior by exaggerating the flexibility of the brain and genome, appeals to the status quo, and by calling for an end to studies that report findings that counter their claims. As evidenced above, endorsing BS’s biosocial life-course perspective would not progress the field of criminology and more fully integrate findings from biology into criminological research. Rather, BS have proposed a perspective that not only misinterprets the role of complex biological processes, they have minimized the role of biology to such an extent that theoretical models ignoring genetic and neurological processes should be favored as they offer greater levels of parsimony. Fortunately, this is not the only alternative available to criminologists who wish to examine biological and environmental influences on behavioral outcomes or who simply wish to estimate properly specified statistical models. The primary goal of the existing biosocial perspective is to make use of any and all factors that improve our ability to explain antisocial phenotypes including delinquency and criminal behavior. These goals are realized by integrating methods, theoretical concepts, and findings from other disciplines such as developmental psychology, behavioral genetics, molecular genetics, epigenetics, neuroscience, evolutionary psychology and the like. Rather than selectively reinterpret findings from these fields that reify the

Continued on the next page
the sociological status quo or our own ideological agendas, biosocial criminologists are doing the hard work of integrating this information into the field of criminology.

While it is expected that the manner in which findings from the biological sciences inform criminological research will continue to evolve, it can also be expected that both biological and environmental influences will be directly implicated in the etiological development of behavioral phenotypes. This observation stresses the importance of observing both sets of influences in subsequent statistical models. Unfortunately for some criminologists, this necessarily means that they will have to step out of their comfort zone and explore new datasets, theoretical perspectives, literatures, and analytic techniques. Such efforts will result in more accurate explanations of behavior, more effective treatment strategies, and the formation of policies that effectively target behavioral modification. However, these goals cannot be accomplished without stepping away from the sociological status quo and embracing the current biosocial perspective. Perhaps the most accurate statement made by BS is that we do indeed ignore biological influences at our own peril.

Joseph A. Schwartz
BCA Treasurer and Secretary

References


You are Cordially Invited to Attend the First Annual BCA Meeting

As a registered BCA member, you are cordially invited to join us at Kuleto’s Italian Restaurant located on 221 Powell Street in San Francisco, California for the 2014 BCA meeting. The meeting will take place on Thursday, November 20th from 4:00 pm to 5:30 pm. A detailed schedule of the meeting can be found on page 3 of the bulletin or on the BCA website: biosocialcrim.org. Free food and drinks will be served to all guests during the meeting. We look forward to seeing you there!

Please also follow us on twitter (https://twitter.com/biosocialcrim) or Facebook (https://www.facebook.com/biosocialcrim) for BCA news and live updates from the 2014 BCA meeting.