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Is Criminology Moving Toward a Paradigm Shift?: Evidence from a Survey of the American Society of Criminology

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Introduction

In response to a question asking which criminological theory had the “greatest amount of empirical support,” a sample of members of the American Society of Criminology (ASC) identified 15 theories in 1987 (Ellis & Hoffman, 1990) and 23 in 1997 (Ellis & Walsh, 1999; see also Walsh & Ellis, 2004). This is indicative of both theoretical fragmentation and of a selective reading of the empirical literature, since by definition there can only be one theory with the “greatest amount of empirical support.” Frank Williams (1999: 65) tells us that “Criminological theories are disciplinary reductionistic—they tend to focus on concepts derived from a single discipline”. He opines that this “smacks of disciplinary hegemony” with each discipline attempting to explain behavior with the only variables that are “really important”—its own (1999: 67). Blankenship and Wachholz (1989) want to rectify such thinking and appeal for theoretical integration: “discipline boundaries should be crossed in an effort to glean from the work of scholars holding different ideologies...true paradigmatic shifts may only occur in the social sciences through the process of theoretical integration” (1989: 2). In the 1997 survey of criminologists, Ellis & Walsh (1999) asked respondents their basic ideological perspective (i.e., conservative, moderate, liberal, and radical) and found that it strongly predicted a person’s favored theory (Cramer’s $V = 0.65$). Few things prevent the accumulation of reliable knowledge than ideology (Blankenship & Wachholz, 1989; Cullen, 2005).

Ideology forms and colors our attitudes and values in ways that lead to a tendency to accept or reject data according to how well or how poorly they cohere with that ideology. Previous research has suggested that the ideological divide in criminology is between criminologists who focus on strictly environmentalist theories that give short shrift to individual differences, and those who focus on individual differences and are favorably disposed to the biological sciences (Wright & Miller, 1998; Walsh & Ellis, 2004). The former tend to be radicals and liberals and the latter tend to be conservatives and moderates, although there is no one-to-one correspondence (Wright & Miller, 1998). The theoretical disarray in criminology occasioned by this tendency (among other things) has been noted by a number of scholars (Barak, 1998; Dantzer, 1998; Walsh, 2002).

The present study repeats and extends these earlier studies with the goals of evaluating the relationship between ideology and favored theory in comparison with the earlier studies to ascertain if the grip of ideology is loosening, and of assessing the possibility of interdisciplinary integration.

Of Paradigms and Ideology

What Thomas Kuhn (1970) called “normal science” tests hypotheses derived from theories shaped by the contents of the paradigm in which they exist. The criminological quasi-paradigm is environmentalism, and as with any other science the purpose is to extend the knowledge the existing paradigm permits, not to look for anomalies within it. According to Kuhn (1970: 24), those whose work extends beyond what the paradigm permits are rarely tolerated by the guardians of the paradigm, and what will not fit in the paradigmatic box is “often not seen at all.”

Environmental theories that largely ignore individual differences, at least in terms of the possible biological origins of these differences, constitute the dominate paradigm of mainstream criminology today (Lilly et al., 2007, Wright et al., 2009). Some criminologists in this tradition seem to have misapprehended the motives and purposes of those that study and attempt to integrate the more fundamental sciences, and what they could actually add to our discipline. A review of criminology textbooks by Wright and Miller (1998: 14) concluded that: "Sadly, twenty recent books link biological explanations of crime to sexism, racism, and fascism, a common tactic used by some criminologists (especially those embracing critical perspectives) to discredit these arguments." Such ad hominem attacks discredit the discipline and stifle healthy debate and good science.

Most criminologists are sociologically trained (Ellis & Hoffman, 1990; Walsh & Ellis, 2004; Cooper et al., 2008), and the history of science tells us that there is always reluctance on the part of scientists operating the level of analysis in one discipline to incorporate the theories and methods of scientists operating in another (Walsh 1997). Yet it is generally agreed upon by philosophers and historians of science that young sciences (such as ours) only advance when they drop their aversions to more fundamental sciences and embrace what they have to offer (Okasha, 2002). Although today's chemists learn physics, biologists learn chemistry, and increasingly psychologists learn biology, each of these disciplines once rejected the notion that the lower-level science could be of use to them (see Walsh, 1997, for a brief history). The desire for discipline autonomy and ideology are the two primary reasons for the reluctance of scientists working in young disciplines not to integrate ideas from other disciplines (Wright et al., 2009).

Frank Cullen, one of the most eminent of current criminologists and a self-described "proud member of the sociological paradigm," has recently written that he is "persuaded that sociological criminology has exhausted itself as a guide for the future study of the origins of crime. It is a paradigm for the previous century, not the current one" (2009: xvi). Spectacular advances in the genomic and neurological sciences convinced Cullen and many other front-rank criminologists that the new paradigm will be biosocial, "a broader and more powerful paradigm" (2009: xvii). Similarly, Andrews and Wormith (1989) contend that individual explanations of criminal behavior in no way undermine social theories; rather, the real danger is in theorists who "insist on denying the importance of human diversity" (p. 307).

But the road to a new paradigm is fraught with stumbling blocks. As Thomas Sowell's '*A Conflict of Visions*' (1987) informs us, there are two contrasting visions that have shaped thoughts about human nature throughout history. The '*constrained*' vision views human activities as constrained by an innate human nature that is self-centered and largely unalterable, while the '*unconstrained*' vision views human nature as socially constructed and malleable. The constrained vision says: "this is how the world '*is*,'" the unconstrained, "this is how the world '*should be*.'" These visions subconsciously intrude into human thinking: "It is what we sense or feel '*before*' we have constructed any systematic reasoning that could be called a theory, much less deduced any specific consequences as hypotheses to be tested against evidence" (Sowell, 1987: 14, emphasis original).

Holding different visions leads to asking very different questions about the same issues that both sides see as problematic and as requiring attention: "While believers in the unconstrained vision seek the special causes of war, poverty, and crime, believers in the constrained vision seek the special causes of peace, wealth, or a law-abiding society" (Sowell, 1987: 31). That is, war, poverty, and crime are aberrations to be explained for unconstrained visionaries, while for constrained visionaries these things are historically normal and inevitable, although regrettable, and what has to be understood is how we can bring about their opposites. Sowell's argument is persuasive, and suggests that vertical theoretical integration faces formidable ideological barriers. It also supports the notion that the liberal-conservative political alignment is fundamental to understanding the fault lines in criminology, as discussed further below.

Education as a Countervailing Process

The biological sciences (such as genetics, evolutionary biology, and neurobiology) cohere more with the constrained vision in that they present us with a universal human nature that is far from perfectible (see Singer, 2000). Perhaps it is for this reason that the guidance these sciences have to offer resonate more with the right than with the left (Pinker, 2002). But this is only a tendency, for many researchers in these areas

have impeccable liberal credentials, and all the above mentioned biological sciences are very “environment-friendly” in that they recognize that nature and nurture are a tightly wound bundle (Walsh, 2002; Singer, 2000). Perhaps the major reason many criminologists believe that biosocial theories are entrenched in the darkest regions of the right is that they lack exposure to contemporary biosocial thought. If criminologists would become acquainted with them it may assuage any ideologically-based fears. On the other hand, criminologists in the biosocial camp have had wide exposure to mainstream criminological theories as part of their professional training in criminology. It is therefore less likely that their acceptance of biosocial theories is a function of ignorance of strictly environmental theories.

Williams suggests one strategy for achieving horizontal integration: “The content of existing theories should be examined for conceptual similarities, and bridges should be built between these concepts” (1984: 103). As a first step, a series of factors having similar meanings in different theories that are associated with crime and criminality should be identified. Agreement among criminologists of different ideological persuasions about the relative importance of these factors as causes should then be identified. We attempt here to determine the extent of conceptual agreement relevant to “causes” of crime across ideological categories in this paper, but do not presume to show how the different theories, concepts, and propositions might be integrated. We only propose to present empirical data to help us to assess the possibility of this occurring some time in the future.

We attempt to do this in four steps. First, we identify the most popular theories among contemporary criminologists and compare them with the most popular theories identified by Ellis and Hoffman (1990) and Ellis & Walsh (1999). Second, we determine the relative weight assigned by criminologists to a series of alleged causes of criminal conduct. The purpose of this is to identify causes of crime that criminologists of different ideologies agree and disagree on. Third, we assess the extent to which exposure to education outside the disciplines in which most criminologists receive their training (typically sociology and criminal justice) influences attitudes toward non-sociological causes of criminal behavior. Finally, we attempt to assess attitudes regarding the value of psychology and biology to criminology, about the desirability of integrating these disciplines into criminology, and finally, whether these attitudes are related to ideology.

Methods

Sample

Members of the ASC with email addresses as of December 2007 were sent an email request to take an online survey. Individuals who had not yet taken the survey were automatically sent a reminder email after one week. Out of an initial N of 3970, 1218 (31%) responded. This is comparable to Walsh and Ellis’s (1999) 29% response rate, and was impacted by a number of email addresses that were returned as undeliverable (over 500) for technical reasons beyond the control of the researchers. Because we wanted to limit our respondents to professional criminologists (to mirror the previous studies), the current study limits its findings to those respondents with a doctoral degree (N=770). Of course, not everyone who studies crime identify themselves as criminologists—criminal justices, sociologists, psychologists, physicians, lawyers, and other professionals—study crime also, and are contained in our sample. The use of the term “criminologist” throughout this paper simply reflects parsimony.

Instrument

This study used a slightly revised instrument initially developed by Ellis and Hoffman (1990), and later revised by Walsh & Ellis (1999). The newest iteration contained five sections: a cover page, demographics, questions pertaining to the objectives of this study, and an exit letter page.

Dependent Variables As with the Ellis and Hoffman (1990) and Ellis and Walsh (1999) studies, the major dependent variable is criminologists’ favored theory. This variable was measured with the open-ended question: “Overall, which theory do you consider the most viable with respect to explaining variations in serious and persistent criminal behavior (please be as specific as possible)?” For responses that included more than one theory, only the first theory was included. These theories were then recoded for ease of

quantitative analysis. Qualitative responses were retained for purposes of enriched discussion, and are presented in Appendix A.

The second dependant variable focused on the most favored causes of criminal behavior among contemporary members of the ASC. The alleged causes listed in the questionnaire were derived from an exhaustive literature review that covered many hundreds of studies compiled in Ellis and Walsh's '*Criminology: A Global Perspective*' (2000). To measure this variable, respondents were instructed to assign a score to each alleged cause ranging from 0, indicating that they considered the cause "of no importance," to 9, indicating that they considered the cause "extremely important." These possible causes of crime and the mean scores assigned to them are presented in Table 3, and are broken down by ideology.

Walsh and Ellis (2004) concluded their paper regretting the fact that they did not ask opinions of criminologists about vertical integration of their discipline with more basic disciplines. We rectify this here with a final dependent variable designed to assess if criminologists believe that (1) psychology and biology have something useful to offer the discipline and (2) if criminology should be integrated with those disciplines. Statements assessing beliefs were in the first instance: "Biology has a lot to offer criminology," "Psychology has a lot to offer criminology;" and in the second instance they were: "Criminology should be integrated with biology," and "Criminology should be integrated with psychology." Answer categories ranged from 0 = "Strongly disagree" to 4 = "Strongly agree."

Independent Variables The primary variable assumed to be linked to all three dependent variables (favored criminological theory, favored causes, and attitude toward psychology and biology) is ideology. To measure this variable, respondents were simply asked to place themselves into one of four ideological categories: "conservative," "moderate," "liberal," and "radical."

To ascertain the scope of respondents' education and training in the basic human sciences, we asked them to indicate the discipline in which they received their primary training, and the number of graduate and undergraduate classes they took in biology, psychology, and sociology. Our reasoning here was that the wider the number of perspectives a person is exposed to, the more open he or she would be to the possibility that factors outside of his or her field of specialization may influence criminal behavior. The modal number of combined undergraduate and graduate classes in both biology and psychology was zero and the median was 1; the modal number of both undergraduate and graduate classes in sociology was 10. Thus our respondents are well-educated in the strict environmentalist stance of most sociological theories, but the great majority of criminologists surveyed here lack formal training in disciplines stressing individual-level factors.

Other variables included in the study were age, gender, and race. All variables included in this study and their associated quantitative values are given in Table 1.

--Table 1 about here--

Results

Favored Theories

Table 2 presents the theories listed by our respondents as the "most viable with respect to explaining variations in serious and persistent criminal behavior" broken down by ideology. We first note that only 49.2% of the respondents indicated a favored theory. This in itself speaks volumes about the theoretical confusion existing in our discipline; as one respondent indelicately replied to the request to indicate a favored theory: "You've got to be kidding." However, a few other criminologists simply felt that no one theory is up to the task and answered in ways similar to the following example: "I feel that a combination of theories, such as Social Bond, Differential Association, and Social Disorganization theories in combination with the Life Course Developmental perspective provides the best explanation in explaining variations in criminal behavior."

--Table 2 about here--

Note is that a total of 24 theories were indicated to be “most viable with respect to explaining variations in serious and persistent criminal behavior.” This is indicative of criminology’s theoretical fragmentation and a tunneled reading of the literature, for there can only be one theory that is most viable. Among respondents listing a theory, social learning theory was the modal choice (13.2% of the respondents who answered this question). Social learning theory was the first choice among moderates (21.6%), fourth among liberals (9.7%), third among radicals (16.1%), and fifth among conservatives (5%). Liberals favored life course/developmental (12.4%) most, radicals favored critical theory (25.8%), and conservatives favored biosocial theory (25.0%). In both the 1987 and 1997 samples social control theory was the most favored theory overall.

Broken down by self-reported ideology, what theories tend to be favored are significantly influenced by ideology ($\chi^2 = 134.6$, $p < 0.001$). The fact that what theories criminologists embrace depend to some extent on ideology is certainly not to our discipline’s credit, but on the bright side, the relationship is much weaker ($V = 0.344$) in the 2007 sample than it was in the 1997 sample ($V = 0.65$; see Walsh & Ellis, 2004).

The number of theories and ideological categories in Table 2 renders the interpretation of the accompanying statistics somewhat suspect because of the number of empty cells in the table. An alternative analysis of the ideology/favored theory hypothesis is to compare the theories that are plainly exemplars of either of Sowell’s constrained or unconstrained visions, omitting theories that that cannot be easily placed into either vision.

Theories clearly in the unconstrained camp are conflict, critical, strain- and anomie-based theories, feminist, differential association, social disorganization, and social learning theories. Each of these theories assume the social construction of human nature, consider it a puzzle that inherently social beings commit antisocial acts, and thus believe it sensible to ask why people commit crimes and to search for the answer in places external to the offenders. Theories in the constrained camp are life-course/developmental, classical, biosocial, and social control and self-control theories. These theories assume a universal human nature, are not at all puzzled that inherently self-centered humans commit antisocial acts, and do not ask why people commit crimes, but rather why most of us do not. They seek to answer that question by looking at individuals and how social and self-control mechanisms prevent antisocial behavior, and how the absence of such mechanisms allows it.

Table 3 presents the constrained/unconstrained theories with ideology as the independent variable. We can reject the null hypothesis that favored theory is unrelated to Sowell’s visions ($\chi^2 = 22.346$, $df = 3$, $p < 0.001$, $V = 0.287$). We see the percentage supporting the constrained vision dropping drastically and predictably as we move along the row from the conservative category (81.8%) to moderates (41.8%) to liberals (38.7%) to radicals (3.8%), just as we see support for the unconstrained vision increasingly running in the opposite direction. If we combine conservatives with moderates and liberals with radicals as Walsh and Ellis (2004) did we get essentially the same strength of association ($\chi^2 = 4.29$, $df = 1$, $p < .05$, $\phi = .267$) as seen in the disaggregated analysis (table not shown). We should note that the identical analysis by Walsh and Ellis (2004) found far stronger results ($\chi^2 = 19.92$, $df = 1$, $p < .0001$, $\phi = .545$)

--Table 3 about here--

Favored Causes

Our second concern is to identify areas of agreement and disagreement about the specific causes of crime among our respondents and to determine if these areas are systematically associated with ideology. Table 4 presents the means of each of the 23 alleged causes of crime for each ideological category, the total mean, and the F ratios and significance levels. Causes of crime were deemed “important” if the mean total value assessed by respondents was five or greater, and “less important” if the mean total value was less than five.

--Table 4 about here--

The first panel lists those causes considered important, but about which there were significant differences across ideological categories as to the mean weight given to the cause. Note that the values assigned vary up or down in theoretically predicted directions as we go from conservative to radical. The only cause considered important (mean value of 5 or more) across all ideological categories was "Lack of empathy and concern for others," although "Unfair economic system" had the highest mean score overall. Both of these findings are consistent with those reported by Walsh and Ellis (2004) for the 1997 sample. The area of biggest disagreement between the ideological groups was "Bias in law enforcement" ($F = 15.757$), with radicals assigning it more than twice the conservative mean weight.

The second panel lists alleged important causes for which there was no significant disagreement as to how important they were across ideological categories. These causes were "Peer influences," "Unstable family life," "Alcohol abuse," and "Hard drugs."

These first two panels reveal an interesting, albeit expected, dichotomy, with conservatives and moderates favoring individual-level explanations most strongly, and liberals and radicals favoring external social explanations most strongly. The top three factors for conservatives were (in order) "Lack of empathy and concern for others," "impulsiveness and risk-taking tendencies," and "Unstable family life." The top three favored by moderates were "Lack of empathy and concern for others," "Poor discipline practices," and "Unstable family life." Liberals favored "Unfair economic system," "Lack of educational opportunities," and "Peer influences" most strongly, and Radicals favored "Unfair economic system," "Bias in law enforcement, and "Lack of educational opportunities."

The final panel contains alleged causes of crime that were considered less important (total means less than 5.00) by respondents summed across ideological categories. This panel reveals that, taken as a whole, criminologists of all ideological persuasions view alleged biosocial causes of crime (hormonal, genetic, and evolutionary factors and possibly low intelligence) as relatively unimportant. This does not mean that they reject the role of biology in criminal behavior entirely, only that they consider biosocial factors to be less important than environmental factors in explaining criminal behavior. For instance, only 17.1% of the respondents indicated (by assigning a score of zero) that genetic factors are of no importance at all, which means that 82.9% did feel that genetic factors are at least of some importance. In the 1997 survey 25.2% assigned a score of zero to genetic factors. The difference between these two proportions is significant ($z = 2.22$, $p = 0.026$). The percentages of respondents assigning a score of zero for hormonal, evolutionary, low intelligence, and neurological factors (from the third panel) were 19.6%, 44.0%, 10.3%, and 8.3%, respectively. The respective percentages assigning zero to these variables in 1997 were 17.0%, 48.3%, 15.5%, and 11.6%. While none of these differences were statistically significant, there is a slight trend to greater acceptance in the present sample compared to the previous sample.

The percentages of respondents who considered biological variables to be of great importance (indicated by assigning a score of five or more) were: evolutionary factors (13.2%), genetic factors (24.5%), hormonal factors (23.9%), neurological factors (38.1%), and low intelligence (33.6%). The corresponding percentages in 1997 were 9.1%, 13.1%, 17.0%, 29.9%, and 34.3%. The only difference to be statistically significant was again genetic factors ($z = 2.73$, $p = 0.0063$), although willingness to accept one-tail tests at $< .05$ would also show hormonal and neurological factors to also be considered more important in the 2007 sample than in the 1997 sample. Thus it appears that criminologists today may be slightly more open to biological factors than they were in 1997. The majority of these criminologists, even while apparently lacking a firm grounding in biosocial theory, were open to the possibility that biosocial factors play at least some part in the etiology of criminal behavior, while only a minority consider them to be very important.

Educational Exposure

We previously noted that theories, and thus theorists, tend to focus on concepts derived from a single discipline, which in the present context is sociology. We thus decided to determine if exposure to psychology and biology (as indicated by number of combined graduate and undergraduate classes in those disciplines) leads to greater acceptance of individual-level causes of crime for conservatives (conservatives combined with moderates) and liberals (liberals combined with radicals). Table 5 presents correlations pertinent to this issue.

--Table 5 about here--

Greater exposure to biology classes (at least in terms of the extremely low overall mean level of exposure of our respondents) does not appear to be significantly related to acceptance of individual level causes among conservatives, nor does greater exposure to psychology or sociology classes. For liberals, greater exposure to biology is only related to the greater acceptance of neurological factors ($r = .155, p < 0.01$), but greater exposure to psychology is related to greater acceptance of all individual-level causes except hormonal causes. This does not mean that liberals on the whole ascribe more causal power to these factors than conservatives, as Table 4 plainly shows; it only means that greater exposure to biology and psychology has more influence on liberals on this matter than it does on conservatives. Not surprisingly, the greater the exposure to sociology the less likely the acceptance of any of the individual-level causes for both conservatives and liberals, although only significantly so for liberals with regard to evolutionary, genetic, hormonal, and neurological causes.

We note that only three of the paired correlations (psychology with evolution and sociology with genetics and neurological) were significantly different (r to Z transformation) between liberals and conservatives. This may be further indicative of the loosening of ideology's grip, because Walsh and Ellis (2004) reported seven such significant correlation differences despite more limited statistical power to detect them than is the case with the present sample.

Attitudes toward Interdisciplinary Integration

The final issue is the attitude of contemporary criminologists toward interdisciplinary integration. There was no significant disagreement among the ideological groups regarding the statement "Psychology has a lot to offer criminology" (table not reported). Of the 491 who responded to the statement, 399 (81%) either strongly agreed or agreed. However, there was significant disagreement regarding integrating psychology with criminology ($\chi^2 = 28.258, df = 12, p < 0.01$; Cramer's $V = 0.242$). As shown in Table 6, conservatives were most enthusiastic, with 66.6% either agreeing or strongly agreeing, and radicals being the most opposed with 56.6% either disagreeing or strongly disagreeing.

--Table 6 about here--

As observed in Table 7, there was more disagreement along ideological lines with the statement: "Biology has a lot to offer criminology" ($\chi^2 = 40.056, df = 12, p < 0.001$; Cramer's $V = 0.165$). Most conservatives and moderates agreed or strongly agreed, and most radicals disagreed or strongly disagreed. While more than one-fourth of the liberals sat on a neutral position, there were more who agreed or strongly agreed (42.9%) than disagreed or strongly disagreed (31.9%).

--Table 7 about here--

Table 8 shows that contemporary criminologists of all ideological persuasions are less than enthusiastic about integrating biology with criminology, with only 27.9% overall either agreeing or strongly agreeing that the disciplines should be integrated and 52.5% either disagreeing or strongly disagreeing. The extent of the agreement or disagreement was again significantly related to ideology, albeit weakly ($\chi^2 = 27.489, df = 12, p < 0.01$; $V = 0.138$) with agreement falling linearly from conservative to radical.

--Table 8 about here--

Discussion

The findings of this study suggest that ideology and visions of human nature (constrained versus unconstrained) still play a substantial role in criminology, impacting favored theories, favored causes, and attitudes toward accepting what other human sciences have to offer. On the positive side, in comparison with the 1997 sample, respondents in the 2007 sample seem less ideologically committed as indicated by weaker values associated with the same issues measured in the same way and subjected to identical analyses.¹

However, given that 24 different theories were identified as “the most viable with respect to explaining variations in serious and persistent criminal behavior,” and that a substantial number of respondents did not even provide a favored theory is disconcerting. Any field generating this much theoretical excess to explain the same phenomenon can reasonably be accused of lacking in scientific rigor, and any field in which a person’s sociopolitical ideology predicts (albeit less strongly than 10 years earlier) which theory he or she considers to have the most empirical support can reasonably be accused of lacking in objectivity. All sciences have their disagreements, but the mature sciences have a large core of knowledge about which there is little or no disagreement (how many competing theories of gravity, chemical bonding, and evolution are there?). By definition, ideology implies a selective interpretation and understanding of the data that come to our senses in terms of a general emotional picture of how things should be rather than an objective and rational evaluation of the evidence.

On the other hand, the wide theoretical range may be a function of the youth of our discipline, and each theory could be looked upon as doing its part to illuminate one small aspect of criminal behavior. The immediate task before criminologists is to come to some sort of agreement as to how those small parts fit together coherently (horizontal integration). Many correlates will doubtless be exposed as spurious as our theorizing and research designs become more sophisticated.

It is clear that the interdisciplinary (vertical) integration that has proved indispensable to other sciences will be difficult to achieve as long as criminologists are educated almost exclusively in sociology with its strict environmentalist orientation. Pierre van den Berghe (1990: 177) has characterized sociologists (and criminologists by extension) as not only oblivious to biology, but “militantly and proudly ignorant.” Hopefully this is not the case today, but we did find that the number of classes our respondents had in sociology was significantly negatively related to the dismissal of all individual-level causes.

Walsh and Ellis (2004) called ideology the Achilles’ heel of criminology and wondered whether its contrasting visions be reconciled to the point that data rather than ideology guide the criminological enterprise. If we had found that greater exposure to psychology and biology led to more relationships positively and significantly related to acceptance of individual factors we would be more optimistic about the future of our discipline, but the low level of exposure to those disciplines make adequate statistical analyses problematic due to low variation. Perhaps if criminology students were required to completely dip both their heels in the interdisciplinary River Styx they would emerge less vulnerable to the arrows of ideological intransigence.

There are obstacles other than ideology to discipline integration, not the least of which is the practical necessity of learning what unfamiliar sciences have to offer. However, one does not have to become an expert in genetics, neurobiology, and evolutionary biology to appreciate them and incorporate them into one’s criminological work any more than one has to learn statistics at the level of a professional mathematician to use the tools of statistics. Learning difficult new material is intellectually challenging and exciting, but as Kuhn intimates, those who fail to do so will find themselves irrelevant: “retooling is an extravagance reserved for the occasion that demands it,” and the wise scientist knows when “the occasion for retooling has arrived” (1970: 76). What will the wise scientist find?

Led by a new paradigm, scientists adopt new instruments and look in new places. Even more important, during revolutions scientists see new and different things when looking with familiar instruments in places they have looked before. It is rather as if the professional community has been suddenly transported to another planet where familiar objects are seen in a different light and are joined by unfamiliar ones as well (Kuhn, 1970: 111).

Those most likely to favor integration will be those not yet stifled by orthodoxy and most willing to learn new concepts; i.e., the young. We found a slight but non-significant tendency for our younger respondents (not shown) to think both that psychology and biology have a lot to offer our discipline and that we should integrate with those disciplines. Younger criminologists grew up with all the excitement of the genome

project and the “decade of the brain,” and perhaps are more likely to expose themselves to the explosion of books and articles on biosocial science that have emerged over the last decade or so.

The biggest limitation of this study is the low response rate. This low rate precluded a more comprehensive assessment of the issues raised in this article. There is no way to know if the response rate reflected systematic bias or not. Regardless, the low response rate certainly threatens our external validity. Further, the question used to assess criminologists’ favored theory, “Overall, which theory do you consider the most viable with respect to explaining variations in serious and persistent criminal behavior (please be as specific as possible)?” could be construed as double barreled. Finally, our discipline integration question, “Criminology should be integrated with biology/psychology” may have been understood by some to mean the dissolution of criminology into the other two disciplines. Although this was not the intent of the survey question, it is a possible interpretation, the implications of which for any serious criminologist are clear.

The study is also mostly descriptive in nature, with the few causal analyses being limited to zero-order effects. Nevertheless, we consider the study to be a valuable snapshot of the situation in our discipline as assessed by its contemporary academics which we compared by similar snapshots taken 10 and 20 years ago. It is our hope that the next iteration of this study 10 years hence will reveal a further weakening of the grip that ideology has on our discipline and a greater willingness of criminologists to embrace the proffered help of the more fundamental sciences that are surging ahead in their ability to elucidate human behavior, including criminal behavior.

Footnote:

- 1. A reviewer suggested that it would be important to know if respondents differed in their acceptance of biological/psychological explanations according to the discipline in which they earned their terminal degrees, and that this might be as important as ideology. We examined this possibility removing the small number who received their Ph.D. in psychology because of the obvious bias. Scholars who received their degree in criminology or criminal justice were more open to integrating criminology with psychology and biology than those who received it in sociology. The majority of criminal justice (60.4%) and criminology (60.8%) degree holders agreed or strongly agreed that criminology should be integrated with psychology, but only 43.9% of the sociologists agreed or strongly disagreed, Chi-square was 24.1, $p < .002$, $V = .132$, but this was attributable entirely the sociologist’s reluctance.**

In terms of agreeing or strongly agreeing with criminology’s integration with biology, 38% of criminology Ph.D.’s did so, 29.2% of the criminal justice Ph.D.’s, and 21% of the sociologists. Sociologists were most likely to disagree or strongly disagree (57.9%), followed by criminal justices (46.4%), and criminologists (43.3%), the rest being neutral on the issue. Chi-square was 21.45, $p = .006$, $V = .125$. Again, the significant chi-square is almost entirely attributable to sociologist’s opinions. Running the same chi-square analysis between only criminologists and criminal justices yielded no significant difference. Thus area of training does make a slight but significant difference in terms of being open to integrating more fundamental disciplines into criminology, but this variable is not as strong as ideology and is almost entirely attributable to the sociology/non-sociology split.

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Tables

Table 1. Demographic frequencies.

Variable	Code	Frequency	Percentage	Mean	SD
Sex	Female=1	340*	44.3%		
	Male=2	428	55.7		
Age	Continuous			45	11.611
Race	American Indian or Alaskan=1	5	.7		
	Asian=2	18	2.4		
	Black or African American=3	20	2.7		
	Native Hawaiian/Pacific Islander=4	0	0		
	White=5	710	94.3		
Primary training	Criminal Justice=1	180	24.4		
	Criminology=2	214	29.0		
	Psychology=3	44	6.0		
	Sociology=4	299	40.6		
Political persuasion	Conservative=1	40	5.4		
	Moderate=2	192	26.1		
	Liberal=3	434	59.0		
	Radical=4	69	9.4		
Highest degree*	J.D.=3	28	3.6		
	M.D.=4	6	0.8		
	Ed.D.=5	11	1.4		
	Ph.D.=6	725	94.2		
Total biology courses	Continuous			1.48	2.137
Total psychology courses	Continuous			4.86	5.095
Total sociology courses	Continuous			10.17	7.320

*Frequencies may not add up to 770 due to missing responses. All percentages represent the valid percentage for each variable.

Table 2. Favored theory cross-tabulated by self-reported political ideology.

Theory favored*	Political ideology				Total
	Conservative	Moderate	Liberal	Radical	
Social learning (2,6)	1	22	22	5	50
Life course/developmental (n/a,11)	3	8	28	3	42
Social control (1,1)	0	14	27	1	42
Social disorganization (7,14)	0	11	26	3	40
Self control (n/a,2)	3	6	15	0	24
Biosocial (4,12)	5	5	11	0	21
Rational choice	2	7	11	1	21
Conflict (n/a,4)	0	2	8	6	16
Critical (10,18)	0	0	8	8	16
Differential association (4,3)	1	4	10	1	16
Age-graded developmental	1	5	7	0	13
Strain (n/a,8)	0	3	9	0	12
Dual-pathway developmental (n/a,5)	1	0	10	0	11
Routine activities (n/a,9)	1	2	8	0	11
General strain	0	2	4	1	7
Institutional anomie	0	1	5	0	6
Interactional	0	1	5	0	6
Opportunity (5,15)	1	2	2	0	5
Ecological (n/a,23)	1	1	2	0	4
Labeling (6,17)	0	1	2	1	4
Psychological	0	1	3	0	4
Classical (n/a,20)	0	3	0	0	3
Feminist (n/a,10)	0	0	2	1	3
Anomie (9,6)	0	1	1	0	2
TOTAL	20	102	226	31	379

$X^2 = 134.6$, $df = 69$, $p < 0.001$; $V = 0.344$

*Numbers in parentheses represent ranking of theories in Ellis and Hoffman (1990) and Walsh and Ellis (2004), respectively. Theories without ranking were not represented in those surveys.

Table 3. Ideology and Preference for Constrained or Unconstrained Theories.

Theory type	Ideology				Totals
	Conservative	Moderate	Liberal	Radical	
Constrained	9 (81.8)*	33 (41.8)	60 (38.7)	1 (3.8)	103 (38.0)
Unconstrained	2 (18.2)	46 (58.2)	95 (61.3)	25 (96.2)	168 (62.0)
Totals	11 (100.0)	79 (100.0)	155 (100.0)	26 (100.0)	271 (100.0)

$X^2 = 22.346$, $df = 3$, $p < 0.001$, Cramer's $V = 0.287$.

Constrained theories include: Social control, Self control, Biosocial, Age-graded developmental, and Classical; unconstrained theories include: Social learning, Social disorganization, Conflict, Critical, Differential association, Strain (Merton), General strain (Agnew), Institutional anomie, Feminist, and Anomie (Durkheim).

Table 4. Mean responses regarding causes of criminal behavior according to political ideology.

Causal factor	Con	Mod	Lib	Rad	Total	F	Sig*
Important causes with significant disagreement among ideological groups							
Unfair economic system	4.73	5.53	6.49	7.66	6.24	13.329	.000
Lack of empathy and concern for others	7.27	6.83	5.92	5.44	6.20	7.498	.000
Lack of educational opportunities	3.67	5.65	6.27	6.56	5.97	13.294	.000
Impulsiveness and risk-taking tendencies	6.83	5.95	5.86	3.90	5.77	11.635	.000
Lack of supervision and monitoring	6.13	5.98	5.51	4.34	5.57	4.594	.004
Poor discipline practices	6.00	6.07	5.42	4.22	5.52	6.714	.000
Bad example by one's family	6.17	5.96	5.26	4.61	5.44	4.897	.002
Bias in law enforcement	3.27	4.24	5.26	6.91	5.02	15.757	.000
Important causes with no significant disagreement							
Peer influences	5.90	6.30	6.10	6.24	6.15	0.384	.765
Unstable family life	6.20	6.37	6.04	5.32	6.07	2.276	.079
Alcohol abuse	5.38	5.93	5.35	4.90	5.46	2.497	.059
"Hard" drugs	6.00	5.74	5.35	4.93	5.45	1.913	.127
Unimportant causes with significant disagreement							
Labeling factors	3.57	4.11	5.08	6.26	4.84	11.468	.000
Punishment too harsh	3.76	3.88	4.51	5.36	4.38	4.061	.007
Mental illness	4.70	4.28	4.08	3.00	4.08	3.299	.020
Neurological factors	4.29	4.03	3.75	2.43	3.73	5.062	.002
Lack of religious/moral training	6.17	4.42	3.13	2.76	3.63	20.763	.000
"Soft" drugs	4.14	4.08	3.43	2.37	3.55	5.992	.001
Low intelligence	4.34	3.86	3.33	2.00	3.41	8.763	.000
Genetic factors	3.97	3.15	2.79	1.43	2.83	8.295	.000
Hormonal factors	3.48	3.23	2.67	1.14	2.72	9.969	.000
Punishment too lenient	5.14	2.81	1.57	0.81	2.05	32.810	.000
Evolutionary factors (natural selection)	2.76	2.10	1.45	0.81	1.64	7.477	.000

* A significance of .000 should be read as $p < 0.001$; otherwise, exact probability is presented.

Table 5. Correlations between support/non-support of biosocial correlates as causes of crime and number of combined graduate/undergraduate classes in the basic human sciences and ideology.

Number of classes		Causes				
		Low IQ	Evolution	Genetics	Hormone	Neuro
Biology	Cons	0.087	0.155	0.073	0.037	0.019
	Lib	0.102	0.007	0.053	0.095	0.155**
Psychology	Cons	0.049	-0.006†	0.087	0.021	0.03
	Lib	0.129*	<u>0.158**</u>	0.185**	0.061	0.139*
Sociology	Cons	0.054	-0.133	-0.042	-0.102	-0.014
	Lib	-0.067	-0.18**	<u>-0.227**</u>	-0.17**	<u>-0.231**</u>

† Underlined correlations represent significant differences between conservatives and liberals at $p < 0.05$ (r to z transformation). * $p < 0.05$. ** $p < 0.01$.

Table 6. Cross-tabulation of the extent to which respondents agreed with the statement “Criminology should be integrated with psychology” and ideology.

Ideology	Criminology should be integrated with psychology					Totals**
	SD	D	N	A	SA	
Conservative	3 (10.0)*	6 (20.0)	1 (3.3)	10 (33.3)	10 (33.3)	30 (100.0)
Moderate	21 (16.8)	23 (18.4)	19 (15.2)	43 (34.4)	19 (15.2)	125 (100.0)
Liberal	32 (11.3)	53 (18.7)	54 (19.1)	99 (35.0)	45 (15.9)	283 (100.0)
Radical	9 (19.6)	17 (37.0)	10 (21.7)	6 (13.0)	4 (8.7)	46 (100.0)
Totals	65 (13.4)	99 (20.5)	84 (17.4)	158 (32.6)	78 (16.1)	484 (100.0)

*Row percentages are presented in parentheses.

**Column totals are rounded.

$X^2 = 28.258$, $df = 12$, $p < 0.01$. $V = 0.242$, $p < 0.01$.

Table 7. Cross-tabulation of the extent to which respondents agreed with the statement “Biology has a lot to offer criminology” and ideology.

Ideology	Biology has a lot to offer criminology					Totals**
	SD	D	N	A	SA	
Conservative	2 (6.5)*	7 (22.6)	6 (19.4)	8 (25.8)	8 (25.8)	31 (100.0)
Moderate	3 (2.4)	21 (16.8)	28 (22.4)	51 (40.8)	22 (17.6)	125 (100.0)
Liberal	19 (6.6)	73 (25.3)	76 (26.3)	96 (33.2)	28 (9.7)	289 (100.0)
Radical	9 (19.6)	18 (39.1)	4 (8.7)	10 (21.7)	5 (10.9)	46 (100.0)
Totals	33 (6.7)	119 (24.2)	111 (22.6)	165 (33.6)	63 (12.8)	491 (100.0)

*Row percentages are presented in parentheses.

**Column totals are rounded.

$X^2 = 40.056$, $df = 12$, $p < 0.001$. $V = 0.165$, $p < 0.001$.

Table 8. Cross-tabulation of Ideology with Attitude about Criminology's Integration with Biology

Ideology	Criminology should be integrated with biology					Totals
	SD	D	N	A	SA	
Conservative	8 (26.7)*	8 (26.7)	4 (13.3)	5 (16.7)	5 (16.7)	30 (100.0)
Moderate	26 (20.8)	34 (27.2)	26 (20.8)	27 (21.6)	12 (9.6)	125 (100.0)
Liberal	61 (21.6)	82 (29.0)	59 (20.8)	67 (23.7)	14 (4.9)	283 (100.0)
Radical	22 (47.8)	13 (28.3)	6 (13.0)	4 (8.7)	1 (2.2)	46 (100.0)
Totals	117 (24.2)	137 (28.2)	95 (19.6)	103 (21.3)	32 (6.6)	484 (100.0)

*Row percentages are presented in parentheses.

$X^2 = 27.489$, $df = 12$, $p < 0.01$. $V = 0.138$, $p < 0.01$.