ISSN: 0040-5841 print/1543-0421 online DOI: 10.1080/00405841.2017.1283574



Angela D. Miller Tamera B. Murdock Morgan M. Grotewiel

Addressing Academic Dishonesty Among the Highest Achievers

Although research shows that higher-achieving students report engaging in cheating behaviors less frequently than lower-achieving students, the cheating rates among this population are still startling. Certain aspects of the context of being a high-achieving student support academic dishonesty. We investigate integrity among the highest achievers using a motivational framework, first examining why these students feel the need to

cheat. We discuss personal standards of performance, social comparison and competition, pressure to succeed, and these students' ability to rationalize cheating behaviors. Finally, we suggest what can be done to combat cheating among high achieving students, including thinking about approaches to pedagogy and assessment, providing clarity and consequences for cheating, and considering the culture of high achievers.

Academic dishonesty is any deceitful or unfair act intended to produce a more desirable outcome on an exam, paper, homework assignment, or other assessment of learning. The pervasiveness of cheating from middle school through graduate education has stimulated many discussions of the factors that support academic dishonesty (for reviews, see Murdock & Anderman,

Angela D. Miller, Ph.D., is at George Mason University. Tamera B. Murdock, Ph.D., is at the University of Missouri-Kansas City. Morgan M. Grotewiel, M.A., is at the University of Missouri-Kansas City.

Correspondence should be addressed to Angela D. Miller, Ph.D., George Mason University, West Building, Room 2105, 4400 University Drive MS 6D2, Fairfax, VA 22030. E-mail: amille35@gmu.edu

2006; Whitley, 1998). Although cheating is sometimes viewed as a victimless crime, it has numerous consequences for others. Cheating interferes with teachers' ability to accurately assess learning and noncheating students suffer from the potential elevation of the normative achievement bar. Being compared to others with inflated grades might affect students' selfconfidence and create a true competitive disadvantage for grade-based awards (i.e., admission to college, receipt of an award). Finally, students who witness unchecked cheating in a given class may develop the belief that cheating is normative and thereby be more inclined to cheat themselves (O'Rourke et al., 2010). In sum, there are numerous reasons for educators to care about academic dishonesty.

Conceptual Framework

We discuss cheating among high-achieving students using a motivational framework offered by Murdock and Anderman (2006). They proposed that cheating in any specific context can be predicted by students' answers to three questions:

- What is my purpose here?
- Can I do this? and
- What are the costs of cheating?

Students' motivation or purpose when they approach their academic work is often viewed as some combination of their learning goals, or a desire to learn, understand, and master the material and their performance goals, or their desire to win, outperform others, demonstrate aptitude, or earn a high grade (Dweck & Leggett, 1988). Students with strong learning goals are less likely to cheat, as compared to students who see less relevance to what they are learning and are simply aiming to get a high grade (Anderman, Griesinger & Westerfield, 1998).

Beyond purpose, students' evaluation of their own capabilities drives the decision to cheat. These capabilities are most often assessed as students' self-efficacy or success expectations (Bandura, 1997). They are influenced by their own academic performance history, the social comparisons they make, the pedagogical skills of the teacher, the workload students carry, and a teacher's emphasis on individual growth versus social comparisons. Students cheat more frequently when their expectancies for success or academic self-beliefs are low (Anderman, et al., 1998).

Finally, students estimate the perceived costs of cheating using some form of risk-benefit analysis (Rettinger, 2007). If the perceived costs of dishonesty outweigh the perceived gain, cheating is less likely to be a desirable strategy thus students become less likely to cheat as the perceived risk of detection and punishment rise. Cheating also requires students to reconcile the costs to their self-

concept by violating the norms of what a good person does. This ability to neutralize, justify, or explain away cheating by blaming others for it (e.g., I have a bad teacher), framing the behavior as typical (e.g., everyone else cheats), and/or minimizing the behavior (e.g., it hurts no one) reduces the threat to one's self-concept and increases the likelihood of dishonesty (Murdock & Stephens, 2007).

Why Care About Cheating Among High-Achieving Students?

Research consistently finds that higherachieving students report fewer cheating behaviors compared to their lower achieving peers, which may explain the relative lack of empirical attention to dishonesty in this specific population. However, high-achieving middle and high school students are by no means immune from cheating. Eighty percent of students attending Stuyvesant High School in New York City, a highly competitive magnet school for the best and brightest, admitted to cheating according to an article in the New York Times (Yess, 2012). A survey of high school students (age 14 to 18) from Advanced Placement (AP) or Honors Math and/or Science classes revealed high rates of cheating behaviors on exams (approximately 75%) and even higher rates of cheating on homework (Geddes, 2011). Finally, a 2005 review of the literature on medical school students reports high rates of academic cheating (25%) and even higher rates of witnessing cheating (66%; Dyrbye, Thomas, Shanafelt, 2005).

High-achieving students have the human capital to ascend to positions in society where they have influence over others both directly (e.g., as supervisors, leaders, etc.) and indirectly (e.g., conducting and sharing research, contributing to policy, donating money to causes and candidates). Evidence suggests that people who are dishonest in their academic careers are more apt to continue a pattern of dishonesty in their work lives (Nonis & Smith, 2001), making the integrity of these students a concern for us all.

Why Do High Achievers Cheat?

Personal Standard of Performance

Although students in academically competitive programs may have higher academic self-efficacy than students in less competitive programs, they also report more stress than their peers (Suldo, Shaunessy, & Hardesty, 2008). Worry has been linked to increased cheating (Anderman et al., 1998) and high-achieving high school students identify pressure for grades as one of their top reasons for cheating (Geddes, 2011).

The pressure created from students' performance standards might be augmented by their understanding of intelligence. Dweck's (2006) widely cited Mindset theory delineates between students who see intelligence as something that improves with learning, termed growth mindsets, and those who believe that the intellect they are born with cannot be modified, termed a "fixed" mindset. A fixed mindset is associated with negative emotions such as shame after feedback and maladaptive behaviors including academic cheating (Dweck & Master, 2009). A substantial number of gifted high school students hold entity or fixed views of intelligence and even more of these same students see giftedness as something that is not malleable (Makel, Snyder, Chandler, Malone, & Puttallaz, 2015). Similarly, students at a highly competitive university were more apt to hold entity views of intelligence if they were identified as gifted during high school, and the higher their own aptitude, the more likely they were to hold these beliefs (Snyder, Barger, Wormington, Schwartz-Bloom, & Linnenbrink-Garcia, 2013). Given the centrality of academic accomplishment to the self-concept of high achieving students, they might be particularly reactive when threatened with performance outcomes that don't meet their high standards. In other words, the risk of getting low grades may pose such a grave threat to these students' being seen as smart or gifted that cheating may be seen as relatively less threatening to their self-concept, especially if it is the norm within their academic culture.

Ever-Increasing Social Comparisons and Competition

As high achievers progress through the educational pipeline, they tend to be concentrated into increasingly homogenous classes in terms of their accomplishments, and with everincreasing demands and higher levels of social comparison. Through the lens of our theoretical framework, these contexts might create an increased focus on performance, and increase the perceived normativeness of dishonesty, thereby making cheating seem more acceptable. One study explicitly looked at the role of achievement context versus individual achievement as a contributor to cheating by comparing cheating at public high schools that were in the top, second, third, and fourth quartiles in terms of school-level performance as measured by statewide assessments (Brandes, 1986). A students at the highest achieving schools cheated less often than A students at the lowest-achieving schools; however, students with GPAs of B+ or below were more likely to cheat if they attended a higher-achieving school, suggesting the influence of local achievement norms on cheating patterns. It is likely that lower achieving students in high performing schools feel the most pressure to succeed because there is the most discrepancy between their performance and the school's overall level of achievement, ultimately making them the most likely to cheat.

Other evidence for the potentially deleterious influence of competition or other-based comparisons comes from the literature on perfectionism. Perfectionism, or critically evaluating oneself against high standards, has been found to be quite common among high-ability students (Neumeister, 2004). However, while some gifted students have more self-oriented perfectionism, setting high standards for themselves, sociallyoriented perfectionists strive to meet the perceived standards of others. Self-oriented perfectionists tend to be driven by a desire for mastery and approach goals; they compete with their own standards, display adaptive behaviors such as effort and persistence and have generally positive affect in achievement settings. Those with

socially oriented perfectionism are more prone to worry and anxiety, compete with their peers, give up easily, and, are more apt to believe that cheating is justifiable (Bong, Hwang, Noh, & Kim, 2014; Neumeister, 2004). Classrooms that students perceive as emphasizing social comparisons and competition also are ones in which rates of academic cheating are higher (Anderman & Midgely, 2004).

Pressures to "Do It All"

High-achieving high school students cite heavy workloads (68%) and multiple tests being scheduled on the same day (60%) as two of the top reasons that they cheat (Geddes, 2011). On top of this, high achieving students at all levels talk about the demands to carry difficult course loads while engaging in activities that distinguish them from other high achievers when they go to compete at the "next level" (Geddes, 2011). Although students may have the efficacy (and skills) for any of these tasks in isolation, the cumulative burden creates enormous stress and encourages students to seek shortcuts to accomplish all of their goals. This overload has been explicitly examined among medical students, where high rates of burnout are common: Although burnout was not linked to academic cheating per se, it did predict unprofessional conduct in the context of clinical work (Dyrbye et al., 2010). Other reasons for cheating listed by high-achieving students in Geddes' (2011) study include "unrealistic" workloads, helping a friend, and "loyalty to a group." Similar views were echoed by the Stuyvesant students who described the environment as one in which students worked together at cheating to beat what they perceived to be the demands being placed on them (Yess, 2012).

Increased Rationalization

High-achieving students' well-developed cognitive abilities might translate into an increased ability to rationalize or justify cheating; these attitudes are consistently one of the strongest predictors of dishonesty (Murdock & Anderman, 2006;

Whitley, 1998). Cheating is regularly rationalized by externalizing the blame onto the teacher or situation, and these externalizations increase when students see the pedagogy as poor, the teacher as uncaring, or the classroom as focused on performance versus mastery goals (Murdock, Miller, & Kohlhardt, 2004; Murdock & Stephens, 2007). The enormity of the demands that many high-achieving students feel might provide an easy justification for dishonest behavior. For example, Geddes (2011) argued that many high achieving students adopt an us versus them mentality that pits the students against the teacher. This mentality may help students justify cheating.

Cultural Pressure

High-achieving students have a status to maintain. They want to get the best grades, get into the best colleges and universities, and live up to parental, teacher, and peer expectations. Galloway (2012) interviewed students in 10 highachieving, advantaged high schools where there are many honors and AP courses and a majority of the graduating students attend 4-year colleges. She found that these students feel forced to cheat because of the pressure, workload, and culture of their school communities. Students described their school experience as being corrupted by their environment. These students viewed cheating as a compromise for a good reason: They saw their situation as "cheat or be cheated" (p. 393). Cheating for students in these contexts is a way to sustain their status in a community that celebrates their success.

What Must Change?

There are many obvious steps to curbing cheating by increasing the likelihood of detection, including changing seating arrangements, creating multiple versions of exams, limiting access to technology during testing, and using antiplagiarism software to fight the proliferation of the electronic dimension to cheating. Ultimately, students learn increasingly sophisticated ways to cheat and the myriad of factors

that create a culture of cheating are not addressed. Attitudes must change as well, such that students see intrinsic value in completing honest work. These changes require creating a culture where demands are reasonable, learning is valued over performance, and cheating is treated as unacceptable. In the following we look at several concrete steps that can help promote these values.

Reasonable Demands

High-achieving students are often taking several challenging classes at the same time, taxing students' limits to get all of their work done. At the school and classroom level, this might be addressed in several ways. First, school administers can encourage collaboration among teachers of advanced classes so that large assignments and exams are spaced across days. Being explicit about this spacing and the reasons for this spacing with students will also communicate to them an empathy for the workload they are carrying and a commitment to good pedagogy. Thus, these practices make the work more doable; the likelihood of cheating should be lessened because of the more favorable way that teachers will be viewed.

In a similar vein, teachers might strive to limit out-of-classroom work (e.g., homework) to a reasonable amount across classes. Students from 10 high-achieving high schools reported completing an average over 3 hr of homework each day (Cooper, Robinson, & Patall, 2006). Although students doing more homework were rated as more engaged in school, they were also more stressed and reported having a harder time balancing the rest of their lives. Homework requirements should promote learning: Lots of busy work creates a focus on completion, rather than understanding (for more detail on best homework practices see, Cooper, 2007).

Finally, it is never too early to explicitly teach students self-regulation and time management strategies so that they can more effectively manage their academic lives, including learning to use a planner to map out shorter and longer periods of time, breaking tasks down into

manageable parts and learning how to troubleshoot a difficult problem or assignment by using available resources and/or reaching out for help. Teaching parents how to offer scaffolding versus providing answers will also increase students' ability to complete tasks on their own, rather than be tempted to take shortcuts (see Cooper et al., 2006).

Promoting Learning Versus Performance

Self-reported cheating has been correlated with a fear of failure (Schab, 1991), test anxiety (Malinowski & Smith, 1985), and worry over performance (Anderman, et al., 1998) all of which increase in classrooms where there is an emphasis on normative performance. Moreover, in an era of high-stakes testing, it is easy to be consumed by the importance and implications of test performance instead of teaching for the purposes of conceptual understanding. Students follow their teachers' lead and if the focus of each lesson is to learn the content for the next big test, then that impending test becomes the goal, rather than learning the course content. Results become most highly valued. When middle and high school students read scenarios about classrooms where the teacher was focused on grades and test scores rather than mastery of concepts, they rated these classrooms as those where cheating is the most likely to occur (Murdock et al., 2004). These same students also noted that cheating was less likely to occur in settings where it was evident that the teacher cared about student progress and learning, and emphasized effort as a means to better understanding.

Although research suggests that all students fair better in classrooms that are *mastery oriented*, achieving a mastery focus may be the more difficult with highest achieving students, who often have multiple sources of achievement pressure. Providing formative assessment opportunities is one suggestion for achieving this goal. Nonpunitive miniassessments, practice exams that are reviewed in class, homework assignments that are reviewed for accuracy and can be corrected until the concepts are mastered and clear alignment of formative and summative

assessments are some concrete ways to achieve this. Increasingly, teachers at all levels can rely on technology to aid them with these practices: many textbooks publishers provide online homework systems that provide students with the opportunity to redo homework multiple times and provide them with explanations to help them achieve mastery. Course shells such as Blackboard allow posting of timed assessments and immediate feedback for students.

Clarity and Consequences

Academic dishonesty is commonly addressed administratively with honor code systems at either the classroom or institutional level. Typically, these codes clearly delineate what is considered honest and dishonest, require students to formally attest that they will behave in an honorable manner, and, many times, require students to agree to create a culture of honesty in their school by reporting any incident of peer transgression. Although some research has suggested that these honor codes might improve student academic integrity (Konheim-Kalkstein, 2006; McCabe & Pavela, 2000), a recent analysis at the college level suggest that the effects of these codes are declining, because students value grades more than an abstract moral standard, and they see it as the job of the school/teacher to detect and deal with cheating (Vandehey, Diekhoff, & LaBeff, 2007).

At a basic level, schools must provide information on academic integrity and specific definitions of what is considered cheating as students often do not understand what constitutes academic dishonesty (Galloway, 2012). In addition, there also needs to be a culture of integrity (Schwartz, Tatum, & Hageman, 2013) and clear consequences for cheating (Galloway, 2012). Galloway's interviews with high school students and staff members found that many teachers don't follow the honor code, and that some staff members even condone cheating as a high school norm. In a school lacking academic integrity as a cultural value, students can more easily justify cheating and develop neutralizing attitudes toward cheating (Rettinger & Kramer, 2009). There must be discussion, and schools must model integrity and open dialog with students and their parents. Given the repeated finding that students cheat less when they feel that teachers treat them with fairness and respect (Murdock et al., 2004), dialogs with students that are explicit about expectations and followed up with clear, consistent action are likely to mitigate cheating.

In short, high-achieving students are experiencing an early entrance into the highly competitive, winner takes all society that Callahan described in his book The Cheating Culture (2004). The growing gap separating those at the top means increases in the pressures that parents and their children feel to be successful and not be left behind. Although there is no magical solution for addressing dishonesty in this climate of winner takes all, particularly for youth who are on the fast track to be the winners, cheating among this group might be reduced if teachers and school administrators work to make assessment clear, fair, and consistent; model the value of learning; minimize comparisons among students; teach students prioritization and regulation skills; and communicate their empathy for high demands and worries associated with the students' pressured lives.

References

Anderman, E. M., Griesinger, T., & Westerfield, G. (1998). Motivation and cheating during early adolescence. *Journal of Educational Psychology*, 90, 84–93. doi:10.1037/0022-0663.90.1.84

Anderman, E. M., & Midgley, C. (2004). Changes in self-reported academic cheating across the transition from middle school to high school. Contemporary Educational Psychology, 29, 499–517. doi:10.1016/j.cedpsych.2004.02.002

Bandura, A. (1997). Self-efficacy: The exercise of control. New York, NY: Freeman.

Bong, M. (2008). Effects of parent–child relationships and classroom goal structures on motivation, help-seeking avoidance, and cheating. *Journal of Experimental Education*, 76, 191–217. doi:10.3200/JEXE.76.2.191-217

- Bong, M., Hwang, A., Noh, A., & Kim, S. I. (2014). Perfectionism and motivation of adolescents in academic contexts. *Journal of Educational Psychology*, 106, 711–729. doi:10.1037/a0035836
- Brandes, B. (1986). Academic honesty: A special study of California students. Sacramento, CA: California State Department of Education, Bureau of Publications.
- Callahan, D. (2004). *The cheating culture: Why more Americans are doing wrong to get ahead*. Orlando, FL: Harcourt.
- Cooper, H., Robinson, J. C., & Patall, E. A. (2006). Does homework improve academic achievement? A synthesis of research, 1987–2003. Review of Educational Research, 76, 1–62. doi: 10.3102/ 00346543076001001
- Cooper, H. M. (2007). The battle over homework: Common ground for administrators, teachers, and parents (3rd ed.). Thousand Oaks, CA: Corwin Press.
- Dweck, C. (2006). *Mindset: The new psychology of success*. New York, NY: Random House.
- Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, 95, 256–270. doi:10.1037/0033-295X.95.2.256
- Dweck, C. S., & Master, A. (2009). Self-theories and motivation: Students' beliefs about intelligence. In K. R. Wentzel & A. Wigfield (Eds.), *Handbook of motivation at school* (pp. 123–140). New York, NY: Routledge.
- Dyrbye, L. N., Thomas, M. R., & Shanafelt, T. D. (2005). Medical student distress: causes, consequences, and proposed solutions. *Mayo Clinic Proceedings*, 80, 1613–1622. doi:10.4065/80.12.1613
- Galloway, M. K. (2012). Cheating in advantaged high schools: Prevalence, justifications, and possibilities for change. *Ethics & Behavior*, 22, 378–399. doi:10.1080/10508422.2012.679143
- Geddes, K. A. (2011). Academic dishonesty among gifted and high-achieving students. *Gifted Child Today*, 34, 50–56. doi:10.1177/107621751103400214
- Konheim-Kalkstein, Y. L. (2006). Use of a classroom honor code in higher education. *Journal of Credibility Assessment and Witness Psychology*, 7, 169–179.
- Makel, M. C., Snyder, K.E., Chandler, C., Malone, P.S., & Puttallaz, M. (2015). Gifted students' implicit beliefs about intelligence and giftedness. *Gifted Child Quarterly*, 59, 203–212. doi:10.1177/ 0016986215599057

- Malinowski, C. I., & Smith, C. P. (1985). Moral reasoning and moral conduct: An investigation prompted by Kohlberg's theory. *Journal of Personality and Social Psychology*, 49, 1016–1027. doi:10.1037/0022-3514.49.4.1016
- McCabe, D. L., & Pavela, G. (2000). Some good news about academic integrity. *Change*, 33, 32–38. doi:10.1080/00091380009605738
- Murdock, T. B., & Anderman, E. M. (2006).

 Motivational perspectives on student cheating:
 Toward an integrated model of academic dishonesty. *Educational Psychologist*, 41, 129–145. doi:10.1207/s15326985ep4103_1
- Murdock, T. B., Miller, A., & Kohlhardt, J. (2004). Effects of classroom context variables on high school students' judgments of the acceptability and likelihood of cheating. *Journal of Educational Psychology*, 96, 765–777. doi:http:10.1037/0022-0663.96.4.765
- Murdock, T. B., & Stephens, J. B. (2007). Is cheating wrong? Students' reasoning about academic dishonesty. In E. A. Anderman & T. B. Murdock (Eds.), *The psychology of academic cheating* (pp. 229–251). San Diego, CA: Elsevier.
- Neumeister, K. L. S. (2004). Understanding the relationship between perfectionism and achievement motivation in gifted college students. *Gifted Child Quarterly*, 48, 219–231. doi:10.1177/001698620404800306
- Nonis, S., & Swift, C. O. (2001). An examination of the relationship between academic dishonesty and workplace dishonesty: A multicampus investigation. *Journal of Education for Business*, 77(2), 69–77. doi:10.1080/08832320109599052
- O'Rourke, J., Barnes, J., Deaton, A., Fulks, K., Ryan, K., & Rettinger, D. A. (2010). Imitation is the sincerest form of cheating: The influence of direct knowledge and attitudes on academic dishonesty. *Ethics & Behavior*, 20, 47–64. doi:10.1080/10508420903482616
- Rettinger, D. 2007. Applying decision theory to academic integrity decisions. In E. Anderman & T. Murdock (Eds.), *Psychology of academic cheating* (pp. 141–167). San Diego, CA: Elsevier.
- Rettinger, D. A., & Kramer, Y. (2009). Situational and personal causes of student cheating. *Research in Higher Education*, *50*, 293–313. doi:10.1007/s11162-008-9116-5
- Schab, F. (1991). Schooling without learning: Thirty years of cheating in high school. Adolescence, 26, 839–847.
- Schwartz, B. M., Tatum, H. E., & Hageman, M. C. (2013). College students' perceptions of and responses to cheating at traditional, modified, and

non-honor system institutions. *Ethics & Behavior*, 23, 463–476. doi:10.1080/10508422.2013.814538

Snyder, K. E., Barger, M., Wormington, S.V., Schwartz-Bloom, R., & Linnenbrink-Garcia, L. (2013). Identification as gifted and implicit beliefs about intelligence: An examination of potential moderators. *Journal of Advanced Academics*, 24, 242–258. doi:10.1177/1932202X13507971.

Suldo, S. M., Shaunessy, E., & Hardesty, R. (2008). Relationships among stress, coping, and mental health in high-achieving high school students. *Psychology in the Schools*, 45, 273–290. doi:10.1002/pits.20300

Additional Resources

- 1. Anderman, E. A., & Murdock, T. B. (Eds.). (2006). *Psychology of academic cheating*. San Diego, CA: Elsevier.
 - This book is a research-based examination of cheating: Who cheats and why? How do they cheat? What are the consequences? What are the ways of stopping it before it starts? Individual personality variables are considered, as well as contextual correlates to cheating.
- 2. Cooper, H. M. (2007). Battle over homework: Common ground for administrators, teachers, and parents (3rd ed.) Thousand Oaks, CA: Corwin.
 - A research-based book written for practitioners and parents. Many practical tools for creating homework policies, as well as information on the purpose and types of homework.
- 3. Demerath, P. (2009). *Producing success:* The culture of personal advancement in

- Vandehey, M. A. & Diekhoff, G. & LaBeff, E. (2007). College cheating: A twenty-year follow-up and the addition of an honor code. *Journal of College Student Development*, 48, 468–480 doi:10.1353/ csd.2007.0043.
- Whitley, B. E. (1998). Factors associated with cheating among college students: A review. Research in Higher Education, 29, 235–274. doi:10.1023/ a:1018724900565
- Yess, V. (2012, September 25). Stuyvesant students describe the how and why of cheating. *New York Times*. Retrieved from. http://www.nytimes.com/2012/09/26/education/stuyvesant-high-school-students-describe-rationale-for-cheating.html
 - an American high school. Chicago, IL: The University of Chicago Press.
 - In this book, the author spends 4 years in a Midwestern high school examining the culture of success and need for advancement. The author discusses work ethics, negotiating tactics of students to get ahead and cheating as a means to the desired outcome.
 - 4. Zito, N., & McQuillan, P. (2010). "It's not my fault": Using neutralization theory to understand cheating by middle school students. *Current Issues in Education*, 13. http://cie.asu.edu/.
 - This article includes interviews with faculty and students in a high achieving competitive middle school and explains how students 'neutralize' and justify cheating behaviors. The author concludes with suggestions for school faculty on how to promote value in course work and eliminate the competitive focus on grades.



Copyright of Theory Into Practice is the property of Taylor & Francis Ltd and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.