

## INTRODUCTION

*Test security is an important element of any exam program, whether the exam is administered as a paper-and-pencil test or as a CBT. However, the relative risks of test security violations differ for paper-and-pencil exam programs and CBT programs. Furthermore, the ways in which certain aspects of security are addressed also differ across the two administration modes. The primary aspects of security which are different for the two administration modes include: the procedures used to identify examinees, the risks of examinees cheating on an exam, the methods employed for delivering tests to examinees, and the number of test administration dates offered.*

## ASPECTS OF TEST SECURITY

### Procedures for Identifying Examinees

One aspect of test security that differs across test administration modes concerns the procedures used to identify examinees at the test administration sites. In paper-and-pencil testing traditional methods for verifying an examinee's identification are typically used. These include reviewing each examinee's photo identification and collecting each examinee's signature. At a CBT site procedures for identifying the examinee might include technological methods such as taking a digital photo of the examinee, obtaining digital fingerprints from the examinee, and possibly even recording a digital scan of the examinee's iris. Technological approaches to security, such as video-taping the test session, might also be used to provide additional security during the test administration.

### Risks of Examinees Cheating

Another test security concern that differs between paper-and-pencil testing and computer-based testing relates to the relative risks of examinees cheating. In paper-and-pencil testing an examinee may attempt to cheat by copying item responses from another examinee seated nearby. This risk almost disappears entirely under computer-based testing because the cubicles at a CBT site make it difficult for one examinee to see the test another examinee is taking. Cheating by copying is also more difficult under CBT because the examinees at a CBT site at any given time are likely to be taking tests from entirely different exam programs. However, another approach to cheating may be aided under computer-based testing. There is some concern that the privacy afforded by



computer cubicles may make it easier for examinees to memorize test items; these memorized items may later be passed on to other exam program candidates.

### Methods for Delivering Tests

Test security considerations also differ in terms of how tests are delivered or transmitted in paper-and-pencil administrations as compared to CBT administrations. For this aspect of test security the concerns are probably far greater for paper-and-pencil testing, where the physical test forms may be vulnerable at a number of critical points. Most major CBT vendors, on the other hand, are able to easily transmit the electronic test data in a secured manner, using data encryption and fragmentation procedures. Secured storage of the CBT data, along with the examinee response data, is also within the technological resources readily available.

### Number of Test Administration Dates

A final aspect of test security that differs across administration mode concerns the number or frequency of test administration dates. In traditional paper-and-pencil testing many exam programs have a very limited number of test administration dates per year. In paper-and-pencil testing this limitation in the number of test administration dates, possibly coupled with the release of a new exam form at each administration, provides test security over time. Most CBT programs, however, make tests available for administration on a far greater number of dates. This increase in test dates creates a substantial security challenge for CBTs because examinees may be able to acquire information about test items during the test administration time frame. One way in which CBT exam programs have addressed this security concern is to increase the size of the item bank. For exam programs administering fixed CBTs or random CBTs, these additional items are used to produce additional test forms. The number of test forms needed is based on candidate volume, characteristics of the candidate community, and overall number of test administration dates. For adaptive CBTs a larger item bank is used to address the same security concern.

### Summary

Computer-based testing provides several security advantages over paper-and-pencil testing. For example, technological approaches to verifying an examinee's identity at a CBT site can provide security enhancements. Furthermore, the risk of an examinee cheating by copying is almost absent under CBT administration. In addition, transmission of the electronic test form data is typically much more secure than paper-and-pencil test



delivery. In fact, the greatest challenge to security for CBTs is probably the result of commonly used scheduling approaches, along with the tendency to administer a given set of items across an expanded time frame, rather than to the use of the computer itself. This security challenge is typically addressed through the use of additional, parallel test forms, or larger item banks.

