

Field Dependence: Some “Back Story”

Introduction

The readings you are performing for the classroom activity in deciphering experimental papers all include as one important factor something the authors call, variously, “Cognitive Style,” “Field Dependence,” and “Cognitive Differentiation.” The purpose of this document is to give you some idea what this phenomenon is about.

Roots

The phenomenon of field dependence first gained attention at about the time of World War II. The military noticed that sometimes pilots flying in cloud banks would get disoriented, and end up flying with their planes far from even. Obviously, this is problematic. The pentagon funded research to determine if there was any way to tell who would be likely to make this mistake, and the resulting work revealed that some individuals are very apt to use visual cues to orient themselves, while others rely very much on signals from their bodies (such as inner-ear sensing). Most of the population lies somewhere between two extremes on this continuum.

The mechanism for testing the degree to which an individual is **field dependent** (relies on the visual field for orientation) or **field independent** (relies solely on body cues), was an ingenious mechanism called the Body Adjustment test (BAT). This device positioned the subject in a chair which the individual could rotate using joysticks. The walls, floor, and ceiling of the room could be rotated by researchers to an arbitrary degree away from the upright. The test consisted of asking the subject to orient the chair to be upright. The more the person tilted to match the room, the greater the degree of field dependence.

Implications for Education

So far, this may sound interesting, but it doesn’t mean much for multimedia developers. However, some discoveries of later research proved quite interesting. One important finding was that individuals with a high degree of field dependence tend to have difficulty articulating a visual stimulus. A plain example is that a field dependent student, shown the shape of Tennessee and asked to locate it on a map, would take much longer than a field independent student. This problem applies to virtually any visual task presented to field dependent individuals.

Other difficulties are faced by field dependent individuals such as problems with imposing rational organization on a disorganized collection of information. Any identifiable factor that poses such a big problem to learning is a concern for educational researchers, and since so much of multimedia depends on visual communication, this phenomenon seems like one that should interest multimedia professionals as well.

Other Instruments

If someone wants to include field dependence as a variable in experimentation, then one needs to have a way to measure it. Clearly, the BAT would be great—if you had the wherewithal to build the elaborate mechanism. Unfortunately, we don’t all have the Pentagon’s budget, so alternate modes of testing are needed.

In the 1950's, the **Rod-and-Frame** was developed. In this test, the subject is asked to place a glowing rod in a vertical position. The trick is that the visual field is completely black except for a glowing frame that can be turned to an arbitrary angle away from the upright. Field dependent individuals are much more successful at orienting the rod to the vertical than field independent folks, who tend to align the rod with the sides of the frame.

Another test developed later is the **Embedded Figures Test** (EFT), and a version intended for administration to groups, the **GEFT**. This test has a high correlation with the BAT and the RFT, although not perfect, but it is relatively easy to administer. Test-takers must locate geometric figures in complex diagrams in this test, and it yields a score from zero (very field dependent) to 18 (very field independent).

Field Dependence and Intelligence

Some may be tempted to say that field dependence is merely a sign of low intelligence quotient (IQ). In reality, no correlation between cognitive style and IQ has been found (except when the IQ test uses primarily visual tasks).

People who are field dependent have many advantages. They are more likely to interpret the feelings of people around them correctly, they work better in groups, and they are more apt to be perceived as "warm" or "personable." The ratio of field dependent people seems to vary with the type of society. Agrarian societies are largely comprised of field dependent people; hunting-gathering societies are more likely to be field independent. Technical industrial societies are mixed.

There are also tendencies based on gender and profession. You don't need to know about these things to interpret your papers, but if the class wants to explore this more later, we can.