

HUMAN BEHAVIOR AND INDUSTRIAL SAFETY

the years and his ability to cope with individuals who have used this name to "needle" him

While an individual's capacity for intellectual achievement is determined at birth, its development and utilization will vary. Some take advantage of their opportunities, whether formal or informal, to develop their capacities. Others, because of conflict within themselves or with the environment, do little to develop their potential. Certainly, it is important for the safety man to try to help provide an atmosphere in which the individual will desire not only to work to the limit of his capacities, but also to increase his knowledge in his field of work, and in which he will feel free to express creative ideas for improving the safety program.

Habit patterns, so important both in physical skills and in relationships with other people, are established through the interaction of the individual with his environment.

Some people have established habit patterns which make them useful, contributing, and acceptable members of groups, while other people are avoided because they have habit patterns that make them "hard to get along with." For whatever reason, lack of motivation, limited ability to learn, or poor training, such workers soon become liabilities to a safety program because of their poorly developed and frequently unsafe work patterns.

Interaction of environment and heredity
Whether hereditary factors or environmental factors account more for individual differences is not of great importance in this discussion. It is important simply to recognize that *both* heredity and environment play a part—that what one is today is the product of the interaction of the qualities with which he was born and the environment in which he has lived.

Influences of differences on safety

The problem of individual differences has been related directly to the problem of safety in industry. For some years, safety men and psychologists alike explored the concept of "accident proneness." It was believed for a time that herein was the final solution to the whole problem of safety. Such has not been the case, and this concept has lately received less attention. This

fact does not, however, minimize the importance of the relationship between individual differences, both physical and psychological, and industrial safety.

Accidents related to physical characteristics of the individual
Reaction time, manual dexterity, and visual abilities seem to have at least some bearing on safe performance. While the extent to which they are directly responsible for accidents is neither clear nor constant, it appears that a certain minimum degree of physical competence is required for successful, accident-free performance. Some types of jobs demand superior physical abilities while others do not. It is also possible to redesign a job to allow a person with certain physical handicaps to perform efficiently and safely.

Most of the research to date has considered these things individually. Recently a few studies have examined the connection between combinations of physical shortcomings and accidents. Apparently such studies were initiated because investigators realized that physical and psychological abilities operate not as single, discrete items, but rather in interacting combination. This research is concerned, for example, with general perceptive capabilities and accidents, and not with just the separate abilities that contribute to perception.

Brakeman and Slocombe,⁶ in their summary of ninety-one studies in the fields of physiology and experimental psychology, found reaction time to depend upon "(1) duration of stimulus, (2) visual angle, (3) intensity of stimulus, (4) nature of surrounding conditions, (5) mode of stimulus, and (6) the mental and physical condition of the individual." Simple laboratory tests of reaction time ordinarily do not consider these factors.

The attitude that it is necessary to analyze the requirements of certain jobs in order to determine the importance of reaction time to their safe and efficient performance is supported by research. Cardall⁶ recognized this fact when he pointed out that "critical scores can be determined for a general risk or a specific job risk below which manipulative dexterity, rhythm, reaction time, and visual acuities are predictive of accidents." Tests can be devised to

⁶See references at end of this chapter.