Weber was appointed Dozent at the University of Leipzig in 1817, the same year Gustav Fechner enrolled as a medical student. The following year Weber was appointed Professor of Anatomy and later Professor of Physiology. His most important contribution to psychology relates to his investigations of the small discriminable difference a person can sense — the just noticeable difference (JND). Working with weights he found that it was not absolute differences in weight that led to discriminations, but the ratio of the JND to the standard weight. For example, on each trial a person lifts two weights, one of which is a standard weight and the other a comparison weight. On subsequent trials the weight of the comparison is increased in small amounts until the person reports a noticeable difference in weight. If the standard weight were 40 ounces it would take a comparison weight of 41 ounces to be discriminated as heavier. If the standard weight were 80 ounces it would take a comparison weight of 82 ounces (not 81) before a JND was reported. The ratio is 1/40. If the standard weight were lower, say 20 ounces, one would predict a comparison weight of 20.5 ounces to be just noticeably different (i.e. 1/40 of 20 ounces). This is in fact what happens. Weber observed constant ratios for other senses too (for judgements of the length of lines and the pitch of tones), except at the extremes. His findings might have gone unnoticed had Fechner not formulated the ratio as: \( \frac{dR}{R} = KdR \) is the just noticeable stimulus increment, \( K \) is a constant and \( R \) is the standard stimulus magnitude. The ratio is referred to as Weber’s law or Weber’s fraction. Weber’s law works well except at the extremes. It was later developed and refined by Fechner.

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