side effects or as the worsening of symptomatology following placebo administration. It is important to separate these two definitions since the origin and significance of negative placebo effects may differ depending on the definition utilized.

Placebo-Induced Side Effects

The findings that side effects often followed ingestion of placebos has contributed to the mystique and potency attributed to placebos (Beecher, 1955). Early studies reported placebo side effects such as vomiting, headaches, dizziness, dry mouth, drowsiness, and nervousness (Brown, 1948; Diehl, 1933). Recent studies have confirmed the frequency of these placebo-induced side effects (Dhune, Agshikart, & Dimiz, 1975; Gowdery, Hamilton, & Philip, 1967; Hass, Fink, & Hartleider, 1963; Pogge, 1963).

The frequency and types of placebo side effects varies among studies. Pogge (1963) tabulated the results of 67 studies and found that 817 of 3549 patients (23 percent) reported at least one side effect following placebo treatment. The type of side effect was related to the type of active medication or disease entity under study. For example, nausea was more frequently reported with antispasmodic placebos and drowsiness with tranquilizer placebos. Many other studies have described the variety and extensiveness of placebo-induced side effects.

Placebo-induced side effects can occur in several ways. Some placebo side effects may be symptoms of the original disease. Even with active medications there may be a misinterpretation of the cause of a side effect. Many of the side effects of antidepressant medication are also symptoms of depression (Busfield, Schneller, & Capra, 1962; Schulterbrandt, Raskin, & Reatig, 1974).

Some placebo-induced side effects may be the result of becoming more sensitive to and aware of bodily reactions. Reidenberg and Lowenthal (1968), in a survey of healthy subjects not taking medication, found that only 19 percent did not experience any of the 25 symptoms inquired about in the last two days. Had they been taking medication, these symptoms would have likely been called side effects.

In two studies, the number of side effects was similar in subjects taking placebos and control subjects not given a placebo (Glaser & Whittow, 1954; Shapiro, Chassen, Morris, & Frick, 1974). However, the type of side effects were different. Patients on placebos tended to report somatic side effects (e.g., headache) while those not on placebo tended to report cognitive or affective side effects (e.g., inability to concentrate) (Linton & Langs, 1962; Shapiro et al., 1974). The environmental set induced by taking medication may, therefore, influence patients to interpret and "label" their bodily reactions in somatic terms (e.g., headache) rather than cognitive-affective terms (e.g., tension).

Some placebo-induced side effects may be considered a patient's indirect communication of dissatisifaction with treatment. High scores on a scale measuring indirect hostility positively correlated with placebo side effects (Downing & Rickels, 1967). Placebo side effects are more frequently reported by clinic patients compared to private practice patients (Rickels et al., 1964b). Two studies found that placebo-induced side effects were correlated with increased clinical symptomatology (Keup, 1971; Rickels, 1964). However, another study found that placebo side effects were common for improved patients as well as those reporting a worsening of symptoms (Shapiro et al., 1973). Thus, side effects may facilitate improvement in some patients, possibly by the communication that a treatment is working (Kast & Loesch, 1961).

Placebos and the Worsening of Symptoms

Eight to 48 percent of patients given placebos in various studies report their condition to be worsened (Keup, 1971; Morison et al., 1961; Shapiro, et al., 1968; Wolf & Pinsky, 1954). Although several mechanisms have been proposed to explain this type of negative placebo effect, the most frequently cited explanation is the "violation of expectation."

Therapist instructions lead patients to have expectations about the effects of their therapy (Knapp & Knapp, 1973; Morris & O'Neal, 1975). Patients may interpret unfulfilled expectations about therapy as an indication that their symptoms were worse than originally thought. For conditions like insomnia, worry may cause an exacerbation of symptoms (Mitler, Guilleminault, Orem, Zarcone, & Dement, 1975; Storms & Nisbett, 1970). This